POSTERS

DISEASES BY HELMINTHS

Epidemiology of Intestinal Parasitosis

Intpar001- **Prevalence of intestinal parasites in children population living in a poor area of Fortaleza, Ceara, Brazil: evaluation of parasitological findings, climate and nutritional parameters.**

Quetz, J. da S.*1, Silva, V.M.O.1; Silva-Filho, J.Q.1; Lima, A.A.M.1
1Institute of Biomedicine for Brazilian Semi-Arid & Clinical Research Unit/Center for Global Health, Federal University of Ceara, Fortaleza, Brazil, 60430-270.

Introduction: Parasitic infections are a major public health problem, especially in developing countries. A combination of factors such as poor sanitation, low economic status, crowding, poor education, limited access to safe water and rudimentary hygiene create favorable conditions for the occurrence of intestinal parasites, especially in childhood. Objective: To evaluate the prevalence of intestinal parasitic infections on rainy and non-rainy seasons, as well as their impact on the nutritional parameters in children. **Material and Methods:** The present work surveyed the prevalence of intestinal parasitic infection in 212 children from a poor urban area of Fortaleza, Brazil. We evaluated socio-economic parameters of the children's families and anthropometric data that reflect the physical development of them (height and weight, used for z-scores calculations). Data collection was conducted from January to November, 2009. In order to compare climate changes involved in the prevalence found, we performed data stratification by separating the population into two distinct groups – SR (samples of the rainy season) and SD (samples of the dry season) - using the rainfall index of the time of fecal samples collection. Parasitological examination of the samples was performed by the flotation method. Data were analyzed using Excel software or GraphPad Prism version 5.01 (USA). Parametric and non-parametric data were performed using Student´s T test and Mann-Whitney test, respectively. Significance level was set at $p < 0.05$. **Results:** The overall prevalence of intestinal parasites was 23.6% (30/127) in the rainy season and 15.3% (13/85) in the dry season (p <0.05). At total number, Giardia lamblia was the more frequently found parasite (10.4%, 22/212) followed by the soil-transmitted helminth Ascaris lumbricoides (9.4%, 20/212). Double-parasitism was detected at 2.3% (5/212) of samples. Children with positive detection of any enteric pathogen was grouped (E+), and; when compared to children without enteric pathogen (E-); presented lower weight-for-age (WAZ), and weight-for-height (WHZ) Z-scores (p<0.05). **Conclusions:** The prevalence of enteric parasites was influenced by the rainy season, suggesting a higher risk in this period of time for parasitic contamination and infections. Infected children presented worsen WAZ and WHZ Z-scores compared to children without infection, and it supports that intestinal parasitic infections have an impact on physical growth in these children. **E-mail:** jquetz@gmail.com

Intpar002- **Prevalence of intestinal parasites in children from a riverside community in Coari, Amazonas State, Brazil**

Brito, C.R.N.[1]; Tomieiro, L.M.[1]; Fernandes, A.B.; Guimarães, J.[1]; Monte, A.A.L.[2]
[1]Instituto de Saúde e Biotecnologia – Universidade Federal do Amazonas – ISB/UFAM – Coari/AM, Brazil; [2]Universidade Potiguar – Natal/RN, Brazil.

Introduction: The enteroparasitosis are a serious public health problem in Brazil, being caused by protozoa or helminths which at one time in the cycle are in the human digestive system, resulting in

physical and/or psychosomatic complications. These parasitic diseases are associated with socioeconomic and environmental issues such as poor sanitation, poor housing, low education, unsatisfactory water and food sanitation, among others. Studies in the State of Amazonas show a high prevalence of enteroparasitosis, however, the large territorial extension, combined with the difficulties of access to certain areas contribute to a shortage in conducting research in the state, especially in riverside communities. **Methods:** This study aimed to determine the prevalence of intestinal parasites in children aged 02-10 years, of both sexes, living at the riverside community Esperança 1, Coari/AM, by the spontaneous sedimentation method. A total of 80 children were studied, 44 females and 36 males. **Results:** The positivity for any intestinal parasites was 83.7% (67/80). Regarding gender, there was a prevalence of 55.2% (37/67) in females, and 44.8% (30/67) in males. The most prevalent infections were those caused by helminths and protozoa simultaneously, with 46.2% (31/67). Among the helminths, the most frequent were hookworm (20.8%) and *Ascaris lumbricoides* (18.1%). Regarding protozoa, the most frequent were *Entamoeba coli* (12.8%), followed by *Entamoeba histolytica/dispar* (11.4%). Analyzing the level of parasitism in the population studied, it was found that 34.4% (23/67) of children presented poly-parasitism, 32.8% (22/67) bi-parasitism and 32.8% (22/67) mono-parasitism. In order to promote health, reducing or preventing new infections and reinfections, lectures were held, emphasizing prevention and prophylaxis. **Conclusion:** The results showed a high prevalence of intestinal parasites in this community. The effective control of enteroparasitosis depends on many factors and should be placed among the priorities in public health, since without any sanitation, hygiene, housing, and especially education, is unlikely to be able to eliminate this problem. **E-mail:** crnbrito@yahoo.com.br

Intpar003- **Enteroparasitism in children (0-5 years old) from difficult access communities in Acre, Amazon Western, Brazil – Preliminary results**

Moraes FHP [1,2]; Dattoli VCC [1,2]; Paula AG [1;] Araújo TS [3];Oliveira CSM [3].
1-Medical school student - Universidade Federal do Acre; 2- Liga Acadêmica de Infectologia e Medicina Tropical do Acre; 3- Professor in collective health of Universidade Federal do Acre.

Abstract: The enteroparasite diseases are endemic in children and adolescents which lives in poor hygiene conditions in developing countries. The relationship between the lack of sewage system, piped water and treated water availability with enteroparasites infection have been well documented. Brazil is one of the richest countries in the world. In recent years there have been significant positive changes in indicators across the country. Although such changes do not occur uniformly and the socioeconomic discrepancy in the population make It still been classified as a developing country. The North region is one of the Brazil's poorest in all country. Noteworthy, the city of Jordão, in Acre state, Western Brazilian Amazon, which is considered one of the poorest cities in the country. In 2000 the Human Development Index (HDI) was 0.475, ranking second to last among the municipalities. The hard access to the communities with lives there reflects a remarkable profile of morbidity and mortality, access to health services, intake profile, which in turn interfere decisively in quality of life and development of people in that region. The main objective of this study is to investigate the screen of intestinal parasites in children 0-59 months living in Jordao, Western Amazon, Brazil . Methodology: The design of this study was population-based cross-sectional study where it was analyzed a random sample of 822 children's aged 0 to 59 months living in Jordão, a small town in Acre State, Western Amazon, Brazil. It was included urban and rural areas. The fecal samples from each child were collected in plastic vial with preservatives. The method used was the HPJ and the analysis was done in duplicate smears and positive samples was performed Kato-Katz as well. Besides collecting stool samples was performed using a structured questionnaire applied to parents or guardians, were collected anthropometric measurements of the children's and performed to test for anemia by collecting a drop of blood from the fingertip.Results: Until know only 372 samples have been analyzed. The enteroparasit's prevalence has been 60,8% (226 children infected). Among helminths parasites it was found 51 positive samples (13,7%) for Ascaris lumbricoides, 32 (8,6%)for Hookworm, 19 (5.1%) for Strongyloides stercoralis , 3 (0,8%) for Enterobius vermicularis and 22 (5,9%) for Hymemolepis nana Among protozoan parasites it was found 65 (17,5%) for Entamoeba coli, 76 (20,5%) for Endolimax nana, 8 (2,2%), for Entamoeba hystolitica/dispar , 84 (22.6%) for Giardia lamblia, 19 (5.1%) for Iodamoeba. Conclusion: This is a very preliminary results, not allowing to make deep conclusion. The high prevalence shows the severe problem of such infections in

this population. The lack of sanitation, including few sewage system coverage and treated water supply probably can explaining our results. **E-mail:** vdattoli@hotmail.com

Intpar004- **Prevalence of intestinal parasites in wandering cats caught by the zoonoses center in Goiania, Goias, Brazil**

Rezende, H.H. , Avelar, J.B., Storchilo, H. R. & Castro, A. M.
Institute of Tropical Pathology and Public Health (IPTSP), Goiás Federal University (UFG)

Introduction: Domestic animals infected by intestinal parasites are important to understand the transmission of various human parasites as part of the life cycle or as sources of parasites which are ambiguous to man and animals. Although studies on the prevalence of enteric parasites in cats are rare the increase of these wandering animals in the cities and the possibility of these cats being adopted by people in the zoonoses centers as pets reinforce the necessity for parasitological studies in these animals. **Materials and Methods:** We analyzed 54 fecal samples from cats of various ages. These cats were captured by the zoonoses center in several neighborhoods of Goiânia/GO. The samples were processed by techniques of centrifugation and floatation in saturated solution of glucose, sodium chloride and zinc sulphate, in addition to carrying out the method of Hofmam sedimentation. Of these, were analyzed a small aliquot of the samples (fresh samples) from the different techniques, slide and slide coverglass, stained by Lugol. Of the 54 samples 51 were positive (94.5%), with only three negative samples (5.5%). **Results:** It was possible to observe samples with monoparsitism and others with poliparasitism. The fecal samples identified with monoparasitism showed eggs of *Ancylostoma sp* in 53% (27/51), oocysts of *Toxoplasma gondii* in 3.9% (2/51), oocysts of *Isospora felis* in 2% (1/51) and cist of *Giardia lamblia in* 2% (1/51). The fecal samples that showed poliparasitism were identified with *Ancylostoma sp* and *Isospora felis* in 15.7% (8/51), *Ancylostoma sp* and *Toxoplasma gondii* in 7.6% (8/51); *Ancylostoma sp* and *Toxocara sp* in 2% (1/51), *Ancylostoma sp, Isospora felis* and *Giardia lamblia* in 2% (1/51), *Ancylostoma sp, Isospora felis* and *Toxoplasma gondii* in 5.9% (3/51); *Ancylostoma sp, Isospora felis* and *Cystoisospora sp* in 5.9% (3/51). **Conclusions:** The high prevalence of parasites in wandering cats may be related to their quality of nutrition and no administration of anti-parasitic drugs to these animals which were captured in different areas of the city favoring the proliferation of intestinal parasites. Most of the parasites detected by stool tests can infect humans and are considered as public health problems which reinforces the necessity for effective control of wandering animals in cities which would result in a reduction of human exposure to various parasites.**E-mail:** hanstter.bio@hotmail.com

Intpar005- **Comparison of the socioeconomic and epidemiological profile and association with the prevalence of intestinal parasites in rural sugar cane workers in the regions of Campinas and Ribeirão Preto, State of São Paulo**

Ribeiro, D.C.; Franco,R.M.B.
State University of Campinas, São Paulo, Brazil

Introduction: The most serious public health problems in Brazil are infections caused by intestinal parasites, and the factors that contribute to higher incidence of intestinal parasites are the poor sanitary conditions and low socioeconomic status for a large portion of the population. In this context, the regions of Campinas and Ribeirao Preto, major sugarcane regions of São Paulo, receive annually an increasing number of migrants from less favored regions of the country to work cutting sugar cane. **Objective:** The objective of this study was to determine the socioeconomic and epidemiological profile study of rural sugarcane workers in the regions of Campinas and Ribeirao Preto, Sao Paulo State and the association of this profile and occurrence of intestinal parasites in this population category. **Material and Methods:** About 617 farm workers sent three fecal samples being subjected to the same parasitological techniques such as Hoffman, Pons and Janer, Faust et al., Modified Ziehl Neelsen, Rugai et al, Willis et al., Auramine O, the quantitative procedure Coprokit; also, answered a semi-structured questionnaire. Collected data were analyzed using statistical tests x^2 Pearson and Fisher exact test with a significance level of 5% using the software EpiInfo 3.5.2. **Results:** The rural sugarcane workers studied presented a high socioeconomic and epidemiological profile compared those presented in previous studies, being

observe a decrease in the prevalence of STH (5.67%). However, there was an overall prevalence of parasitic infections of 30.47%, and we verify an association between the presence of protozoa (26.58%), *Giardia duodenalis* (3.40%) and *Cryptosporidium spp.* (3.24%), with the variables "age", "type of drinking water", "lack of garbage collection and sewage system", "monthly family income" and "type of house you live". **Conclusion:** The profiles presented in this study point to improvements in living conditions of rural sugarcane workers, however, the prevalence for intestinal parasites can also be ascribed to poor sanitation in some households in which these individuals living and highlights the need to be evaluated health status of rural workers on the occasion of their admission to the cane cutting. **E-mail:** daniloribeir@gmail.com

Intpar006- **Spatial distribution and prevalence of intestinal parasites in community without basic sanitation in São Cristóvão – Sergipe**

Menezes, F.H.P., Prado, N.M.C.S., Teodósio, C., Viana, F., Ribeiro, C.M., Barbosa, L., Araújo, K.C.G.M, Katagiri, S.
Universidade Federal de Sergipe, São Cristóvão – Brazil.

Intestinal parasitic infections represent an important public health problem in the Northeast region of Brazil especially considering the lack of sanitation conditions, quality of water supply and low socioeconomic situation encountered by its population. Due to the lack of epidemiological data, it becomes hard to track the exact occurrence of parasitic infections. However, there is an innovative way to objectively assess the spatial location of parasitic activity behavior by GPS. The aim of this present study was to evaluate the prevalence of intestinal parasitic infections among citizens of São Cristóvão Municipality, Sergipe, and to characterize parasitic activity patterns. **Material and Methods**: Stool samples were collected from 225 voluntary individuals randomly selected from main streets of São Cristóvão Municipality, in 2011. These samples were then submitted to examination for intestinal parasites in the parasitology laboratory and processed by centrifugation-sedimentation method (CS), centrifugation-flotation (CF) technique for parasites diagnosis. Spatial data collection was obtained through the Global Positioning System (GPS). The relation in between the point-prevalence recording of the distribution and base map provided by IBGE (Brazilian Institute of Geography and Statistics) was established. TerraView software was used for preparation of thematic maps providing spatial analysis of positive cases and spatial locations. **Results:** The overall prevalence of intestinal parasites among the 225 individuals was found to be 41,3%. The most frequently found parasites were: *Endolimax nana* (21,8%), *Entamoeba coli* (14%), *Giardia duodenalis* (7,5%), Ancilostomídeos (3,5%), *Ascaris lumbricoides* (2,2%). Other different helminthes such as hookworms and *Strongyloides* sp. were found at very low rates. There was a uniform spatial distribution of individuals submitted to the examinations. It was also verified small spatial clusters of positive cases related to water collections in recreational habits and consumption of untreated water from various sources throughout the city. **Main conclusions**: GPS is a promising tool for improving understanding of the spatial context of parasitic activity. The current findings suggest that high intestinal parasites prevalence can be related to the lack of knowledge about parasitic transmission and absence of sanitation conditions. **E-mail:** sativet@gmail.com

Intpar007- **Research of intestinal parasites in school children from Recife, Pernambuco state, Brazil**

Silva, RP[1]; Nascimento, WR[1]; Ferreira, MJ[1]; Silva, IP[1]; Barros, VM[1]; Moura, ML[1]; Lima, SC[1]; Rocha, FJS[1]
1 Parasitology Laboratory, Department of Tropical Medicine, UFPE, Recife, Brazil

Introduction: Parasitic infections represent a serious public health problem, it presents a cosmopolitan distribution and affects individual of all social levels. In this context the enteroparasites occupy a central position, both for its clinical importance and for its subtle dissemination and transmission on the environment. Children in school age are, frequently, threatened by enteropathies of this nature, due to their immune system immaturity and inadequate hygienic habits, also because they stay most of time in a closed and collective ambiance. The aim of study was to verify the occurrence of enteroparasites eggs, cysts, oocysts and larvae in fecal material of a nursery school and a school, both located in Recife,

Pernambuco, Brazil. **Material and Methods:** An authorization form was elaborated in a clear language and free of coercion, and then handed out to the children's parents and/or those responsible for them, thus the survey was carried out only with those who authorized the cropologycal exam in children. The samples were stored in collector containers with 10% of formaldehyde and sent to the Parasitology Laboratory in the Department of Tropical Medicine, UFPE. Samples were processed using the spontaneous sedimentation technique (method of Hoffman, Pons and Janer) to identify presence of protozoa cysts and helminthes eggs, and Kinyoun method to identify presence of oocysts in stool samples. The survey was conducted from April 8th till November 10th of 2011. **Results:** A total of 102 stool samples were analyzed, 54 from the nursery school Amiguinhos and 48 from Nossa Senhora da Penha school, 34 (33.3%) had positive results to some type of parasite, out of this total 10 (29.5%) were positives to protozoa, 10 (29.5%) to coccids, 7 (20.5%) to helminthes, 2 (5.8%) to helminthes and protozoa and 5 (14.7%) to protozoa and coccids. The species more frequently found were *Criptosporidium* spp 15 (34.9%), *Giardia lamblia* 7 (16.3%), *Endolimax nana* 6 (14.0%), *Ascaris lumbricoides* 5 (11.7%), *Entamoeba histolytica/dispar* 3 (7.0%), *Trichuris trichiura* 2 (4.6%), *Entamoeba coli* 2 (4.6%), *Blastocystis hominis* 1 (2.3%), *Enterobius vermiculares* 1 (2.3%) and *Ancilostomideo* 1 (2.3%). A large number of positivity was observed in the nursery school 24 (23.5%), predominantly aged 2.2 years in compared to school 10 (9.8%) predominantly aged 6.6 years. **Main Conclusion:** The prevalence of parasitic infections were larger in children within the average age group equal to 2.2 years, this can have a relation with the immunologic immaturity, oral exploration and direct contact with the soil and other infected children. **Keywords:** Intestinal Parasites; Children; Hygiene Habits**. E-mail:** janainarocha@ufpe.br

Intpar008- **Profile parasite found in sand beaches of the northern coast of São Paulo state, Brazil**

Ramos ELP[1]; Queiroz LG[1]; Moura RGF[1]; Rezende-Oliveira, K[1]; Ferreira GLS[1]
[1] **Laboratório de Ciências Biomédicas, Faculdade de Ciências Integradas do Pontal, Universidade Federal de Uberlândia, Brazil**

The soil's contamination by parasites represents a public health problem worldwide. It has been documented the presence of geohelminths and protozoa in soil from different locations, which enhances the degree of risk of infection by different parasites. However, there are few studies on the parasitic profile in sandy beaches public, becomes important the investigation all variables related to this type of contamination and the possible presence of parasites in this soil type. This way, the present study aimed to analyze the some environmental variables and the presence of parasites in urban beach (Praia da Enseada) and desert beach (Praia do Alto) in "Ubatuba", "Sao Paulo's" state in two seasons, winter and summer**.** The sample sand of collected in the months of July 2011 and January 2012, concomitantly with the environmental analysis. Were collected and analyzed 138 soil samples for analysis to the presence of parasites, analyzed by the methods Rugai and Hoffman, Pons & Janer. It has been observed that 85.7% of summer samples were positive for at least a parasite, whereas in the winter the percentage of positive samples was 53%. It was also observed that in the summer geohelminth positivity (85.7%) was significantly higher than in winter (43.9%). However, this didn't occur for the presence of protozoa, and in the summer the positivity for these parasites were 34.7% and in winter were 31.8%. The most commons parasitic structures in the summer samples were Hookworm larvae (55.1%), Hookworm eggs (46.9%), *Toxocara* sp (40.8%), *Ascaris lumbricoides* (38.8%) and larvae of *Strongyloides* sp (38.8%). In the winter samples were found more frequently, eggs of *Toxocara* sp (16.7%), eggs of *A. lumbricoides* (13.6%), coccidia oocysts (13.6%) and Hookworm eggs (12.1%). Through environmental analysis showed that the average temperature in the soil sampling sites in summer was 26.5°C and in winter was 17°C. Near the most collection points of the urban beach had trash, dogs or canine's traces (feces or footprints) and/or sewer in both seasons. The results suggest that the presence of geohelminths has a strong relationship with climate and environmental conditions; however the presence of protozoa in soil is probably related only to environmental conditions. It also follows that the presence of domestic animals in sandy soils can be related to the frequency of such parasites on beaches used for baths, which creates problems with public health, thus, is necessary greater control of those areas. Finally, it is important to investigate the prevalence of parasitic diseases in the population that attends these recreational areas to the development for preventative measures. **E-mail:** eliezerlucas3@gmail.com

Intpar009- **Prevalence of *Strongyloides stercoralis* in HIV infected patients**

Gonçalves FL, Ribeeiro SR, Laignier ER, Pereira FEL
Núcleo de Doenças Infecciosas .CCS-UFES – Vitória, ES

Introduction: Data on prevalence of *Strongyloides stercoralis* in HIV-infected patients are controversial, both in Brazil and other countries. The aim of this study was to investigate the prevalence of *Stromgyloides stercoralis* and factors that may be associated with prevalence of *the* worm, especially abusive alcohol consumption and HTLV-1 infection, in HIV-positive patients treated at a University Hospital in Vitoria,ES,Brazil (period 2009-11) and to compare with the prevalence of the parasite in samples of HIV negative patients treated at the same Hospital. **Methods:** Examination of three samples of stools, by spontaneous sedimentation method at the routine laboratory of the Hospital. Investigation of HTLV 1-2 infection, chronic alcoholism (> 80 g / day of ethanol), use of footwear, availability of treated water and sanitary facilities. **Results:** Prevalence of *S. stercoralis* in 167 HIV-positive patients (13/167; 7.78%, 95% CI 3.7-11.7%) did not differ significantly from the prevalence in a sample of HIV-negative patients at the same hospital, during the same period (9/220, 4.1%, 95% CI 1.5 – 6.8%). In HIV-positive patients alcoholics, the prevalence was significantly higher than in HIV positive non-alcoholics (respectively, 7/42 or 16% and 6/123 or 4.8%, $p = 0.023$). In addition the prevalence of *Strongyloides* in HIV(+) alcoholics patients was significantly higher than in non-alcoholics, HIV negative patients, attended at the same hospital (respectively 7/42 or 16% and 26/491 or 5.3% $p = 0.010$). HTLV-1 was detected in 2/113 HIV(+) patients that were negative for *S stercoralis*. Binary logistic regression analysis taking in account gender, alcoholism, schooling, origin (rural or urban),use of shoes, sanitary facilities,CD4 counts and viral load demonstrated that chronic alcoholism persisted as the only factor significantly associated with *Strongyloides* infection in HIV(+) patients. **Conclusion**: The prevalence of *S. stercoralis* was similar in HIV positive and HIV negative patients attended at the same Hospital, but was significantly higher in HIV positive patients when chronic alcoholism is associated with HIV infection. **E-mail:** felp@ndi.ufes.br

Intpar010- **Nematoda larvae in soil of public squares of São Paulo: recovery frequency and environmental factors**

Silva Mello C*[1] and Cassenote AJ[2]
1. Department of Environmental Health, Public Health College of São Paulo University, São Paulo – Brazil; 2. Postgraduate Program in Infectious and Parasitic Diseases, Medicine College of São Paulo University, São Paulo - Brazil.

Introduction: environmental factors are crucial for maintaining the life cycle of many of nematode known in the environment. In the propagation phase in the form of eggs or larvae, these parasites in the external environment need to find the ideal conditions to ensure the survival and maturation of infectious elements in amount sufficient to maintain viable parasite population. The objective of this study was to determine the frequency of recovery of nematode larvae in the soil of public places and assess the impact of environmental factors in this context. **Materials and methods:** samples were collected for one year, from October 2008 to September 2009. Each month five squares were studied, being chosen five different points for withdrawal of samples, totaling 25 samples per month and 300 in the entire assessment. For the detection and identification of parasitic forms, the technique employed is flotation in saturated sodium chloride solution (density = 1.20 g/cm3). Climatic factors (rainfall, humidity, winds and temperature) were provided by the Laboratory of the Hydrometeorological Institute of Atmospheric from USP (São Paulo University) for the months corresponding to the collection of soil samples. **Results:** 372 larvae were recovered in the study, the overall average recovery was 37.2 larvae (SD=38.3) per square, with 123 being the maximum and minimum of 7; among the recovered larvae was observed the presence of Strongyloides stercoralis infective to humans. The proportion of larvae recovered in the dry period was 47.85% (178) and 52.15% (194) in the rainy season, the general comparison of proportions per period not show statistical significance ($p = 0,221$). **Main conclusions:** there is contamination by nematode larvae that cause disease in humans in the markets studied. In the overall comparison showed no difference in larval recovery between the rainy and dry seasons, even when considered climatic factors. Efforts to

control parasites in soil should be directed to public places because there is risk to the population. **E-mail:** nicebio@usp.br.

Intpar011- **Main Enteroparasitosis found in students from State Schools of Felicio dos Santos – MG**

D.R. Samira[1]; A.A. Leticia[1]; V.B.Marcos[2]; R.M. Helen[1]
[1] **Federal University of the Jequitinhonha and Mucuri Valleys;** [2] **Municipal Government of Felicio dos Santos – MG**

Introduction: The human intestinal parasites are considered a major public health problem due to its wide geographic distribution, its high prevalence rate in relation to pathogenic effects, besides its ease of spreading through the production of large quantities of contaminants. In recent years, fecal examinations in isolated works taking place in Brazil, generally confirmed that the prevalence of intestinal parasites in our country is high, due to poor conditions of sanitation, housing and education, especially in health. **Materials and Methods:** The project was conducted in the Municipality of Felicio dos Santos located in Jequitinhonha Valley in Minas Gerais with a population of 5729 inhabitants which the primary education entity is the State School Felicio dos Santos, who has 1045 students distributed between the primary and secondary schools, among them 711 (68%) volunteered to participate in the project providing the team with the fecal samples and questionnaire. Most students (58.2%) were from rural areas and considering the age it was revealed that the majority have between 11 and 16 years, what can be explained by greater awareness of the participants in this age group in relation to intestinal parasites and damage caused by them. By fecal examinations using the HPJ method, was possible to show that 228 (32.07%) cases were positive, where 69.23% were of protozoa and 30.77% for different species of helminths. **Conclusion:** The number of cases was high in this population occurring that among students who were positive for fecal examination, 13.12% showed an association of two or more parasitic structures. The most prevalent specie was the commensal protozoan *Entamoeba coli* (49.23%) that although non-pathogenic, were considered for discussion, for they include the same mechanisms of transmission from other pathogenic protozoa, serving as good indicators of socio-sanitary conditions and also suggesting the presence of habits related to poor hygiene, as inadequate hand washing and contamination of water and food. It was followed by the species of the Ancylostomidae family (17.69%) and of the protozoan *Giardia duodenalis* (8.85%). The *Enterobius vermicularis* infection was observed in 7.69% of cases noting that in the study was not employed the method of gummed tape, which is more sensitive for the parasite detection, meaning that the number of cases may be even greater. Intestinal parasitic infections reflect the living conditions of different communities and its high frequency is related to lack of prevention policies that monitor the population through regular surveys. **Support:** Fapemig, UFVJM **E-mail:** samira-dr@hotmail.com

Intpar012- **Kindergartens in Poorest Neighborhoods of Itabuna - Bahia: a Target for Intervention against Endoparasitic Diseases**

Hora, FL; Carvalho, SMS; Silva, VO; Tedgue, MAP; Mariano, APM; Silva, MF-
Laboratory of Parasitology Profa Maria Lena Melo Mariano (LAPAR) - Dept. of Biological Sciences – State University of Santa Cruz (UESC) - Ilhéus - Bahia.

Introduction: The prevalence of parasitism varies with the environment and the type of parasite, especially in regions with inadequate sanitation and hygiene standards. Infection can occur in individuals of all ages; however, parasites may cause high morbidity and mortality among child under 6 years old, because they cause malnutrition, diarrhea and anemia, affecting the physical and intellectual development. Human in-house agglomeration is also risk factors for contamination, such as occurs in day care centers, where is noticeable increased among children exposed to several risk factors for infectious diseases. The objective of this study was to identify the positivity rate in stool examinations for intestinal parasites in children of preschool age, regularly enrolled in community day care centers located at different neighborhoods in Itabuna, Bahia, Brazil. **Material and Methods:** A given number of 175 fecal samples collected in triplicate and processed by the methodology of Mariano & Carvalho in LAPAR as

usual; the overall analysis of samples revealed that the children aged 4 to 6 years old and 50.8% female. **Results**: Of the samples processed, 73.7% were positive for enteroparasites. The poliparasitism was present in 68.6% of fecal examinations, more often *Ascaris lumbricoides*, *Trichuris trichiura*, *Endolimax nana*, *Entamoeba coli* and *Giardia sp.* To further analysis, only 100 children with complete medical data participate of study. In this context, the kindergarten "A" with 24 children showed positivity rate of 87.5%, and the multiple infection parasite was 80.9%. The kindergarten "B", with 55 children, showed positivity rate of 92.7% and multiple parasitisms in 66.7% of samples tested. The last kindergarten "C" with 21 children, showed positivity rate of 80.9% and multiple parasitisms in 47% of samples tested. **Main Conclusions**: Based on the results, it is possible to note that parasitism is common feature in these sample groups studied in different locations in Itabuna-BA, as observed in previous studies elsewhere and conducted in LAPAR. We conclude that, despite the lacking of a better conclusive correlation of differences among non-related and unmatched children groups in and out of kindergartens, the socioeconomic conditions, infrastructure and hygiene of these locations can contribute as risk factors of contamination. Kindergartens represent strategic targets to diagnosis, treatment, education and prevention of endoparasitic diseases in Itabuna, Bahia, Brazil. **E-mail:** fau_1507@hotmail.com

Intpar013- **Intestinal parasites: Soil contamination by a municipal drain into an area used as a play of a children care Institution placed in Ititioca, Niterói, RJ**

Adami, Yara Leite[1]; Leite, Roberta de Oliveira[2] & Macedo, Heloísa Werneck[1].
[1]Laboratório de Parasitologia, Faculdade de Medicina/Departamento de Patologia, Hospital Universitário Antônio Pedro/Universidade Federal Fluminense; [2] Biomedicina / Universidade Federal Fluminense

Introduction: Intestinal parasites unfortunately remain as an important and neglected public health problem despite their social impact and high prevalence rates among those who live in precarious conditions. It is a general concern that there is a direct link between infections and education as well as low quality of life. Still, they are an important cause of malabsorption, chronic diarrhea, anemia, malnutrition, abdominal pain, learning difficulties and growth dysfunction. In this study our goal was to evaluate infection by intestinal parasites in resident children and staff at a children care institution placed in Ititioca, neighborhood of Niterói (RJ). Additionally, lectures were held in order to provide and improve expertise on health education for the related community. **Material and Methods:** Briefly, a total of 68 fresh fecal samples were collected and analyzed through Hoffman, Pons & Janer (1934) and Willis (1921) Methods. The tests were carried out in duplicate for each method supplying a total of 272 processed fecal samples. The imunoassay "Detecção do Antígeno de *Entamoeba histolytica* II ELISA, Techlab (Inc. Blacksburg, VA, USA) was employed for differential diagnosis of *Entamoeba histolytica*. All data obtained in this study were tested for significance by means of (one-tailed) Fisher´s exact Test with a confidence interval (IC) of 95% and an error of 5% ($\alpha = 0.05$), and a p-value <0.05 indicating statistical significance. The Chi-Square and Fischer Exact Test were performed with the GraphPad Prism version 4.00 for Windows, GraphPad Software San Diego, California USA www.graphpad.com.**Results and Main Conclusions:** The parasitological methods carried out were able to detect 50% of positive samples and a predominance of protozoa infections. *Blastocystis hominis* was detected in 88% of the positive samples, followed by the nonpathogenic *Endolimax nana* (29%), *Giardia intestinalis* (23,5%) and the complex *Entamoeba histolytica/E.dispar* (20,6%). Helminths such as *Hymenolepis nana*, *Ascaris lumbricoides*, *Trichuris trichiura* and *Enterobius vermicularis* were also found, but all with low prevalence rates. An ELISA Test was employed to detect infections by *Entamoeba histolytica* in seven samples where microscopic examination were positive for the *E. histolytica/E. dispar* complex and only one reacted positively in the immunoassay. As the Institution has a good pattern of hygiene not appropriate for the results found, a superficial analysis of its terrain periphery was carried out and showed points of sewer into the play area of the Institution. We concluded that these points may be responsible for the soil contamination and could be incriminated as one of the sources of infection for the kids. **E-mail:** yaraadami@vm.uff.br

Intpar014- **Incidence of endoparasites during childhood: influences of microenvironment conditions of neighborhoods, slums and peripherals of Itabuna, Bahia, Brazil.**

Silva, MF; Santos, TN; Santos, EN; Silva, JA, Carvalho, SMS; Mariano, APM
Laboratory of Parasitology Profa Maria Lena Melo Mariano (LAPAR) - Dept. of Biological Sciences – State University of Santa Cruz (UESC) - Ilhéus - Bahia.

Introduction: We have been accompanied in the past the incidence of endoparasite in childhood enrolled in several kindergartens in Itabuna located at southwest of Bahia state, Brazil. In the last year, we compared the mono and poliparasitisms among several groups of child and non-related unmatched groups. It was took in account the in-house agglomeration as risk factors for contamination, such as occurs in day care centers. Conversely, we selected children from marginal communities with large human settlements and usually devoid of minimum health infrastructure with profound social inequity with optimal conditions for transmission of parasites. The objective of this study was to compare the incidence of endoparasites in children of preschool age regularly enrolled in community day care centers compared to other children at same age but with different settlement located in the city of Itabuna-BA. **Material and Methods:** A given number of 200 fecal samples collected in triplicate, and processed by methodology of Mariano & Carvalho in LAPAR. **Results**: we found in the kindergarten "A" with 24 children showed positivity rate of 87.5%, and the multiple parasites infection was 80.9%. The kindergarten "B", with 55 children, showed positivity rate of 92.7% and multiple parasitisms in 66.7% of samples tested. The last kindergarten "C" with 21 children, showed positivity rate of 80.9% and multiple parasitisms in 47% of samples tested. To comparison, a group of 15 non-related children at same age but with different addresses in the same city showed a positivity rate of 53.5%, and the multiple infection parasite was 33,3 %. In the children from kindergartens the poliparasitism was present in 68.6% of fecal examinations, more often *Ascaris lumbricoides*, *Entamoeba coli* and *Giardia sp.* On the other hand, the unpaired group, poliparasitism was only 20% and more often by *Trichuris trichiura* and *Endolimax nana*. **Main Conclusions:** We can concluded that, despite the unbalanced and non-matched group comparisons, children from kindergarten located at poorest regions of Itabuna shows significant higher incidence of endoparasites when compared to others from different social stratus. Compared to other parasitological surveys the diagnosis made by LAPAR, this study showed high levels of positivity which is strongly influenced by the notions and practices of public health, with emphasis on the education, prevention, prophylaxis and better urban planning for Itabuna, Bahia, Brazil. **E-mail:** mfsilva@uesc.br

Intpar015- **Frequency of intestinal parasites in the families' children and adolescents from cooperative of garbage collectors recycle, Riacho Fundo II, Distrito Federal, Brazil.**

Carvalho, MA[1], Oliveira, DA[1], Machado, ER[1,2]
[1]Curso de Enfermagem, Faculdade Anhanguera de Brasília, Taguatinga, [1,2]Faculdade de Medicina, Universidade de Brasília, Brasília, DF, Brazil.

Introduction: Enteroparasitosis are important public health, especially in developing or underdeveloped countries. Children are an important high-risk group for enteroparasite infections. **Objective:** The aim this study was to verify to the frequence of enteroparasites among children and teenage that had parent's collectors of recyclables and solid garbage recycling cooperative, in the city Riacho Fund II city, DF, Brazil, on March 2009. **Methods:** It was a field research and qualitative. Data were obtained from a questionnaire answered of children and adolescent parents, to verify if these individuals had clinical signs of enteroparasites. They examined three fecal samples from each participant, by Rugai and spontaneous sedimentation technique, in to the Parasitology Laboratory, Faculty of Medicine, University of Brasilia, in March of 2012. **Results:** Of the 30 children examined, 43% were boys and 57% were girls, 82% were children (age: five month at 11 year old) 16% teenage (age: 12 at 18 year old). 70% of children and adolescents were born in the Distrito Federal, and 67% never made parasitological exams. Of the 10 who were examined, 60% were negative, 20% positive and 20% do not remember the result. The clinical symptoms presented by children were: 43% had diarrhea, 47% vomiting, 27% constipation, 57% slick

skin, 20% had some type of injury, 10% asthma, 23% bronchitis 57% cough, 13% weakness, 53% fatigue, 40% anorexia, 10% grinding of the teeth, 23% insomnia, 40% irritability. 90% of these individuals do not drink filtered water, 73% of them were taken to the pediatrician only in emergency situations. Among children aged 5 months to 1 year were all breastfed, 33% performed three meals a day, 13% four meals, 30% five meals, 23% six meals per day, 67% had fed on food from the garbage, 57% ate fruits, vegetables, 33% washed that food with water, 53% did not fruits and vegetable before consumption, and just only 13% washed them using water, soap and vinegar. At the residence of the children or teenage 60% had dog or cat, 67% of those had not appropriated place for animal feces. 60% of people went barefoot, 63% had anal itching, 62% were normocoradas mucous, and 38% hipocoradas. 38% of these individuals had long dirty fingernails, and 62% short nails clean fingernails, 12% had larger abdomens. Of the 30 persons examined, 22 were positive with: 55% of *Entamoeba coli*, 14% of *Endolimax nana*, 5% of *Iodamoeba butschlii*, 9% of *Entamoeba histolytica/dispar*, 14% of *Giardia lamblia*, 27% of *Ascaris lumbricoides,* 27% of *Hymenolepis nana*, 5% of *H. diminuta*, 14% Hookworm, 5% of *Strongyloides stercoralis*, 9% of *Trichuris trichiura*. **Conclusion:** There are a positive relationship between precarious hygienic habits with food and environment and high frequency of enteroparasites in these children and teenage. **Key words:** enteroparasites, children, teenage, garbage collects, Riacho Fund II city, Brazil **E-mail:** eleuzarodriguesmachado498@gmail.com

Intpar016- **Frequency of intestinal parasites in sample of lettuce (*LACTUCA SATIVA)* commercialized in groces and open air market in Ituiutaba City, Minas Gerais state**

Sanches, MC[1]; Gómez-Hernández, C[2]; Rezende-Oliveira, K[1]
1-Faculdade de Ciências Integradas do Pontal, Universidade Federal de Uberlândia, Ituiutaba, Brazil 2-Universidade Federal do Triângulo Mineiro, Uberaba, Brazil.

Introduction: Vegetables in general can be contaminated by various evolutionary forms and species of parasitic diseases, considering the place of cultivation, handling and transportation to the final consumer. **Objective:** To investigate the presence forms of intestinal parasites in lettuce (*Lactuca sativa*), sold in different areas of urban distribution, such as grocers and open-air market in the city of Ituiutaba,Minas Gerais. **Material and Methods:** Were analyzed 51 samples of lettuce: 42 samples from grocers and nine samples from open-air market. From each grocers and open-air market three samples of lettuce were obtained, and in each place two repetitions were performed which totalized into the six samples from each place. The methodology was based on sedimentation, adapted from Coelho et.al. (2001) and Ritchie's methods, in order to find protozoan cysts and helminth eggs. **Results:** In 42 (82,4%) samples of lettuce collected in grocers, found 95,2% (40) of *Endolimax nana*, 33,3% (14) of eggs of roundworms, 14,2% (6) of larvae *Strongyloides* sp., 9,5% (4) of *Entamoeba histolytica*, 7,1% (3) of *Entamoeba coli* and 7,1% (3) hookworm eggs. In 9 (17,6%) samples of open-air market, the parasites were found: 88.9% (8) of *Endolimax nana*, 33,3% (3) of hookworm eggs, 22,2% (2) of *Entamoeba histolytica* and 11,1% (1) larvae *Strongyloides* sp. **Conclusions:** These results suggest that the lettuces marketed in grocers and open air market present precarious hygienic conditions, which was evidenced by the high frequency of different parasites founded in the samples**. E-mail:** meirianesanches@hotmail.com

Intpar017- **Frequency of enteroparasites in collectors of the recyclable material into Distrito Federal, Brazil**

[1]Pereira, IGS; [1]Rodrigues, CS; Machado, ER[1, 2]
[1]Curso de Enfermagem, Faculdade Anhanguera de Brasília, Taguatinga, [1,2]Faculdade de Medicina, Universidade de Brasília, Brasília, DF, Brazil.

Introduction: Trash can trigger many health problems for the population, especially when they use it as a source for survival. This is a precarious and unhealthy activity, in which collectors of recyclable materials are exposed to various risks of infection and contamination. This becomes clear the relationship between work of garbage collection and health, especially enteroparasites infections. **Objection:** To determine if exists correlation between the collections of urban solid residues to the health of recyclable material

collectors of the Distrito Federal, in association with enteroparasites in these individuals. **Methodology:** It was a field and qualitative research. The data was obtained from an interview and applied a questionnaire answered by recycling collectors RECICLO to verify the social and economic conditions this individuals. It were coleted three stool samples from each worker, and analyzed by Rugai and spontaneous sedimentation technique, on the Laboratory of Parasitology, Faculty of Medicine, University of Brasilia, in 2012. **Results:** The sample was compost of the 20 individuals, being 95% women. Of these persons, 30% was illiterate, 20% semiliterate, 40% had basic teaching, and 10% secondary education. Their 90% was working more than five years in the cooperative, 5% more than two years, and 5% more than one year. 70% people were living with more than four persons, and 30% lives with three persons. 80% of the collector recognized that the local work was of risk to the health, 85% believes what animals that live in that place can transmit diseases to the man. All workers believed that EPIs was important in the prevention of accidents, however, only 44% wears gloves, 34% wears boots, and 22% put the masks. 50% had suffered accident of work while handling the garbage, 5% had parasitic disease, 60% already made examination of feces. 65% of these individuals consumed foods of the garbage, 95% washed the hands after handling the garbage and before consuming foods, 15% walked barefoot. The clinical symptoms of diseases were: 1% of diarrhea, 5% constipation, 7% gases in excess, 5% abdominal pain, 11% stomachache, 4% nausea, 3% vomiting, 4% loss of weight, 6% deficiency of appetite, 4% excessive hunger, 8% weakness, 9% cephalalgia, 2% fever, 4% coughs up, 3% difficulty to breathe, 1% drowsiness to creak of the teeth at night, 5% irritability, 1% sleepiness, 5% insomnia, 3% skin itch, 1% nose itch, 3% anal itch, 4% vaginal itch, 15% redness. All the individuals were positive for commensals or pathogenic parasites such as: 27% *Entamoeba coli*, 10% *E. histolytica/dispar*, 9% *E. hartmanni*, 9% *Endolimax nana*, 3% *Dientamoeba* sp, 1% *Giardia lamblia*; 7% Hookworm, 4% *Ascaris lumbricoides*, 1% *Strongyloides stercoralis*, 1% *Hymenolepis nana*, and 1% *H. diminuta*. **Conclusion:** The social and economic conditions, hygiene habits of individuals' garbage collectors favor the emergence and spread of enteroparasites in the Distrito Federal. **Keywords:** enteroparasites, human adults, urban Solid garbage, health. **E-mail:** eleuzarodriguesmachado51@gmail.com

Intpar018- **Frequency and risk factors for infection parasitic diseases in children and municipal employees of a nursery in Piaçabuçu - Alagoas**

Santos, E.O.[1 2]; Reis, JB[2]; Silva, WRG[2].
[1] **Postgraduate in tropical medicine, Center for Health Sciences (CHS), Federal University of Pernambuco (UFPE); [2]State University of Alagoas (UNEAL).**

The intestinal parasites are a serious public health problem in Brazil and worldwide. Among the individuals affected, children are a group of great relevance, causing various health disorders, as well as providing increased infections and anemic processes. In collective environments, such as day care exposure to the risk of intestinal parasites is facilitated by allowing greater interpersonal contact. The present study aimed to evaluate the frequency and risk factors for infection with intestinal parasites among children and staff enrolled in a local nursery in Piaçabuçu - AL. To collect material coprological collection tubes were distributed among the study participants. In the Laboratory of General Biology, State University of Alagoas samples collected were processed and analyzed by the parasitologic like Hoffman and Kato-Katz through the use of rapid testing Helm-Test Bio - Manguinhos, following the instructions manufacturer. Of the 61 samples analyzed, 49 were children and 12 samples were from employees. The positive rate was 55.1% (27/49) among children and 33.3% (4/12) among employees. *Trichuris trichiura* (16/27), hookworms (8/27), *Ascaris lumbricoides* (7/27), *Giardia lamblia* (5/27) species were identified among children. Among employees, the species found were: *Entamoeba histolytica / dispar* (3/4), *Entamoeba coli* (2/4) and *Trichuris trichiura* (fourth). Only one employee was found poliparasitada. The age of participants was between 10 months to 5 years among children and 23 to 63 years among employees. 51% of participating children (25/49) were male, while 49% (24/49) were female. However, all employees were female. Males had a higher number of cases of infection by intestinal parasites, and the age of three and four years the most affected. Among the employees intestinal parasitism was higher in those aged over 50 years. Most children lived in a brick house, had treated water in your home and how the fate of human waste pit. As for the employees of the nursery, all lived in brick houses. The data obtained demonstrate a high percentage of intestinal parasitism among children of Nursery investigated, demonstrating the need for preventive measures in health education in

the population studied. Could not find any statistically significant association between the variables analyzed. **E-mail:** erlon.medtropical@hotmail.com.

Intpar019- **Evaluation of parasitic infection by** *Ascaris Lumbricoides* **in children and adolescents in the city of Santo Antonio de Jesus – Bahia - Brazil**

Souza, V.B.; Jesus, R.S.; Almeida, J.S.; Amor, A.L.M.
Centro de Ciências da Saúde / Universidade Federal do Recôncavo da Bahia – CCS/UFRB

Introduction: *Ascaris lumbricoides* is a enteroparasite of worldwide occurrence. Brazil is one of the most infected by this infection. Soil contaminated or food serves as routes of transmission. Due to the time for eggs eliminated by the host in the environment to become infective, a surprising precocity of transmission of *A.lumbricoides* when compared to intestinal protozoa transmitted via fecal-oral direct. Besides the migratory capacity (erratic ways), clinical manifestations may be triggered by only one worm. Intestinal obstruction in children under five years, nutritional and obstructive changes in infants were observed in children with mild parasitic loads. The objective was to determine the parasite load to *A. lumbricoides* in a children and adolescents population. **Methodology:** A study in a population aged between 01-17 years and residing in Santo Antonio de Jesus / Bahia (in agosto/2011). Each participant was asked to sign a consent form, accepting the participation of children under its responsibility as a criterion for inclusion. To evaluate the parasitic load for *A. lumbricoides*, we used the parasitological examination by Kato-Katz technique considering the ratings for intensity of infection based on the criteria recommended by the World Health Organization: mild infection, found when the load is less than 5,000 eggs per gram of feces, mild infection when the load is between 5,000 and 50,000, and high infection if more than 50,000 eggs / gram of feces. **Results:** 77 children participated. Were positive for some enteroparasite: 80.52% (n=62). The Kato Katz technique proved positive for helminths in 40.26% (n=31) of samples analyzed: *Trichuris trichiura* (n=22), *A. lumbricoides* (n=13), *Enterobius vermicularis* (n=04) and hookworm (n=04). Analyzing the parasitic load for the samples positive for *A. lumbricoides*, register 46.15% (n 06) of mild infection, 23.08% (n=03) of mild infection and 30.77% (n=04) high infection for this parasite. Highlighting two brothers (07 and 13 years) with more than 100,000 eggs per gram of feces, and one of them had surgery to remove appendix, a week after having participated in the interview, the victim of an erratic infection. **Conclusion:** The data for moderate to high infection when added together exceed the record of the parasitic load for mild infection. Suggest the need for further research on this parasite as an indicator of socio-environmental conditions and health. **E-mail:** ana_amor@ufrb.edu.br

Intpar020- **Enteroparasitological profile of children and food handlers in a nursery in Santa Clara community in the municipality of João Pessoa – PB**

Moura, J.A.P, Antunes, P.S, Martins, I.S , Rodrigues, D.A, Cardoso, B.C , Vieira, L. M. , Rocha, J.C , Albuquerque, J. A , Torres, P.A., Freitas,F.I.S
Laboratory of Clinical Parasitology, Department of Pharmaceutical Sciences, health sciences center, Federal University of Paraíba, João Pessoa, Brazil.

Background: The intestinal parasites are a serious public health problem, and the child population most affected due to their immunological immaturity and poor hygiene**. Objective:** This study aimed to identify enteroparasitológical in children and food handlers in the nursery of the Santa Clara community in the city of Joao Pessoa-Pb. **Materials and Methods:** We performed tests of 60 fecal samples, of which 41 (68%) were from females and 19 (32%) were male, were analyzed by the method of Hoffmann, conducted during November to December 2011. **Results:** After analyzing the results one can observe a high degree of parasitism, with rates that reach 53% of positive samples, representing a total of thirty-two fecal samples, including 19 (59%) were monoparasitadas, 9 (28%) biparasitadas and 4 (13%) multiinfested frequent. The protozoa most frequently were: Endolimax nana 16 (50%), Entamoeba coli 12 (37.50%), Entamoeba histolytica / Entamoeba díspar 4 (12.50%), Giardia lamblia 9 (28.13%) and Iodamoeba butschlii 1 (3.13%). Since the frequency of helminthwas Ascaris lumbricoides 3 (9.38%), Trichuris trichiura 3 (9.38%) and Hymenolepis nana 1 (3.13%). **Conclusions:** To prevent foodborne illness is necessary to joint implementation of various actions, including the identification of pathogenic agents that

can be transferred to food through handling, as well as education on personal hygiene to the handlers and Kindergarteners study. **Keywords:** Profile, Enteroparasitoeses, Community. **Email:** andersonconsa@hotmail.com

Intpar021- **Analysis of the frequency and helminth protozoa in children and food handlers in state nurseries 3 The city of João Pessoa – Pb**

Moura, J.A.P, Antunes, P.S, Martins, I.S , Rodrigues, D.A, Cardoso, B.C , Vieira, L. M. , Rocha, J.C , Albuquerque, J. A , Torres, P.A., Freitas,F.I.S
Laboratory of Clinical Parasitology, Department of Pharmaceutical Sciences, health sciences center, Federal University of Paraíba, João Pessoa, Brazil.

Background: The intestinal parasites constitute a serious public health problem, especially in developing countries, one of the key factors debilitating the population, joining the boards often chronic diarrhea and malnutrition, compromising, as a consequence, the physical and intellectual performance of young and professional individuals in productive age. **Objective:** To assess the prevalence of intestinal parasites in children and food handlers in three kindergartens in the city of João Pessoa - PB. **Materials and Methods:** We analyzed 79 fecal samples from individuals living in the community San Rafael, Santa Clara 60 community and the community of District 26 Mechanic, a total of 165 people participating in the project. The samples were analyzed by the method of Hoffmann in 2011. **Results:** In the data compiled demonstrated community that in the first 37 (47%) samples were negative, and 42 (53%) samples were positive, and the frequencies of nematodes were Ascaris lumbricoides 6 (14%) and Hymenolepis nana 2 (4%) , Trichuris trichiura, 2 (4%), Enterobius vermicularis 2 (4%), Ancylostomidae 2 (4%) and larvae Strongyloides strecoralis 1 (2%). Since the frequencies of protozoa were Endolimax nana 32 (76%), Entamoeba coli 16 (38%), Entamoeba histolytica / Entamoeba dispar 13 (31%), Giardia lamblia 6 (14%). In the second community, the fecal samples analyzed there were 10 (38%) were negative and 16 (62%) positive samples, the frequencies being so distributed helminth Ascaris lumbricoides 2 (12.50%), Trichuris trichiura 2 (12.50 %), Ancylostomidae 1 (6.25%) and a Shistosoma mansoni (6.25%), protozoa: Endolimax nana 13 (81.25%), Entamoeba coli 9 (56.25%), Entamoeba histolytica / Entamoeba dispar 6 (37.50%), Giardia lamblia 2 (12.50%) and Iodamoeba butschlii 4 (25%) and the third community of fecal samples analyzed there were 32 (53%) positive samples and 28 (47%) were negative being the frequency of helminths: Ascaris lumbricoides 3 (9.38%), Trichuris trichiura 3 (9.38%) and Hymenolepis nana 1 (3.13%), and protozoa: Endolimax nana 16 (50%), Entamoeba coli 12 (37.50%), Entamoeba histolytica / Entamoeba dispar 4 (12.50%), Giardia lamblia 9 (28.13%) and Iodamoeba butschlii 1 (3.13%). **Conclusion:** The data shows that the frequency of parasitic infections were high among the communities studied, where 54.54% of the fecal samples were parasitized with helminths or protozoa. These results can be justified by the lack of personal hygiene, sanitation and hygiene education, day care centers in the three studied factors that contribute to transmission of pathogens through contaminated food and water. Therefore, food handlers may not be the main vectors of parasitic infections. **Keywords:** Frequency, Entereparasitoses, Community. **Email:** andersonconsa@hotmail.com

Intpar022- **Prevalence of intestinal parasitic infections among schoolchildren in capital areas of the Democratic Republic of São Tomé and Príncipe**

Sheung-Mei Lau1, Chia-Kwung Fan2,*, Chien-Wei Liao2,3, Ying-Chieh Huang2, Vilfrido Gil5, Yu-Tai Chang6, Ângela dos Santos Ramos José da Costa7, Da-Der Ji8, Li-Hsing Chi6, Takeshi Nara3, Akiko Tsubouchi3, and Peter Wu-Shou Chang9
1Division of Infectious Disease of Taipei Medical University - Shuang Ho Hospital,2Department of Parasitology, Center for International Tropical Medicine, 9School of Public Health, College of Public Health and Nutrition, College of Medicine, Taipei Medical University, Taipei, Taiwan; 3Department of Molecular and Cellular Parasitology, Juntendo University School of Medicine, Tokyo, Japan; 5National Global Fund Program in São Tomé, Democratic Republic of São Tomé and Príncipe; 6Taiwan Medical Mission in São Tomé, Democratic Republic of São Tomé and Príncipe; 7Ministry of Health and Social Affairs, Democratic Republic of São Tomé and Príncipe;8Laboratory of Parasitic Diseases, Center for Diseases Control, Department of Health, Taipei, Taiwan

Background: Although the Democratic Republic of São Tomé and Príncipe (DRSTP) has undertaken schoolchildren-based deworming programme against intestinal parasitic infections (IPIs) using a single dose of mebendazole annually since 2005, it remains unclear as to the outcome to date. The present study intends to investigate on the recent IPIs status among schoolchildren living in capital areas of the DRSTP. **Methods:** A total of 252 schoolchildren (121 boys and 131 girls) of grades 4 and 5 from 4 primary schools located in the capital areas participated in the present study and their fresh faecal specimens were examined for the presence of any parasites using the merthiolate-iodine-formalin concentration method. **Results:** The overall prevalence of IPIs was 64.7%(163/ 252). No significant gender difference in prevalence between boys (67.8%) and girls (61.8%) was found (p = 0.3). The majority of schoolchildren were infected with a single species of parasite (55.8%). Altogether, 12 different intestinal parasite species were identified in DRSTP schoolchildren, of which 9 species were pathogenic and the remaining 3 were non-pathogenic. **Conclusion:** Improving the detection method, sanitation facilities and personal hygiene as well as utilizing combined drugs are all important measures to greatly reduce IPIs in DRSTP schoolchildren. **Keywords:** Democratic Republic of São Tomé and Príncipe; schoolchildren; intestinal parasitic infections; helminth; intestinal protozoa; diagnosis. **E-mail:** tedfan@tmu.edu.tw

Intpar023- **Intestinal helminths from domestic dogs (*Canis familiaris* LINNAEUS, 1758) from the semiarid of Piaui and Pernambuco states, Northeastern Brazil**

[1,2]Oliveira-Santos, J. D.; [1,2,3]Chame, M.
[1]Instituto Nacional de Arqueologia, Paleontologia e Ambiente do Semiárido – INAPAS/INCT/MCT/CNPq; [2] Programa de Pós-Graduação em Saúde Pública -Escola Nacional de Saúde Pública, Fiocruz, Rio de Janeiro, Brazil; [3] Programa Institucional Biodiversidade & Saúde – FIOCRUZ, Rio de Janeiro, Brazil

Introduction: Diverse helminthiasis, including some zoonosis, are neglected diseases. In northeastern Brazilian semiarid region, helminthes diseases remain a challenge to public health, where poverty, social problems and risk situations walk side by side. Underestimation of risk situations, lack of sanitation and poor hygiene habits facilitates the occurrence and transmission of some intestinal helminthes, many times shared among animals, especially in this region, with livestock and wildlife. Domestic dogs are one of the most antique domesticated animal species, and they can transmit some parasite helminthes species to humans, including wildlife parasites. Due the majority of these parasites don't represent a fatal threat to human life, they are normally underreported. However, these species can affect seriously it´s host health, life quality and productivity, as an example, child blindness caused by *Toxocara* sp. The main goal of this work is verify the diversity of intestinal helminths of domestic dogs from the semiarid countryside region of Pernambuco and Piauí States, where only few works studying the intestinal helminthes of canids have been made and its implication for human health and biodiversity conservation. **Materials and Methods:** The scats were collected directly from the soil. The helminthes diversity was verified using the classic Lutz´s spontaneous sedimentation method (1919), and on microscopy (400x) searching for eggs and larvae. They were photographed and measured in length and width. 15 slides containing 20 µl of sediment were analyzed from each sample. **Results:** At this moment, 37 samples from 15 localities have been analyzed, with 30 (82%) samples positives to helminthes eggs or larvae. It has been recorded 13 morphospecies of helminths eggs: acanthocephala eggs identified as *Oncicola canis* (2,7%), Trematoda eggs identified as *Alaria* sp. (2,7%), Cestoda eggs identified as *Taenia* sp. (2,7%), and Nematoda eggs identified as Ancylostomatidae (56,7%), Ascarididae (8,1%), Physalopteridae (16,2%), Strongyloididae (10,8%), Strongylidae (2,7%), Trichuridae (2,7%), Trichostrongylidae (5,4%), *Toxocara* spp. (8,1%), *Spirocerca lupi* (13,5%) and *Toxascaris leonina* (2,7%). **Main conclusions:** From the sample totality, 11 morphospecies (84,6%) can be shared with wildlife animals. It has been found four morphospecies of helminthes that can cause health problems in humans: Ancylostomatidae, Strongyloididae, *Toxocara* spp. and *Alaria* sp.. High prevalence of Ancylostomatidae species indicates a major risk of transmission of these parasites to humans, considering the dog´s population density and socioeconomics and cultural conditions. **E-mail:** jdanielsantos@uol.com.br; mchame@fiocruz.br

Intpar024- Frequency of intestinal parasites of dogs on a college campus in Rio Grande do Sul, Brazil

Cardoso, Paula; Santos, Paula; Tissot, Lais; Amaral, Suélen;Sturbelle, Nathália; Soares, Amapola; Tarouco, Fabio; Alves,Barbara; Beheregaray, Ana; Scaini, Carlos
Universidade Federal do Rio Grande, Faculdade de Medicina – Rio Grande, RS, Brasil

Introduction: Dogs are definitive hosts of some helminths species with zoonotic potential and food water and soil can be contaminated with larvae and eggs. The growing number of dogs in Brazil associated with these animals easy access to places of human society is a risk factor for infection. Some important helminthiasis is caused by *Ancylostoma sp* and *Trichuris sp*, and is among the most prevalent parasitic diseases in Brazil. The Federal University of Rio Grande is located in open region, with constant traffic of the local community of the university. This feature provides that people abandon dogs in and around campus. The aim of this study was to investigate the occurrence of helminths eggs and larvae in dog feces found on the campus of Federal University of Rio Grande - FURG located in Rio Grande, Rio Grande do Sul, Brazil. We collected 40 samples of dog faeces on the ground of the campus of the Universidade Federal do Rio Grande - FURG the period September-October 2011. The samples were stored at 4 ° C and examined by flotation Willis with some modifications, using the saturated solution of sodium chloride (density1, 200). **Results:** From the total samples analyzed, 12.5% were negative and 87.5% were contaminated with parasites.

Enteroparasites	Frequency(%)
Ancylostoma sp + *Trichuris* sp	35%
Ancylostoma sp	52,5%
Trichuris sp	-*

* No samples were found positive for Trichuris sp **Conclusion:** The present study showed a high frequency of intestinal parasites found in dog feces, especially eggs of *Ancylostoma sp* and *Trichuris sp*. The parasite with the highest frequency was of the genus *Ancylostoma*, which is the main etiological agent of cutaneous larva migrans. Also was detected *Trichuris sp* that causes enteric infection in man, species *T. vulpis*. The results have shown the presence of dogs parasite represents environmental contamination of worms and it can infect humans. **E-mail:** paulinhahdutra@hotmail.com

Intpar025- Infection Status with helminthes from Feces on Wildlife Mammals in Korea

Gab-Man Park [1*] , Sung-Yong Han [2], and Kye-Jae Lee [3]
[1]Department of Environmetal Medical Biology, Kwandong University College of Medicine, Gangneung, Kangweon-do 210-701, Korea, [2]Association of Korea Otter Conservation, Georye-ri, Hanam-Myeon, Hwacheon, Gangweon-do 209-808, Korea, [3] Department of Environmetal Medical Biology, Yonsei University Wonju College of Medicine, Wonju, Gangweon-do 220-701, Korea

Abstract: To investigate the infection status with helminth of wildlife mammals in Korea, parasitological surveys were carried out in 13 species (*Lutra lutra, Mustela sibirica, Nemorhaedus caudatus, Hydropotes inermis, Caproelus pygargus, Sus scrofa, Nyctereutes procyonoides, Felis catus, Lepus coreanus, Apodemus agrarius, Rhinolophus ferrumequinum korai, Myotis mystacinus gracili* and *M. daubentoni ussuriensis*) of the 10 families (Mustelidae, Bovidae, Cervidae, Suidae, Canidae, Felidae, Leporidae, Muridae, Rhinolophidae and Vespertilionidae). A total of 139 fecal specimens and road killed animals were collected from field in March 1996 to October 2010, and examined with formalin-ether concentration method. We found various kinds of helminth ova and protozoan oocysts from the feces. Infection rates were 68% (94/139) with 47 parasite species belonging to 13 species of four classes: 14 species of trematoda, 22 species of nematoda, eight species of cestoda and three species of protozoa. Out of the

139 fecal samples, cumulative positive for parasites was Mustelidae 68%, Bovidae 43%, Cervidae 60%, Suidae 100%, Canidae 78%, Felidae 100%, Leporidae 63%, Muridae 66%, Rhinolophidae 100% and Vespertilionidae 100%, respectively. Grouping by feeding habits, infection rates were 54% (34/63) with five species of herbivorous animals, 89% (24/27) with five species of polyphagous animals, and 74% (36/49) with three species of carnivorous animals. In this study, most helminthes were identified of zoonotic parasites. **E-mail:** gmpark@kd.ac.kr

Intpar026- **Pig Ascaris: an important source of human ascariasis in China**

Zhou C.H1, Li M.2, Yuan K1., Deng S.L1., Peng W.D1.
1Nanchang University, Nanchang, China; 2 Nanchang Institute of Technology, Nanchang, China

Introduction: Ascaris lumbricoides and Ascaris suum are two of the most important parasitic nematode of humans and pigs. During the past 20 years, molecular markers have been used in studies on Ascaris and ascariasis, and added valuable information to the understanding of the two roundworms. For example, results from a recent study showed that hybrid worms were detected in both sympatric samples from Guatemala and China. These results encourage further studies to detect the frequency of cross infection and hybridization in additional sympatric populations, which are important not only for understanding the transmission patterns of ascariasis and its control, but also beneficial to studies exploring gene introgression between the host-associated populations, especially for genes related to host infectivity/affiliation or drug-resistance evolution. The present study aimed to reveal the frequency of cross infection and hybridization between the human and pig Ascaris in China, and to explore if there would be any differences in the frequency distribution between host species, geographical regions and different genotypic categories. **Material and Methods:** 258 Ascaris worms from sympatric populations of human and pig were screened by 20 microsatellite loci. The PCR products were detected on an ABI3730xl capillary DNA sequencer (Invitrogen™, Shanghai, China). Fragment sizes of alleles were calculated against the size standard GS-500-ROX using GeneMapper® software, version 3.7 (Invitrogen™). The size of alleles based on capillary electrophoresis was determined and raw data converted into the required format using the microsatellite format conversion software CREATE v 1.1. The software programs STRUCTURE, BAPS and NEWHYBRIDS were used to search for cross infection and hybrids. **Results:** Cross infection was detected in all sampled locations and of the total 20 cross infection cases, 19 were identified as human infections by pure-bred pig type Ascaris in contrast to only one case of pig infection by pure-bred human type Ascaris. Similar to the findings in cross infection, hybrid Ascaris was also detected in all locations and both host species and most of hybrids (95%) were detected from human host. The distribution of cross infection and hybrids showed significant difference between the two host species and among three categories of genotype in terms of G1, G2 and G3, and between the south and north regions (for hybrids only). **Main Conclusions:** The results strongly suggest pig Ascaris as an important source of human ascariasis in endemic area where both human and pig Ascaris exist. In consideration of current control measures for human ascariasis targeting only infected people, it is urgently needed to revise current control measures by adding a simultaneous treatment to infected pigs in the sympatric endemics. The knowledge on cross transmission and hybridization between human and pig Ascaris is important not only for public health, but also for the understanding of genetic evolution, taxonomy and molecular epidemiology of Ascaris. **E-mail:** pwdjxmu@hotmail.com

Clinical and Pathogenesis of Intestinal Parasitosis

Intpar027- **Interactions between intestinal parasitism and nutritional status in children aged 1-10 years-old in Santa Isabel do Rio Negro, Amazonas, 2011**

Cabral AMA*, Souza AC*, Barbosa ATL*, Chiluisa GC*, Hardoim DJ*, Camara DCP*, Brito-Santos F*, Assunção LS*, Heringer M*, Portilho MM*, Marques VA*, Carvalho-Costa FA*
* Programa de Pós-Graduação em Medicina Tropical, Instituto Oswaldo Cruz, FIOCRUZ

Malnutrition still represents a public health concern in many Brazilian Amazonian communities, where poor sanitary infrastructure in accompanied by high prevalence rates of intestinal parasitosis. This study aims to: i) estimate the prevalence of intestinal parasitosis in children aged 1-10 years-old and ii) assess the interactions between intestinal parasitism and nutritional status in the studied population. We carried out a cross-sectional survey between October-November 2011, in the urban heart of Santa Isabel do Rio Negro, Amazonas state,; 360 children were recruited through domiciliary visitations which covered the whole studied area. About 5,000 inhabitants live in the urban heart, which is situated in the "Alto Rio Negro" region. Parasitological, anthropometric and socioeconomic data were collected in this survey. Parasitological examinations of the fecal samples were performed through the Ritchie method in a laboratory assembled in the local health unity. Children's weight was measured with digital scales no the nearest 100g and height was assessed with a portable anthropometer to ne nearest 1 mm. Z-scores for the nutritional parameters height-for-age (HAZ), weight-for-age (WAZ) and weight-for-height (WHZ) were calculated with the Nutrition module (EpiInfo 2000). Prevalence rates of intestinal parasitosis were as follows: *Ascaris lumbricoides*, 29.2%; *Trichuris trichiura*, 26.4%; hookworms, 3.9%; *Hymenolepis nana*, 3.1%; *Entamoeba coli*, 42.8%; *Giardia duodenalis*, 18.9%; *Entamoeba histolytica/Entamoeba dispar*, 10%; *Entamoeba hartmanni*, 10%; *Iodamoeba butschlii*, 9.7%, and *Endolimax nana*, 4.4%. Multivariate analysis through multiple linear regressions showed independent interactions between: i) HAZ and *A. lumbricoides* ($p = 0.023$), hookworms ($p = 0.017$) and familiar wage ($p < 0.001$) and ii) WAZ and hookworms ($p = 0.02$) and familiar wage ($p = 0.002$). We did not found any interaction between WHZ and the studied explanatory variables. Results suggest that hookworms and *A. lumbricoides* infections can impair full physical development; nevertheless parents' wage is the main determinant of nutritional status of children in the studied area. **Keywords:** intestinal parasitosis, Amazon, malnutrition, children's health. **E-mail:** andrea.cabral@ioc.fiocruz.br

Intpar028- **Nutritional status and immunity against intestinal helminthes: relevant ethnic differences in Venezuela.**

Tatiana Giusti [1,2], Isabel Hagel [2], Loana Gutierrez[2], Yelitza Barrios [3], Alfredo Noda[4], Leonor Pocaterra[4]
[1] Laboratorio de Inmunoquímica, Instituto de Biomedicina., [2] Cátedra de Parasitología, Escuela de Medicina "Luis Razetti", Universidad Central de Venezuela. [3] Laboratorio de Parasitología, Dirección de Epidemiología Ambiental, Ministerio de Salud, Venezuela. [4] Cátedra de Parasitología, Escuela de Medicina "J.M. Vargas", Universidad Central de Venezuela.

Introduction: Intestinal parasites head the list of the "Neglected Tropical Diseases". They are still a relevant impediment for social development in rural populations, because of their large global prevalence and their key association with growth and cognitive retardation. Even though great global effort is being done in control programs, prevalence of these diseases is increasing. Nutritional status of children has been described as an important factor playing a role in the immune response and the main health condition, but also as a consequence of the burden of intestinal parasitic infection. **Materials and Methods**: We carried out a study to correlate parasitic infection, nutritional status and relevant immunological parameters involved in intestinal parasite immunity, and compare them between four selected ethnic groups. We evaluated 239 school children from four different ethnic groups: Afro-American, Creole and "Panare" and "Warao" Amerindians. All the Children whose parents signed the inform consent were included in this study. We carried out clinical, nutritional and parasitological evaluation. Serum determination of total IgE, anti-Ascaris IgE, IgG4 levels, sCD23, IL-10, and IL-13 were performed by ELISA assays. Correlation analysis was performed with the Spearman correlation test and comparison analysis between groups with exact T fisher test. **Results**: Significant differences were found in intestinal helminthes infection prevalence and intensity between ethnic groups. It is noteworthy that high nutritional deficit were found in all evaluated children, regardless their ethnic group. We found also some significant differences in all nutritional indicators between the different ethnics groups, related to significant differences in each immunological parameter evaluated. On the other hand, no severe malnutrition were observed in the evaluated children. Thus, in attempt to optimize control programs, the ethnic structure and nutritional status of each particular population may be taken in account particularly in multi-ethnic countries like Venezuela. **E-mail:** tatianagiusti@yahoo.com.br

Intpar029- **Intestinal helminth co-infection is associated with development of mucosal lesions and poor response to therapy in American tegumentary leishmaniasis**

Azeredo-Coutinho RB[1], Gagini TB[2], Pimentel MI[2], Valete-Rosalino CM[2], Mendonça SC[1]
[1]Laboratório de Imunoparasitologia, Instituto Oswaldo Cruz, [2]Laboratório de Vigilância em Leishmanioses, Instituto de Pesquisa Clinica Evandro Chagas, Fundação Oswaldo Cruz, Rio de Janeiro, Brazil

Introduction: American tegumentary leishmaniasis (ATL) is a serious public health problem in Brazil, where *Leishmania* (*Viannia*) *braziliensis* is the main causative species. The human infection with *L. braziliensis* may result in cutaneous and mucosal lesions. The majority of the patients present cutaneous leishmaniasis (CL), with lesions restricted to the skin. Lesions in nasal and/or oral mucosa may develop in a small proportion of patients, characterizing the severe clinical form termed mucocutaneous or mucosal leishmaniasis (ML). *L. braziliensis* infection in humans is characterized by a proinflammatory cytokine response, with high production of interferon (IFN)-γ, a T helper (Th)1 cytokine directly involved in the control of *Leishmania* infection. On the other hand, infections with intestinal helminths are associated with Th2 responses, which are able to inhibit Th1 responses and IFN-γ production. This retrospective present study was aimed at evaluating the influence of intestinal parasites in the clinical course of ATL. **Material and Methods** One hundred and ten patients from Rio de Janeiro State, Brazil, where *L. braziliensis* is virtually the only causative agent of ATL, were studied. Parasitological examination (PE) was performed in faecal material from all patients by the sedimentation, Kato-Katz and Baermann-Moraes methods. All patients were treated with meglumine antimoniate (5 mg Sb/kg/day for 30 days) at Instituto de Pesquisa Clinica Evandro Chagas, Fiocruz, Rio de Janeiro. Statistical analysis was performed using Fisher and Mann-Whitney tests. **Results:** Patients with positive PE had a frequency of ML significantly higher than those with negative PE ($p<0.005$). The same was observed with infections with helminths in general ($p<0.05$), with nematodes ($p<0.05$) and with *Ascaris lumbricoides* ($p<0.05$), but not for protozoan infections. The group of patients with intestinal parasites had poor response to antimonial therapy (therapeutic failure or relapse) significantly more frequently than the non-coinfected patients ($p<0.005$). A similar difference was observed between patients infected and non-infected with intestinal helminths, but not between patients infected or not with protozoa. Patients with positive PE took significantly longer to heal than those with negative PE ($p<0.0005$). A similar difference was observed for intestinal helminth infections ($p=0.0005$), but not for protozoan infections. **Main conclusions:** Our results demonstrate a deleterious effect of intestinal helminth infections, particularly with nematodes and *A. lumbricoides* in the clinical course of ATL. **E-mail:** mendonca@ioc.fiocruz.br

Intpar030- **Incidence of pathogenic and nonpathogenic intestinal parasites in schoolchildren of rural area in the Northeast of Brazil**

Sousa, M. S.[1]; Pinheiro, M. C. C.[1]; Lemos, V. P.[1]; Bezerra, F. S. M.[1,2,3].
[1]Department of Clinical and Toxicology Analysis, Federal University of Ceará, Fortaleza, Brazil.[2] Department of Pathology and Legal Medicine, Federal University of Ceará, Fortaleza, Brazil.[3.]Department of Community Health, School of Medicine, Federal University of Ceará, Fortaleza, Brazil.

Introduction: The intestinal parasites affect mainly developing countries where, in many suburbs, the population has no infrastructure and adequate sanitation conditions. In Brazil, they are still very widespread and highly prevalent, especially in the Northeast. Commensals species are not pathogenic, but they are important in the epidemiology of parasites diseases, providing indicators of socioeconomic and sanitary conditions, and also can be correlated with same mechanisms of other pathogenic protozoa transmission such as *Entamoeba histolytica* and *Giardia lamblia*. The aim of this study was to determine the incidence of parasites and verify the occurrence of intestinal commensals in the schoolchildren of Oiticica district of Umirim county, Ceara, Brazil. **Methods:** There were performed two parasitological methods: Hoffman, Pons & Janer (1934) Method and Faust and Cols. (1939) Method. A total of 82 samples were examined. **Results:** A total of 65 (79.3%) children were infected, 38.5% of these with mono and 61.5% with multiple parasitic infections; 16 (24.6%) only by protozoa, 26 (40%) only by helminths and 23 (35.4%) by protozoa and helminths. We identified six species of protozoa and four species of helminth.

The incidences were: *T.trichiura* (46.3%), *A.lumbricoides* (34.1%), *E.coli* (31.7%), *G.lamblia* (22%), *I. butschlii* (11%), *E. histolytica / dispar* (9.8%), *E.nana* (9.8%), *E.vermicularis* (4.9%), Hookworm (3.7%) and *C.mesnilli* (2.4%). All the positive ones were referred to the county health center for appropriate treatment. **Conclusion:** The high prevalence of intestinal parasites found in this population suggests the need for developing a national health policy that aims to deal with them, directing the actions primarily to regions of high prevalence especially in rural areas, because the infections are related to underdevelopment, lack of environmental sanitation conditions and failures in education and health information. Infection by *Entamoeba coli* and other intestinal commensals may reflect infection rates found in this study for the pathogenic species *G.lamblia* and *E.histolytica/dispar*, since the transmission routes of these species are the same as observed for intestinal commensals. **E-mail:** maryanna_mss@yahoo.com.br

Intpar031- **Anemia associated with hookworm infection in an alcoholic patient**

Silva, M. L. S.; Inês, E. J.; Souza, J. N.; Teixeira, M. C. A.; Soares, N. M.
Faculty of Pharmacy, Federal University of Bahia, Salvador, Brazil

Introduction: The hookworm infection is one of the most prevalent parasitosis in developing countries. The parasites consume large amounts of blood in the small intestine leading to severe iron deficiency anemia. The frequency and severity of hookworm infection in alcoholics may be related to alterations in intestinal mucosa permeability and decreasing of intestinal immunity induced by chronic alcohol intake. The objective of this study was to describe a clinical case of an alcoholic patient with hookworm hyper infection and severe iron deficiency. **Results:** A 60-yr-old man, living in a rural area, in Bahia, Brazil, presented to our laboratory for evolution of previously identified anemia. He related that had been hospitalized twice with intense fatigue and abdominal pain and during the last hospitalization, the patient received blood transfusion and iron replacement therapy. Moreover, the gastroscopy examination revealed mild gastritis and the patient was treated with omeprazole 40 mg, for thirty days. One year later, at the time he presented to our laboratory, with relapse of symptoms, the blood tests showed 6,700 leukocytes/ml, without eosinophilia, hemoglobin 4.7 g/dl, serum iron 23.0 mcg/dl, ferritin 2.4 ng/dl and fecal occult blood test positive. A great number of hookworm eggs (1,400 eggs per gram of stool) and larvae were identified by stool routine examination. At this moment, the physician prescribed a new iron replacement therapy. The patient was treated with albendazole 400 mg for the parasitic infection, repeating the dose two weeks later. Anthelmintic treatment resulted in parasitological cure, observed by Willis, Baermann-Moraes and agar plate culture methods. Moreover, three months later, the hematological parameters returned to normal levels after the treatment and alcohol abstinence. **Conclusion:** The main cause of intense anemia observed in this patient could be due to the chronic blood loss, caused by hookworm hematophagism, associated with high consumption of alcohol. Nowadays, medical diagnosis has been focused on highly complex tests, underestimating simple procedures, as regular parasitological examination, which in this case was essential for the correct diagnosis and treatment. **Support:** National Council for Scientific and Technological Development (CNPq**). E-mail:** monica_lopes10@hotmail.com

Intpar032- **Eosinophilia and anemia in an endemic area of parasitic infections in Bahia, Brazil**

Souza, J N; Cardeal, A L S; Pontes A M
Faculty of Pharmacy, Federal University of Bahia, Salvador, Brazil

Introduction: Intestinal parasitosis still constitutes one of the major causes of public health problems in the world, especially in tropical and subtropical regions, like Brazil, where appear among the main endemic diseases. Enteroparasites are able to develop on their hosts a number of pathophysiological changes, including allergenic action and blood loss responsible for development of blood eosinophilia and anemia, respectively, in parasitized individuals. The aim of this study was to verify the prevalence of anemia and eosinophilia in carriers of intestinal parasites from Curica village, an endemic area of parasitic infection located in municipality of Conde, Bahia, northeast of Brazil. **Material and methods:**

Samples were collected from villager's blood and feces for carrying out hematological (automation and observation of blood smears) and parasitological (spontaneous sedimentation) analyses, respectively. The hemoglobin concentration and eosinophils count was used as parameter to define the presence of anemia and eosinophilia following the limits that were established by local studies. **Results:** Among 137 subjects, 83.2% (114) of the coproparasitological samples were positive. There was no significant difference in the prevalence between male and female. The age-group 0-11 years had the highest frequency of parasites (38.6%) and a decrease in prevalence of parasitism with increasing in age was observed. Of the 114 positive samples, 70.17% (80) were diagnosed with more than one parasite. The enteroparasite with the highest prevalence (64%) was hookworm, followed by *A. lumbricoides* (48%), *E. coli* (42%), *T. trichiura* (36%), *E. nana* (24%) and *E. histolytica/dispar* (14%). In 114 livers, 11.76% (12) had anemia and 62,74% (64) showed eosinophilia of the peripheral blood. However, despite the association of enteroparasitosis with the presence of anemia and eosinophilia in some samples, this was not significant in statistical tests (p=1 and p=0.29, respectively in Fisher's exact test). **Conclusion:** High prevalence of enteroparasitosis in the studied community indicates the difficulty to control these diseases and emphasize there is need preventive and educative measures adapted to reality of each region. The growth of circulating eosinophils and the anemia was not related to the prevalence of intestinal parasites. **E-mail:** jo_souza2005@yahoo.com.br

Intpar033- Diabetes mellitus type I associated with enteroparasites in patients assisted in Public Health Centers, Brasilia, Distrito Federal, Brazil.

Matos, NO[1], Silva, TC[1], Rezende, SM[1], Almeida, MJR[1], Carlos, D[2], Marinho, RC[1], Rodrigues, L[1], Gurgel, RG[3], Machado, ER[1,3].
[1]Nursing, Faculdade Anhanguera de Brasília, Taguatinga, DF, [2]Universidade de São Paulo de Ribeirão Preto, Ribeirão Preto, SP, [1,3]Universidade de Brasília, Brasília, DF, Brazil.

Introduction: Diabetes mellitus I affects millions of people worldwide and is an organ-specific autoimmune disease. **Objective:** The aim of this study was to investigate the association between Diabetes mellitus I and enteroparasites in patients of the Public Health Centers and Public Hospital of Taguatinga, in the Federal District of Brazil. **Methodology:** Field, exploratory and quantitative methods were used. Three samples de faeces were collected without preservative and in intervals 5-6 days, from each patient. The fecal samples were analyzed using two Rugai and Spontaneous Sedimentation parasitological techniques **Results:** The study included 89 patients with Diabetes mellitus. Of these, 82 (92%) were enteroparasitados. Of the total group: 64 (72%) were women and 25 (28%) were men; 55 patients (62%) had Diabetes mellitus type II and 29 (32%) had type I. Among the 82 patients infected with enteroparasites, 60 were infected with *Entamoeba coli*, with 36 DM II and 24 DM I; 29 were infected with *Giardia lamblia*, of which 25 had DM II and four DM I. Twenty-four were infected with *Ascaris lumbricoides*, with 18 DM II and six DM I; 21 were infected by *Endolimax nana*, with ten DM II and nine DM I; five DM II were infected with hookworms, three were infected with *Entamoeba hystolitica/dispar*, of which two had DM II and one DM I; three DM II were infected with *Hymenolepis diminuta*, three were infected with *H. nana*, with two DMII and one DM I, five were infected with *Taenia* spp, with two DM II and three DM I, one DM was infected by *Balantiduim coli*, one DM I was infected with *Strongyloides stercoralis*, one DM II had Hookworm and one DM I had *Dipylidium caninum*. **Conclusion:** Early diagnosis of parasitic infections in patients with Diabetes mellitus I and II is important because intestinal parasites, if untreated, can result in serious complications. **Key words:** Diabetes mellitus type I and II, Health Centers, Adults, Enteroparasites. **E-mail:** sinione_morais@hotmail.com

Intpar034- Correlation of enteroparasites infection with symptoms in children and adolescents – city of Santo Antonio de Jesus – Bahia - Brazil

Souza, V.B.; Jesus, J.M.; Carvalho, F.L.; Pereira, J.S.; Santos, I.P.; Silva, I.M.; Jesus, R.S.; Almeida, J.S.; Amor, A.L.M.
Centro de Ciências da Saúde/Universidade Federal do Recôncavo da Bahia – CCS/UFRB

Introduction: Enteroparasite infection in children is related to living conditions and hygiene conditions still prevailing where they live and / or feed, highlighting the significant health hazards, requiring much greater attention to prevention measures, control and how to avoid the presence of the parasite with the host environment. **Methodology:** The study of 230 children and adolescents living in central and peripheral neighborhoods of Santo Antonio de Jesus - Bahia - Brazil (from November 2010 to August 2011), participating in the study after signing the consent form and fill, the heads of the participants, a questionnaire with information on signs and / or symptoms related to infection by intestinal parasites produced by child / adolescents in the 15 days preceding the survey [(spots on the skin type / white cloth, diarrhea, insomnia / loss of sleep, anal itching, vomiting / nausea, anorexia / decreased appetite, abdominal pain, nervousness / irritation, bronchitis / flu, hives, headaches / headache, tiredness); aspect of the participant viewed by the researcher (jaundice / skin yellow, pale and / or skin patches)]. For parasitological examination, stools were analyzed by: sedimentation, Kato-Katz and Graham. **Results:** Of the group of 230 participants, 32.2% did not deliver for the stool examinations. For the tests analyzed, 75% were positive, only 12.8% for helminths, protozoa, only 35.9% and 26.3% for both infections; monoparasitism to 32.7% and 21.2% for biparasitism. It was found 72.6% of children / adolescents with a positive stool for parasites as well as presenting symptoms in the last 15 days preceding the survey. Of those who had positive tests, 86.3% also had good looks. The frequencies of signs and symptoms present in the population correlated with positive results for some enteroparasite were: abdominal pain, n = 33; anorexia / decreased appetite, n = 28; pruritus ani, n = 27; nervousness / irritability, n = 27; spots white, n = 20 and diarrhea, n = 13; rate of 85 cases of registration of some symptoms and 32 asymptomatic cases were positive for any parasite. **Conclusion:** There is a record of very specific symptoms such as pruritus ani, which is one of the clinical manifestations that may arise in cases of enterobiose and highlighting asymptomatic, although a positive result of infection by some parasite. **E-mail:** ana_amor@ufrb.edu.br

Intpar035- **Immunoregulatory property of soluble extract of *Ascaris suum* on experimental liver injury mediated by immune cells**

Nascimento, WR[1]; Silva, RP[1]; Nóbrega, CO[1]; Fernandes ES[1]; Fontenele AL, Albuquerque, MC[1]; Costa, VA[1]; Pontes Filho, NT[1]; Souza, VO[1].
1 Laboratório de Imunopatologia Keizo Asami (LIKA), UFPE, Recife, Brazil.

Introduction: Infection and antigenic extract of adult worms *Ascaris suum* (Asc) has immunosuppressive action in vaccine models, allergic asthma and autoimmune diseases. However, it are few studies about the immunoregulatory action of extract in a model of autoimmune hypersensitivity. Autoimmune responses mediated by T cells are crucial in pathogenesis of tissue injury, as observed in Autoimmune Hepatitis (AIH). Anti-inflammatory therapy is not always able to lead a remission of the AIH. Therefore, therapeutic options that induce liver tolerance mechanisms are beginning to emerge. In this context, the administration of Asc could play immunomodulatory role in autoimmune liver diseases due to anti-inflammatory and immunosuppressive activity. This study evaluated prophylactic effect of administration of the Asc in a mouse model Concanavalin A (Con A)-induced hepatitis mediated by immune cells. **Material and Methods:** BALB/c mice received ConA, i.v., (20mg/kg) to AIH induce, and three groups of animals were formed (n=6). 1) **Control**: received PBS, i.p., and after 30 minutes, PBS i.v.; 2) **AIH**: received PBS, i.p., and after 30 minutes, ConA (20mg/kg); 3) **AIH+Asc prophylactic**: treated with Asc (1mg/mL), i.p., 30 minutes before induction of the AIH (20mg/Kg of ConA i.v.). It were measured alanine aminotransferase (ALT), aspartate aminotransferase (AST) and total immunoglobulins at 8, 24 hours and 7 days after treatment. Splenocytes were cultured upon ConA and Asc stimulation. IL-4, IL-10, IL-13 and IFN-γ levels were obtained in the supernatants and measured by ELISA. The livers were weighed and examined histologically by hematoxylin-eosin and Masson's trichrome. **Results:** In the AIH group was an increase in liver weight (7º day), transaminases and total immunoglobulins levels (8, 24 hours and 7º day). There was no increment of these parameters in AIH+Asc group. Levels of IL-4, IL-10 and IL-13, in AIH+Asc group were significantly higher than AIH. There was no difference in levels of IFN-γ. Histological analysis showed a reduction of the inflammatory infiltrate in AIH+Asc group and increased in liver fibrosis over AIH group. **Main conclusion:** Prophylactic treatment with Asc prevented the AIH due to decrease of transaminases, total Ig levels and liver weight. Animals treated with Asc showed an immunomodulation to

Th2 profile (increase of IL-4, IL-10 and IL-13). It is decrease inflammatory infiltrate and increased the liver fibrosis, possibly related to induction of IL-13. **Keyword:** *Ascaris suum*, Autoimmune Hepatitis; Immunomodulation **E-mail:** valdenia.souza@gmail.com

Diagnosis and Treatment of Intestinal Parasitosis

Intpar036- **Diagnosis of *Strongyloides stercoralis* infections in the set of occupational medicine**

Gottardi M[2]; Corral MA[2]; Sitta RB[2]; Gryschek RCB[2]; Chieffi PP[1,2,3], Paula FM[2].
[1]Instituto de Medicina Tropical Universidade de São Paulo; [2]Laboratório de Investigação Médica (LIM06)-HCFMUSP; [3]Faculdade de Ciências Médicas, Santa Casa, São Paulo, Brasil.

Introduction: *Strongyloides stercoralis* infects 30-70 million people were infected worldwide. This parasitosis can occur without symptoms, as a disseminated infection or potentially fatal hyperinfection. Diagnosis of strongyloidiasis is usually based on detection of larvae in stool samples, but the parasitological methods have low sensitivity. Thus, serological tests can represent a good diagnostic alternative, with high sensitivity and specificity, even using heterologous species (*S. venezuelensis*). The objective of this study was to evaluate the parasitological and serological diagnosis of stronyloidiasis in the set of occupational medicine. **Material and Methods:** Fecal and serum samples from 150 occupational medicine patients (in the process of admission, dismissal, or periodical) from in a clinical laboratory in São Paulo. Parasitological diagnoses were performed by Lutz, Rugai and agar plate culture methods. Immunological diagnosis was realized by enzyme-linked immunosorbent assay (ELISA) using soluble and of membrane saline larval extract of *S. venezuelensis*. For ELISA were used 10μg/mL of antigen, serum sample diluted 1:200 in PBS 0.05% Tween 3% milk (PBSTM) and conjugate (anti-human IgG conjugated to peroxidase) diluted 1:30000 in PBSTM. Values of reactivity index greater than one were considered positive. **Results:** Parasitological results reveled two (1.3%) cases of *S. stercoralis*, only in the agar plate culture. Of the 150 serum samples analyzed, 17 (11.3%) and 30 (20%) using soluble and of the membrane antigen, respectively were positive for *S. stercoralis*. **Conclusions:** The results suggest that the detection of specific antibodies of *S. stercoralis* by ELISA test may contribute to the diagnosis of strongyloidiasis, as complementary parasitological methods. Nevertheless, one must consider the limitations in interpreting serology results in individuals that live in endemic areas of strongiloidiasis. **E-mail:** maiara.gottardi@usp.br

Intpar037- **Extraction and detection of *Strongyloides* sp DNA in fecal samples**

Sitta RB[1]; Malta FM[3]; Chieffi PP[1,4]; Gryschek RCB[2]; Gottardi M [2]; Corral MA[2]; Paula FM [2].
[1]Instituto de Medicina Tropical, [2]Laboratório de Investigação Médica (LIM06)-HCFMUSP, [3]Lab. Gastroenterologia e Hepatologia Tropical, [4]Faculdade de Ciências Médicas, Santa Casa, São Paulo, Brasil.

Introduction: High quality DNA is fundamental for genetic studies, or even for diagnostic proposes. Then, we propose the comparison of DNA extraction of *Strongyloides* sp in fecal samples, using different methods, as well as its primary application in conventional PCR amplification. **Material and Methods:** Fecal samples from patients infected by *S. stercoralis* and patients with fecal samples negative for intestinal parasites, as well as fecal samples of rats experimentally infected by *S. venezuelensis* were analyzed. Positive control samples were obtained from *S. venezuelensis* and *S. stercoralis* third stage larval (L3). To verify the potential use of PCR in detection of *Strongyloides* sp, 10 stool samples from patients positive for *S. stercoralis*, 10 patients negative for parasites and 10 patients positive for other parasites (hookworm, *Schistosoma mansoni*, *Ascaris lumbricoides* and *Hymenolepis nana*) were used. DNA extractions were done by the use of three kits: QIAamp DNA stool minikit, QIAamp DNA minikit and ZR fecal DNA MiniPrep, following the manufacturer's instructions. Fragments of subunit 18S rRNA was employed as the PCR targets. Amplification products were subjected to electrophoresis in 2% agarose gel. The amplified products were sequenced and compared with those from the GenBank database.

Results: Extractions using QIAamp DNA minikit proved to be useful for obtention of free larvae DNA, but did not produce good results in fecal samples. The product extracted with ZR fecal DNA MiniPrep, although easy to use and allow high concentrations of DNA, revealed the presence of nonspecific bands. Extraction with QIAamp DNA stool minikit with some modifications, such as incubation at 56 ^{0}C for three hours after addition of proteinase K, provided the best performance. Positive samples showed amplification of the fragment in the sizes 101 and 340pb, while negative and other parasitic samples had no amplification products. **Conclusions:** The use of QIAamp DNA stool minikit with changes in the protocol was effective in extracting DNA from *Strongyloides* sp in both human and rat fecal samples, allowing the reproducibility of the procedure and better quality of conventional PCR amplification. **Financial support:** FAPESP (2010/51110-2). **E-mail:** renatabarnabe@usp.br

Intpar038- "Comparison of four in vitro culture methods for obtaining evolutive stages of *Strongyloides venezuelensis*"

Marques PD[1]; Paula FM[1]; Santos SV[1]; Chieffi PP[1, 2,3]; Lescano, SZ[2].
[1]Laboratório de Investigação Médica LIM 06-HCFMUSP; [2]Instituto de Medicina Tropical SP-USP, [3]Faculdade de Ciências Médicas da Santa Casa- São Paulo, Brasil.

Introduction: Strongyloidiasis is an important public health disease caused by *Strongyloides stercoralis*. Experimental infection of *Rattus norvegicus* with *Strongyloides venezuelensis*, a gastrointestinal nematode that naturally infects these rodents, is a model to study this parasitosis. The objectives of this study were to determine the intensity of infection in *Rattus norvegicus* infected with *S. venezuelensis* by quantifying the number of eggs per gram of stool to verify the efficiency of four culture methods. **Material and methods:** Five *Rattus norvegicus* (Wistar), males with 3-5 weeks were subcutaneously inoculated with 1.500 L3 larvae in 0,2 mL filtered water; another five rats were maintained free of infection to obtain clean feces. Three experiments were designed to test the following culture methods: charcoal fecal cultures, agar plate, filter paper and nutrient broth culture in order to obtain evolutive stages of *S. venezuelensis.* To determine the morphometric characteristics of infective larvae a Zeiss Axiophot microscope was used measuring esophagus length and width, and total length of infective larvae recovered in each method. **Results:** Evaluating the recovery efficiency of evolutive stages by culture method, it was observed that the filter paper technique produced the highest yield (55.98%), followed by charcoal fecal cultures (26.99%). With regards to morphology, it was observed that infective larvae showed greater length when using the method of cultivation on charcoal (604.36 ± 26.79), followed by culture on filter paper (588.9 ± 19.82). **Conclusions:** It is concluded, in this assay, that the culture in filter paper presented greater efficiency to obtain evolutive stages of *S. venezuelensis*. Culture on agar plate was not very effective in recovering the evolutive stages, and the culture in Nutrient Broth method did not exhibit efficacy, requiring new standardization. **E-mail:** duarte-priscilla@hotmail.com

Intpar039- Parasitological and molecular diagnosis in *Strongyloides venezuelensis* infection

Paula FM[2], Sitta RB[2]; Malta FM[1,3], Gottardi M[2]; Corral MA[2]; Gryschek RCB[2]; Chieffi PP[1,2,4].
[1]Instituto de Medicina Tropical; [2]Laboratório de Investigação Médica (LIM06)-HCFMUSP; [3]Lab. Gastroenterologia e Hepatologia Tropical; [4]Faculdade de Ciências Médicas, Santa Casa, São Paulo, Brasil.

Introduction: *Strongyloides venezuelensis* is a parasitic nematode of rats that has been used as a model to study the host-parasite relationship in human and/or animal infections, molecular aspects during infection, the efficacy of new therapies and many immunological events related to strongyloidiasis. This nematode has also been used to standardize new immunological techniques to optimize human strongyloidiasis diagnosis. The aim of this study was to evaluate the correlation between parasitological and molecular diagnosis in *Strongyloides venezuelensis* infection. **Material and Methods:** Five male *Rattus norvergicus*, Wistar were infected subcutaneously with 2000 L3 of *S. venezuelensis*. Faeces were collected from day 0, 1, 4, 6, 8, 11, 13, 15, 18, 20, 25, 29, 32, 36, 40, 42, 53, 60 and 68nd day of infection. Parasitological diagnosis was performed by direct faecal smears and charcoal culture. DNA extraction was done by the use of QIAamp DNA stool mini kit, following the manufacturer's instructions.

Fragment of subunit 18S rRNA was employed as the PCR target. Amplification product was subjected in 2% agarose gel. The amplified product was sequenced and compared with those from the GenBank database. **Results:** Parasitological diagnosis started positivity at six day after infection and became negative in 32 days after infection in direct examination and day 40 after infection in charcoal culture. On the other hand the PCR detected parasite DNA in faeces from 4 to 68 days after infection. **Conclusion:** These results disclose a higher rate of positivity using PCR in fecal samples collected in the beginning and after 40 days pos-infection, when the conventional diagnostic methods did not showed *S. venezuelensis* in fecal samples. **Financial support:** FAPESP (2010/51110-2). **E-mail:** fmp@hcnet.usp.br

Intpar040- **Molecular differentiation of ANCYLOSTOMA species from dogs in São Paulo State, Brazil, for the assessment of zoonotic risk**

Oliveira AP, David EB, Sequeira TCGO, Ribolla PEM, Guimarães S
Department of Parasitology, Universidade Estadual Paulista, UNESP, Botucatu, São Paulo, Brazil

Dogs are associated with more than 60 zoonotic diseases among which, parasitic infections, especially, helminthiasis, can pose a continuing public-health concern worldwide. Species of *Ancylostoma* constitute the most common parasitic nematode that inhabit the small intestine of dogs and the human infection by their larvae is almost always limited to skin given a condition known as cutaneous larva migrans (CLM), also called creeping eruption. *Ancylostoma caninum* and *Ancylostoma braziliense* are the common species referred to occur in dogs in Brazil, but there are no current data available regarding the prevalence of each one. Although both species are currently incriminated in causing CLM, *A. braziliense* is the most frequently implicated aetiological agent. Thus, in the present work the frequency of each hookworm species was investigated in dogs living in the households of children enrolled in public schools of Pratânia municipality, São Paulo State, Brazil. A single fresh fecal sample was obtained from 279 animals and they were examined by light microscopy after concentration by sedimentation and flotation methods. Total DNA was extracted directly from eggs-positive microscope slides using Chelex method. The eluted DNA was submitted to a single-step PCR to amplify the 545 pb and 673pb regions of the internal transcribed spacer (ITS) -1, 5.8S and ITS-2 for *A. caninum* and *A. braziliense* molecular differentiation, respectively. Hookworm infection was found in 158 (56.6%) of the samples assessed and out of them, 107 (67.7%) were successfully amplified by PCR. Of these, single infections with *A. caninum* and *A. braziliense* were detected in 65 (41.1%) and in 8 (5.06%) dogs, respectively, and mixed infections were noted in 34 (21.52%) ones. It is important to highlight that evidence of CLM was not found in the clinical examination of the children, as well there was no record of this syndrome in the primary health care center of the municipality. These preliminary results, which revealed a high frequency of *A. caninum* in dogs associated to the absence of CLM in children population, suggest that the zoonotic potential of this species in causing human CLM is low. **E-mail:** sgviana@ibb.unesp.br

Intpar041- **Influence of antigen glycoprotein depletion with sodium metaperiodate in the serodiagnosis of *Strongyloides stercoralis***

Inês, E. J.; Silva, M. L. S.; Souza, J. N.; Teixeira, M. C. A.; Soares, N. M.
Faculty of Pharmacy, Federal University of Bahia, Salvador, Brazil

Introduction: *Strongyloides stercoralis* infection usually results in an asymptomatic chronic disease, with low parasite load and irregular larval output in feces, hampering the parasitological diagnosis by routine methods, such as the Baermann-Moraes. The detection of circulating antibodies by enzyme-linked immunosorbent assay (ELISA) has high sensitivity and it is also used as a tool for strongiloidiasis diagnosis, although it has been shown cross-reactivity with other parasitic diseases. The objective of this study was to evaluate the sensitivity and specificity of ELISA for detection of specific IgG and IgE antibodies, using antigen of S. *stercoralis* treated with sodium metaperiodate in order to reduce nonspecific bindings. **Material and Methods:** A total of 50 sera from patients with confirmed *S. stercoralis* infection, 50 sera from patients with other intestinal parasites and 48 control sera (35 sera from newborns of mothers with negative parasitological examination and 13 healthy adult subjects also negative in routine parasitological tests) were used. The ELISA was carried out with soluble filariform larvae antigen

treated or not-treated with metaperiodate. **Results:** The sensitivity of ELISA for IgG anti-*S. stercoralis* range from 72% to 76%, and specificity was 91.7%, with no significant differences when the antigen was treated or not with sodium metaperiodate. On the other hand, the ELISA for IgE had a sensitivity of 80% and after treatment of the antigen with sodium metaperiodate it significantly decreased to 74% ($P > 0.05$), while the specificities of ELISA-IgE, calculated using normal sera as negative controls, had no significant variations. However, the number of cross-reactions in ELISA-IgE increased approximately 18% when the antigen was treated with the oxidizing agent. **Conclusions:** In this study, it was observed a reduction in the mean optical densities of sera from patients infected with *S. stercoralis*, compared with normal serum, when the antigen was treated with sodium metaperiodate, demonstrating the importance of glycosylated epitopes for the recognition by anti-*S. stercoralis*, furthermore antibodies depletion of IgG from false-negative serum, increased the sensitivity of ELISA-IgE. However, the antigen treatment with metaperiodate may have exposed new cross-reactive epitopes of helminths. **Support:** Foundation for Research of the State of Bahia-FAPESB. **E-mail:** farmliza@yahoo.com.br

Intpar042- **Immunoregulatory property of soluble extract of *Ascaris suum* on experimental liver injury mediated by immune cells**

Nascimento, WR[1]; Silva, RP[1]; Nóbrega, CO[1]; Fernandes ES[1]; Fontenele AL, Albuquerque, MC[1]; Costa, VA[1]; Pontes Filho, NT[1]; Souza, VO[1].
1 Laboratório de Imunopatologia Keizo Asami (LIKA), UFPE, Recife, Brazil.

Introduction: Infection and antigenic extract of adult worms *Ascaris suum* (Asc) has immunosuppressive action in vaccine models, allergic asthma and autoimmune diseases. However, it are few studies about the immunoregulatory action of extract in a model of autoimmune hypersensitivity. Autoimmune responses mediated by T cells are crucial in pathogenesis of tissue injury, as observed in Autoimmune Hepatitis (AIH). Anti-inflammatory therapy is not always able to lead a remission of the AIH. Therefore, therapeutic options that induce liver tolerance mechanisms are beginning to emerge. In this context, the administration of Asc could play immunomodulatory role in autoimmune liver diseases due to anti-inflammatory and immunosuppressive activity. This study evaluated prophylactic effect of administration of the Asc in a mouse model Concanavalin A (Con A)-induced hepatitis mediated by immune cells. **Material and Methods:** BALB/c mice received ConA, i.v., (20mg/kg) to AIH induce, and three groups of animals were formed (n=6). 1) **Control**: received PBS, i.p., and after 30 minutes, PBS i.v.; 2) **AIH**: received PBS, i.p., and after 30 minutes, ConA (20mg/kg); 3) **AIH+Asc prophylactic**: treated with Asc (1mg/mL), i.p., 30 minutes before induction of the AIH (20mg/Kg of ConA i.v.). It were measured alanine aminotransferase (ALT), aspartate aminotransferase (AST) and total immunoglobulins at 8, 24 hours and 7 days after treatment. Splenocytes were cultured upon ConA and Asc stimulation. IL-4, IL-10, IL-13 and IFN-γ levels were obtained in the supernatants and measured by ELISA. The livers were weighed and examined histologically by hematoxylin-eosin and Masson's trichrome. **Results:** In the AIH group was an increase in liver weight (7° day), transaminases and total immunoglobulins levels (8, 24 hours and 7° day). There was no increment of these parameters in AIH+Asc group. Levels of IL-4, IL-10 and IL-13, in AIH+Asc group were significantly higher than AIH. There was no difference in levels of IFN-γ. Histological analysis showed a reduction of the inflammatory infiltrate in AIH+Asc group and increased in liver fibrosis over AIH group. **Main conclusion:** Prophylactic treatment with Asc prevented the AIH due to decrease of transaminases, total Ig levels and liver weight. Animals treated with Asc showed an immunomodulation to Th2 profile (increase of IL-4, IL-10 and IL-13). It is decrease inflammatory infiltrate and increased the liver fibrosis, possibly related to induction of IL-13. **Keyword:** *Ascaris suum*, Autoimmune Hepatitis; Immunomodulation **E-mail:** valdenia.souza@gmail.com

Intpar043- **Distribution of intestinal parasites in pregnant women in the region of Araraquara - SP, Brazil and allopathic and phytotherapy therapies**

Júlio C. Miné[1], Cláudia Solano Rocha[1], João Aristeu da Rosa[1], Isabel Martinez[2], Raquel R. D. Moreira[3], Silmara Marques Allegretti[4] e Márcia da Silva[5]
1. Depto. de Ciências Biológicas – FCF – UNESP, Campus de Araraquara,. 2. Depto. de Análises Clínicas – FCF – UNESP, Campus de Araraquara 3. Depto. de Princípios Ativos Naturais e Toxicologia – FCF – UNESP,

Campus de Araraquara, 4.Instituto de Biologia – Depto. de Biologia Animal – UNICAMP, 5. Depto. de Fármacos e Medicamentos – FCF – UNESP, Campus de Araraquara

Introduction: The knowledge of how parasites interfere with the pregnancy is not fully established and even less about the therapeutic interventions - needs and consequences. **Material and Methods:** In order to study the distribution of intestinal parasites and analysis of possible pharmacological therapies that can be used, fecal examinations of 5.300 women were performed using the techniques of direct fresh examination, Coprotest ® and Rugai, Mattos and Brisola. **Results:** We found that 1.165 samples had: *Entamoeba coli* (64.6%), *Strongyloides stercoralis* (14.5%), Hookworm (12.7%), *Giardia duodenalis* (8.8%), *Trichuris trichiura* (4.7 %), *Schistosoma mansoni* (2.8%), *Hymenolepis nana* (2.7%), *Taenia* sp. (1.9%) and *Ascaris lumbricoides* (1.8%). Although the absence of pregnancy the usual recommendation in the case of intestinal parasites is the prescription of polyvalent, in pregnancy the pharmacological protocols are restricted to individual actions of the health care provider. This situation is due to the fact of not having well-established behavior of drugs in relation to the transposition placental excretion in breast milk and its real effects on the fetus. Potentially, metronidazole, praziquantel, niclosamide, mebendazole, albendazole, piperazine, levamisole, ivermectin, and others can be used as antiparasitic drugs, however, during pregnancy there is records of prescriptions only after the first quarter of benzimidazoles for their effectiveness and low cost. You can not lose sight still popular practice of using of phytotherapics like *Mentha* sp., *Mentha piperita* L., *Chemopoides ambrosioides* L., *Cucurbita pepo* L., *Punica granatum*, etc without notifying your doctor or pharmacist due to the false perception that what is natural does not hurt. **Conclusion:** Given of consequences that parasites can cause in the mother and fetus, we can not ignore the need to implement the treatment of pregnant women. For this purpose it is necessary to establish the clinical practice requirement of stool examinations, coupled with effective measures for Health Education. **E-mail:** minej@uol.com.br

Intpar044- Clinical Trial of Areca Nut Seed (*Areca catechu* L.) Extract Tablets In Schoolchildren infested by Intestinal Worms in Mumbulsari sub-district Jember

*Utami, W.S., **Nuri, **Wicaksono, Y, ***Palupi, I.R, ***Gemawan, T
*Lecturer in Faculty of Medicine, Jember University; **Lecturer in Faculty of Pharmacy, Jember University; ***Medical Students in Faculty of Medicine, Jember University

Abstract: A helminthic disease is a disease of all ages. Based on WHO data, it was estimated that approximately one billion of people worldwide were infected and about 40-60 percents Indonesian were infested by worms (Molyneux, 2007). Indonesia as tropical country serves as good habitat for growth and development of many parasites so they can easily infect human. In Mumbulsari sub-district Jember, the level of soil contamination by parasitic worm eggs was 52% in Suco village and 68% in Lengkong village (Herlina, 2005). The worm with highest percentage of eggs was *Ascaris lumbricoides* (68,96%) followed by *Enterobius vermicularis* (34,48%), and hookworms (17,24%) (Firdaus, 2008). In recent years, researches have been focused on development of natural and traditional substances as alternative drugs for geo-helminthic therapy. One of natural substance which is clinically therapeutic for worms' infestation is areca nut seeds (*Areca catechu* L.) (Nuri, 2007). Empirically, areca nuts are effective against worm infestation. The purpose of the research was to prove whether areca nut seed extract tablets (*A. catechu* L.) have antihelminthic properties to fight against infection to intestinal nematodes in elementary schoolchildren in Mumbulsari sub-district, Jember municipality.Research was conducted in elementary schools in Mumbulsari sub-district-Jember. Research design used was randomized control clinical trial method. Subjects in this research were elementary school children in Mumbulsari sub-district Jember which have been diagnosed with worm infection based on feces examination. Group A was treatment group provided with therapy of areca nut seed extract tablets, while group B was control group provided with standard drugs of pirantel pamoat. After examination of feces samples in 457 students, 75 kids (16.4%) was found to suffer from worm infection. Most infection was *A. lumbricoides* in 53 kids (70%), followed by hookworm infection in 12 kids (16%) and *Trichuris trichiura* in 10 kids (13%). Children provided with areca nut seed extract tablets had cure rate (CR) of 85.71% and egg reduction rate (ERR) of 94.3%, while the use of pirantel pamoat yielded a cure rate of 91.60% and egg reduction rate of 93.1%. Statistical analysis using *Chi-Square* test found no significant difference between both treatment groups. In Tukey HSD test, it was shown that infection with *Ascaris* and *Hookworm* showed better therapeutic

effect as compared to *T. trichiura*. Conclusion obtained from this research was that areca nut seed extract had equal therapeutic results as compared to pirantel pamoat (cure rate of 85.71%) and had better therapeutic effect on *Ascaris* and *Hookworm* infection. **Keywords:** *Areca catechu – antihelminthic – Intestinal Nematodes - Cure Rate – Egg Reduction Rate.* **Email:** wiwien.dr@gmail.com

Intpar045- **Difficulties in the treatment of *Strongyloides* infection in patient with Hansen's disease: a case report**

[1]Souza, J N; [2] Machado, P L R; [1]Teixeira, M C A; [1]Soares, N M
[1] Faculty of Pharmacy, Federal University of Bahia, Salvador, Brazil; [2]University Hospital Professor Edgard Santos, Salvador, Brazil.

Introduction: *Strongyloides stercoralis* infection affects about 100 million of people throughout the world, mainly in tropical and sub-tropical areas. Asymptomatic strongyloidiasis is the most common form of the disease. However, in patients with immunosuppressive disorders, *S. stercoralis* infection may develop into a hyperinfection syndrome or disseminated disease. Therapy of *S. stercoralis* with thiabendazole has been limited due its high side effects, being replaced by albendazole and ivermectin. The present study describes a case of Strongyloides Hyperinfection Syndrome (SHS) in a patient with Hansen's disease, presenting resistance to anthelmintic treatment. **Results:** A 38-yr-old man, living in an urban area of Salvador City, Brazil, was diagnosed with lepromatous leprosy in 2003 and had been used corticosteroid therapy for 7 years (prednisone in initial dose of 60 mg/day followed by maintenance dose of 5 mg/day, with interruption during remission of the signs and symptoms). In 2005 he was diagnosed with strongyloidiasis and treated with a single dose of ivermectin (6 mg) with a resulting parasitological cure. Thereafter, between 2009 and 2010, the patient was diagnosed again, in two different moments, with *S. stercoralis* infection, being treated in both occasions with mebendazole 200 mg daily for three days. Eight months after the last treatment, the stool examination showed 4,000 larvae of *S. stercoralis*/g of feces. At this moment, there was prescribed albendazole, 400 mg daily for three days, with no parasitological cure, but a significant reduction (96, 3%) in larval output. For that reason, the patient received a single dose of ivermectin (6 mg), resulting in larvae excretion clearance as observed by modified Baermann-Moraes and Agar Plate Culture methods. Follow-up stool examination was performed one, six and twelve months later confirming absence of the parasite. **Conclusion:** In regions where strongyloidiasis is endemic, anthelmintic prophylaxis before starting an immunosuppressive therapy is highly recommended. However, since the patient can be re-infected during the treatment, regular search of *S. stercoralis* infection under the course of therapy is critical. This case report demonstrates that patients under immunosuppressive therapies and with SHS can develop resistance to anthelmintic treatment. Moreover, the efficacy of any drug regimen could be overestimated because the lack of sensitive parasitological tests to confirm eradication of the infection. Therefore, regularly parasitological examination follow-up for strongyloidiasis is necessary after the vermifuge therapy in patients with Hansen's disease. **E-mail:** jo_souza2005@yahoo.com.br

Epidemiology and Control of Schistosomiasis

Schisto001- **Epidemiological situation of schistosomiasis in the state of Bahia – 2007 to 2011**

Saavedra RC, Rios ZM, Dias JP, Filho AMSD, Miranda MRS, Freitas PPG

Introduction: Schistosomiasis is a parasitic infectious disease, transmitted by waterborne and caused by trematode *Schistossoma mansoni*. The magnitude of the prevalence and severity of clinical forms complicated give great importance to the disease. It is an endemic in 52 countries worldwide, and in Brazil it occurs in 19 states. In Bahia is still considered a serious public health problem. Currently, the 417 municipalities of Bahia, 170 are endemic with widespread transmission, 103 have a focal transmission,

and 144 are harmless, although they have a potential for transmission by the presence of at least one of three intermediate hosts (*Biomphalaria glabrata*, *B. straminea* and *B. tenagophila*). **Material and Methods**: It is a descriptive study based on a survey and analysis of secondary data available on the Health Information System of the Schistosomiasis Control Program - SIS / PCE, and analyzed the following variables: number of examinations, according to the Kato-Katz method, number and percentage of positive tests and treatment carried out, and the distribution of the disease by sex, age and prevalence by municipality, which was stratified in the classes very high (> 25%), high (> 15% and <25%), medium (> 5% and <15%), low (<5%) and unaffected (0%). **Results**: The number of tests ranged from 349,684 in 2007 to 109,144 in 2011, with a reduction of 31.2%, whereas the positivity rate showed a gradual increase from year to year, from 4.6% in 2007 to 8, 8% in 2011. The percentage of patients ranged from 83.4% in 2010 and 90.1% in 2008. Among the positive tests were 60.1% male, while the most affected age group was 20-44 years, 45.7%. Of the 417 existing municipalities in Bahia, 40.7% are endemic, 24.8% have focal transmission, and 34.5% are considered harmless. **Conclusion**: *Schistosomiasis* remains a serious public health problem in Bahia, despite the decrease in positive tests performed between 2007 and 2011, where almost 70% of municipalities still have the disease. In this sense it is necessary to the implementation of control measures not only reduce the prevalence rates in endemic areas but also to prevent its dissemination to those unaffected by the disease. **E-mail:** saavedra@saude.ba.gov.br

Schisto002- Comparative study of prevalence and morbidity of *Schistosomiasis mansoni* infection in two rural areas of Jequitinhonha and Rio Doce Valleys, in Minas Gerais, Brazil

Maria Jose´Conceição [a,b,*], Aline Eduardo Carlôto [a,b], Eric Vinaud de Melo [b,c], Iran Mendonça da Silva[d], Jose´ Rodrigues Coura [b]
[a] Department of Preventive Medicine, Infectious and Parasitic Diseases Post-Graduation, Clementino Fraga Filho Hospital, Universidade Federal do Rio de Janeiro, UFRJ, Brazil [b] ; [b]Laboratory of Parasitic Diseases, Instituto Oswaldo Cruz, Fiocruz, Manguinhos,Rio de Janeiro ; [c] Tropical Medicine Post-Graduation- Fiocruz,[d] University of the State of Amazonas, Brazil

Introduction: Surveys on infection by *Schistosoma mansoni* that have been conducted in Minas Gerais since the 1970 decade aimed to follow-up the natural history of schistosomiasis with emphasis on: 1- the pathogenicity of the etiological agent and its experimental behavior, 2- the host's characteristics, and 3- environmental conditions, distribution of streams, presence of *Biomphalaria* and its infection rates with comparison of exposure to different isolates of the parasite). The objective of this study was to compare the prevalence and morbidity data on Schistosomiasis mansoni infection in two rural areas: the Jequitinhonha valley (area 1) and Rio Doce valley (area 2), in the state of Minas Gerais, Brazil, covering 2007 to 2010. **Material and methods**: The total number of inhabitants in the areas 1 and 2 taking part in the survey was evaluated according to a random number table (Spiegel 2009). In area 1, 75 homes were sampled, involving 288 individuals; and in area 2, 80 homes with 257 individuals. The parasitological tests were based on the Kato method, as modified by Katz et al. (1972). Clinical examination- In order to measure liver and spleen sizes, the subjects were examined in the dorsal position (during deep expiration) and in the Schuster position. Ultrasonography was requested to determine the portal vein caliber, liver and spleen sizes, and fibrosis. Three clinical forms were considered: type I- schistosomiasis infection, type II- hepatointestinal form, and type III- hepatosplenic form. Study of intermediate host . This study was approved by the Ethical Committee of Fiocruz- Instituto de Pesquisa Clínica Evandro Chagas- IPEC. The statistical analysis was based on the chi-square test with a confidence level of 95% ($p < 0.05$). **Results**: The prevalence of infection among inhabitants of area 1 was 22.9%, with 2.1% presenting the hepatosplenic form and two cases of schistosomial myeloradiculopathy. The infection prevalence rate in area 2 was 20.2%, with 3.3% presenting the hepatosplenic form. *Biomphalaria glabrata* were the intermediate host in both areas. **Conclusions**: There was no difference in the prevalence and in the morbidity of *Schistosoma mansoni* infection between the two areas, but it was predominantly in young men with a low intensity of infection. On highlighted the cases of schistosomial myeloradiculopathy in the area 1, by emphasizing that schistosomiasis should not be neglected in Brazil. The lack of infection control in both areas may be related to poor sanitation system, absence of previous treatment and the

reinfection process. **Keywords:** Schistosomiasis mansoni - prevalence - morbidity - myeloradiculopathy - endemic areas - Minas Gerais, Brazil. **E-mail:** conceicao@ioc.fiocruz.br

Schisto003- **Frequency and risk factors to infection through *Schistosoma mansoni* among pregnant women kept up with by a unit of family health program in Penedo - Alagoas**

Santos, E.O.[1 2]; Vicente, A.P.C.A.[2]; Santos, E.P.[2]
[1] **Postgraduate in Tropical Medicine, Center for Health Sciences (CHS), Federal University of Pernambuco (UFPE); [2]State University of Alagoas (UNEAL)**

Schistosomiasis mansoni is a serious parasitic disease that affects 200 million people around the world. In Brazil, Schistosomiasis mansoni is present in at least 19 units of the federation, with a higher concentration in the Northeast along the coastline. In Alagoas, this disease affects the majority of the population. Penedo, city which is distant 270 km from the capital, was the first city to identify infected snails. Investigate the presence of Schistosoma mansoni in pregnant women is of utmost importance, because at this stage there is a fall in their immune status, making them vulnerable to infections caused by different pathogens including *Schistosoma mansoni.* This type of infection can cause some problems for pregnant women, anemia, malnutrition maternal-fetal and abortion. This study aimed to estimate the frequency and risk factors for infection with S. mansoni among pregnant women accompanied in a unit of the Family Health Program in Penedo, AL. In the Laboratory of General Biology at State University of Alagoas the fecal samples were processed and analyzed through parasitological examination of Hoffman type (HPJ) and the method of Kato Katz through the use of a rapid test Helm-Test Bio-Manguinhos following the manufacturer's instructions. To evaluate the risk factors a questionnaire was administered at the time that preceded the consultation. Was not detected no infection by S. mansoni among pregnant women surveyed. Participated in this study 54 of 65, pregnant women aged between 15 and 40 years. The income less than one minimum wage was reported by 56,92% (37/65). In relation to educational level, 26,15% (17/65) said they have completed secondary school. In relation the place where they live, 61,53% (40/65) they said that reside in urban areas. All said they had treated water and septic tanks in their homes. The habit of washing hands before meals was observed by 66,15% (43/65). The frequency of washing fruits and vegetables before consumption was detected in 70,76% (46/65). Wash hands after using the bathroom was considered a common practice in 75,38% (49/65) of pregnant women. There were no cases of infection with S. mansoni. Also there was no statistically significant association between the variables analyzed.**E-mail**: erlon.medtropical@hotmail.com

Schisto004- **Prevalence of schistosomiasis in sugar cane workers in the north of Espírito Santo state, Brazil**

Amorim, R.F.1; Almeida, C.P.1; Crause, D.H.1; Maciel, J.S.1; Albuquerque, N.O.1; Ambrozim, F.B.1; Venturin, D.A.1; Prado, G.P.1; Telles, V.G.A.1; Soares, A.R.1; Estevão, M.2; Souza, M.A.A.1.
[1-] **Departamento de Ciências da Saúde, CEUNES/UFES - São Mateus, Espírito Santo, Brasil.[2-] Superintendência Regional de Saúde - São Mateus, Espírito Santo. Brasil.**

Introduction: Schistosomiasis is a serious health medical problem. In Brazil, it is estimated that the number of carriers of the trematode *Schistosoma mansoni* varies from 2,500,000 to 8,000,000 and it is present in 19 states. In Alagoas, according to the Schistosomiasis Control Program, 10.13% of the population worked in the past 12 years was harboring the parasite. This fact becomes quite relevant since hundreds of rural workers moving every year of this region for several states of Brazil in search of job opportunities, especially in Espírito Santo, where the number of infected *S. mansoni* is greater than 200,000. In this way, we tried to carry out a parasitological survey in Alagoas sugar cane workers, temporary residents in the municipality of Conceição da Barra, North of Espírito Santo state. **Material and Methods:** Stool samples from workers were collected between October and December 2011 and then forwarded to the Clinical Analysis Laboratory of Centro Universitário Norte do Espírito Santo (CEUNES/UFES) for processing. A total of 287 samples were analyzed by the methods of spontaneous sedimentation and Kato-Katz. **Results:** It was observed a prevalence of schistosomiasis of 15.68%,

whose participants, aged between 29 and 39 years, had the highest rate of parasitism (48.9%). Among them, 77.8% had low parasite level, with up to 100 eggs of *S. mansoni* per gram of faeces. **Conclusions:** The high prevalence was higher than those observed in Alagoas (10.13%) between January 2000 and September 2011. So, we must consider that migration of workers from endemic areas may constitute the starting for the formation of new stable foci or the occurrence of occasional transmission of the parasite in Conceição da Barra, since there are ecoepidemiological conditions for maintenance of its biological cycle. In summary, these results reflect the degree of importance of the spread of schistosomiasis by rural workers in the Espírito Santo, especially in the North region. **E-mail:** f.a.renan@gmail.com; marcosouza@ceunes.ufes.br

Schisto005- **Sectional Comparative Study of the Prevalence and Morbidity of Schistosomiasis mansoni in the town of Alhandra, in the state of Paraíba (1979-2010).**

Melo EV1, Costa W 3, Conceição MJ 1,2, Coura JR 1
1. Laboratório de Doenças Parasitárias, IOC-FIOCRUZ. Rio de Janeiro, Brasil, 2. Departamento de Medicina Preventiva, Pós-graduação em Doenças Infecciosas e Parasitárias, Hospital Universitário Clementino Fraga Filho, UFRJ, Rio de Janeiro, Brasil, 3. Núcleo de Medicina Tropical da Universidade Federal da Paraíba

Introduction: According to the Ministry of Health of Brazil, schistosomiasis mansoni is an endemic disease that affects about 2.5 to 6 million of Brazilians, and 25 million are in risk of contracting the disease. Despite the government efforts in implementing the Special Programme for Schistosomiasis Control, this disease still represents a serious public health problem, especially in the northeast and southeast states. However in the last twenty years there was a significant reduction in the occurrence of severe cases of the disease. To evaluate the current situation of schistosomiasis in the study area, a cross-sectional study was conducted to evaluate the prevalence and morbidity of schistosomiasis mansoni in a random sample of the population of the town of Alhandra, in the state of Paraíba, compared with previous results obtained by Mendonça in 1979. **Materials and methods:** Parasitological diagnosis tests for schistosomiasis were performed by the method of Kato modified by Katz et al. (1972), and evaluation of the clinical forms of the disease, according to the classification of Pessoa and Barros 1953, modified by Barbosa 1966, including the types I-intestinal form (schistosomiasis infection), hepatointestinal form-II, and III-hepatosplenic form. We also evaluated the socio-sanitary conditions of the population and the presence of the intermediate host, and it infection rate with cercariae in the Popocas River, which borders the city of Alhandra. For statistical analysis we used the Fisher exact test. **Results:** The prevalence of schistosomiasis in 2010 was 10.5%, while in 1979 was 24.3%. Among the clinical forms of schistosomiasis, in 2010, 95.3% were type I, 4.6% type II and 0% type III, and in 1979, 94.4% belonged to type I, 3.0% to type II and 2.6% type III. In 2010, 0.81% of *Biomphalarias glabrata* collected eliminated cercariae in the area, while in 1979, the snails eliminated 6.0%. Regarding the socio-sanitary conditions, in 2010 90.5% of households had water supplies, 94.3% had septic tanks and 76.6% reported collecting garbage in homes, while in 1979 the water supply was not in any of the homes, 40.8% had septic tanks and only 15.4% reported collecting trash. **Conclusions:** There was an important decrease in prevalence and morbidity of schistosomiasis infection and reduction of intermediate hosts eliminating cercariae, probably due to the treatment carried out and improvement of sanitary conditions in the area. **Keywords:** Schistosomiasis evolutive study, Prevalence and Morbidly, Alhandra, Paraíba state, Brazil. **Email:** eric.melo@oi.com.br

Schisto006- **Spatial distribution of foci of transmission of *Schistosoma mansoni* in neighborhoods of Aracaju - SE**

Karina Conceicao G. M. de Araujo[1]; Marcio Bezerra Santos[1]; Patricia Pereira da Silva[1]; Allan Dantas dos Santos[1]; Tiago P. V. de Carvalho[1]; José Chagas Sobrinho[2]; Gilberto Vieira Sampaio[2].
1 - Programa de Pos-graduacao em Biologia Parasitaria ~ UFS, 2 - Centro de Controle de Zoonoses - Aracaju/SE.

Introduction: The Schistosomiasis is a parasitic disease, severe and chronic, prevalent in tropical and subtropical areas, especially in communities with inadequate water supply and sanitation. In Brazil, the disease is caused by *Schistosoma mansoni* and data indie ate that it affects about eight million people and an estimated 30 million at risk of infection by this parasite. According to World Health Organization there are approximately 236 million cases of Schistosomiasis in the world with 747 million people at risk of infection transmission areas, distributed in 76 countries of the Americas, Africa and Asia. Furthermore, the development of digital mapping technologies and particularly the environments generically called Geographic Information Systems (GIS) 'has opened new avenues for epidemiological studies that have used many techniques to map and analyze the distribution of health-related events. Based on this information, the aim of this study was to analyze the spatial distribution of foci transmission of Schistosoma mansoni in the neighborhoods of Aracaju/SE. **Material and Methods:** We identified 96 water collections distributed among the districts of greatest epidemiological importance in the city of Aracaju. Among the stations, 86were investigated and samples were collected of Schistosomiasis snail vector. The analysis of positivity for S mansoni was made by the method of exposure to ' light, the _ database was constructed using the program Excel (Windows 2007). The maps were constructed and analyzed in the TerraView. The availability of data was performed through a query system based on GIS which led to connecting all the stored data describing geographic features, allowing the visualization and spatial analysis of the same. The results were obtained in the form of maps. We identified 66 stations with snails**. Results:** The total number of snails captured was 986, with an average of 16.72 pre breeding snails. Of these, 14.91% were identified as the species Biomphalaria glabmta. The frequency of positives was 189 (l9.l7%). There was no identification of the species Biomphalaria srraminea and Biomphalaria tenagophila. The analysis of spatial distribution of foci of transmission of Schistosomiasis was related with poor infra-structure of the districts surveyed. The main sources of contamination were identified in the SantaMaria neighborhoods, Jabotiana, S50 Conrado, Ponto Novo, Aeroporto and América. **Conclusions:** It is essential to invest in the infrastructure of the family home, in networks of exhaustion sanitary and water supply and, above all, measures of health education in order to enlighten people about the ways of prevention of Schistosomiasis and other infectious and parasitic diseases .Keywords: Schistosomiasis, Spatial Analysis, and Aracaju. **E-mail:** kkkaraujo2066@yahoo.com.br

Schisto007- **The Schistosomiasis in a small municipality and low endemicity in Espirito Santo, Brazil**

Gabriel Pitanga Soneghet (1,2), Daniel Almeida dos Santos (2), Josiane dos Santos (2), Josiane Ines de Souza (2)
1 - Graduate Program in Public Health / Federal University of Espirito Santo (UFES);   2 - Town of Anchieta / Health Department / Health Surveillance

Introduction: Representing a major public health problems in Brazil, it is estimated that schistosomiasis, affecting 4.6% of the population. It is one of infectious and parasitic diseases that have been urbanized in recent decades and is worrying health officials. Most work on transmission dynamics of schistosomiasis was performed in hyperendemic areas, their results can not be directly translated into areas of low endemicity. The State of the Holy Spirit has many municipalities, especially small (less than 50,000 inhabitants) with a high frequency of the disease. This study aims to analyze the confirmed cases of schistosomiasis in Anchieta, ES, Brazil. **Material and Methods:** Cross-section from 2007 to 2011. Report forms SINAN (Information System Diseases Reported) as well as the examination of Katu-Katzs for disease confirmation. The information contained in these documents were tabulated and analyzed in Excel (Microsoft). **Results:** 31 cases of schistosomiasis in the studied period. The median age was 36 years. 61.29% of cases were male and 38.71% female. Regard to race / color, 45, 16% were brown, 25.80% white, 19, 35% blacks. Regarding education 45.16% had incomplete primary education and 22.58% of the field were blank. The location of housing, 35.48% are natives of the region and 25.80% came from other highly endemic areas (Bahia and Minas Gerais). In all cases, 87.09% lived in areas with high transmission potential (presence of vector and water bodies used for recreation, hygiene, food, etc.). **Conclusions:** The present results regarding gender, age, education and other variables presented corroborate several studies conducted in various parts of the country. Should be strengthened to health professionals the need for completeness in completing the reporting forms for this disease. Despite being small and low endemicity, Anchieta experience a great demographic explosion to be receiving an

investment of the multinational steel. As schistosomiasis has been urbanized, it becomes paramount training of technicians for active surveillance of risk factors that may provide a disease epidemic. **E-mail:** gabrielpitanga@gmail.com

Schisto008- **Presence of *Schistossomosis mansoni* in the workers of the São Francisco River Transposition of Waters (SFRTW) construction sites**

Vivian da Silva Gomes[1], Ricristhi Gonçalves de Aguiar Gomes[1], Asevedo Quirino de Sousa[1] Ferrnando Schemelzer Moraes Bezerra[2].
1.Secretaria de Saúde do Estado do Ceará; 2. Departamento de Saúde oletiva/Famed/Universidade Federal do Ceará .

Introduction: *Schistossomosis mansoni* is an endemic disease that spreads along the population migratory processes and gets set according to the favorable epidemiologic and environmental conditions. In Ceará (Northeastern state of Brazil), the sites of the great economic and infrastructure projects such as the transposition of waters from the Sao Francisco river or the Transnordestina railway stimulate the hiring of labor force originated from different states where Schistossomosis has a high endemic incidence. Therefore, it is also of great concern the probability of continuation of the disease cycle when the workers migrate to the construction sites elsewhere. New intermediate hosts outbreaks can potentially appear in such a situation. **Objective:** Notify Schistossomosis mansoni cases in the workers of the construction sites at the SFRTW in the counties of Penafort and Mauriti (both in Ceará). **Material and Methods:** The coproscopic research was held through the Kato Katz technic, which takes a chosen sample and prepares three microscope slides with faeces. After delivering the recipients, the workers returned them at the construction sites always in the early morning in order not to compromise their working day. **Results:** From the 780 workers of the two sites, only 69 from Penafort applied with one positive answer to *Schistosoma mansoni* presence. In Mauriti, only 210 applied with two positive answers. **Conclusion:** The presence of workers from endemic areas at the sites of great infrastructure projects in Ceará offers a potential risk to the rising of new outbreaks of intermediate hosts in the State. **E-mail:** gomes.viviandasilvagomes@gmail.com

Schisto009- **Historical Series (1995-2011) in a state of Schistosomiasis Endemic in Southeast Brazil**

Gabriel Pitanga Soneghet (1.2), Daniel Almeida dos Santos (2), Crispim Cerutti Junior (1), Josiane dos Santos (2)
1-Graduate Program in Public Health / Federal University of Espírito Santo (UFES); 2-Town of Anchieta / Health Department / Health Surveillance

Introduction: Schistosomiasis is considered one of the most important tropical diseases and more widespread in the world, estimated to infect about 200 million people and Brazil, before deployment of the Special Program for the Control of Schistosomiasis, she reached between ten and twelve million persons. Different sources of data show a reduction in the occurrence and severity of schistosomiasis: from 1995 to 2006, the number of hospitalizations due to complications of schistosomiasis per 100,000 inhabitants per year fell from 21 to 04 (a 80% reduction), and deaths per 100,000 population fell from 0.38 to 0.27 (a 29% reduction). The Espírito Santo has several areas with high frequency schistosomiasis and the analysis of time series becomes essential to assess the actions taken to reduce the disease what is the purpose of this study. **Materials and Methods:** An ecological study of time series, descriptive. Data were collected through the Schistosomiasis Control Program State (PCE) and tabulated in Excel (Microsoft). Confirmation of the data was made through the clinical and epidemiological examination of Katu-Katzs. **Results:** Of the 78 cities, 69.23% (54) showed an incidence of the disease. The small towns (fewer than 50,000 inhabitants) had a greater increase during the years studied. A significant reduction from the year 2004. Five counties had more than 50,000 cases in the series representing approximately 30% of all cases (Afonso Claudio, Ecoporanga, Colatina, Pancas and Venda Nova do Imigrante).**Conclusions:** It is believed that the increase in the number of cases from the year 2000 is partly because the deployment of PCE in small towns especially. The cases then began to

be reported and dealt with a decline from 2004 through treatment, education and social mobilization. Active surveillance of susceptible populations is of overriding importance for maintenance of the reduced number of cases today. Train, retrain and equip the staff of the vector control and epidemiological surveillance is extremely necessary especially in small municipalities that lack of logistics to work. **E-mail:** gabrielpitanga@gmail.com

Schisto010- Evaluation of the degree of implementation of the Schistosomiasis control program, SANAR-SES/PE, in priority municipalities in Pernambuco State, northeast Brazil in 2012

Silva, P.K.F.; Barreto, A.V.M.S.; Rodrigues, F.A.; Quinino, L.M.; Cavalcante, VMS.; Silva, B.M.; Barbosa, J.L.; Silva, J.A.M.
Sanar Program – Health Surveillance Unit – Pernambuco State Health Authority, Brazil.

Introduction: Pernambuco is among the five Brazilian states with the greatest number of people infected with *Schistosoma mansoni (S.m)*. From 2005 to 2010 73,639 positive tests for *S.m* were notified, with an annual average of 12,273 cases in 109 endemic municipalities. In the light of this situation, the Pernambuco State Health Authority has included schistosomiasis in the SANAR program, which proposes to reduce and/or eliminate seven persistent neglected diseases; acting chiefly through the intensification of the control routinely performed in the priority municipalities. **Objectives:** To perform a normative evaluation study as a tool to improve the planning and management of the SANAR Program. **Material and Methods:** The degree of implementation (DI) was measured to match the scale of the routine activities proposed by the Ministry of Health and by the Pernambuco State Health Authority (SES), carried out by the 40 municipalities included in the program. The combination of primary health care initiatives with regular sending of slides for quality control served as primary data. The secondary data was the percentage of clinical samples collected, percentage of treatment of positives, compliance with the testing pact and regular submission of information on the positivity of *S.m* and soil-transmitted helminthiasis. Indicators were developed on the basis of the average number of actions carried out over a certain period of time, which were arranged in a judgment matrix. This permitted the classification of the DI of the actions: implemented: 90 - 100 points; partially implemented: 60 - 89 points; and not implemented: <59 points. **Results:** After the data survey, it was found that only 6 municipalities (15%) had their DI classified as implemented; 31(77.5%) as partially implemented and 3 (7.5%) as not implemented. **Conclusion:** From this evaluation it was observed that the majority of the priority municipalities in the SANAR Program for schistosomiasis show weakness in terms of compliance with the minimum recommendations made by the Brazilian Ministry of Health for the control of the disease. The information obtained in this study may contribute to the guidelines for the SANAR Program and the reduction of schistosomiasis rates in Pernambuco State. **Keywords:** Schistosomiasis, SANAR Program, evaluation. **E-mail:** vaniamariacavalcanti@gmail.com

Clinical and Pathogenesis of Schistosomiasis

Schisto011- Clinical profile of Myeloradiculopathy Schistosomal in a Health Unit of Sergipe, Brazil

Silva, P.P.[1], Santos,M.B. [1], Carvalho, T.P.V. [1], Santos, A.D. [1], Silva, M.T.[1], Oliveira,A.C.[1], Trindade, K.T. [1], Lima, R.V. [1], Araújo, K.C.G.M. [1].
[1]**Federal University of Sergipe. São Cristovão, Brazil.**

Introduction: The Myeloradiculopathy Schisosomal (SMR) is a severe disease of evolution where the nervous system is compromised due to *Schistosoma sp*. The nervous system lesions in SMR are due to occurrence of granulomatous inflammatory reaction to parasite eggs deposited in the spinal cord. The aim of this study was to survey the clinical profile of patients admitted in a Health Unit in the State of

Sergipe, Brazil. **Methodology:** We conducted a retrospective study of a series of cases from the review of records related hospital admissions in a reference hospital in Sergipe in the period 2007 to 2011, where the population consisted of all patients (adults and children) diagnosed as SMR in this period. Data collection was performed by applying the Protocol for the Evaluation of Spinal Cord Schistosomiasis, adapted and based on the criteria of Ferrari (1997). The research protocol was approved by the Ethics Committee of Federal University of Sergipe and received approval in accordance with the requirements of Resolution CNS 196/96 (CAAE number- 0187.0.107.000-11). **Results:** We identified 18 cases where 61.11% are males and 72.22% are of working age. The time interval between onset of symptoms and first medical evaluation was on average 23.17 days with a median of 12.5 days. CID-10 was the most common G628 (66.66%) since the MRE is a disease that does not present any particular classification. In clinical signs observed in cases of SRM motor deficit was present in all cases. The urinary dysfunction (88.88%) was the second highest percentage recorded followed by fecal dysfunction (83.33%). Low back pain and / or inferior members and muscle weakness were present in 14 patients (77.77%). The drug of choice for the treatment in 12 patients was the praziquantel that started with an average of 24.4 days (median 13.5 days). **Main Conclusions:** It is extremely important to recognize this condition early to prevent permanent functional limitations to the individual affected. The absence of records in order and uniformity of these may have contributed to the underreporting of cases of MRE in this work.**Email:** patriciaa.enf@gmail.com

Schisto012- **Hepatosplenic schistosomiasis mansoni: hyaluronic acid, YKL40 and TGF-β1 in the diagnosis of liver fibrosis**

Voieta I, Otoni A, Papatella J, Caporali J, Teixeira AL, Resende V, Andrade Z*, Queiroz L, Mota L, Antunes CM, , Lambertucci JR
Universidade Federal de Minas Gerais, Belo Horizonte; Fiocruz - Salvador*

Introduction: Serum biomarkers have been used as a tool in the diagnosis and evaluation of liver fibrosis intensity in hepatosplenic schistosomiasis with variable results. Few studies have used liver biopsy in the confirmation of Symmers' fibrosis and more frequently physicians rely upon imaging techniques as gold standard in the evaluation of liver fibrosis severity. **Objective:** Herein we evaluated the serum levels of HA, YKL-40 and TGF-β1 in the evaluation of liver fibrosis and its intensity using imaging techniques and surgical wedge liver biopsy. **Methodology:** Sixty patients with schistosomiasis mansoni were selected for this study: 30 had the hepatosplenic form and no evidence of active infection (group 1) and 30 had the hepatointestinal form (group 2) with viable eggs in the stools. Patients were submitted to clinical and abdominal ultrasound. A blood sample was collected for further tests. The hepatosplenic group was also submitted to serology for hepatitis B and C, upper digestive endoscopy, abdominal magnetic resonance and surgical liver wedge biopsy. The serum markers of fibrosis were measured using commercial kits. Liver fragments obtained during surgery were fixed in 10% buffered formalin and afterwards embedded in paraffin wax. Five μm slices were stained using Hematoxylin-Eosin and examined under light microscopy. Other fragments were stained with Picrosirius red and portal tracts were selected and quantified by software. **Results:** HA and YKL40 had no value in the diagnosis of liver fibrosis when imaging techniques were used for liver fibrosis identification. Serum levels of TGF-B1 were higher in the sera of patients with hepatointestinal schistosomiasis. Intensity of liver fibrosis classified by histology did not coincide with serum levels of the biomarkers evaluated in this study. There was moderate correlation between serum levels of hyaluronic acid when it was compared to histomorphometry. There was a good concordance between imaging techniques and liver biopsy in the classification of liver fibrosis intensity. **Conclusions:** HA and YKL40 were not useful as a markers of liver fibrosis in our study. TGF-β1 also was not a good marker of liver fibrosis but its serum levels were significantly higher in patients with hepatointestinal schistosomiasis as compared to hepatosplenic. Therefore, TGF-β1 may be a good marker of *S. mansoni* infection because it had high titles only in the group with active infection (viable eggs in the stools). The biomarkers used in the present study were not important in classifying schistosomiasis liver fibrosis intensity. **E-mail:** lamber@uai.com.br

Schisto013- Human Schistosomal glomerulopathy: urine and serum chemokine profile

Otoni, A; Voieta I; Antunes, CM; Drummond, SC, Teixeira, AL; Melo, VLC; Lambertucci, JR
Universidade Federal de Minas Gerais – Belo Horizonte, BRASIL

Introduction: Renal involvement has been described in 15% of patients with hepatosplenic schistosomiasis mansoni. There have been no studies on the profile of chemokines in the serum and in the urine of patients with schistosomal glomerulopathy. **Objective**: We investigated serum and urine levels of chemokines in patients with hepatosplenic schistosomiasis, with and without renal disease, aiming at defining a profile of chemokines in patients with kidney injury. **Methodology:** This is a cross-sectional study developed at the Outpatient Clinic of the Universidade Federal de Minas Gerais, Belo Horizonte, in Brazil, between October 2008 and July 2010. After informed consent, 160 volunteers with a median age of 40 years were enrolled in the study and divided into five groups: 1) sixty eight patients had hepatosplenic schistosomiasis mansoni without renal disease; 2) twelve had hepatosplenic schistosomiasis with renal disease; 3) twenty seven had hepatointestinal schistosomiasis; 4) twenty two had glomerulopathy of varied causes, without schistosomiasis; and 5) thirty one were apparently healthy. All participants were submitted to clinical examination. Those with microalbuminuria above 30mg in 24 hours were considered as having renal disease. In eight patients with microalbuminuria and schistosomiasis the presence of glomerulopathy was confirmed by renal biopsy. Diagnosis of hepatosplenic schistosomiasis was established by the association of epidemiological, clinical, parasitological and ultrasound data. From all participants, sera samples and a small quantity of urine (taken from the 24 hour urine collected) were obtained and stored at -80°C. The sera and urine chemokines MCP-1/CCL2, MIP-1α/CCL3, IL-8/CXCL8, eotaxin/CCL11 and RANTES/CCL5 were measured using an ELISA test and commercial kits. Information obtained was transferred to a data bank (EpiData 3.1) and analyzed in the SPSS software. **Results:** In patients with hepatosplenic schistosomiasis and renal disease the following chemokine profile was found: MIP-1α in the urine >14.3pg/ml, sera MIP-1α >61.9pg/ml, IL-8 in the sera <1,030pg/ml, eotaxin in the urine >26.7pg/ml and sera MCP-1 >634pg/ml. A similar profile was observed in the group of patients with glomerulopathy caused by other diseases (without schistosomiasis), except for serum MCP-1 that was <634pg/ml. Patients with hepatosplenic schistosomiasis without renal disease presented the following profile: MIP-1α in the urine <14.3pg/ml, serum MCP-1 <490pg/ml and RANTES <11,509pg/ml. The other groups presented different profiles. **Conclusion:** In hepatosplenic schistosomiasis patients with serum MCP-1>634pg/ml the diagnosis of schistosomal glomerulopathy should be considered. **E-mail:** lamber@uai.com.br

Schisto014- Morbidity by schistosomiasis mansoni in Ceará state, the period 2008 to 2011

Furtado, F. H. S², Gomes. V. S¹, Cavalcante, R. C², Nascimento, F. C²., Sousa, A. Q²., Oliveira, M. F.F²
¹ - Center for Vector Control NUVET/COPROM/SESA/CE, ² - Department of Health of the City of Baturité 4 º CRES / SESA-CE.

Introduction Schistosomiasis mansoni in Brazil is still a public health problem widespread. The disease affects 2.5000000 to 6,000,000 people in the country occurred primarily in rural communities, with expansion to the large urban centers, due to the haphazard process of occupation of space that foster environments with inadequate sanitation. This situation contributes to the emergence of new breeding and maintenance of the disease cycle. Although 75% of positive cases of schistosomiasis in Ceará have a parasitic load 1-4 eggs which are not posing a risk for the development of the chronic form. The other 25% that make up the group of medium and high parasite load has probably contributed to the maintenance of morbidity in the state. This work checks morbidity due to schistosomiasis according to gender and the length of stay and the value of the Authorization for Hospitalization - AIH according to the municipalities of Ceará. **Research Methods:** in the bank DATASUS period 2008 to 2011 hospitalizations by sex, length of stay and average value of AIH according to the municipality. **Results** Hospital morbidity from schistosomiasis during the period 2008 to 2011 was reported in 42 patients, 16 males and 26

females in ten 10 municipalities. The days of hospital stay were a total of 811 days and patients sex male and female remained 262 days 549 days. Since the average AIH by gender according to the 10 municipalities was 795.01. **Conclusion** Although there was a significant reduction in morbidity of the disease in the state of Ceará there are still patients who undergo hospitalization on account of injury with a mean of approximately 20 days of hospitalization burdening the SUS**. E-mail:** heliosfurtado@hotmail.com

Schisto015- **Schistosomiasis - related morbidity in the indigenous population Maxakali, Minas Gerais state, Brazil**.

Nicolato AJPG; Rossini MCS; Nascimento TC; Rodrigues AB; Lima TLF; Correa MG; Rocha MRC; Costa BAS; Gripp HL; Carvalho GLX; Machado-Coelho GLL; Faria HP; Marinho, CC.
Laboratório de Epidemiologia das Doenças Parasitárias, UFOP - Universidade Federal de Ouro Preto, Ouro Preto, Brasil

Introduction: This is a descriptive study of the morbidity related to *Schistosoma mansoni* infection among individuals of the ethnic group Maxakali, residing in the indigenous land located in the northeast of Minas Gerais, Brazil. A prevalence of infection of 23.7% was detected in a previous study performed by our group in 2007, but the prevalence of the severe forms of the disease remained to be defined. **Material and Methods:** The adult male population was invited to participate. Women and children were not examined because of limitations imposed by the local culture. All participants were submitted to clinical examination and abdominal ultrasonography (US), performed by experienced examiners. Clinical, epidemiological and US data were registered in a specific research protocol. Abdominal US were performed following the World Health Organization recommendations. Right and left liver lobe length and spleen longitudinal diameter; portal, splenic and mesenteric veins diameter, the presence and intensity of periportal fibrosis, second order portal branches wall thickness, gallbladder wall thickness and image patterns of the liver parenchyma were recorded. **Results:** 149 individuals were evaluated, median age 28 (range: 16 - 86). 139 participants (93.3%) reported contact with natural water collections. Palpable left and/or right liver lobes were detected in 22 participants (15.3%), and 4 (2.8%) had a palpable spleen. Abdominal US showed left liver lobe enlargement in 26 patients (18.1%) and spleen enlargement in 3 (2%). Liver fibrosis was found in 13 cases (9%), 9 (6.3%) were classified as mild and 4 (2.8%) as moderate. Most cases (n=7, 53.8%) were detected in the age group between 11 and 30 years. Portal hypertension was documented in one case (main portal vein diameter: 15mm). **Main Conclusions:** The present data show predominance of the hepatointestinal form of schistosomiasis with mild to moderate liver fibrosis, in the young adult male Maxakali indigenous population. The documentation of one case of portal hypertension is in consonance with the high prevalence of schistosomiasis detected previously, and demonstrates the importance of ultrasonography diagnosis and adequate management of the severe forms of disease in this population. **Acknowledgements:** FAPEMIG – Fundação de Amparo à Pesquisa do Estado de Minas Gerais, CNPq – Conselho Nacional de Pesquisa, UFOP, Distrito Sanitário Especial Indígena/Minas Gerais-Espírito Santo/Ministério da Saúde. **E-mail:** carolinacmarinho@gmail.com

Schisto016- **Spatial Distribution of Clinical Forms of Schistosomiasis in the state of Sergipe, Brazil**

Carvalho, TPV[1]; Silva PP[1]; Santos MB[1]; Santos AD[1]; Araújo KCGM[1].
[1] Graduate Program in Biology Parasitic by Federal University of Sergipe. São Cristóvão, Brazil.

Introduction: In Brazil, millions of individuals are carriers of schistosomiasis, mostly from the Northeast. According to data from the Schistosomiasis Control Program and the 2010 IBGE census, the state of Sergipe had an infection rate of 4.9%, the second largest of the country, only smaller to the State of Alagoas (8.2%). The spatial distribution of schistosomiasis in endemic areas has contributed to the understanding of the natural history of disease, its epidemiology, the evolution of clinical forms and their control. **Material and Methods:** We researched cases of schistosomiasis through the records of the System Diseases Information and Notification (SINAN) assigned by the State Health Department of Sergipe, from January 2007 to November 2011. These data were decoded tables in Microsoft Office

Excel 2007 and transferred to the database of the Geographic Information System (GIS) where the spatial data were stored and checked against data collected in DATASUS. To obtain the results we used the free software TerraView for GIS data and following the making of maps. The geographical base of the municipalities was from IBGE's database where we used the coordinates of the municipal seats to represent the city which served as the unit of analysis in this study. For the analysis in TerraView, stratification was performed by equal steps, using up to five slices with precision 6.**Results:** We analyzed 617 positive cases, 57.37% male, 41% are aged 25-49 years, 56.23% are from rural areas and 49.43% claim to have contracted the disease in the county of residence. The intestinal form of schistosomiasis was prevalent with 371 cases (60.12%) of whom, 113 cases were concentrated in the southern state of Sergipe, followed by an acute form with sixteen cases (2.59%). The hepatic and intestinal and hepatic and splenic clinical forms were observed in five (0.81%) and four cases (0.64%), respectively. The Agreste region was the most affected by this disease presenting 28.68% of cases in the state. Underreporting of cases is striking when compared to previous studies that show that all the municipalities of Sergipe have cases of schistosomiasis, but in our analysis only 44 municipalities were observed. **Main Conclusions:** It is known that there is an underreporting of schistosomiasis in Sergipe, however, this study provides important ancillary information involved in the recognition of cases and proper notification to the knowledge of the real situation and control of this disease in the state. For best control is necessary political will, sanitation, health education, combating the vector beyond training of health professionals for correct identification of cases and their clinical and following treatment for those infected. **Email:** ticopvc@hotmail.com

Schisto017- **Spatial analysis of human cases of schistosomiasis mansoni in the municipality of Umbaúba, Sergipe State, Brazil, in the year 2011**

Santos, Allan Dantas dos [1]; Santos, Márcio Bezerra [1]; Silva, Patrícia Pereira da [1]; Carvalho, Thiago Pinheiro Vaz de [1]; Araújo, Karina Conceição Gomes Machado de [1]
[1] Graduate Program in Parasite Biology, Federal University of Sergipe - São Cristóvão, Sergipe State, Brazil.

Introduction: Schistosomiasis mansoni is an important public health problem in many endemic states of Brazil. It is an infectious disease of chronic or acute manifestation. Their occurrence is closely related to poor socio-environmental conditions and the highest prevalence in humans is in the Northeast. The present study was accomplished to spatially analyze the distribution and the epidemiologic profile in human cases of schistosomiasis in the municipality of Umbaúba, Sergipe State, Brazil. **Material and Methods**: This is an epidemiological and cross study, accomplished through a number of cases (223) of schistosomiasis identified by agents to combat endemic diseases of the Fundação Nacional de Saúde - FUNASA (National Health Foundation) through parasitological survey conducted from January to September 2011 by the Programa de Controle da Esquistossomose – PCE (Schistosomiasis Control Program) of the mentioned municipality. It was used an absolute method with snapshot of a point, with the aid of a GPS receiver to the spatial location of homes participants. Spatial analysis was performed using the TerraView program (http://www.dpi.inpe.br/terraview/ index.php), using the kernel intensity estimation, nonparametric technique which allows estimating the number of events per unit area in each cell of a regular grid which covers the region studied, using a bandwidth of two hundred meters for controlling the statistical smoothing and quartic function. **Results**: The results were obtained in the form of thematic maps and analysis of the distribution point of the cases. It was detected an increased prevalence of disease in males and aged 20-30 years; the predominant clinical presentation was intestinal; one hundred percent of the patients were treated for schistosomiasis. Through the spatial analysis was revealed a greater concentration of cases in the central urban area and villages in rural areas. Through the kernel intensity estimator, was found that areas with high concentrations of human cases, where the clusters of higher intensities were represented by darker shades. In thematic maps was possible to observe the proximity of the cases with the largest river that runs the whole municipality, Pagao River. The locations were visited to survey the environmental issues involved in the maintenance of disease outbreaks. **Conclusion**: The control of disease in the area only will be possible if measures such as early diagnosis and treatment of cases, intersectoral action in education, health and sanitation are taken together, since the region's ecosystem and the immigration of people from endemic areas have favored the maintenance of the foci of transmission. **E-mail:** allanufs@hotmail.com

Schisto018- Postsplenectomy sepsis in chronic schistosomiasis as a result of bacterial translocation

Lima KM[1]; Magalhães, MGPA[2]; Magalhães PAF[3].
[1] Faculdade Estácio/FIR; [2] Universidade de Pernambuco; [3]Universidade Federal do Rio Grande do Norte, Brazil

Introduction: Schistosomiasis can cause changes in the immune system, damage to the intestine, mesenteric lymph nodes and portal system. Despite numerous reports of bacterial diseases associated with schistosomiasis, there are no studies investigating questions about the bacterial translocation (TB), infection and sepsis in chronic disease, even after splenectomy. We aim to understand the causes of co-infection and sepsis, considering the influence of TB and chronic splenectomy in schistosomiasis. **Material and Methods:** After approval by the Ethics Committee, 40 female Swiss Webster mice (*Mus musculus*) with 35 days were divided into four groups, Schistosomiasis (ESF = 10), Schistosomiasis Splenectomized (ESEF = 10), Splenectomy (EF = 10) and Control (FC = 10). The infection was performed percutaneously with 50 cercariae of *S. mansoni* (SLM). After 125 days of live births, half of the mice infected and not infected underwent conventional total splenectomy. Body weight was recorded in seven days that followed after splenectomy, when the mice were euthanized for study of TB, microbiota and intestinal morphology. **Results**: Compared to control, there was a reduction of weight gain in EF, ESF and ESEF ($p < 0.0001$). Also in these groups, the intestinal microbiota, an increase of at least 1000 CFU compared to CF. The EF, ESF and ESEF showed a decrease in villus height, villus area and total area (perimeter) ($p < 0.0001$). Occurred higher rate of bacterial translocation and sepsis ESEF in the group, with higher rates of co-infection by different genera of bacteria. **Conclusions:** In ESEF, TB and sepsis occurred more sharply. This can is associated with immune responses even more disabled by the absence of the spleen and reduced nutritional status thus increasing by both events. Further studies are necessary in order to confirm and extend the findings**. Email:** kedma.biom@gmail.com

Schisto019- Passive transfer of Schistosoma mansoni antigens-specific antibodies in mice born or suckled by schistosomotic mothers

Nóbrega, CGO[1], Fernandes, ES[1], Nascimento, WRC[1], Sales, IRF[1], Santos, PDA[1], Schirato, GV[2], Albuquerque, MCPA[1], Costa, VMA.[1], Souza, VMO[1,3]
[1]Setor de Imunologia, Laboratório de Imunopatologia Keizo Asami – Universidade Federal de Pernambuco, Recife - PE, Brasil. [2] Biotério do Centro de Pesquisa Aggeu Magalhães - Fundação Oswaldo Cruz, Recife -PE, Brasil. [3]Departamento de Ciências Farmacêuticas – Universidade Federal de Pernambuco, Recife - PE, Brasil.

Rationale: Experimental studies have demonstrated that *Schistosoma mansoni* infected mothers modulate immunity to homologous antigen, in their adult offspring, through prior contact with anti-*Schistosoma* antibodies during the prenatal period plus breastfeeding. Adult offspring of schistosomotic mothers showed alterations in immunity to a heterologous antigen, ovalbumin (OA): the prior breastfeeding induced higher production of anti-OA antibodies, while the pregnancy decrease it. Here, antibodies against soluble egg antigen (SEA) and worms (SWAP) in offspring born or only breastfed by schistosomotic mothers were measured, in order to study the association between maternal anti-*Schistosoma* antibodies and change in the heterologous immunity in adult offspring. **Methods:** newborn mice were divided into four groups: animals Born from Infected Mothers (BIM) suckled by non-infected mothers; animals from non-infected mothers Suckled by Infected Mothers (SIM); and mice Born and Suckled in Infected Mothers (BSIM) or non-infected (Control) mothers. The animals were bled (21, 45, 60, 77), after birth. IgG1 and IgG2a isotypes were measured by ELISA. **Results:** It was detected IgG1, but not IgG2a, mainly anti-SEA in a group BIM and in the groups SIM and BSIM. The transfer by breastfeeding was more effective (higher levels and maintenance during the kinetic). **Conclusions:** The anti-SEA IgG1 isotype detected in the group BIM, as well as, in the SIM, excludes the association of anti-parasite antibodies and the improvement of heterologous immunity in offspring nursed by schistosomotic mothers. This study highlights the important role of breastfeeding as effective way to transfer anti-SEA antibodies for individuals from an endemic area for schistosomiasis. **E-mail:** valdenia.souza@ gmail.com

Schisto020- **Differences in behavior of ¨*Schistosoma mansoni*¨ Isolates of Patients from different endemic areas of Schistosomiasis in Brazil- Experimental study in ¨*Biomphalaria glabrata*¨ and in mice**

Isabel Cristina Melo Mendes[a,b,d]*, Maria Jose´Conceição[a,b], Aline Eduardo Carlôto [a,b] , Viviane ; Gomes da Silva Pereira[a,b], Natália Machado da Silva[b], Martha Cecília Suarez Mutis[b], Eric Vinaud de Melo[b,c]
[a] **Faculdade de Medicina- Scientific Initiation Program, Department of Preventive Medicine, Infectious and Parasitic Diseases Post-Graduation, Universidade Federal do Rio de Janeiro- UFRJ, Brazil;** [b] **Laboratory of Parasitic Diseases, Instituto Oswaldo Cruz, Fiocruz, Manguinhos,Rio de Janeiro;** [c] **Tropical Medicine Post-Graduation-** *Fiocruz,* [d] **Scientific Vocation Program-Fiocruz**

Introduction: Differences on the severity of clinical forms of Schistosomiasis mansoni during surveys in several endemic areas in Brazil led to experimental studies in *Biomphalaria glabrata* and mice with *Schistosoma mansoni* isolates from patients of the same municipality of Minas Gerais State (Costa et al. 1983, 1984, Conceição et al. 2008). Anderson and Cheever (1972) also infected mice with strains of *S. mansoni* from Puerto Rico, Brazil (BH), Saint Lucia and Tanzania (Mwanza). Powers and Cheever (1972) in a study in mice and Rhesus monkeys using differents inoculations, confirming the previous results that did not detect differences in hepatic histopathology. **Objective:** The objective of the present survey was to compare *S. mansoni* isolates of patients from some areas of Brazil. **Material and Methods**: two outpatients from municipalities of Pernambuco (isolate A) and Bahia (isolate B) were attended in the University Hospital-Federal University of Rio de Janeiro-UFRJ, compared with two other patients, attended in municipalities of Rio Doce (isolate C) and Jequitinhonha Valleys (isolate D). The fecal examination was done by two methods: Lutz (1919) and Kato (1960) modified by Katz et al. (1972). *Biomphalaria glabrata* snails were collected from the Capitão Andrade stream and allowed to adapt to the Laboratory of Parasitic Diseases (Instituto Oswaldo Cruz). The hatching and concentration of miracidia were obtained from the feces of each patient (Chaia, 1956). Twenty *Biomphalariae* of the third generation in the laboratory were exposed individually to five miracidia from each of the 20 isolates. Cercariae counts were started after 40 days. Thirty male albino Swiss Webster mice aged 21 days and weighing 8–11 g were infected with each of the 4 isolates with 50 cercariae. The number of cercariae introduced by the mouse tail was figured out by a technique developed in laboratory of Fiocuz (Conceicão et al.,1986). The animals were submitted to euthanasia in accordance with the animal ethical practice (study approved by the Ethical Committee of Fiocruz in October, 2010). Specimens of the liver were collected and fixed in 10% formalin and embedded in paraffin. Five micrometer sections were stained with hematoxilin-eosin. **Results**: the isolate A from patient of Pernambuco was more positive than B, C and D isolates, with higher percentages of positivity in all procedures, with values above the average of the samples, in addition to the sample, whose blades for reading Kato modified by Katz, had higher numbers of eggs of *S. mansoni*. **Conclusions**: The strains showed different behaviors on aspects directly related to its pathogenicity, for example, the elimination of parasite eggs, and number of granuloma, observed in the liver of albino mice. The behavior of this isolate raises the extension study involving isolates from other endemic areas, and the addition of molecular biology methods. **Keywords:** *Schistosoma mansoni* Isolates – experimental behavior – patients – endemic areas – *Biomphalaria glabrata*. **E-mail:** melo.ic@hotmail.com

Diagnosis and Treatment of Schistosomiasis

Schisto021- **Schistosomiasis – test availability and positivity rate in endemic municipalities in Pernambuco state, Northeast Brazil**

Cavalcanti, V.M.S.; Silva, P.K.F.; Silva, B.M; Barreto, A.V.M.S.; Rodrigues, F.A.; Magalhães, N.M.E; Silva, J.A.M.
Pernambuco State Health Authority – Health Surveillance Unit - SANAR

Introduction: In 2011 the State of Pernambuco defined the priority of seven supposedly neglected diseases, including schistosomiasis, with the aim of stepping up surveillance and control and the target of reducing the prevalence of this disease to < 10% in priority municipalities. Studies of the distribution and prevalence of schistosomiasis are needed as basic inputs for increasing the efficiency of control strategies. (Barbosa et al, 2010; Farias, LMM et al, 2007; and Pierri, OS et al, 2007).. **OBJECTIVES**: To analyze the availability of tests and the levels of positivity by age group for cases of schistosomiasis recorded in 41 endemic municipalities in 2010.**Methodoly:** A descriptive epidemiological cross-sectional study based on 2010 data from both the Brazilian National Census and the Pernambuco State Database for the Schistosomiasis Control Program (SIS-PCE). Microsoft Excel version 7.0 and TabWin version 3.6b were used for the tables. In order to analyze the provision of tests and positivity rate (PR) per age group, two groups were considered: Group 1: 2-14 years-olds; and Group 2: adolescents and adults over 15. **Results:** According to the 2010 Census, the 41 municipalities studied had a total population of 2,186,207 inhabitants, representing 25.59% of the total population of Pernambuco State. That year, 111,225 parasitological stool tests were carried out for the detection of *Schistosoma mansoni* and other worms in the above-mentioned municipalities, which represented 5.8% of the total number of tests performed in the state. In the general population of the municipalities studied, Group 1, with 560,278 inhabitants, corresponds to 25.6% and Group 2, with 1,625,929 inhabitants, 74.3%. This distribution pattern for the tests by age group was also observed by Lima-Costa, M. F. et al. (2002), in locations in Minas Gerais. In relation to the tests performed in the 41 municipalities, 30.3% were for Group 1 and 69.6% for Group 2. Concerning the PR for *Schistosoma mansoni*, Group 1 showed 9.1+/-8.2% against 11.2+/-7.9% for Group 2, varying between 0.91% and 30% for Group 1 and from 2.2% to 35.27% for Group 2. **Conclusions**: These results show a low availability of tests for the diagnosis of schistosomiasis in the endemic municipalities. However, the distribution by age group is representative considering the normal distribution of the population. The data also suggests that the choice of target population for carrying out surveys and collective treatment in high prevalence areas should not be focused only on children of school age. **Keywords**: schistosomiasis, positivity rate, age distribution. **E-mail:** vaniamariacavalcanti@gmail.com

Schisto022- **Early detection of *Schistosoma mansoni* infection by real time PCR in a hamster model – is ir a serum sample better than feces?**

Maria Cristina Carvalho do Espírito Santo[1], Mónica Viviana Alvarado-Mora[2], Pedro Luiz Silva Pinto[4], Livia de Souza Botelho[2], Emmanuel Dias-Neto[5], Pedro Paulo Chieffi[3], João Renato Rebello Pinho[2], Flair José Carrilho[2], Ronaldo Cesar Borges Gryschek[1]

[1.]Departamento de Moléstias Infecciosas e Parasitárias - Faculdade de Medicina, Universidade de São Paulo. [2.]Laboratório de Gastroenterologia e Hepatologia Tropical, Departamento de Gastroenterologia- Faculdade de Medicina, Universidade de São Paulo [3.]Laboratório de Helmintologia, Instituto de Medicina Tropical - Faculdade de Medicina, Universidade de São Paulo. [4.] Núcleo de Enteroparasitas do Centro de Parasitologia e Micologia do Instituto Adolfo Lutz. [5.]Laboratório de Genômica Médica e Bioinformática, Centro Internacional de Pesquisas e Ensino (CIPE) - Hospital A.C. Camargo

Introduction: Schistosomiasis is a worldwide public health problem affecting more than 200 million people in the world. In Brazil, the only species of medical and sanitary interest is *S. mansoni*. The goal of the Brazilian Ministry of Health has been to reduce the occurrence of the severe forms of the disease and the number of deaths, to reduce the prevalence of infection, and to reduce the risk of geographic expansion of the disease. The study and development of new diagnostic techniques for early detection of schistosomiasis are still necessary in view of the difficulties to evaluate infection patterns accurately and to control the disease. Specifically, in the low transmission areas, the prevalence of infection is reduced among individual with low parasite load, the diagnosis of schistosomiasis by detection of eggs in the feces has low sensibility. To overcome this problem, multiple sampling and analysis of a larger amount of samples are necessary, which considerably increases costs, making them too heavy techniques for the accurate diagnosis of the infection. The use of more sensitive techniques than the search for eggs in feces is necessary. The aim of the present study was compare the *S.mansoni* DNA detection in serum and feces samples in hamsters infected with *S.mansoni* during the pre patent and patent stages of infection. **Material and Methods:** Twenty-four hamsters were infected with 150 cercariae and as a control group eight hamster were not inoculated. To assess the level of infection in the pre and post-posture,

three animals were sacrificed under anesthesia with ketamine and xylazine, weekly from day 7 after infection extending to the 56th day (7, 14, 21, 28, 35, 42, 49, 56 days after infection). During this period, a serum sample and a pool of feces were collected for each animal. The presence of schistosome eggs in feces samples was evaluated by Kato-Katz method. DNA extraction was carried out from 200µl of serum and from 500mg of feces using the acid guanidinium thiocyanate/phenol/chloroform method and the DNA purification was performed with Instagene Matrix (Biorad). Detection of DNA of *S.mansoni* was performed in tripled by TaqMan real-time PCR system. A TaqMan Exogenous Internal Positive Control (IPC) was used during the amplification. **Results:** The results showed that the first detection of eggs in feces by Kato-Katz method was at 56 day post-infection. The same result was found by Real-Time PCR amplification. However, S.mansoni DNA was detected in the serum samples from 14th day after infection. **Main Conclusions:** The development of laboratory tools for the early diagnosis of *S.mansoni* infection represents one of the priorities in the low area endemicity for schistosomiasis. DNA detection in serum sample by real time PCR suggests that this kind of sample is a valuable method for early diagnosis of pre-patent *S.mansoni* infection. **E-mail:** cristinasanto@usp.br

Schisto023- **Prevalence of IgG and IgM anti-S.mansoni antibodies in peripheral areas of Barra Mansa, Rio de Janeiro, Brazil**

Espírito-Santo MCC[1], Alvarado-Mora MV[2], Sanchez MCA[3], Sanches AR[3], Botelho LS[2], Moreira JP[2], Pinho JRR[2], Carrilho FJ[2], Luna EJA[4], Gryschek RCB[1].
[1]Department of Infectious and Parasitic Diseases, Faculdade de Medicina da Universidade de São Paulo-LIM-06, [2]Laboratory of Tropical Gastroenterology and Hepatology, Department of Gastroenterology, Faculdade de Medicina da Universidade de São Paulo, [3]Laboratório de Soroepidemiologia e Imunologia, Instituto de Medicina Tropical de São Paulo, [4]Instituto de Medicina Tropical, Universidade de São Paulo.

Introduction: Schistosomiasis constitutes major public health problem, with 200 million people infected and 700 million who lives in areas at risk of infection. In Brazil, this endemic disease affects 19 federal units. The city of Barra Mansa, Rio de Janeiro, Brazil, is an area of low endemicity for schistosomiasis, with an estimated prevalence of 1%. The parasitological diagnostic methods lack sensitivity, especially in areas like that. The ELISA test has been proposed for antibodies against antigens of *Schistosoma mansoni* adult worms and eggs, or for detection of circulating antigens. However, its use in our environment for epidemiological purposes is still very limited. **Objective**: The objective of this study was to determine systematically the prevalence of *S. mansoni* infection in peripheral areas of Barra Mansa: Nova Esperança, Siderlândia, Siderlândia, Cantagalo, Santa Clara and São Luiz. **Patients and Methods:** This is a cross-sectional study, conducted from March 2011 to February 2012. The sample was selected randomly, with systematic selection of households and random selection of individuals to be included in each household. We collected 636 serum samples from 636 individuals who freely agreed to participate. ELISA-IgG with total extract and ELISA-IgM with TCA-soluble fraction were used were used in the research of antibodies anti-*S. mansoni.*. **Results:** From all the patients studied, 11.16% (n = 71) had ELISA-IgG positive reactions and 20.75% (n = 132) had ELISA-IgM reactions. The agreement between tests was 85.38% (n = 543), and 8.65% (n = 55) serum samples were positive in both tests. **Conclusions:** The higher positivity of ELISA-IgM test corroborates the results of other authors that the test may be a useful tool in epidemiological studies, especially in areas of low endemicity for schistosomiasis mansoni. Comparison with other diagnostic tools will confirm our findings. **Email:** cristinasanto@usp.br

Schisto024- **Serum CCL11 (eotaxin) and CCL17 (TARC) are serological indicators for multiple helminth infections and are driven by *Schistosoma mansoni* infection in humans.**

[1]Geiger SM, [2]Jardim-Botelho A, [3]Alexander NE, [4,5]Bethony JM
[1]Universidade Federal de Minas Gerais, Belo Horizonte-MG, Brasil; [2]Universidade Federal de Sergipe, Aracaju-SE, Brazil; [3]London School of Hygiene and Tropical Medicine, London, United Kingdom; [4]George Washington University, Washington DC, USA; [5]Fundação Oswaldo Cruz, Instituto René Rachou, Belo Horizonte-MG, Brazil.

Introduction: Helminth infections are among the most common parasitic diseases in tropical countries and co-infections with different helminth species are frequent. However, in human infections the impact that co-infections exert on the host immune response are still poorly studied. We evaluated systemic serum cytokine and chemokine markers for inflammation and Th1/Th2 responses in relation to helminth infection, parasite burden and/or nutritional parameters in an area highly endemic for *Necator americanus*, *S. mansoni*, and *Ascaris lumbricoides.* **Material and Methods:** In a longitudinal study, stool samples from 210 individuals were examined before and 12 months after clearance of parasites by chemotherapy. On both occasions presence of mono- or multiple infections and intensities of infection were compared with nutritional parameters and with serum cytokines or chemokines as markers for inflammatory (IL-1ß, IL-6, TNF-α, CCL3), regulatory(IL-10) or Th1-(CXCL10) or Th2-type(IL-5, IL-13, CCL11, CCL17) immune responses. **Results:** Before treatment we could not associate any altered nutritional parameters with increased inflammatory responses and highest intensities of infection were found in eutrophic participants with multiple infections. Major changes in serum Th2-type chemokine levels were measured in individuals infected with intestinal helminths and/ or *S. mansoni* and resulted in significantly higher CCL11 and CCL17 concentrations, both before treatment and after reinfection. **Main conclusions:** The driving force for elevated chemokine concentrations was a *S. mansoni* infection and fecal egg counts significantly correlated with serum IL-10 concentrations**. E-mail:** stefan.geiger76@gmail.com

Schisto025- **Assessing infection status and therapeutic response to Praziquantel (PZQ) by molecular and immunological tests in individuals with low intensity *Schistosoma mansoni* infection**

Silva L.F[1], Garcia M.C.[1], Peralta R.H.S.[3], Barreto M.G.M.[4], Igreja, R.P[5], Macedo HW. [3], Cavalcanti M.G.[1,2], Peralta .J.M.[1]
Instituto de Microbiologia Paulo de Goes (IIVIPG/UFRJ), 2 Servico de Doenças Infecciosas e Parasitérias (UFRJ, RJ, Brasil), 3. Departamento de Patologia (UFF,RJ, Brasil), 4. Fundação Oswaldo Cruz (FIOCRUZ, RJ, Brasil); 5. Departamento de Medicina Preventiva (UFRJ, RJ, Brasil).

Introduction: Successful reduction of schistosomiasis severity and infection intensity was achieved by treatment-based control that rendered highly endemic areas in low endemic. Nonetheless, transmission did not subside and low-level reinfection persisted in several areas. In addition, low intensity infection is hardly detectable by coproscopy which is less sensitive to diagnosis low parasite burden. In order to overcome limited assessment of infection status and response to specific therapy by standard methods, several groups have been developing alternative methods such as molecular and immunodiagnostic tests. The present study examines the performance of real time PCR and specific immunoglobulin response to *S.mansoni* antigen in assessing infection status and therapeutic response to PZQ in individuals with low intensity infection**. Objective:** To evaluate molecular and immunological assays as tools for detection of *S. mansoni* infection and therapeutic response in areas of low endemicity. **Material and Methods:** Study population comprised 108 individuals from rural area (Sumidouro, Rio de Janeiro). After informed consent, fecal and blood samples was obtained from each participant. *S.mansoni* infection was determined in 3 stool samples/person by Kato-Katz (two slides/stool sample, K-K). Specific IgG1, IgG4 and IgE anti-adult worm antigen were measured by ELISA. Real-Time PCR was used for DNA detection in fecal samples. Probes and primers targeted the cytochrome c oxidase subunit 1 (cox) gene in the mitochondrial genome. Individuals K-K positive and/or PCR positive were treated with PZQ at a dose of 60mg/kg. **Results:** Egg-excretion was detected by K-K in 8 out of 108 individuals (7.41%) examined with geometrical mean excretion of 12eggs/g which is consistent with low intensity infection. IgG1 reactivity was present in 64 (59.25%) individuals and IgG4 and IgE were reactive in 7 (6.48%) and 69 (63.9%) individuals, respectively. DNA was detected in 7 out of eight egg-excretors and also in 7 egg-negative individuals before treatment. All but one egg-excretor individual responded to PZQ. K-K and PCR were negative in all individuals samples analyzed in the period of 2 to 6 months post-treatment. However, DNA detection persisted in all non-excretors individuals after 6 months post-therapy suggesting either non therapeutic response or reinfection. IgG1 levels were not significantly different on pre and post-treatment (mean=2_013i0.822 x 1.78i0.83 arbitrary units-a.u.). In contrast, both IgG4 and IgE levels differed on pre and post-therapy (IgG4, mean=0.33i0.72 x 0.89 i 0.78 a_u.; p < 0.05; IgE, mean= 1.63-£0.54 x 2.381060 a.u., p < 0.001). **Conclusion:** Results suggest that in individuals with low intensity

infection both diagnosis and response to therapy might be better assessed by additional tests than parasitological examination. **E-mail:** peraltajm@globo.com

Schisto026- **Two year's impact of one round MDA using praziquantel in the maintenance of urinary schistosomisis transmission in Barombi Kotto focus, Cameroon.**

Nkengazong L[1,2]., Njiokou F[1]., Teukeng F[1]., Asonganyi T[2].
1Laboratory of General Biology and Physiology, Faculty of Science, P.O Box 812, Yaounde, University of Yaounde I, Cameroon.2Faculty of Medicine and Biomedical Science, University of Yaounde I, Cameroon. 1Institutes des Researches Médicales et les Etudes de Plants Médicinales, MINRESI, Cameroun

Introduction: The level of infestation and mechanism of persistence of urinary schistosomiasis was determined in two villages (Kotto Barombi and Marumba II) by conducting a survey on school children from May 2007 to May 2008. **Methodology:** Urine samples were collected from 418 children and examined using filtration technique. All participants were subsequently treated by Praziquantel. Drug efficacy and incidence rate were assessed three month, one and two years later respectively. **Results:** The overall prevalence of *S. haematobium* was 50.8%: Kotto Barombi (69.5%), Marumba II (41.3%).The prevalence differed significantly between the villages ($P = 0.004$). The mean parasite load of 211.3 and 39.62 eggs/10ml of urine respectively in Kotto Barombi and Marumba II differed significantly ($P = 0.0001$), and between the quarters (Mainland and Island) in Kotto Barombi ($P = 0.007$). Praziquantel was highly efficacious on schistosome worms, with a global cure rate and egg reduction rate of 97.2% and 99.2% respectively. These values were 100% in Kotto Barombi, 88.1% cure rate and 79.8% egg reduction rate in Marumba II. The overall incidence rate was 13.5%: Kotto Barombi (13.5%), Marumba II (13.7%) after one year. At two years post treatment, 23.0% incidence rate was obtained: Kotto Barombi (24.3%), Marumba II (20.0%). The global mean parasite load was 64.1 eggs/10ml urine: 49.48 and 104.2 eggs/10ml of urine respectively in Kotto Barombi and Marumba II. A statistical significant difference was observed (K = 26.38, $P = 0.00001$) between the two villages. **Conclusion:** These results suggest that the initial prevalence (50.8%) may be reached soon, if the WHO recommendations (appropriate health education and snails' control) are not fully applied. **Keywords:** *Urinary schistosomiasis, S. haematobium, prevalence, parasite load, drug efficacy, cure rate, egg reduction rate, incidence rate, Kotto Barombi, Marumba II*, Cameroon. **E-mail:** nkenglu@yahoo.com

Schisto027- **Adverse reactions to praziquantel in collective treatment patients in Pernambuco state, Northeast Brazil – 2011 and 2012**

Barreto, AVMS*; Cavalcanti, VM*; Nesello, F*; Oliveira, ECA*; Silva, A*; Fernando, VCN*; Silva, PKF*; Barbosa, JL*; Neto, JHS**; Silva, GM***; Silva, BM*; Silva, JAM*.
Pernambuco State Health Surveillance Unit*; Municipal Health Authorities of Jaboatão dos Guararapes and São Lourenço da Mata**

Introduction: According to WHO, collective treatment (CT) should be applied in order to reduce morbidity, gravity and consequences of schistosomiasis and soil-transmitted helminthiasis in areas of high prevalence. The Pernambuco State Sanar Program has given priority to addressing these diseases, along with five other neglected diseases. The main control actions are: the effective involvement of primary health care, adaptation of the welfare referral network and CT in hyper-endemic locations for both conditions. By 2014 the program aims to reduce the prevalence of schistosomiasis to < 10% and soil-transmitted helminthiasis to < 20% in 40 municipalities. The medication used in CT was prazinquantel (PQZ) and albendazole. According to the manufacturers' recommendations, PQZ is contraindicated in under-4 year-olds, pregnant women, infants and patients with heart, liver and kidney disease. The most frequently mentioned adverse reactions (AR) to this drug were: sleepiness, dizziness, headache, nausea, vomiting. **Objectives:** To investigate adverse reactions to PQZ occurring during CT in two of the Sanar program's priority locations. **Material and Methods:** A descriptive and cross-sectional study was carried out on a conveniently defined sample of patients who reported AR in the Lagoa das Garças district of Jaboatão dos Guararapes (JG) and in the Nova Tiuma district of São Lourenço da Mata (SLM). In these

locations, PQZ was used in combination with albendazole, except for patients with contraindications. The CT was administered by family health and endemic teams. Stool samples were collected from patients who reported AR, for studies of *S. mansoni* and other worms by the Kato-Katz method. In this survey a structured questionnaire was used. **Results:** CT was applied to 1,897 of around 3,000 previously treated patients in JG and SLM. Around 20% of the patients interviewed reported AR. Among 196 patients investigated: dizziness (80.1%), nausea (72.2%), drowsiness (50%) and headache (49%) were observed, and in 52.6% the symptoms disappeared in less than 12 hours. In 106 (67.1%) patients in SLM, stool samples were collected, recording 16 (15.1%) positive for helminthes, among which 8 (7.5%) *S. mansoni*, 6 (5.6%) *Ascaris lumbricoides*, 3 (2.8%) *Trichuris* and 1 (0.9%) hookworms. Among the individuals with negative stool tests for *Sm*, the most frequent reactions were: dizziness (77.8%), nausea (74.4%) and headache (56.7%). Among those tested positive for *Sm,* the main reactions were: dizziness (75%), nausea and abdominal pain (62.5%), and vomiting (37.5%). **Conclusion:** Adverse reactions to prazinquantel were frequent during collective treatment, although the majority was mild and transient. Further studies are considered necessary to verify the association between adverse reactions and positive testing for *S. mansoni.* **Keywords:** schistosomiasis; collective treatment; praziquantel; adverse reactions. **Email:** aninhabarretoo@gmail.com

Schisto028- **Genotoxic action of praziquantel in mammalian cells**

Melo, M.E.B[1], Chaves, C.V[1], Lira, R.T[1], Barbosa, C.S[1]. –
Centro de Pesquisas Aggeu Magalhães / FIOCRUZ -– Recife - PE - Brazil

Introduction: Due the high populational demand of the country, the public health issues have been growing progressively. The increasing rates is characterized mainly by the existence of parasitic diseases. One of the most frequent diseases is the schistosomiasis, whose treatment is carried through the use antiparasitic drugs, like praziquantel (PZQ), widely used in medical clinic. Despite the fact that the above cited drug shows a proven and effective action, researches about the possible PZQ mutagenic and/or genotoxic effects are limited and it lacks a more comprehensive research. Therefore, there is relevance in the investigation of the mutagenic and/or genotoxic potential induced by this drug, because of the existing correlation between mutagenicity and carcinogenicity. The detection of the cromossomic damage has particular relevance to the people, since a significant number of genetic diseases are caused by abnormality in the chromosomes structures or numbers. In this research it was used the micronuclei test, employed worldwide, with special relevance to the screening programs used in health vigilance for detecting of genotoxic agents. The micronucleus represents a structural or numeric loss of chromosomic fragments or whole chromosomes, induced by genotoxic agents (clastogenics and/or aneugenics) that damage the chromosomes directly, producing breaks or affecting the achromatic zone apparatus. **Objective:** Research the genotoxic potential of PZQ in *Swiss webster* mice bone marrow cells. **Material and Methods:** The experiments consisted in the administration of PZQ (40, 60 and 80 mg/kg), by gavage, to the *Swiss Webster* mice 40 years old of both sex. It was used cyclophosphamide 1% (25 mg/Kg), by i.p., and distillated water (10 ml/Kg) by gavage to the positive and negative controls respectively. Two thousand (2.000) cells were analyzed per animal per dose through optical microscopy (10 x 100x) to identify the micro nucleated polychromatic erythrocyte (PCE) and normochromatic erythrocyte (NCE). RESULTS: It was detected micro nucleated PCE (1,59 %, 1,49 %, 1,91 %) proportional to the concentration of 40, 60 and 80 mg/kg respectively. Micronuclei cells were detected in the negative control, without abnormality (3/1000), and 1,85% of micronuclei cells were present in the positive control (CPA - 25 mg/Kg). Concerning the concentrations tested and the percentual of micro nucleated PCE found, both control groups corroborate statistically (p<0,05), the reliability of the tests in question. CONCLUSION: Based on the results shown, one may conclude that PZQ revealed its genotoxic effects through the micronucleus test in mice bone marrow cells, for both sexes, in dependent –dose form. **Keywords:** praziquantel, micronucleus, genotoxic, schistosomiasis **E-mail:** melomeb@cpqam.fiocruz.br

Schisto029- **Activity of Epiisopiloturine against *Schistosoma mansoni***

L.M. Veras[1,2], M.A. Guimarães[1], Y.D. Campelo[1], M.M. Vieira[1], C. Nascimento[3], D. F. Lima[4], L. Vasconcelos[4], E. Nakano[3], S.S. Kucklhaus[5], M.C. Batista[6], J.R. Leite[1] and J. Moraes*[3,7]
[1]Núcleo de Pesquisa em Biodiversidade e Biotecnologia, BIOTEC, Universidade Federal do Piauí, Parnaíba, PI, Brazil;[2]Programa de Doutorado Rede Biotecnologia do Nordeste, Fortaleza, CE, Brazil; [3]Laboratório de Parasitologia, Instituto Butantan, São Paulo, SP, Brazil;[4]Vegeflora Extrações do Nordeste LTDA, Parnaíba, PI, Brazil;[5]Faculdade de Medicina, Universidade de Brasília, Brasília, DF, Brazil;[6]Laboratório de Morfofisiologia Veterinária, Centro de Ciências Agrárias, Universidade Federal do Piauí, Teresina, PI, Brazil;[7]Supervisão de Vigilância em Saúde, SUVIS Casa Verde, Secretaria de Saúde da Cidade de São Paulo, SP, Brazil;

Introduction: Schistosomiasis, caused by blood flukes of the genus Schistosoma, still imposes a considerable public health burden on large parts of the world. The control of this disease depends almost exclusively on the drug praziquantel, and there are no alternative drugs in sight. Natural compounds have recently attracted significant attention due to their relevance to parasitic infection and potential development into new therapeutic agents. Epiisopiloturine is an imidazole alkaloid isolated from the leaves of *Pilocarpus microphyllus* (Rutaceae), a native plant from Brazil. **Material and Methods:** Here, we report the in vitro effect of this drug on the survival time of *Schistosoma mansoni* of different ages, such as 3 h old and 1, 3, 5, and 7 days old schistosomula, 49-day-old adults, and on egg output by adult worms. Epiisopiloturine at a concentration of 300 µg/mL caused the death of all schistosomula within 120 h. **Results:** Extensive tegumental alterations and death were observed when adult schistosomes had been exposed to 150 µg/mL of the epiisopiloturine. At the highest sub-lethal dose of alkaloid (100 µg/mL), a 100% reduction in egg laying of paired adult worms was observed. Additionally, epiisopiloturine showed selective antischistosomal activity and exhibited no cytotoxicity to mammalian cells. **Conclusion:** This work shows the first evidence that epiisopiloturine is able to kill S. mansoni of different ages and inhibit worm egg laying. **E-mail:** josuem@usp.br, josuemoraes@ig.com.br

Schisto030- **Artemetin ceases *Schistosoma mansoni oviposition: in vitro* assay**

Frezza, T. F.[1*]; Oliveira, R. N.[1]; Oliveira, A. S. S.[2]; Rehder, V. L. G.[2], Allegretti, S. M.[1]
[1]Departamento de Biologia Animal, Universidade Estadual de Campinas, Campinas, Sao Paulo, Brazil. [2]Division of Organic Chemistry and Pharmaceuticals - Multidisciplinary Center for Chemical Biological and Agricultural Paulinia, Sao Paulo, Brazil

Cases of tolerance and resistance exhibited by available antischistosomal drugs - praziquantel and oxamniquine - propose the urge to develop new anti-*Schistosoma mansoni* drugs. In addition, research with medicinal plants becomes viable mainly in tropical countries like Brazil, where there is a wide biodiversity. Studies done by our research group with the Organic Fraction (OFEE), obtained from *Cordia verbenacea* (a native medicinal plant with anti-inflammatory properties, popularly known as "erva-baleeira") and its refractions (F3, and F3.6, the latter obtained from F3) showed, in Thin Layer Chromatography (TLC), the presence of flavonoid artemetin. This study aim was to evaluate comparatively the action anti-*S. mansoni in vitro* of artemetin (previously isolated) and the fractions. OFEE was extracted from the leaves with ethanol 96% followed by mechanical agitation and filtered using rotaevaporator. The fractionation was made with dried column. TLC's were done on silica gel plates and revealed with anisaldehyde. *In vitro* tests were carried out using a pair of worm maintained in RPMI supplemented with penicillin-streptomycin, CO_2 5% and 37°C. Survival, motility, mating and oviposition were observed for 72 hours. Four doses of the fractions and artemetin were tested in 5 replicas: 50 (D1), 100 (D2), 200 (D3) and 400 (D4) µg/mL. These tests indicated mortality ranges of 100% and 90% with the D3 and D4 to artemetin and fractions, respectively; 90, 60 and 40% with sublethal concentrations (D1, D2) of OFEE, F3, F3.6 and artemetin, respectively. Fractions and artemetin reduced motility of the worms with all doses. There was separation of 100% of couples with sublethal doses of fractions and artemetin. There was no oviposition of the worms subjected to OFEE with the D3 and D4, as well as in all doses for F3, F3.6 and artemetin. Considering the results of oviposition, we believe that this compound was responsible for the oviposition inhibition, because the fractions which were rich in this compound, haven't presented ovipostion. We also believe that this compound was not responsible for causing the death of the worms, because the schistosomicidal potential was low for artemetin and high in fractions. Future

studies are needed for purification of these compounds responsible for the antischistosomal action of these fractions. **Keywords:** *Cordia verbenacea, Schistosoma mansoni*, artemetin, *in vitro assay.* **Financial Support:** CAPES. **E-mail:** taferraz@gmail.com

Schisto031- *In vitro* ultrastructural study of the action of the *Mentha x villosa* Hudson (Lamiaceae) essential oil and its isolated compounds on adult worms of *Schistosoma mansoni* (Sambon, 1907)

Rocha, T. J. M. [1,4], Cavalcanti, M. G. S. [2,4], Veras, D. L. [4], Gonçalves, G. G. A. [4], Barbosa-Filho, J. M.[3], Lúcio, A. S. S. C.[3], Padilha, R. J. R. [6], Alves, L. C.[4,6], Santos, F. A. B. [1, 4, 6]
[1] Programa de Pós-graduação em Medicina Tropical, Universidade Federal de Pernambuco, Recife, PE, Brasil;[2] Departamento de Fisiologia e Patologia, Universidade Federal da Paraíba, João Pessoa, PB, Brasil;[3] Laboratório de Tecnologia Farmacêutica, Universidade Federal da Paraíba, João Pessoa, PB, Brasil;[4] Laboratório de Biologia Celular e Molecular, Departamento de Parasitologia, Centro de Pesquisas Aggeu Magalhães, Fundação Oswaldo Cruz, Recife, PE, Brasil;[5] Laboratório de Produtos Naturais, Instituto Agronômico de Campinas. Centro de Pesquisa e Desenvolvimento de Recursos Genéticos Vegetais, Fitoquímica. Campinas, SP, Brasil.[6] Laboratório de Imunopatologia Keizo Asami, Universidade Federal de Pernambuco, Recife, PE, Brasil;

Mentha x villosa is a aromatic medicinal plant and the essential oil (EOMv) of its leaves has many biological activities. However, no activity anti-*S. mansoni* has been reported. Thus, the study of a new option for the treatment of schistosomiasis is of great importance. The aim of this study was to study antischistosomal activity of extracts and isolated compounds from this plant. Adults of *S. mansoni* treated with differents concentrations of EOMv had tegumental disorders such as exposure of the subtegumentar region, loss of tubers, suckers presenting morphological alterations and presence of ulceration in some regions. In worms treated with the isolated compound rotundifolone, it was observed ulcerations in the integument during breakdown of the integument. It was observed destruction of some tubers in the integument of worms treated with limonene. Worms treated with two others isolated compounds, β-pinene and trans-caryophyllene, showed some tubers with altered morphology. During evaluation in transmission electron microscopy (MET), adult worms of *S. mansoni* treated with EOMv showed presence of vacuoles in the matrix syncytial region. The worms treated with rotundifolone, limonene, trans-caryophyllene and β-pinene presented changes in the syncytial region and presence of vacuoles in the region of tubers and muscle fibers. The results of this study suggest that EOMv has *in vitro* schistosomicidal activity and that rotundifolone showed the highest activity among the isolated compounds, although other was capable of causing tegumental modification on the morphology of *S. mansoni*, however, it is noteworthy that further studies should be performed in order to evaluate the antiparasitic activity *in vivo* of the EOMv and rotundifolone. **E-mail:** thy_rocha@hotmail.com

Schisto032- *In Vitro* Schistosomicidal Effect of Diclorometanic Extract and Fractions from *Baccharis trimera* (Less) DC

Oliveira, R.N.,[1] Oliveira, C.N.F[1]., Rehder,V.L.G[2]., Oliveira, A.S.S.[2], Montanari Jr, I[2]., Allegretti , S.M.[1]
[1] Instituto de Biologia – Universidade Estadual de Campinas - UNICAMP. [2] Centro Pluridisciplinar de Pesquisas Químicas Biológicas e Agrícolas - CPQBA - UNICAMP, Campinas - SP - Brasil.

Schistosomiasis is a parasitic disease caused by trematodes of the genus *Schistosoma.* Affects at least 200 million people worldwide, more than 700 million people live in endemic areas and more than 200.000 deaths are reported annually. In Brazil, chemotherapy with praziquantel (PZQ) is the main strategy adopted to control this disease. Although PZQ appears to be an efficacious drug, in recent years problems of resistance have arisen. In this context, different studies *in vitro* have been used to investigate the biological activities of medicinal plants against *S. mansoni* to establish future strategies in schistosomiasis control. The aim of this study was to analyze *in vitro* the biologic potential of *Baccharis trimera* in adult worms of *S. mansoni* BH strain. *B. trimera*, popularly known as "Carqueja" is used in the form of infusions in the control of gastrointestinal and liver diseases, angina, poor circulation, diabetes and inflammatory processes. One couple of *S. mansoni* was used for the *in vitro* assay. All experiments

were performed in five replicas using four concentrations- 130µg/mL, 91µg/mL, 48µg/mL and 24µg/mL- of crude diclorometanic extract (DE) and their respective fractions: hexane (FHE) and acetone/water (FAA), both obtained by liquid-liquid partition. Anti- *S. mansoni* activity of DE, FHE and FAA were evaluated based in following parameters: (a) worm survival (b) motor activity and (c) oviposition. Worms were monitored during 72 hours using an inverted microscope. Evaluation of morphological changes on tegument was performed with Scanning Electron Microscopy (SEM) techniques. *In vitro* tests with DE, in concentration of 130µg/mL, caused death in 60% of the parasites after 6 hours of exposure. After 24 hours, 100% of the worms were dead. Furthermore, we observed a reduction of 100% in egg production when the parasites were exposed to the sub lethal concentration (C4 = 24µg/mL). FHE and FAA, in concentrations of 130 µg/mL and 91 µg/mL, caused the death in 100% of the parasites after 24 hours of exposure. In addition, a significant ($p < 0,01$) reduction in oviposition in the order of 96% and 94% with the sub lethal concentrations: 48 µg/mL and 24 µg/mL, respectively. DE, FHE and FAA caused reduction in motility beyond morphological changes on tegument, oral and ventral suckers, observed with SEM. This study shows the potential activity of *B. trimera* against *S. mansoni*, BH strain, indicating the need for further studies. **Keywords**: *Baccharis trimera*; Diclorometanic Extract; *In vitro* assay; *Schistosoma mansoni;* Treatment*.* **E-mail:** rosy_biologa@yahoo.com.br

Schisto033- *Schistosoma mansoni:* The *in vitro* effect of butanolic partition and fractions obtained of the *Phyllanthus amarus* on the adult worms

Oliveira, C. N. F.[1]; Oliveira, R. N.[1]; Silva, C. R.[2]; Rehder, V. L. G.[2]; Allegretti, S. M[1].
1Instituto de Biologia, Departamento de Biologia Animal, Universidade Estadual de Campinas (UNICAMP), Campinas, São Paulo, Brasil. 2Centro Pluridisciplinar de Pesquisas Químicas, Biológicas e Agrícolas, Universidade Estadual de Campinas (UNICAMP), Paulínia, São Paulo, Brasil.

The spreading of schistosomiasis (more than 200 million people infected and 800 million at risk of infection in three continents) and the threat of tolerance and resistance to the drug of choice, praziquantel, have stimulated studies searching new alternatives, such as use of medicinal plants, to prevent, treat and cure this disease. *Phyllanthus amarus* has a long history of usage by folk because of its rich medicinal values that has been reported to possess potent anti-inflammatory, hepatoprotective, analgesic, diuretic properties. The present study evaluated *in vitro* the schistosomicidal activity of FBuOH, F2BuOH and F3BuOH obtained from leaves of *P. amarus.* Adult worms were obtained by perfusion of the hepatic portal system of *Swiss* mice infected with *Schistosoma mansoni* strain BH. The worms were collected and incubated in 24 well plates, containing RPMI 1640 culture and one couple worm. The schistosomes were incubated at 37°C and 5% CO_2 in the presence of 200, 100, 50 or 25 µg/mL of FBuOH, F2BuOH; F3BuOH and PZQ. The worms were observed for a total period of 72 hours to evaluate mortality, changes in the pairing of worms, oviposition and morphological/tegumental alterations, using an inverted microscope and SEM. The FBUOH at 200 and 100 µg/mL caused death of 100 and 80% of worms after 24 hours of observation. However, incubation with the F2BuOH resulted in the death of most adult worms (200 and 100 µg/mL - 100%; 50 µg/mL - 80%; 25 µg/mL - 50%) after 24h. Total mortality of worms for these fractions occurred in 48 h. F3BuOH was lethal to 100% of the worms at 200 µg/mL in 48h, the remaining concentrations in mortality was not effective. In contrast, the worms remained viable in the negative control group and the PZQ caused the death of 100% only at 200 µg/mL, for other concentrations the mortality was of 60, 80 and 60%, respectively. Oviposition was observed only in negative control groups (no sample added). All samples promoted separation of 80-100% of the pair of worms and 20-25% in negative control and PZQ were separated. The tegumental changes were more evident in male worms (100%), while the more internal damage reached the female (60%), for the all groups, including the PZQ. In summary, the results indicate that F2BUOH possesses *in vitro* schistosomicidal activity against *S. mansoni* adult worms. This fraction is a promising compound for the development of new schistosomicidal agents. Acknowledgements: FAPESP. **E-mail:** claudineide@gmail.com

Schisto034- **Origin and Molecular characterization of a novel SEA-domain containing protein family in Schistosoma japonicum**

Evaristus Chibunna Mbanefo[1,6], Yu Chuanxin[2], Mihoko Kikuchi[1], Mohammed Nasir Shuaibu[1], Daniel Boamah[1], Masashi Kirinoki[3], Naoko Hayashi[3], Yuichi Chigusa[3], Yoshio Osada[4], Shinjiro Hamano[5] and Kenji Hirayama[1*]

[1]Department of Immunogenetics, and [5]Department of Parasitology, Institute of Tropical Medicine (NEKKEN), Nagasaki University, 1-12-4 Sakamoto, 852-8523, Japan, [2]Laboratory on Technology for Parasitic Disease Prevention and Control, Jiangsu Institute of Parasitic Diseases, Wuxi, People's Republic of China, [3]Laboratory of Tropical Medicine and Parasitology, Dokkyo Medical University, Tochigi, Japan, [4]Department of Immunology and Parasitology, University of Occupational and Environmental Health, Japan

Introduction: Evolution of novel protein-coding genes is the bedrock of adaptive evolution. Recently, we identified six protein-coding genes with similar signal sequence from *Schistosoma japonicum* egg stage mRNA using signal sequence trap (SST). The present analyses aim at finding the mechanism underlying the origination of this gene family with similar core promoter regions and signal sequence in this zoonotic trematode. **Materials and Methods:** We adopted an integrated approach utilizing whole genome, transcriptome and proteome database BLAST queries, other bioinformatics and genetic analyses, and molecular expression analyses. **Results:** We confirmed the expression of this gene family both at the mRNA and protein levels exclusively in all developmental stages of *S. japonicum*. The signal sequence motif was identified in 27 distinct *S. japonicum* UniGene entries with multiple mRNA transcripts, and in 34 genome contigs distributed within 18 scaffolds with evidence of genome-wide dispersion. No homolog of these genes or similar domain was found in deposited data from any other organism. By repeat masking, we observed preponderance of flanking repetitive elements (REs), albeit partial copies, especially of the *RTE*-like (SjR2) and *Perere* (SjR1) class at either side of the duplication source locus. The role of REs as major mediators of DNA-level recombination leading to dispersive duplication is discussed with evidence from our analyses. In addition to a significant balancing selection, we also identified a stepwise pathway towards functional selection in evolving genes by alternative splicing. Equally, the possible transcription models of some protein-coding representatives of the duplicons are presented with evidence of expression *in vitro*. We hope to also present data on the molecular characterization of this protein family. **Main Conclusion:** Our findings contribute to the growing evidence of the role of REs in the generation of evolutionary novelties in organisms' genomes. *S. japonicum* has wide range of mammalian hosts including humans, buffalo, cattle, pigs, rats, etc. and produces more severe hepatic pathology in comparison with *S. mansoni.* Evolution of novel secreted protein-coding genes after its divergence could account for these distinctive characteristics. **E-mail:** evari4u@yahoo.com

Schisto035- **Role of dynein light chains in surface biogenesis and renewal in *Schistosoma mansoni***

Schulte, L[(1,2)]; Mulvenna, J[(3)]; Gobert, GN[(1)] & Jones, MK[(1, 2)*]
1Queensland Institute of Medical Research, Brisbane, Australia, 2School of Veterinary Sciences, The University of Queensland, Brisbane, Australia, 3Queensland Tropical Health Alliance, James Cook University, Cairns, Australia

Introduction: Schistosomes, a cause of major human morbidity and mortality in over 60 nations, have an intriguing membrane-bound cytoplasmic layer, the tegument. The tegument serves a variety of biological roles for the parasite including nutrition, sensory reception, osmoregulation, and immune evasion and modulation. The latter allows the parasite to live for prolonged periods in its human host. Some members of a family of dynein light chains (DLCs) are expressed exclusively in the tegument and appear to be intimately linked with molecules present in the apical host-interactive membrane of the parasites. In other eukaryotic cells, cytoplasmic DLCs hold together multi-protein motor complexes involved in such diverse cellular translocation events as protein trafficking, mitosis and ciliary beating. DLCs of the schistosome

tegument likely have similar roles and are thus likely to be important in the movement, development and renewal of the apical tegument membrane, thereby contributing to parasite survival in its host. However, complexes that DLCs ordinarily bind are not present in the schistosome tegument and thus the molecular interactions of these molecules remain a mystery. Here we report on investigations of the interactions of DLCs and related molecules in the tegument of *Schistosoma mansoni.* **Materials & Methods**: To explore the range of protein interactions, the "interactome", in the tegument we have used a series of methods, including Blue native polyacrylamide gel electrophoresis and protein crosslinkers, coupled with in-line liquid chromatography-tandem mass spectrometry. Putative protein interactions will be validated by immunoprecipitation experiments using antibodies generated against proteins of interest. The expression of key tegumental genes throughout the life cycle has been quantified by Real-Time PCR using a housekeeping gene as a positive control and to construct standard curves. To explore the function of tegument genes RNA interference will be used to knock down genes of interest and phenotypic changes visualised by electron microscopy. **Results:** Here we describe the interacting suite of molecules of the DLCs as well as, more generally, the interactions of the tegument of *S. mansoni.* Transcriptional data of 2 tegumentary DLCs and associated molecules through the life cycles will be presented. The effect of RNAi knockdown of DLCs and associated molecules on tegument development and maintenance will be reported. **Main Conclusions:** This study will provide insights into molecular complexes associated with the host-interactive surface membrane of schistosomes. This work will illuminate, not only which molecules are associated with the surface membranes, but how those molecules slot functionally into the maintenance biology of that membrane system. This may, in turn, lead to identification of novel targets for vaccination or drug therapy for schistosomiasis. **E-mail:** m.jones@uq.edu.au

Schisto036- **Immunolocalization of Cercarial Secretory Antigen on Different Life Cycle Stages of *S. mansoni* and tissues of infected animals Using Immunoperoxidase Reaction**

Fahmy ZH , El- Komy WA, Ali EM, Sabry HY
Department of Parasitology, Theodor Bilharz Research Institute, Imbaba, Egypt

Background: Although targeted chemotherapy and other public health measures are employed to control schistosomiasis and its spread, there is a need for the development of vaccine and/or new anti-schistosomal drugs. **Objective:** The study was designed to assess the potentiality of prepared immunoglobulins (anti-cercarial secretory antigen) in recognizing antigenic epitopes in different life cycle stages of *S. mansoni*, as well as detecting this cercarial secretory antigen in tissues and blood cells collected from *S. mansoni*- infected mice. **Materials and Methods:** Antigen prepared from *S. mansoni* cercarial secretions was used to immunize rabbits for production of anti-cercarial antibody. Anti-cercarial antibody was purified, tested for reactivity against different concentrations of cercarial antigen, and serially standardized by sandwich ELISA. The life cycle stages of *S. mansoni* were prepared on slides for immunostaining. Representative specimens of liver, spleen and intestine removed from both *S. mansoni* infected mice and healthy controls were sectioned and used to prepare corresponding slides for detection of deposited antigen by Immunoperoxidase staining. Preparation of slides for peripheral blood mononuclear cells was accordingly performed for application of immunostaining. **Results:** Sections of male *S. mansoni* revealed clearly visible Immunoperoxidase reaction. The shell of *S. mansoni* ova and the cercariae exhibited a strong positive reaction, while the miracidium yielded negative reaction. Compared to negative control, tissues of infected mice also revealed weakly positive immunoperoxidase reaction in the liver and the intestine; the spleen on the other hand, showed moderate reaction. Strong positive immunoperoxidase reaction was shown in peripheral blood lymphocytes of infected mice. **Conclusions:** Cercarial secretory antigen expression using immunoperoxidase reaction demonstrated in different *S. mansoni* parasitic stages, in histopathological tissue sections of infected mice as well as mice blood cells, may focus on the importance of antigenic secretions during the stage of skin invasion. Results obtained suggest that this antigen could serve as a potential target for the development of new anti-schistosomal agents. Also its ability to induce any sort of protection against infection in mice may be considered in further studies implicated in vaccine trials. **Keywords:** Cercarial Antigen, Immunolocalization, Experimental Schistosomiasis. **E-mail:** zeinabfahmyh@yahoo.com

Schisto037- Susceptibility of *Biomphalaria tenagophila* and *Biomphalaria straminea* from Argentina to infection with *Schistosoma mansoni* Brazilian strains

Simões LF, Camargo EAF, Bastos LAD, Neves MF, Magalhães LA, Zanotti-Magalhães EM
Department of Animal Biology, Institute of Biology, State University of Campinas

Introduction: The spread of schistosomiasis mansoni southwards in South America and the presence of planorbids vectors of *Schistosoma mansoni* in northeastern Argentina results in that the fields of rice cultivation in the basin of the de La Plata River, where contact of the host with potential vectors is propitiated, may be turned into a possible endemic foci of infection. This research was aimed at studying the susceptibility of Argentinian populations of *B. tenagophila* and *B. straminea* to infection by different strains of Brazilian *S. mansoni*. **Materials and methods**: Specimens of *B. tenagophila* and *B. straminea* used in the research were raised in the laboratory from specimens collected respectively in Atalaya, La Plata River (province of Buenos Aires) and Santa Lucía River, in the province of Corrientes, Argentina, provided to us by Alejandra Rumi. Five strains of *S. mansoni* were used: BH (Belo Horizonte, MG, Brazil), maintained in sympatric *B. glabrata*; SJ (São José dos Campos, SP, Brazil), maintained in sympatric *B. tenagophila*; selected SJ (São José dos Campos, SP, Brazil) maintained in sympatric *B. tenagophila* genetically selected for the susceptibility to *S. mansoni;* BA (Bahia) isolated from a tourist's feces (from Barra Grande, Bahia, Brazil) and maintained in *B. glabrata* from Minas Gerais (Brazil); SE (Sergipe) isolated from *B. glabrata* from Ilha das Flores (SE, Brazil) and maintained in sympatric molluscs. Five groups of *B. tenagophila* and *B. straminea* containing each one thirty copies were individually exposed to 10 miracidia of each *S. mansoni* strains. The molluscs were kept in the laboratory at room temperature and fed with lettuce. From the 4th week of exposure to miracidia and until the 16th week, the molluscs were examined for the release of cercariae stimulated by the action of artificial light and a temperature of 28 ° C. **Results**: At the end of the experiment, we noted the release of cercariae in *B. straminea* exposed to selected SJ and SE strains, both with infection rate of 6.7% and *B. tenagophila* exposed to selected SJ strain, with infection rate of 3.3%. **Conclusion**: These results indicate the susceptibility of *B. straminea* from Atalaya (La Plata River) and *B. tenagophila* coming from the Santa Lucía River, both from Argentina to infection by *S. mansoni* of the Brazilian strains selected SJ and SE. **E-mail:** emzm@unicamp.br

Schisto038- Origin of a Novel Protein-Coding Gene Family with Similar Signal Sequence in *Schistosoma japonicum*

Evaristus Chibunna Mbanefo[1,6], Yu Chuanxin[2], Mihoko Kikuchi[1], Mohammed Nasir Shuaibu[1], Daniel Boamah[1], Masashi Kirinoki[3], Naoko Hayashi[3], Yuichi Chigusa[3], Yoshio Osada[4], Shinjiro Hamano[5] and Kenji Hirayama[1*]
[1]**Department of Immunogenetics, and** [5]**Department of Parasitology, Institute of Tropical Medicine (NEKKEN), Nagasaki University, 1-12-4 Sakamoto, 852-8523, Japan,** [2]**Laboratory on Technology for Parasitic Disease Prevention and Control, Jiangsu Institute of Parasitic Diseases, Wuxi, People's Republic of China,** [3]**Laboratory of Tropical Medicine and Parasitology, Dokkyo Medical University, Tochigi, Japan,** [4]**Department of Immunology and Parasitology, University of Occupational and Environmental Health, Japan**

Introduction: Evolution of novel protein-coding genes is the bedrock of adaptive evolution. Recently, we identified six protein-coding genes with similar signal sequence from *Schistosoma japonicum* egg stage mRNA using signal sequence trap (SST). The present analyses aim at finding the mechanism underlying the origination of this gene family with similar core promoter regions and signal sequence in this zoonotic trematode. **Materials and Methods:** We adopted an integrated approach utilizing whole genome, transcriptome and proteome database BLAST queries, other bioinformatics and genetic analyses, and molecular expression analyses. **Results:** We confirmed the expression of this gene family both at the mRNA and protein levels exclusively in all developmental stages of *S. japonicum*. The signal sequence motif was identified in 27 distinct *S. japonicum* UniGene entries with multiple mRNA transcripts, and in 34 genome contigs distributed within 18 scaffolds with evidence of genome-wide dispersion. No homolog of these genes or similar domain was found in deposited data from any other organism. By repeat masking, we observed preponderance of flanking repetitive elements (REs), albeit partial copies, especially of the

RTE-like (SjR2) and *Perere* (SjR1) class at either side of the duplication source locus. The role of REs as major mediators of DNA-level recombination leading to dispersive duplication is discussed with evidence from our analyses. In addition to a significant balancing selection, we also identified a stepwise pathway towards functional selection in evolving genes by alternative splicing. Equally, the possible transcription models of some protein-coding representatives of the duplicons are presented with evidence of expression *in vitro*. We hope to also present data on the molecular characterization of this protein family. **Main Conclusion:** Our findings contribute to the growing evidence of the role of REs in the generation of evolutionary novelties in organisms' genomes. *S. japonicum* has wide range of mammalian hosts including humans, buffalo, cattle, pigs, rats, etc. and produces more severe hepatic pathology in comparison with *S. mansoni*. Evolution of novel secreted protein-coding genes after its divergence could account for these distinctive characteristics. **E-mail:** evari4u@yahoo.com

Schisto039- **A Combined Proteomic and Immunological Analysis of Excretory-Secretory Products of *Schistosoma japonicum* Adult Worms and Eggs**

Guan Fei, Xu Hong, Su Bing-tao, Liu Wen-qi [*], Lei Jia-hui, Li Yong-long
Department of Parasitology, Tongji Medical College, Huazhong University of Science and Technology, Wuhan 430030, P. R.China

Abstract: Excretory-secretory products (ESPs) are the majority of worm components which can be directly recognized by host immune system and sequentially induce the development of specific antibodies or other immune response. Own to the widespread application of protein multidimensional physic-chemical separation followed by Mass Spectrometry (MS)-based detection of proteolytic peptides in the last decade, however, the ESPs of *Schistosoma japonicum* adults and eggs, the main life cycle stages in final host, the latter also known as the major pathogenic agent of schistosomiasis, still require systematical investigation. Especially, the differential analysis on immuno-related ESPs and exploration of biomarkers of infection from ESPs should be highlighted. In our current study, a high throughput proteomic approach combined by MS with Two-dimensional gel electrophoresis (2-DE) was used to identify living-adult worms and living-eggs ESPs. The immunoreactions of ESPs with rabbit sera collected at two or six weeks after *S.japonicum* infection have been also studied. By 2-DE, we identified 166 protein spots from adult ESPs and 138 protein spots from egg ESPs. Of these spots, 48 and 34 spots were larger and clear, which may indicate the abundant proteins of *S.japonicum*. Twelve protein spots were identical in both eggs and adult worms, 24 spots were stage-specifically expressed in adult worms and 16 spots were egg-specifical. Protein spots of specific expression and relatively abundant yield or positive in immunoblot assay were excised after precisely matching with the homologous gels. Next the spots were analyzed by MALDI- TOF/TOF. The abundant proteins of adult worms revealed a confident constituent of glutathione transferase, aldolase, metallothionein, fatty acid binding protein, glycolate oxidase, D-glucuronyl C5-epimerase, CBN-MOP protein, and homeobox protein. Other putative proteins included amino peptidase, Cystathionine β-lyase(CBL), myosin(Bm), M-phase phosphor protein, lactoferrin (CLF), Dicer-2, cAMP response element (CRE), SLD-5 protein, and M-phase phosphor protein. Of these proteins, CBL, homeobox, CBN-MOP protein and putative myosin of *Brugia malayi*-origin could be recognized by infective sera of two weeks. Dicer-2 protein and glycolated oxidase were reactive with sera of six weeks post infection. Eleven spots of egg-secretory proteome were sorted out to analyzed by MS, an enolase of cestode-origin was found to strongly react with early-infected sera. Another putative CAP-Gly-domain protein was weakly recognized by sera of early infection. In brief, we identified total 166 and 138 proteins from ESPs of adult worms and eggs, respectively, which mainly involved in redox balance, protein folding, development and signaling, scavenging, metabolic pathways, and immune response modulation. Moreover, five proteins have been screened to be potential in early diagnosis for schistosomiasis japonica. **Supported by:** National Natural Science Foundation of China (No. 30972571).**E-mail:** liu_wq2002cn@yahoo.com.cn

Schisto040- Video on schistosomiasis in the State of Ceará tool for training of health professionals

Ribeiro, J. H. Farias[1]; Gomes, V. S[1], Gomes, R. G. A.[1]
Secretaria da Saúde do Estado do Ceará[1]

Schistossomosis prevails in tropical and subtropical areas, especially in poor communities, with no access to potable water and without waste water treatment. It is estimated that at least 90% of the people needing treatment for Schistossomosis live in Africa. In Brazil, it is estimated that Schistossomosis mansoni is found in 2.5 to 6.0 million people residing in rural communities mainly, as well as expanding to urban centers where weak sanitation conditions. Understanding *Schistossomosis mansoni* transmission dynamics is crucial component to surveillance and control of it. Thus, this kinf of information represents an important instrument to guide professionals of health institutions that are responsible to surveillance and control of the disease. The necessity to elaborate a systemic instrument to subside the process of health personnel capacitation (health community agents – HCA and endemic disease fighter agents – EDFA) through an audio visual tool is fundamental to fortify the segment of Health Education. It will stimulate the development of skills and potential of professionals so that they can act effectively in his area. **Objective:** Contribute as didactics material to increase professionals' capacities in Health (HCA and EDFA) in order to execute their prophylactic activities against Schistossomosis mansoni in the counties of HEALTH REGIONAL COORDENATIONS – HRC. **Materials and Methods:** Audio visual production, emphasizing prophylactic measures against Schistossomosis mansoni as well as the flow from primary disruption up to treatment. The video might stimulate health personnel, leading them to fully comprehend the disease. Through the activities developed in the counties it can stimulate cooperation through the themes explained daily in class, and involve them with communities' members. **Conclusion:** The audio visual methodology through a localized contextualized reality, and as an information component to health professionals contribute in a satisfactory way to comprehend the eco epidemiologic aspects that incisively interfere to the disease cycle. So, this educational media has shown itself as a powerful tool to fight against this disease. **E-mail:** hibiss@ig.com.br

FILIARIASIS

Filar001- Mapping of *Wuchereria bancrofti* infection in children and adolescents in an endemic area of Brazil

Brandão, E.[a,b], Bonfim, C.[c], Cabral, D.[a], Lima, J.C.[d], Aguiar-Santos, A.M.[a], Maciel, A.[b], Medeiros, Z.[a,e]
[a]Parasitology Department, Aggeu Magalhães Research Center, Oswaldo Cruz Foundation, PE, Brazil [b]Postgraduate Course on Tropical Medicine – Federal University of Pernambuco, PE, Brazil [c]Social Research Department, Joaquin Nabuco Foundation, PE, Brazil [d]Secretary of Health of Jaboatão dos Guararapes, PE, Brazil [e]Pathology Department, Institute of Biological Sciences, University of Pernambuco, PE, Brazil

Introduction: A parasitological survey was conducted among children and adolescents in the municipality of Jaboatão dos Guararapes, Brazil to describe the occurrence and spatial distribution of lymphatic filariasis. **Material and Methods:** Microfilaraemia was investigated through the thick smear technique, using 50µL of capillary blood that was collected at night. The spatial analysis used a digital base map of the municipality, divided into districts, which were classified as hypoendemic, mesoendemic or hyperendemic. **Results:** 8670 children were examined and 96 cases of microfilaraemia were identified (1.1%). The prevalence rate did not differ significantly between the sexes. Occurrences of filarial infection increased with increasing age: the greatest prevalence was recorded between 15 and 18 years of age (P < 0.05). There were 49 reports of clinical manifestations. The spatial distribution of microfilaraemia according to residential district showed that 13 (54.2%) of the 24 districts investigated were positive. Approximately 33% of the districts were hyperendemic. **Conclusions:** The results demonstrated that the pediatric population had intense early exposure to the parasite, thus characterizing filariasis as endemic in the municipality. The spatial analysis allowed identification of areas with greater occurrence of infection

among children, and showed localities where the populations most exposed to transmission were concentrated. Epidemiological surveillance of microfilaraemia among children and spatial analysis are important local transmission indicators and form instruments for planning actions within the Global Program to Eliminate Lymphatic Filariasis, since they make it possible to identify priority areas. **E-mail:** brandaoe@cpqam.fiocruz.br

Filar002- **The role of spatial analysis and social deprivation index for Lympactic filariasis control in Brazil**

Bonfim C[1]; Brandão E[2]; Aguiar-Santos AM[2]; Portugal JL[3]; Medeiros Z[2,4]
1Fundação Joaquim Nabuco, Recife, Brazil 2 Centro de Pesquisas Aggeu Magalhães, Fundação Oswaldo Cruz, Recife, Brazil 3 Universidade Federal de Pernambuco, Recife, Brazil 4 Universidade de Pernambuco, Recife, Brazil

Introduction: In Brazil, the Program for the Elimination of Lymphatic Filariasis points to the definition of synthetic risk indicators based on stratification of urban space, as one its main strategies. To find which areas present greater risk, the deprivation index reflects differences in living conditions relating to the social organization of the space and, consequently, differences in the filariasis transmission risk. One important component in planning filariasis control activities is detailed mapping of the spatial distribution of infection. The aim of this study was to show how composite living condition indicators can be used to identify areas in urban space with higher risk of transmission. **Material and Methods:** An ecological study was made in the municipality of Jaboatão dos Guararapes, in Brazil. The unit of analysis was the census tracts (CT). The study was divided into three phases: first involved analysis of data gathered during an epidemiological investigation; then two living conditions indicators were drawn up and the relation between these indicators and the levels of prevalence of microfilaraemia analyzed. In the third phase, the positive cases were georeferenced with a view to identifying the spatial concentration using the *Kernel* intensity estimate. Two composite living conditions indicators were calculated: the calculation of scores (an indicator of socioenvironmental risk) and factor analysis by principal components (an indicator of social deprivation). **Results:** Of the 23,673 individuals examined, 323 had microfilaraemia (1.4%). The prevalence in the CTs ranged from 0,1 to 25%. According to the two indicators, a greater prevalence was found in the high-risk strata, an association confirmed by the *Kernel* intensity estimate. **Conclusions:** The indicators – elaborated using data of environmental conditions – can be used to identify priority areas for policy interventions. Using the indexes and the prevalence obtained, the areas were classified by their level of priority. Areas that showed higher risk will be perceived as priority in the application of mass drug administration. This study indicated that socioeconomic and environmental factors are relevant in identifying priority areas in urban spaces for interventions by the surveillance services and in planning filariasis control. The spatial analysis also proved to be an important tool for building up a territorially based surveillance system. These indicators, used in association with spatial analysis, are instruments for identifying priority areas of intervention. **E-mail:** cristine.bonfim@uol.com.br

Filar003- **Frequency of *wuchereria bancrofti* infection in school-age children in the neighborhood of Sapucaia, Olinda, Recife metropolitan area, Pernambuco – Brazil, through card ICT technique**

Silva, JSF[1]; Craveiro, NJA[1]; Lima, JA[1]; Barros, MRG[1]; Oliveira, P.[1]; Aguiar-Santos, AM[1]; Rocha, A[1].
[1] - Filariasis National Reference Service– CPqAM / FIOCRUZ–PE

Introduction: The lymphatic filariasis affects about 110 million people worldwide. Currently, In Brazil, only the metropolitan area of Recife (MAR) in the state of Pernambuco is considered an endemic area. Nowadays, the number of infected individuals who have low or none levels of microfilaraemia is increasing, which reduces the sensitivity of parasitological diagnosis of this disease. Therefore more sensitive tests has been used, for instance the circulating filarial antigen (CFA) detection in order to confirm the infection by Wuchereria bancrofti. Among these techniques, we highlight the ICT card test, which is a rapid immunochromatographic assay, what its result can be read in 10 minutes. OBJECTIVES: This study evaluated the frequency of infection by W. bancrofti in school-age children in the neighborhood

of Sapucaia, located in the city of Olinda, RMA, Pernambuco - Brazil, using the ICT card technique. **Materials and Methods:** For the ICT card test, digital lancing was performed on each of 337 school-age children randomly selected, residents in the neighborhood of Sapucaia, to collection of about 100µL of blood in a heparinized capillary. **Results:** Of the 337 children evaluated, whit the age ranged from 5 to 18 years, 22 (twenty two) antigen-positive individuals (6.52%), were identified. Among them, 16 (72.7%) were male and 6 (27.3%) were female. In parallel, the nocturne Filtration in Polycarbonate Membrane (NF) technique was performed) in positive patients for ICT, and just 1 (one) was considered positive by that technique. **Conclusion:** The use of ICT Card Test was more sensitive than the NF technique. The observed frequency in pediatric patients (6.52%) using the ICT card technique is a warning in according of the criteria of the World Health Organization (WHO) and indicates that active transmission is occurring in the area. In some areas of the city of Olinda the collective treatment with diethylcarbamazine (DEC) has already begun, which is part of the program of elimination and control of lymphatic filariasis proposed by WHO and the Brazilian Ministry of Health (MOH). The results obtained in this work, associated with other epidemiological data will serve as support for the implementation and management of the collective treatment program in the studied neighborhood, as part of the Global Plan to Eliminate Lymphatic Filariasis (GPRLF), advocated by the WHO, whose goal is the elimination of all outbreaks of the disease by 2020. **E-mail:** jennifer@cpqam.fiocruz.br

Filar004- **Detection of *Wuchereria bancrofti* infection in *Culex quinquefasciatus,* vector of lymphatic filariasis in Brazil**

Araújo, T. A.; Ayres, C. F. J.; Albuquerque, A. L.; Oliveira, C. M. F.
Departamento of Entomology, Centro de Pesquisas Aggeu Magalhães/FIOCRUZ, Recife-Brazil.

Introduction: Lymphatic filariasis is a disabling disease, and in Brazil it is caused exclusively by the parasitic worm *Wuchereria bancrofti*, transmitted by the mosquito vector *Culex quinquefasciatus*. It is a disease worldwide distributed; with an estimated 120 million people infected in 80 countries in tropical regions. In Pernambuco State, the endemic areas are located in the cities of Recife, Jaboatão, Olinda, Paulista and Cabo de Santo Agostinho. The World Health Organization (WHO) has launched the Global Programme to Eliminate Lymphatic Filariasis (PGEFL), aiming to eradicate the disease by 2020, through mass drug administration with the anti-filarial drug diethylcarbamazine citrate (DEC) or other associated drugs. **Material and Methods**: In order to monitor the efficiency of the filariasis control program in Olinda, where the microfilaria prevalence in the human population is > 1%, we have estimated the *W. bancrofti* infection rate in *C. quinquefaciatus.* About 5,000 mosquito females were collected in six districts (Alto da Bondade, Alto da Conquista, Sapucaia, Vila Popular and Caixa d'Água) before starting the mass treatment. Samples were examined by Polymerase Chain Reaction (PCR) to detect *W. bancrofti* DNA. **Results**: Of 999 pools assayed by PCR (pool size **=** 5), four were positive for the presence of *W. bancrofti* DNA. All positive samples were from the district of Vila Popular. The vector infection rate is this district was 0.43%, corresponding to pre-mass treatment, while in the other remaining districts there were no positive pools. **Main Conclusions**: Our data show that the transmission cycle of *W. bancrofti* remains active in the city of Olinda, which reinforces the importance of monitoring vector infection in the these endemic areas during the filariasis control program. The vector infection rate is an important indicator to evaluate the effectiveness of PGEFL strategies deployed in endemic areas. **E-mail:** tattinha_araujo@hotmail.com

Filar005- **Lymphatic Filariasis - investigating suspected cases in Jequitinhonha Municipality, Minas Gerais State, Brazil, 2011**

Soares, P. A.; Costa, D. P.; Duarte, H. H. P.
State Health Secretary of Minas Gerais (SHS/MG), Brazil.

Introduction: Lymphatic Filariasis (LF) is a parasitic disease caused by the nematode *Wuchereria Bancroft,* in Brazil, and transmitted by the bite of the mosquito *Culex quinquefasciatus.* The worm lives and damages the lymphatic vessels and can cause clinical manifestations. Today, the only endemic area in Brazil is in some suburbs of Recife, the capital of Pernambuco State. On June 16, 2011, SHS-MG

received the notification of three confirmed cases of LF in the Municipality of Jequitinhonha, diagnosed by the thick smear method (TS) in a local laboratory. The surveillance investigated the event promptly. **Material and Methods:** search for suspected cases were done between the residents assisted by care units of Jequitinhonha. Data sources were medical records and home interviews, all registered in a semi-structured questionnaire. Serological (Circulating Filarial Antigen-CFA) and parasitological (Blood filtration-BF) exams were done in blood samples collected of all suspected cases and sent to the National Laboratory Aggeu Magalhães Research Center (AMRC) for LF in Recife, Pernambuco. **Results:** Twenty (20) suspected cases were identified; nine (45%) were male with a median age of 61,5 years; 17 (85%) of them had associated diseases; 12 (70,6%) of them had cardio circulatory disorders. Three patients had lower limb lymphedema without any associated disease: they were all female aged 37, 70, and 87 and had the lymphedema for 14, 25 and 80 years, respectively. The oldest patient had a history of living for 32 years in Pernambuco were her symptoms began when she was 7 years old. All the laboratory results were negative. TS blades reviewed in AMRC were all negative too. **Conclusions:** LF was not confirmed in Jequitinhonha. However, the possibilities of transmission cannot be excluded with certainty yet, for such reasons as: low positivity for LF laboratory tests commonly found in endemic areas; a high percentage of asymptomatic people between those infected; diagnostic methods with false-negative results, even in patients with adult worms, which depends on how long a person is infected. At the end of the investigation it was recommended to structure surveillance for lymphatic edema of unknown etiology in Jequitinhonha Municipality**. E-mail:** patricia.asoares@gmail.com

Filar006- **Standartization of enzyme immunoassay for lymphatic using *Brugia malayi* recombinant antigen, Bm14, with blood samples on filter paper**

Craveiro, NJA[1]; Silva, JSF[1]; Alcantara, PF[1]; Lorena, VMB[1]; Rocha, A[1].
1 – Filariasis National Reference Service – CPqAM / FIOCRUZ–PE

Introduction: The Bm14 antigen was selected from a *Brugia malayi* cDNA library, being recognized in the serum of patients affected by *Wuchereria bancrofti* and *B. malayi* lymphatic filariasis. The detection of specific antibody to the Bm14 filarial recombinant antigen is a new perspective for the serological diagnosis of lymphatic filariasis. **Objective:** This study aims to standardize an enzyme immunoassay for detection of IgG4 against Bm14 antigen in blood samples collected on filter paper in Brazil. **Methods:** Plates were coated with recombinant Bm14. Approximately 60µL of blood on filter paper for 7 (seven) patients were collected. The samples were cut with a radius 0.25 cm perforator, and were processed at concentrations of pure, 1:20, 1:50, and the serum sample at a concentration of 1:100. We evaluated two final volumes of reaction (50µL and 100µL) in order to define the most cost-effective. To determine the optimal concentration of anti-IgG4 antibody conjugated to peroxidase was carried titration of 1:500 and 1:1000. **Results:** It was verified that the use of 50µL final volume per reaction showed results similar to those which were used 100mL. We found that a dilution of 1:1000 in the 2nd antibody is the best option tested for this reaction. About the samples, only in the pure samples the antibody concentration was possible to differentiate positive and negative samples. **Conclusion:** Titration of anti-human IgG4 conjugated to peroxidase was determined at a concentration of 1:1000 final volume to 50µL of reaction, optimizing the cost of the technique and the amount of sample and material used. The implementation of the ELISA technique for detection of anti-Bm14 IgG4 using blood samples collected on filter paper proved to be feasible, but more studies are required to validate this technique, evaluating a larger number of samples from different regions of Brazil. **E-mail:** nykon@hotmail.com

Filar007- **Laboratory Diagnosis of *Wuchereria bancrofti* in the Tropical Medicine Foundation - "Dr Heitor Vieira Dourado"**

[a,b]Martins, M; [a]Nascimento, VL; [a]Soares, ARL [a]Tavares, JM; [a] Silva, MAT; [a] Martins, AG; [a]Oliveira, VCM;[a,c]Arcanjo, AR
[a]**Fundação de Medicina Tropical - Doutor Heitor Vieira Dourado - FMT-HVD, Manaus, Amazonas, Brasil ;** [b]**Universidade do Estado do Amazonas - UEA - Manaus, Amazonas, Brasil;** [c]**Laboratório Central de Saúde Pública - LACEN - Manaus, Amazonas, Brasil**

Introduction: Lymphatic filariasis caused by *Wuchereria bancrofti* is considered a serious public health problem in several regions of the world. It is estimated that there are 1.2 billion people living in endemic areas, this amounts to one fifth of the world population. Of these, about 120 million are already infected. In the Americas, about 6.5 million people live in areas where transmission of the disease is active. There are currently outbreaks of endemic disease in the Guianas, Brazil, Dominican Republic, Costa Rica, Haiti, Suriname, Trinidad and Tobago and Brazil and Haiti the main foci of the disease in the Americas. The city of Manaus, Amazonas, has been endemic for the parasite in the 50s, with prevalence rates of 0.2%, after which time the parasite has ceased to be diagnosed. With immigration from Haiti to the city of Manaus, there is mobilization of the health department of Amazonas State for the diagnosis and treatment of patients with this filariasis. **Objective:** Conduct Laboratory diagnosis of *Wuchereria bancrofti* in patients treated at the Tropical Medicine Foundation of Amazonas "Dr Heitor Vieira Dourado". **Materials and Methods:** We used the following methods for the diagnosis of the parasite: a thick smear of blood from digital puncture after 22:00, cardboard rapid immunochromatography (ICT card test BINAX ®), and the quantitative methods of polycarbonate membrane and Knott, in patients from Haiti, which are monitored by the medical FMT-HVD. Genomic DNA was amplified by PCR and products were visualized by electrophoresis on 2% agarose gel stained with ethidium bromide, visualized in UV transluminator. **Results:** Six blood samples showing to be positive for microfilariae *W. bancrofti*, were from Haitians, whose average age was 31.8 years, all males. The blood was evaluated by the following diagnostic methods and their respective prevalence of positivity: peripheral thick blood smear and immunochromatography showed 100% positivity; Quantitative methods polycarbonate membrane and Knott had an average of 41.5 and 31.8 mf/mL respectively. One immigrant (16.7%) showed *Mansonella ozzardi* and *W. bancrofti* concurrently. The size of the PCR products after the second amplification corresponded to the expected size of approximately 310bp.**Conclusion:** Patients referred for medical care in the FMT-HVD, from Haiti, were positive for the parasite, diagnosed by specific methods. The Management of Parasitology FMT-HVD is able to diagnose the parasite and use various methods for the diagnosis. **Keywords:** Diagnóstico, *Wuchereria bancrofti,* Manaus, Amazonas, Brasil, Haiti. **E-mail:** marilaine@fmt.am.gov.br

Filar008- **Molecular characterization of *Dirofilaria immitis* adult worms from ectopic migration in a dog**

Leles, D.[1]; Sudré, A.P.[1]; Millar, P.R.[1]; Mattos, D.P.B.G.[1]; Uchôa, F.[2]; Brener, B.[1]
[1]Universidade Federal Fluminense, Niterói, Rio de Janeiro, Brazil, [2]Laboratório Clínico Veterinário Flávia Uchôa, Niterói, RJ, Brazil

Introduction: Molecular studies of helminthes have shown genotypic differences related to its location inside the host. Thus, molecular studies can demonstrate genetic similarities and/or differences between *D. immitis* species that perform a normal life cycle and those that present erratic migration. **Objective:** characterize molecularly *D. immitis* isolated through necropsy from ectopic and natural location in a dog raised in Niteroi municipality, RJ. **Material and Methods:** After necropsy and morphological identification, five *D. immitis* adult worms were collected for molecular diagnosis. Worms were located in the heart (n=1), in the pulmonary artery (n=2), and in the abdominal cavity (n=2). DNA extraction followed by PCR for mitochondrial target 12S (barcoding gene) for *D. immitis* were performed for all five adult worms. All the amplified products were sequenced. **Results:** All the sequences analyzed were identical, regardless the place from where the parasites were recovered. The sequences showed 100% similarity when compared to sequences from *D. immitis* specimens isolated from dogs in Italy and Australia (access number AM779770, FN391554, AJ537512), cats in Italy (access number AM779769, AM779771), and from red panda in China (EU182327). However, erratic migration was only observed in one of those previous studies (access number FN391554). Additionally, the sequence showed 96% similarity with one isolate from a human intraocular dirofilariasis case previously reported in Brazil (access number HQ540423). **Main Conclusions:** the fact that the sequences recovered from worms collected in natural and ectopic locations were identical among them and when compared with sequences from worms isolated in cats and dogs from other parts of the world, suggests the need for more genotyping studies with other gene targets and with more isolates. Therefore obtaining a more complete molecular

epidemiology of this parasite in Niterói, since it is a zoonosis with a number of cases diagnosed in our country **E-mail:** dleles@id.uff.br

Filar009- **Productivity of the laboratory of the filariasis national reference service (L-FNRS) between 2010 and 2011**

Craveiro, NJA[1]; Silva, JSF[1]; Lima, JA[1]; Barros, MRG[1]; Brandão E[1], Moreira, MJT[1]; Beliz, F[1]; Albuquerque, MBC[1]; Aguiar-Santos, AM[1]; Medeiros, Z[1]. Rocha, A[1].
1 – Filariasis National Reference Service – CPqAM / FIOCRUZ–PE

Introduction: The filariasis national Reference Service In (FNRS) meets the demands of the Brazilian Ministry of Health (MOH) since 1986, providing clinical care, urology, ultrasound and laboratorial analysis to patients from the various health services in all states of Brazil, to the investigation of filariasis . The laboratory activities are developed in the Laboratory of the NATIONAL REFERENCE SERVICE IN FILARIASIS, where the Drop Thick (DT), Nocturne Filtration of Blood in Polycarbonate Membrane (NF), Knott Technique, Test Card ICT (ICT) and Og4C3-ELISA techniques: are performed. OBJECTIVE: The objective of this study was to analyze the productivity of the (L-FNRS) between the years 2010 and 2011 in order to verify the quantitative of each technique for diagnosis of lymphatic filariasis performed by the laboratory. **Methods:** The method used was the descriptive and quantitative data analysis, where the books were checked for records of the techniques of DT, NF, Knott, ICT and Og4C3-ELISA performed in the years 2010 and 2011 in the L-FNRS. **Results:** The productivity of the L-FNRS consists of exams via the Clinic FNRS (C-FNRS) and the research project linked to the a FNRS. The numbers of performed NF, DT, Knott, ICT and Og4C3 in 2010 was 639, 195, 181, 451 and 224, respectively. Having a monthly average of 53 NF tests, 16 DT tests, 15 Knott exams, 37 ICT exams and 18 Og4C3 exams. In the year 2011 were performed 326 NF, 163 DT, 151 Knott, 541 ICT and 26 Og4C3 exams, with monthly average for the techniques of 27, 13, 12, 45, 2, respectively. **Conclusion:** There is a significant reduction in the number of NF tests between the years 2010 and 2011 due to completion of projects. On the other hand, the numbers of examinations performed with ICT increased due to the implementation of a new research project in areas of the Metropolitan Region of Recife (MRR). It is observed a drastic drop in the number of tests by the technique of Og4C3 due to a problem in the kit provided. Importantly, the maintenance and use of these techniques recommended by the World Health Organization (WHO) and Brazilian Ministry of Healthy are critical for accurate and conclusive diagnosis, and for the intervention and implementation of the treatment in endemic areas with antifilariais drugs as well,, according to the Plan for Global Elimination of Lymphatic Filariasis (PGELF) whose goal is the elimination of all outbreaks of the disease by 2020, using strategies as mass treatment of populations living in endemic areas. **E-mail:** nykon@cpqam.fiocruz.br

Filar010- **Presence of atypical microfilariae in an endemic area of mansonellosis of Brazilian Amazonia**

Ta Tang TH1, Luz SLB2, Merino FJ3, Fuentes I1, López-Vélez R4, Almeida TAP2, Lanza M1, Abrahim CMM5, Rubio JM1.
1Parasitology Department. Instituto de Salud Carlos III. Madrid, Spain.2Instituto Leônidas e Maria Deane. Fiocruz. Manaus, Brazil. 3Microbiology Department. Hospital Severo Ochoa. Madrid, Spain 4Department of Infectious Diseases. Hospital Ramón y Cajal. Madrid, Spain. 5Fundação de Hematologia e Hemoterapia do Amazonas - HEMOAM, Brazil

Introduction: Mansonellosis is a filarial disease caused by nematodes of the genus Mansonella and transmitted by the bite of bloodsucking insects (Simulium, Culicoides). Two species are described in Latin America, M. ozzardi and M. perstans. Microscopic examination of the peripheral blood is the golden diagnostic method. In the last decade, a number of unidentified/atypical microfilariae have been described in different regions of America based on morphological characteristics with the suspicious that they could belong to an unknown human filarial species. The objective of this report was the characterization of filariae present in the inhabitants of Pauini, a mansonellosis endemic area of Amazonas State in Brazil, and determines the frequency of atypical microfilariae into the population. **Materials and Methods:** 40

individuals were analyzed. The diagnosis was performed by Giemsa-stained blood film and by a Filaria Nested PCR plus enzymatic digestion which is able to differentiate filarial species by fragment size. Furthermore, amplified fragments were purified and sequenced for species confirmation. In case of discrepancies blood films were re-examined blindly by 6 experienced microscopists and PCR was repeated twice. **Results:** Fourteen of 40 samples analyzed by microscopy were positive (35%), meanwhile the FnPCR detected five other positive cases (47.5%). M. ozzardi was the only species detected by the FnPCR. Instead, microscopy characterized eleven samples as M. ozzardi and the other three were described as atypical Mansonella microfilariae (21.4%). The description included no sheath, unusual size (range 126-180 x 3.6 ☐m), short cephalic space, nuclei that reached the tip of the tail, blunt and less attenuated tail than M. ozzardi. Based on the microfilaria morphology 5 out of 6 microbiologists suggested a possible similarity with M. perstans and only one identified the samples as M. ozzardi. Repetition of the PCR resulted in M. ozzardi, likewise the alignment of these sequenced fragments with all filarial species also presented maximum similarity with M. ozzardi. **Conclusions:** The predominant filariae found in the area were M. ozzardi. More than 20% of microfilariae present in the Pauini inhabitants showed an atypical morphology, which several microscopists characterized as M. perstans. Molecular methods including sequencing showed that these atypical microfilariae corresponded to the M. ozzardi group. **E-mail:** jmrubio@isciii.es

Filar011- Morphological and molecular diagnoses of *Mansonella ozzardi* (Nematoda, Onchocercidae) in the municipalities of Codajás and Tefé, Amazonas, Brazil

[a, b, e]Tavares, JM; [c]Nascimento, VL, [c]Soares, ARL, [b] Silva, MAT, c, [e]Martins, M.
[a]Universidade Literatus - Unicel, Manaus, Amazonas, Brazil, [b]Scholar the Support Program for Scientific Initiation - PAIC-FAPEAM, [c]Foundation of Tropical Medicine - Dr Heitor Vieira Dourado Management Parasitology, Manaus, Amazonas, Brazil., Paulista University - UNIP, Manaus, Amazonas, Brazil, [e]University State of Amazonas, Manaus, Amazonas, Brazil Coordination Department of Parasitology and Mycology

Introduction: Mansonelliasis is a filariasis, caused by the accumulation of microfilariae in human peripheral blood vessels, one of which etiologic agents is *Mansonella ozzardi.* The adult forms of *M. ozzardi* are found in the mesentery and serosa of the abdominal cavity. The juvenile forms, called microfilariae are found in peripheral blood stream and in some cases also in the subcutaneous tissue capillaries. Classic symptoms of other infectious diseases like mild fever, joint pain, headache and paresthesia inguinocrural adenitis with sensation of coldness in the legs. It has a wide geographical distribution in the Americas and in Brazil the state of Amazonas is endemic to it, being found in high prevalence at several municipalities. For the morphological diagnosis of the parasite is used thick smears of peripheral blood stained with Giemsa were used for the morphological diagnosis of the parasite. Molecular methods show to be important tools for gathering genetic information on the parasite. **Objective:** morphological and molecular diagnoses of M. ozzardi carriers in the municipalities of Codajás Tefé, AM, Brazil. **Materials and Methods**: We used a blood smear stained with Giemsa and examined it under an optical microscope. The microfilariae were identified according to the WHO protocol (1997) and Post et al. (2003). DNA extraction from the whole blood samples (200μL) was performed with the QIAmp ® DNA Mini Kit (QIAGEN), following the manufacturer's instructions. Dried blood spots on filter paper were processed using the Chelex method. Sequences for 18S (small subunit ribosomal RNA), ITS1, 5.8S and ITS2. Genomic DNA was amplified by PCR and products were visualized by electrophoresis on 2% agarose gel stained with ethidium bromide, visualized in UV transluminator. **Results**: We collected 81 whole blood samples from residents of rural and urban areas of Tefé and Codajás AM municipalities known to be endemic to filariasis. 15/81 (18.6%) of the samples were positive and identified as Mansonella ozzardi, small in size with average length of 162μm and 4.0 mm thick, without sheath and tail long, slender, pointed and without cores. The size of the PCR products after the second amplification corresponded to the expected size of approximately 305bp. **Conclusion**: The morphological characteristics of the microfilariae in whole blood were obtained from *M. ozzardi* and genomic DNA obtained from the filter paper in the amplified expected size. **Keyword**: Diagnosis, Mansonella ozzardi, Amazonas, Brazil. **E-mail:** julianamonteirotavares2@gmail.com

Filar012- Experience report of Treatment Collective Filariasis occurred in the period 2008 to 2011 in the Sanitary District V - Recife / PE / BRAZIL – 2011

Lima, ICR *; Markman, ATL *, Araujo, GR *, Almeida Jr., JA *, Luis LF,* Melo, CR
City of Recife / Secretariat and Health

Introduction: Despite great advances in science and technology, Bancroftian lymphatic filariasis, a major cause of deformities and disabilities, reaches a large number of people living in poor sanitation in developing countries. It is a disease caused by Wulchereria bancrofti, affects only humans, transmitted by the female Culex quinquefaciatus. In Brazil, the Metropolitan Region of Recife is considered one of the main foci of disease. In 2003, the program "Xô Filariose" was implemented in order to eradicate the disease in the city, from the Collective Treatment (CT), which consists in treating people living in areas covered by the Family Health Program (PSF) and Health Agents Community Program (PACS), held in neighborhoods identified as endemic through the Epidemiological Survey in 2000, by Ageu Magalhães Research Center - Oswaldo Cruz Institute Foundation. In Sanitary District V (V DS), treatment began in 2008. **Objective**: To report the experience of the V DS CT Filariasis in the period 2008 to 2011. **Methodology:** The DS V promoted the mobilization and training of all health professionals. The target population of the TC was aged 4-65 years living in the neighborhoods of Afogados, Mangueira and Mustardinha. The exclusion criteria included pregnant women, nursing mothers, children under 4, subjects over 65 years and those with not controlled chronic diseases. Medication was diethylcarbamazine, administered according to age and sex by Community Health Workers in the home and in the Health Units of the locality. The eligible population was updated annually with a goal of treating at least 80%. The Site Sentinel was used as an indicator of outcome and in 2012 the use of immunochromatographic assay (ICT Card Test) will be used. A total of 1000 tests was conducted by thick drop in subsequent years to the CT, which occurred in 500 fixed streets, selected by the risk criteria, and another 500 in rotation covering the entire neighborhood. **Results:** The average eligible population in the four years of CT was 38,528 people, whose coverage ranged from 68 to 87%, reaching the target just the in the last two years. At first there was resistance in the population adherence to CT for not understanding the importance of prevention in breaking the chain of disease transmission. The percentage of refusals was 3.5%. **Conclusion:** We observed that the results met the objectives, through the absence of positivity in these neighborhoods. There is a constant need to improve the quality of housing and sanitation and the adoption of measures to combat the vector, strengthening the effectiveness in elimination the disease. **E-mail:** izabellimabebel@bol.com.br

Filar013- A case series study: lymph scrotum as an unusual urological presentation of lymphatic filariasis

Aguiar-Santos, A. Maria[1], Leal-Cruz, M.[1], Netto, M.José [1], Carreira, A. [1], Lima, G [2] & Rocha, A [1]
[1] Centro de Pesquisas Aggeu Magalhães, Serviço de Referência Nacional em Filarioses, Fundação Oswaldo Cruz/Fiocruz, Recife, PE, Brasil. [2] IMIP/Instituto Materno Infantil Prof. Fernando Figueira, Recife, PE, Brasil.

Introduction: Lymphatic filariasis (LF) causes a wide range of clinical signs and symptoms, including urogenital manifestations. Transmission control and disability/morbidity management/control are the two pillars of the overall elimination strategy for LF. Lymph scrotum is an unusual urological clinical presentation of LF with important medical, psychological, social and economic repercussions. **Material and Methods:** A retrospective case series study was conducted on outpatients attended at the National Reference Service for Filariasis, in an endemic area for filariasis (Recife, Brazil), between 2000 and 2007. **Results:** Over this period, 6,361 patients were attended and seven cases with lymph scrotum were identified. Mean patient age was 45 years (range, 26 to 64 years). Mean disease duration was 8.5 years (range, two to 15 years). All patients had evidence of filarial infection from at least one laboratory test (parasitological, antigen investigation or "filarial dance sign" on ultrasound). Six patients presented histories of urological surgery. **Main Conclusions:** The authors highlight the importance of the association between filarial infection and the inadequate surgical and clinical management of hydrocele in an endemic area, as risk factors for lymph scrotum. Thus, filarial infection should be routinely investigated

in all individuals presenting urological morbidity within endemic areas, in order to identify likely links in the transmission chain. **E-mail:** amas@cpqam.fiocruz.br

Filar014- *Wuchereria bancrofti* asymptomatic infection in male Haitian immigrants in Manaus, Amazonas, Brazil

Martins A[1], Oliveira V[1], Safe I[1], Beltrão R[1], Martins M[1,2], Guerra MVF[1], Albuquerque BC[2], Arcanjo ARL[2], Alecrim MCG[1,4],Lacerda MVG[1,2,4]
1. Fundação de Medicina Tropical Dr. Heitor Vieira Dourado (FMT-HVD), Manaus, Amazonas, Brazil 2. Universidade do Estado do Amazonas (UEA), Manaus, Amazonas, Brazil, 3. Fundação de Vigilância em Saúde do Estado do Amazonas (FVS-AM), Manaus, Amazonas, Brazil, 4. Universidade Nilton Lins (UNL), Manaus, Amazonas, Brazil

Introduction: Lymphatic filariasis affects about 112 million people worldwide and is mainly caused by *Wuchereria bancrofti.* Infected patients can be asymptomatic or present a wide spectrum of clinical manifestations. It's believed that irreversible damage to tissue and lymph vessels can already occur during the asymptomatic phase, even after specific treatment, and asymptomatic carriers may act as an infection source. Haiti has the highest prevalence of lymphatic filariasis in the Americas. With the recent immigration of Haitians to Brazil, more precisely to the Amazon region, government action has been taken to promote prompt diagnosis and prevention of endemic diseases and to ensure immigrants access to public health facilities, thereby avoiding the introduction and spread of new diseases in Brazil. **Materials and methods:** In Manaus, capital of the Amazonas state, where it is estimated that approximately 4.000 Haitians immigrated, active search for the filariae was made by the Health Surveillance Foundation in the peripheral blood of 200 Haitians, by the technique of thick blood smears stained with Giemsa, during the night. **Results:** From 200 evaluated immigrants, 5 (2.5%) cases of microfilaria carriers were identified, all male young adults, aged 22 to 30 years. Individuals were referred for specialized evaluation at the Fundação de Medicina Tropical Dr. Heitor Vieira Dourado (FMT-HVD), and three of them agreed to start the specific antifilarial treatment with diethylcarbamazine (DEC) at a dose of 6mg/kg/day, for twelve days. In order to increase the synergy of the drug it was introduced dual therapy with a single daily dose of albendazole (400mg daily) for seven days. The patients underwent ultrasonography of the scrotum for adult worms search, resulting in: a) 22-year-old splenectomized patient, with moderate hydrocele and the presence of *W. bancrofti* in scrotum, a sign known as "filarial dance"; b) 30-year-old healthy patient, with mild hydrocele and without the presence of the filariae on exam; c) 26-year-old patient with no abnormalities. All patients remained hospitalized for 72 hours for monitoring drug adverse effects, and underwent an uneventful recovery. **Main conclusions:** Since humans are the only reservoir of *Wuchereria bancrofti* and considering the possible reintroduction of the disease in Brazil, it emphasizes the importance of active case finding in immigrants from countries with high endemicity, and adequate monitoring and follow-up of infected individuals in order to minimize consequences of the disease and the potential for transmission. Considering the vulnerability of the region for this disease, with the wide presence of *Cullex sp.*, mass treatment is being considered in all immigrants from Haiti, once this disease is moving towards elimination in Brazil. **E-mail:** izabellasafe@yahoo.com.br

Filar015- *Mansonella ozzardi* and *Plasmodium* sp. Co-infection in Coari Township-AM, Brazil

[a,b] Martins, M; [a]Nascimento, VL; [a]Soares, ARL; [c] Silveira, H.
[a,b]Fundação de Medicina Tropical - Doutor Heitor Vieira Dourado, Gerência de Parasitologia, Manaus, Amazonas, Brasil; [a,b]Universidade do Estado do Amazonas, Manaus, Amazonas, Brasil, Coordenação Disciplina de Parasitologia e Micologia da [c]Unidade de Malária, Centro de Malária e outras Doenças Tropicais, Instituto de Higiene e Medicina Tropical (IHMT), Universidade Nova de Lisboa, Lisbon, Portugal

Introduction: The pathogenesis of infection with *Mansonella ozzardi* and *Mansonella perstans* is not well defined, with most infected people showing no apparent symptoms. However, a variety of nonspecific symptoms, which may be confused with other diseases, have been described as being infection by these

filariae. Although apparently asymptomatic, the prevalence of *Mansonella* sp. in the Amazon region can reach, in some communities, up to 82.5% for *M. perstans* and 30% for *M. ozzardi*. In the same geographic region, microfilariae cohabit with other parasites, such as *Plasmodium falciparum* and *Plasmodium vivax*, which just in 2011 accounted for 2,401 noted cases in the city of Coari, State of Amazonas. **Objective:** The objective of this study was to diagnose the co-infection of *Mansonella ozzardi* and *Plasmodium* sp in the city of Coari-AM, Brazil. **Materials and Methods**: The target population consisted of urban and rural Coari, Amazonas residents. We reviewed slides with thick peripheral blood smears stained with Giemsa, obtained during an epidemiological survey conducted from August 2006 to September 2007. **Results**: reviewed in 1,733 microscope slides, containing a drop of peripheral blood, they showed 231 (13.3%) to be positive for *M. ozzardi*, six (0.4%) for *P. vivax* and four (0.3%) positive for both parasites. No cases of *P. falciparum* and *M. ozzardi* were found. **Conclusion:** The present study just provides an overall blood smear slide analysis for the diagnosis of *M. ozzardi* and *Plasmodium sp.*, found in urban and rural population from Coari, Amazonas, Brazil. This overview shows the coexistence of parasites in the town assessed and draws attention to the need of conducting diagnosis assays on both parasites in routine laboratory tests. **Keywords:** *Mansonella ozzardi, Plasmodium* sp, Coari-Amazonas, Brazil. **E-mail:** marilaine@fmt.am.gov.br

Filar016- **Remote sensing, landscape epidemiology and spatial analysis in the onchocerciasis Amazonian focus of southern Venezuela**

C. Botto,[1,2] M. Escalona,[1,2]. N. Villamizar[2], J. Cortéz,[2] P. Coronel,[2] L. Suárez-Villasmil,[3] , María L. Gonzalez[2], O. Lander, [1], O. Noya [1,2] M.E. Grillet,[2,4] M.G. Basáñez[2,5]
(1) Instituto de Medicina Tropical "Felix Pifano", Universidad Central de Venezuela, UCV, Caracas. (2) Centro Amazónico para Investigación y Control de Enfermedades Tropicales "Simón Bolívar" SA CAICET Av.Perimetral, Puerto Ayacucho 7101, Amazonas, Venezuela. (3) Laboratorio de Ecología de la Vegetación, Instituto de Zoología y Ecología Tropical, UCV, Caracas. (4) Laboratorio de Biología de Vectores, Instituto de Zoología y Ecología Tropical, UCV, Caracas.(5) Department of Infectious Disease Epidemiology, School of Public Health, Faculty of Medicine (St Mary's Campus), Imperial College London, Norfolk Place, London W2 1PG, England, UK

Introduction: Onchocerciasis, a filarial infection transmitted by *Simulium* flies, still poses an important challenge to public health for the Yanomami population in the Venezuelan part of the Amazonian focus. Although onchocerciasis transmission has been interrupted in some areas due to ivermectin treatment, there are still remote, probably hyperendemic, communities no yet contacted by the Venezuelan health system in the Amazonian focus, placing under risk the regional strategy of onchocerciasis elimination in the Americas. Remote sensing, geographical information systems (GIS) are helping to understand the heterogeneous spatial distribution of this vector-borne disease and estimate the risk of infection. The objective of this work is to apply spatial analysis to assess the influence of landscape and different social and environmental variables on the risk of onchocerciasis infection in the Upper Orinoco basin. **Material and Methods:** Pretreatment prevalence of infection was assessed in 63 out of 131 Yanomami communities by skin biopsy; social and environmental variables were described for each community with the aid of GIS. We performed principal component analysis [PCA], discriminant analysis [DA], logistic regression [LR] and multiple regression [MR] analysis, as well as used spatially-explicit models (spatial logistic regression, generalized least squares [GLS] and simultaneous autoregressive [SAR] models). PCA enabled a clear characterization of the habitat for hypo- and hyperendemic onchocerciasis, whilst DA, LR and MR analyses helped to identify significant socio-environmental variables relevant for prediction of infection risk. Ethnic group, cultural change, river order, slope of terrain, volcanic substrate and landscape type (plateau, mountainous) were selected by DA, LR, GLS and SAR. **Conclusions:** There is a striking concordance among the results of different spatial and non-spatial multivariate analyses. Heterogeneity in onchocerciasis transmission is associated with the mosaic structure of landscapes, the use of tropical rainforest space and resources by the Yanomami population, and the diversity and complexity of a multivector system of transmission. Understanding of this complex system requires both a local and a global approach to address properly the spatial variation and to account for the influence of spatial autocorrelation in order to improve the predictive power of the proposed models. **E-mail:** okotoima@gmail.com

Filar017- **Neglected Tropical Diseases and the development community-directed approaches for health: the example of onchocerciasis in Africa.**

Bush, SR[1]., [2]Meredith, S., [3]Amazigo, UV.
[1]Sightsavers, Accra, Ghana, [2] Global Health Consulting, Divonne les Bains, France, [3] Global Health Consulting, Enugu, Nigeria

Introduction: A review of the development of community –directed approaches for health in development programmes in Africa with a particular focus on the role of non-governmental development organisations (NGDOs. **Materials and Methods:** In 2011 and 2012, with a geographic focus on Mali, Nigeria, Uganda and Cameroon, methodology included a desk review of what has already been written and published on community directed interventions. In particular grey literature, i.e. reports, presentations etc. from NGDO meetings, were reviewed along with reports from field trials by the WHO including the Onchocerciasis Control Programme, the African Programme for Onchocerciasis Control. Reports from the NGDOs involved with initial trails such as Sightsavers, Helen Keller International, the River Blindness Foundation, the Carter Center, International Eye Foundation and CBM. This allowed the researchers to identify gaps and look for new information from key informants; summarise the factors responsible for the original vertical, mobile team approach for Mectizan ® treatment of onchocerciasis and; contextualise the role of the NGDOs and other partners in the development of community directed treatment. **Results:** The origin of the community-directed approach and the factors responsible for its development: To look at reasons why it was thought that a community-based approach was an appropriate way to deliver long-term mass treatment and the circumstances in which Mectizan®/onchocerciasis appeared (e.g. rural areas, limited access and communications). To include brief background on onchocerciasis and how it affects communities. Brief background on Mectizan® and the donation. How and why did the Community Based Treatment with Ivermectin (CBTI) approach develop into Community Directed Treatment with Ivermectin (CDTI)? The factors responsible for onchocerciasis control's initial vertical approach and the factors which have made it possible to initiate an integrated approach: how CDTI developed into a vehicle for delivery of health interventions/treatments in rural communities in Africa. Review of how CDTI is different from other community models, such as DOTS for TB, and how it differs from other community distribution methods - e.g. delivery of bed nets for malaria? Analysis of CDTI's comparative advantage. **Main Conclusions:** Lessons learnt in the delivery of health services/interventions at community level including 'spin offs' (e.g. Community Directed Distributors identifying cataract cases/eye care, delivery of drugs for other NTDs, and motivation of distributors). Review the additional workload as result of integrated delivery of NTDs and/or delivery of multiple health interventions. Lessons learnt for community health systems strengthening. **E-mail:** sbush@sightsavers.org

TOXOCARIASIS AND "LARVA MIGRANS"

Toxocar001- **Epidemiological and laboratory scores associated with clinical diagnosis of visceral toxocariasis**

Cassenote, AJ*[1,2] and Ortega, NRS[2]
1. Postgraduate Program in Infectious and Parasitic Diseases, Medicine College of São Paulo University, São Paulo – Brazil; 2. Center of Fuzzy Systems in Health, Medicine College of São Paulo University, São Paulo - Brazil.

Introduction: toxocariasis is a zoonosis caused by the nematode of the genus Toxocara, commonly *T. canis* and *T. cati*, parasites of dogs and cats. The disease is considered a public health problem for both developed and development countries, being included in the list of neglected diseases. The main risk factors listed are the contact with soil contaminated with parasite eggs, lack of personal hygiene and contact with dogs that can even accommodate embryonated eggs in their fur. The aim of this study was to propose scores epidemiological and laboratory that can assist in clinical diagnosis of visceral toxocariasis. **Materials and methods:** was analyzed a database containing characteristics of 100

individuals aged between 1 and 12 years from the study of Cassenote (2010). The presence of disease was defined by infectious and parasitic physician using a medical history, laboratory tests and clinical evaluation. The prevalence of visceral toxocariasis this group was 12%. The epidemiological score (ES) was designed based on the value of adjusted odds ratio from multiple logistic regression model from of the same study, the variables considered were geophagy (g), habit of putting objects in the mouth (b), onychophagy (o), number of dog pets (c) and washing hands (h) in the following relation: ES= (g+b+a)+(c*h). The laboratory score (LS) takes into account the value of the optical density of the anti-TES IgG ELISA test (d) and the number of eosinophils (e) from blood cell count, in the following relationship: (LS = d*e). **Results:** the ES e LS had a mean of 25.4 (SD=21.7) and 1.91 (SD=2.96), respectively. In the clinical disease group the median proved to be concentrated being, for ES 61.8 (IQR=29.67) and LS 8.4 (IQR =6.28), both with statistical significance when compared with the group without clinical disease (p ≤ 0.001). The score ES showed area under the ROC curve of 0.84 (CI95%0.71-0.96) and LS 0.87 (CI95% 0.78-0.96) with statistical significance for both (p ≤ 0.001). **Main conclusions**: the scores were associated significantly with the presence of clinical disease; ES variables can be easily obtained from the patient history, a common habit in the clinical diagnosis; LS variables depend on laboratory tests and are easily obtained too. So ES and LS scores may be a useful and easily accessible to assist the physician in the diagnosis of visceral toxocariasis. **E-mail:** cassenote@usp.br

Toxocar002- Toxocariasis in humans: risk factors for infection in pregnant women assisted at the hospital in Rio Grande – RS

Santos, Paula; Lehmann, Lis; Fenalti, Juliana; Lorenzi, Carolina; Hirsh, Carolina; Gonçalves, Carla; Scaini, Carlos
Universidade Federal do Rio Grande, Faculdade de Medicina – Rio Grande, RS, Brasil

Introduction: The syndrome of visceral larva *migrans* (VLM) or human toxocariasis is anthropozoonosis with worldwide distribution, caused by the nematode *Toxocara canis*, a intestinal parasite of dogs. Humans are accidental hosts, and the main form of infection is by ingestion of embryonated eggs of *T.canis*. The impact of toxocariasis in human health and its prevalence is underestimated worldwide, due to limitations of the methods of diagnosis and by unspecific symptoms. The VLM has high prevalence in developing countries and tropical climate. In Brazil, the seroprevalence for antibodies to *Toxocara* spp. can reach 54.8%, whereas the environmental contamination by eggs of this parasite represents a risk factor for infection. The importance of other forms of infection must be clarified, such as the ingestion of raw or undercooked meat and congenital infection, common in dogs. In this decade, was made the first report of congenital infection in humans, when a premature newborn was diagnosed with retinopathy compatible with ocular toxocariasis. Research of the occurrence of visceral toxocariasis in pregnant women are scarce, however, studies in this area is extremely important, since during pregnancy there are alterations in the immune system resulting in increased susceptibility to parasitic infections. In a study conducted in Brasilia, showed 7.2% seroprevalence in pregnant women and was appointed as a risk factor the familiarity with dogs. This study aimed to evaluate the risk of pregnant women in relation to exposure to the nematode *T.canis.* **Material and Methods:** The study was cross-sectional with convenience sample of 80 patients treated at the HU / FURG of Rio Grande, RS, in the period from April to July 2011. During the prenatal test was applied a structured questionnaire about eating habits, onychophagy, contact with soil, exposure to dogs and knowledge of human toxocariasis. This study was approved by the Ethics Committee in Research in Health Area of the University. **Results:** The study showed that pregnant women surveyed have behavior that a risk for infection *T.canis.* Furthermore, the population studied showed unknowledge of toxocariasis. Risk factors associated with *Toxocara canis* infection in pregnant women treated at University Hospital in Rio Grande, RS (n = 80)

Risk factors for infection by *T. canis*	Pregnant women (n)	%
Contact with dog	56	70.0
Pregnant women that clean the dogs feces	16	20.0
Onichophagy	31	38.8
Direct contact with sand	30	37.5
Ingestion of raw or undercooked meat	25	31.3
Ingestion of sausages	75	93.8

Main Conclusions: The present study showed that pregnant women are susceptible to infection by *T. canis* and 100% of pregnant women didn't know about human toxocariasis. Given the fact that the eggs of the nematode *T. canis* are a major contaminant of soil, are important conduct more studies in this population. These studies may contribute to the knowledge of the possible health implications for pregnant women and occurrence of vertical transmission. **E-mail:** paulavet10@hotmail.com

Toxocar003- Assessment of toxocara canis glycoconjugates activity upon human cells *in vitro*

Amor, A.L.M.[1,3]; Santos, L.N.[2]; Silva, E.S.[2]; Bastos, B.L.[2]; Portela, R.W[2]; Alacântara-Neves, N.M.[2,3]
[1.] **Centro de Ciências da Saúde, Universidade Federal do Recôncavo da Bahia, Brazil;** [2.] **Departamento de Ciências da Biointeração, Instituto de Ciências da Saúde; Universidade Federal da Bahia, Brazil;** [3.] **Rede Nordeste de Biotecnologia - RENORBIO.**

Introduction: Glycoconjugates are compounds that result from covalent attachment of carbohydrates to proteins (glycoproteins) and lipids (lipoglucan*s*). They are constituents of the plasma membrane of all living organisms, most notably among eukaryotes. They exert cellular functions and act as chemical mediators to cell-cell specific interactions. Their biological function is to promote activation of the innate immunity and antigen recognition by IgM antibody. **Objective**: To obtain fractions from pellet of *T. canis* adults extract, to characterize their electrophoretic profiles and identifying candidate products for potential application as immunomodulators of atopy/asthma and for immunodiagnosis of toxocariasis.. **Methodology:** Step 1 - Adult worms' collection and lysating. Step 2 - Obtaining the glycoconjugate fractions (F1 - butanolic phase, F2 – lipoglicans´ enriched aqueous phase and F3 – glycoprotein's enriched fraction) followed concentration of samples by rota-evaporation and sub fractionation in hydrophobic interaction column. Step 3 - electrophoretic profile analysis (by SDS-PAGE and gel staining by silver nitrate). Step 4 - Determination cytokines production (IL-10, IL-1β, TNF-α and IL-6) by human peripheral blood mononuclear cells (PBMCs) cultures stimulated by *T. canis* glycol conjugate sub fractions by ELISA. **Results:** The SDS-PAGE gel showed possible bands of lipoglucans and glycoproteins in F2 and F3 (and their sub fractions) respectively. The fractions presented different reactivities. F2 showed higher stimulation of pro inflammatory and IL-10 cytokines than F3, except for IL-6 which production was induced by both fractions. FI did not induce the production of any cytokine. **Conclusion:** The extraction and chromatographic protocol was effective to semi-purify lipoglucans and glycoproteins from *T. canis* membranes. As shown by *in vitro* stimulation, *T. canis* glycol conjugates may induce diverse immune response in their hosts. Further studies on the purification of these fractions will be carried out to obtain possible candidate antigens for immunoprophylaxis of allergy and / or immunodiagnosis of human toxocariasis. **Financial Support:** CNPq, FAPESB AND CAPES. **E-mail:** ana_amor@ufrb.edu.br

Toxocar004- Georeferencing in the study of soil contamination Toxocara spp. in areas of recreation, Paraná, Southern Brazil

Marchioro A.A.[1],Colli C. M.[2],Ferreira E. C.[1],Tiyo R.[1],Souza W. F.[2], Mattia S.[2], Falavigna-Guilherme A.L[2].
[1] **Faculdade Ingá – Uningá, Brazil,** [2] **State University of Maringá, Maringá**

Introduction: Toxocariasis is a worldwide public-health problem that poses major risks to children who may accidentally ingest embryonated eggs of Toxocara. The georeferencing can analyze and estimate the risk of acquisition for some diseases and to observe the spatial variation. The aim of this work was to

use the georeferencing to study the spatial variation of the contamination by Toxocara spp. in urban areas of leisure and recreation in Northwest Paraná, Brazil, and compare these structures in the sand and grass. Using georeferencing to study the spatial variation of the contamination by eggs of Toxocara spp. in urban areas for leisure and recreation in Northwest Paraná, Brazil and compare the presence of these structures in sand and grass lawn. **Materials and Methods:** We investigated 98% of public spaces filled with sand and / or grass lawn parks and schools, for leisure or recreation, city of Paraná. Each sample was analyzed by centrifuge-flotation technique, a solution of zinc Sulphate, density 1,420, and sedimentation in water. The maps were developed with the program ESRI Arc GIS 9.2. **Results:** A total of 77/98 (78.6%) had eggs. There was no difference (p = 0.9999) in the prevalence of eggs in sand, 44/56 (78.6%), and grass lawn, 33/42 (78.6%), both at school (p = 0.6898) and in the squares (p = 0.0616). Contamination prevailed at the periphery of urban areas for both the sand 20/27 (74%) and for the lawn 18/21 (86%). However, there was no difference in contamination of the sand and the lawns of schools and parks when compared central and peripheral. Although the schools 62/66 (93.9%) have higher amount of enclosed spaces, this fact did not provide a lower rate of contamination (p = 0.3327). Association was observed between presence of dogs / cats and contamination of environmental spaces (p=0,0008), (p=0,0045) respectively. **Conclusion:** The georeferencing allowed us to observe that this zoonosis is also scattered among sand and grass lawn of schools and public squares, with a slight predominance of contamination in the peripheral urban areas, and the presence of dogs and cats contributed to the contamination of spaces. **E-mail:** ariella_86@hotmail.com

Toxocar005- **Levels and avidity of specific IgG antibodies in female rabbits experimentally infected with *Toxocara canis* and their offspring.**

Rubinsky-Elefant G[1], Roldán-Gonzáles WH[1], Sanchez MCA[1], Laposy CB[2], Bin LLC[2], Santarém VA[2]. **[1].Lab. de Soroepidemiologia e Imunobiologia do Instituto de Medicina Tropical de São Paulo- SP, Brasil. Santarém VA. [2]. Lab. de Medicina Veterinária Preventiva II- Hospital Veterinário – Univ. do Oeste Paulista - Presidente Prudente – SP, Brasil.**

Introduction: In toxocariasis, different experimental studies have reported that infection with *Toxocara* spp may occur either by transplacental or galactogenic routes from mothers to offspring. Congenital parasitic infections may not lead to any clinical manifestation, but may modulate future immune response in the offspring. The aim of our study was to detect and assess IgG avidity in offspring and female rabbits experimentally infected with *Toxocara canis*. **Material and Methods**: Six New Zealand female rabbits (two-months-old) were inoculated orally with 1,000 embryonated *T. canis* eggs (infected group) and 5 animals were uninfected (control group). One month following infection, the females were mated to become pregnant and have offspring. Six months post-lactation, serum samples were obtained from all rabbits (mothers and offspring) in order to detect anti-*Toxocara* IgG antibodies by ELISA, using excretory-secretory larval antigens. Anti-*Toxocara* IgG avidity was measured using a solution of 8M urea in PBS-Tween 20 as the chaotropic agent. **Results**: The reactivity index (RI) was defined by mean OD of the sample/cut-off point (0.292). The cut-off was based on serum samples from control group and pre-infected rabbits. The RI mean of the mother rabbits and the offspring were, respectively, 4.807 and 2.039, which is significantly lower (paired t test, p<0.001). A negative correlation was observed between mothers and offspring RIs (Pearson's correlation coefficient= -0.801; p=0.056). High avidity index were found in mother rabbits (IA mean= 97.1%) and the offspring (IA mean= 80.1%), without statistical difference (paired t test, p> 0.05). **Main conclusions:** The detection of anti-*Toxocara* IgG antibodies in offspring six months post-lactation confirms the vertical transmission of infection. The negative correlation between the IR values from mothers and offspring may suggest the possibility of protection by maternal antibodies. The high avidity of the IgG antibodies detected six months post-lactation in mothers and offspring may reflect a chronic phase of the infection. **E-mail:** guitare@usp.br

Toxocar006- *Toxocara canis* eggs stored in laboratory by five to seven years are viable?

Mata-Santos, Tais; Santos, Paula; Klafke, Gabriel; Martins, Lourdes; Cruz, Luis; Fenalti, Juliana; Dutra, Paula; Scaini, Carlos
Universidade Federal do Rio Grande, Faculdade de Medicina – Rio Grande, RS, Brasil

Introduction: The nematode *Toxocara canis*, intestinal parasite of dogs, is the main etiological agent of Human Toxocariasis. This parasite has a cosmopolitan distribution, with prevalence in developing countries and tropical or subtropical. The main form of infection by *T. canis* to humans occurs by ingestion of embryonated eggs found in dirty hands, fomites, food and hairs of dogs. The nematode *T. canis* is a pathogen that presents a risk of infection for laboratory personnel, with low risk of spread, being classified by biosafety standards as a biological risk agent 2.This study aimed to evaluate in vivo the viability of eggs of *T. canis* stored for up to seven years in a parasitology lab, in order to determine the risk of infection of these eggs. **Material and Methods:** In this study, due to administration of pyrantelpamoate (12.5 mg / kg / oral) in young dogs, the parasites were eliminated by paralysis and the eggs of *T. canis* was collected directly from the uterine tubes of female specimens. The eggs were incubated in 2% formalin solution at 28 °C, with relative humidity above 90% and oxygenation, during 30 days. After incubation, the eggs (infective form) were stored between 4 and 6 °C for seven (March/2005) and five years (March/2007) forming the Groups 1 and 2, respectively. And as control group (Group 3) were used eggs with 14 months (January/2011). To evaluate the viability, was carried out intragastric inoculation of 300 eggs of *T. canis* in three Swiss mice, females, in all groups G1, G2 and G3.After 48 hours was applied the technique of tissue digestion of organs (liver, lungs, brain, eyes, spleen, heart, kidneys) and striated muscle to recovery *T. canis* larvae. The feasibility of larvae was performed under light microscopy. **Results:** In all three groups of mice inoculated with embryonated eggs of *T. canis*, larvae were recovered in the muscle tissues and organs. In G1, the average recovered larvae was 1.3 (± 0.6), 1 in G2 (± 1.0) and G3 (control) 8.3 (± 4.5). **Main Conclusions:** The results showed that embryonated eggs of *T. canis* maintained under appropriate conditions (2% formalin, 4-6°C) for a long period are viable and capable to cause infection in the host. **E-mail:** farmatais@hotmail.com

Toxocar007- The hamster (*Mesocricetus auratus)* as an experimental model of toxocariasis

Silva, AMG[1]; Chieffi, PP[1,3]; Kanashiro, EHY[1]; Silva, WLF[1]; Holanda, FMC[1]; Rubinsky-Elefant, G[1] ; Cunha-Neto, E[2]; Mairena, EC[2]; Brito,T[1].
[1]Instituto de Medicina Tropical, Universidade de São Paulo, São Paulo, Brasil, [2]Instituto do Coração (Incor), Universidade de São Paulo, São Paulo, Brasil, [3]Faculdade de Ciências Médicas da Santa Casa de São Paulo

Introduction: Toxocariasis is a worldwide parasitic infection caused by the larval stage of nematode*Toxocara spp.* Humans are infected mainly by the larval stage after ingesting embryonated eggs in soil or contaminated hands or fomites. The present study proposes a model in hamster, infected with *Toxocara canis,* looking at histopathological, serological and immunological aspects. **Material and methods:** A group of 15 hamsters were infected orally with 800 embryonated eggs of *T. canis* and evaluated after 5, 15 and 30 days post-infection and 15 control animals were maintained without infection. Fragments of liver, lung and kidneys were routinely processed, embedded in paraffin, stained hematoxylin (Harris)-eosin and Immunohistochemistry assay using two antisera, one polyclonal and another monoclonal. Frozen tissue kidney was cut in a cryostat and Immunofluorescence reactions were performed to detect immunoglobulins and C3 deposits and detect immunoglobulin deposits. For ELISA procedures serum samples were used for detection anti-*Toxocara* IgG antibodies and detection of circulating excretory-secretory toxocaral antigen by sandwich ELISA. Liver samples were used for RNA isolation, reverse transcription, and real-time reverse-transcriptase polymerase chain reaction (RT-PCR). **Results:** a- Histopathology and immunohistochemistry: Toxocaral antigen/s were present in macrophages in lung,liver and in granulomas .Lungs showed also presence of toxocaral antigen/s in bronchial lining Larva were detected both in lungs and liver, ,chiefly at the late phases of the infection. Mesangioproliferative GN is present with glomerular immunoglobulins and complement deposits at the

late phase of the infection. b- Immunofluorescence: Complement deposits, seen in five inoculated animals, were observed as small granules apparently located in the mesangial region .In four animals both immunoglobulin and complement were present and in one animal only complement was detected .Therefore in four hamsters no immunoglobulins and complement were present in the glomerulus. c- Serology: Specific anti toxocaral antibodies were detected on the 15 day after infection (1/200) rising up to 1/6.400 (average of 1/1600) on the thirty day. Circulating antigen/s were particularly increased after five days of infection and decreased according to the time of infection. **Conclusions:** The hamster is an adequate model to toxocariasis.The kidney in the experimental disease apparently is the result of glomerular deposits of preformed antigen-antibody complexes. **E-mail:** pchieffi@usp.br

Toxocar008- **Atypical Presentation of Larva Migrans in Patient in the Interior of Brazil: Relate of Case.**

Jácome, T. N.; Brito, R. R. F. F.; Fonsêca, P. C. M.; Fonsêca, C. R.; Lustosa, M. M.; Silva, M. T. N.; Marinho, A. M. N.; Bragagnoli, G..
Faculdade de Medicina da Universidade Federal de Campina Grande, Universidade Federal de Campina Grande, Campina Grande-PB/Brazil.

Introduction: The atypical *Larva migrans* characterizes itself for being one dermatozoonosis of little common presentation in Brazilian Northeast, having as etiology diverse nematodes larvae, acquired through direct contact with the dejections of domestic animals (dogs and cats) infested of parasite eggs, which when submitted the enough heat and humidity they come out the larvae with active capacity liberate it to penetrate for the reentrances of the skin, can be hands, legs, feet and buttocks regions most affected. The main clinical manifestations include moderate to intense itching, being frequent multiple excoriations, which represent doors of entrance for secondary infections. **Material and Methods:** Study of clinical case of patient presenting atypical form of presentation of Larva Migrans, presenting significant clinical improvement after pharmacological and behavioral treatment set. **Results:** Patient J.D.J.A., 52 years, butcher (he works in butcher shop and slaughterhouse), natural and coming from Campina Grande/PB. Patient looked for medical service complaining of hyperemia spots, of infiltrated aspect, rounded off contours and well definite edges and center with infectious activity, have 02 years approximately. He denies general symptoms as fever, asthenia and diarrhea. It was presented with eosinophilia (7%), negative feces for protozoa, helminthes and larvae. The managed treatment was systemic ivermectin, two per week, beyond changes of style of life, such as use of rubber gloves in work environment and not ingestion of red meat, evolving with clinical improvement and disappearance of the injuries, after about three months of treatment. Taking in consideration the distinguishing diagnostics diversity, one becomes necessary to develop a method of diagnosis capable to allow the precocious administration of adjusted treatment, reducing the morbidity of the illness in the population at risk. **Main Conclusions:** Ahead of the clinical form presented by the patient, There was the necessity of systemic and lasting treatment, beyond changes of habits and style of life to get itself resulted definitive and satisfactory, having if observed satisfactory clinical improvement, after empirical treatment, even without the aid of laboratory tests to identify more precisely the etiology of the disease**. E-mail:** taciton@hotmail.com.

ECHINOCOCCOSIS

Echino001- **Echinococcosis neotropical mimicking polycystic neoplastic disease: a case report**

Conde S.R.S.S.[1], Athias, R.T. [5]; Sampaio F.D.C.[2], Souza G.B.F.[3], Nunes F.R.[4], Carvalho R.D.G.[5], Marsala G.M.[6],
1.Universidade Federal do Pará (UFPA), Belém-PA, Brasil; 2.Universidade Federal do Pará (UFPA), Belém-PA, Brasil; 3 Universidade Federal do Pará (UFPA), Belém-PA, Brasil; 4.Centro Universitário do Pará (CESUPA),

Belém-PA, Brasil; 5 Centro Universitário do Pará (CESUPA), Belém-PA, Brasil; 6.Centro Universitário do Pará (CESUPA), Belém-PA, Brasil.

Abstract: The polycystic neotropical echinococcosis (EPN) is a disorder of great public health impact, especially in the Amazon region, presenting peculiar clinical and epidemiological features and there is no consensus on the best therapeutic management. This paper aims to report a case of EPN framework that mimics lung and liver cancer, with a delay of about four years of the final diagnosis and, in parallel, do a literary review. Periodical banks, such as LILACS, MEDLINE and PubMed, were accessed from March to July 2010, including the following keywords: hydatidosis, echinococcosis, clinical epidemiology and treatment. The case was derived from the general medicine infirmary of the University Hospital João de Barros Barreto, where it was collected the clinical history and physical examination and general systems, and additional laboratory and imaging investigation. The serological and molecular diagnosis by polymerase chain reaction (PCR) was performed in the section of hepatology at the Instituto Evandro Chagas. The clinical case concerned a male patient, 33 years old, married, laborer, born in Miri Igarapé, coming from Macapá-AP, where he lived for 16 years. Reports that four years earlier had undergone removal of right adrenal gland and drainage of a liver abscess, with no definitive diagnosis and for seven months has presented onset of cough, hemoptysis and chest pain. The investigation in Macapá resulted in the hypothesis of lung cancer and sent to Belém for histopathological diagnosis of certainty. But with the epidemiological data of the consumption of game and dog breeding and presence of pulmonary lesions and liver cysts was given the differential diagnosis of EPN. The serologic test (ELISA) was inconclusive, but there was positivity in the PCR specific for *Echinococcus*, confirming the hypothesis. Initiated drug therapy with albendazole and forwarded to an outpatient treatment. It was concluded that the EPN must always enter the differential diagnosis in the presence of cystic hepatic lesions, particularly in the cases from the Amazon region and hunting habits. **E-mail:** rafaelathias@hotmail.com

Echino002- **Investigation of possible moonlighting functions of an *Echinococcus granulosus* enolase**

Paludo G. P.*[a], Lorenzatto K. R.[a], Bonatto D.[b],Ferreira H. B[a].
[a] **Laboratório de Genômica Estrutural e Funcional;** [b] **Laboratório de Radiobiologia Molecular, Centro de Biotecnologia, UFRGS, Porto Alegre, Brazil**

Glycolytic enzymes, such as enolase, have been described as complex multifunctional proteins that may perform non-glycolytic moonlighting functions. However, little is known about such functions, especially in parasites. In *Echinococcus granulosus*, the causative agent of cystic hydatid disease, an enolase (EgEno) is among the intracellular proteins also detected as excretory-secretory products and in components of parasite-host interface. These ectopic localizations are indicative of EgEno moonlighting functions, making this protein an attractive target for study. One of the strategies that have been used to investigate moonlighting functions is the use of systems biology tools, which allow the prediction of protein functions/interactions through the study of biological networks. As no databases of protein-protein interactions (PPI) are available so far for *E. granulosus,* we have used comprehensive databases available for model organisms to design enolase PPI networks. In this sense, String database (www.string-db. org) was applied for PPI prospection using the model organisms *Saccharomyces cerevisiae*, *Caenorhabditis elegans* and *Drosophila melanogaster*. Modularity and centrality analyses, and functional enrichment for all generated networks were performed by Cytoscape software (version 2.8.2), and its plugins AllegroMCODE, CentiScaPe and BiNGO, respectively. So far, enolase PPI networks were generated for *S. cerevisiae* and *D. melanogaster* and several similar protein interactions involving enolase were identified for both species. These interactions are related to processes ranging from glycolysis to stress response and apoptosis. Enolase PPI prospection will now be performed with *C. elegans* data and the results will be compared to the other two generated networks. This approach will give a general idea of possible conserved non-glycolytic processes involving enolase, which are likely to be valid for EgEno. To experimentally validate at least some of the enolase partners predicted in these studies, a recombinant version of EgEno will be used in protein-protein interaction *in vitro* assays. **Supported by:**CNPq, CAPES. **E-mail:** gabrielappaludo@gmail.com

Echino003- **Characterization of two *Echinococcus granulosus* 14-3-3 protein isoforms (Eg14-3-3ζ2 and Eg14-3-3ζ3) expressed in the parasite's pathogenic larval stage.**

Vargas DM, Monteiro KM, Teichmann A, Meneghetti BV, Zaha A, Ferreira HB
Centro de Biotecnologia, Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, Brasil

Cystic hydatid disease is an emergent/re-emergent parasitic disease caused by the *Echinococcus granulosus* (Cestoda, Taeniidae) metacestodes (hydatid cyst). Cyst development occurs mostly in the liver and lungs of livestock or human intermediate hosts. The hydatid cyst, filled with hydatid fluid, is formed by an inner germinal layer, that gives origin to protoscoleces (pre-adult worms), and an external acellular laminated layer, secreted by the germinal layer. The germinal layer and the hydatid fluid constitute compartments of host–parasite interaction. Parasite proteins found in these interfaces have the potential to participate in survival strategies. Eukaryotic 14-3-3 proteins participate and regulate multiple signaling networks by interacting with hundreds of cellular proteins, and previous *E. granulosus* proteomic studies have identified four different 14-3-3 proteins, two zeta (Eg14-3-3ζ2 and 3) and 2 epsilon (Eg14-3-3ε1 and 2) isoforms, in protoscoleces and germinal layer, and in excretory/secretory products from *in vitro*-cultured protoscoleces. The aims of this work are to determine Eg14-3-3ζ2 e Eg14-3-3ζ3 expression pattern in cyst components and identify proteins that interact with them, as first steps towards the elucidation of functions of 14-3-3 isoforms in the hydatid cyst. Immunoblot and immunohistochemistry analyses confirmed the presence of both Eg14-3-3ζ isoforms in germinal layer and protoscoleces, being Eg14-3-3ζ2 presence also detected in the hydatid fluid, and Eg14-3-3ζ3 presence in laminated layer. The binding proteins that interact with Eg14-3-3ζ2 and Eg14-3-3ζ3 are being identified by cross-linking and two-dimensional electrophoresis gel-overlay experiments. Overall, 27 Eg14-3-3ζ2 and/or Eg14-3-3ζ3 interacting proteins have been identified so far, with 8 and 5 of these proteins interacting only with Eg14-3-3ζ2 and Eg14-3-3ζ3, respectively. Among these 14-3-3 interacting proteins there are proteins involved in basic metabolic processes, such as glycolytic pathway enzymes, and antioxidants, stress response proteins and RNA binding proteins. A complementary strategy of affinity chromatography using recombinant 14-3-3 isoforms as baits will also be employed to confirm and expand the repertoire of identified ligands, and competition assays using a competitor peptide ligand (R18) will be used to further confirm the specificity of the detected interactions.**Supported by:** CAPES and FAPERGS. **E-mail:** daianivargas@cbiot.ufrgs.br

Echino004- **Structural analysis of oligomers formed by recombinant subunits AgB8/4 and AgB8/5 of antigen B from *Echinococcus granulosus***

Silva ED, Cancela M, Monteiro KM, Ferreira HB, Zaha A
Centro de Biotecnologia, Universidade Federal do Rio Grande do Sul, Porto Alegre, Brasil

Cystic hydatid disease is a zoonosis caused by the larval stage (hydatid cyst) of *Echinococcus granulosus* (Cestoda, Taeniidae). The hydatid cyst is an unilocular structure filled by the hydatid fluid, which contains parasitic excretory/secretory products. Antigen B (AgB) is the major protein secreted by the larval stage and was first characterized as a lipoprotein of 120-160 kDa. AgB is an oligomeric protein composed of 8 kDa subunits which are encoded by a multigene family that includes at least five members (*EgAgB8/1-EgAgB8/5*). Despite being an extensively studied protein, little is known about the subunits oligomerization mechanism. The characterisation of this mechanism, as well as, of potential differences among subunits may shed some light on the biological role of AgB. In this work, we performed analysis of the aggregative properties of two recombinant subunits of AgB (rAgB8/4 and rAgB8/5) which have been expressed in *Escherichia coli*. The recombinant protein AgB8/4 was expressed as fusion protein with Green Fluorescent Protein (GFP) and as polyhistidine-tagged and was purified by affinity chromatography in nickel resin. The recombinant protein AgB8/5 was expressed as fusion protein with glutathione-S-transferase (GST) and was purified by affinity chromatography in glutathione sepharose 4B resin. Both recombinant proteins were recovered by TEV protease cleavage. Native gel, dynamic light scattering (DLS), glutaraldehyde cross-linking and transmission electron microscopy (TEM) experiments showed that the two subunits, rAgB8/4 and rAgB8/5, were able to form oligomers *in vitro* with some distinct

characteristics. In native gel, rAgB8/5 oligomers were concentrated in the region corresponding to 150 kDa, otherwise rAgB8/4 oligomers had a broader distribution from 150 kDa to more than 500 kDa. Cross-linking assays demonstrated differences in the kinetics of oligomerization of each protein, with rAgB8/5 multimers appearing earlier than rAgB8/4 multimers. DLS experiments showed rAgB8/5 subpopulations with hydrodynamic diameters varying from 10 nm to nearly 500 nm, whereas for rAgB8/4 a main population with medium hydrodynamic diameter of 500 nm, was observed. TEM images have shown different morphologies in the high-order recombinant oligomers. While rAgB8/4 displayed an open structure, with many thin regions, rAgB8/5 displays a globular-like shape, with a more compact structure. Our results indicate that the recombinant proteins rAgB8/4 and rAgB8/5 were able to assemble into homo-oligomers in a non-covalent manner. **Supported by:** CNPq. **E-mail:** edidanieli@cbiot.ufrgs.br

Echino005- **Characterization of 14-3-3 epsilon isoforms from the parasite** *Echinococcus granulosus*

Teichmann A, Monteiro KM, Vargas DM, Meneghetti BV, Zaha A, Ferreira HB
Laboratório de Genômica Estrutural e Funcional & Laboratório de Biologia Molecular de Cestódeos, CBiot, UFRGS, Porto Alegre, RS, Brazil.

Echinococcus granulosus is the causative agent of cystic hydatid disease and the establishment and maintenance of the hydatid cyst (pathogenic larval form) during chronic infection involves several proteins that mediate parasite-host interaction. Among the proteins potentially involved in such processes are 14-3-3 proteins, which constitute a family of highly conserved eukaryotic regulatory molecules, able to interact with different binding proteins in different cellular contexts, and to regulate complex biological functions. In parasites, 14-3-3 proteins play important roles in processes such as adhesion and immunomodulation, among others. For *E. granulosus*, at least four 14-3-3 isoforms, (two ε isoforms and two ζ isoforms) have been detected in previous transcriptomic and proteomic studies, and the aim of this work is to functionally characterize the parasite's isoforms Eg14-3-3ε1 and Eg14-3-3ε2. The recovery of protoscolex proteins that interact with the recombinant versions of Eg14-3-3ε1 and Eg14-3-3ε2 was performed using a Sulfo-SBED mediated cross-linking assay with identification of interacting proteins by mass spectrometry (LC-MS/MS). So far, 26 proteins that interact with 14-3-3 epsilon isoforms, and 8 and 3 proteins that interact only with Eg14-3-3ε1 and Eg14-3-3ε2, respectively, were identified. The interacting proteins identified are involved in important biological functions, such as cytoskeletal organization, resistance to stress, cellular transport and metabolic processes. Other two complementary strategies will be performed, two-dimensional electrophoresis gel-overlay experiments and affinity chromatography with purification of proteins interacting with the synthetic competitor peptide (R18). These strategies will be used to confirm and extend the repertoire of identified ligands. The characterization of the repertoire of ligands will indicate potential roles of 14-3-3 epsilon proteins and their relevance for parasite development and host interaction. (CNPq, CAPES). **E-mail:** alinet@cbiot.ufrgs.br

Echino006- **Analysis of the expression pattern of 14-3-3ε1 and 14-3-3ε2 proteins from** *Echinococcus granulosus*

Meneghetti, B.V.; Teichmann, A.; Monteiro, K.M.; Vargas, D.M.; Ferreira, H.B.; Zaha, A.
Laboratório de Biologia Molecular de Cestódeos & Laboratório de Genômica Estrutural e Funcional, Centro de Biotecnologia, Universidade Federal do Rio Grande do Sul, Brazil.

Cystic echinococcosis is a neglected infectious disease that constitutes a public health problem in developing countries. It is caused by the larval stage (hydatid cyst) of *Echinococcus granulosus* which secretes and exposes numerous immunomodulatory molecules to the host's immune system. These include an important group of molecules, the 14-3-3 protein family, described and characterized in several parasites and mostly studied in *E. granulosus* and *E. multilocularis*. The importance of 14–3-3 proteins in parasite proliferation and survival suggested that these proteins have potential as vaccine candidates. The ε isoforms of 14-3-3 proteins of E. *granulosus* (Eg14-3-3ε1 e Eg14-3-3ε2) were identified in proteomic analysis of the excretory-secretory products obtained from protoscoleces (pre-adult) culture. The aim of this study is to analyze the expression pattern of Eg14-3-3ε proteins in hydatid cyst

components. The coding sequences of the Eg14-3-3ε1 and Eg14-3-3ε2 proteins were cloned into the plasmid vectors pET-26b and pGEX-TEV, respectively, to produce recombinant proteins. The recombinant Eg14-3-3ε proteins were expressed in *E. coli* and purified by affinity chromatography and used to immunize rabbits for the production of purified antibodies. These antibodies were used in the analysis of the expression pattern of Eg14-3-3ε1 and Eg14-3-3ε2. Immunofluorescence experiments were performed using thin slices of protoscoleces and germinal layer (hydatid cyst), and with protoscoleces in toto. The detection of antibody-protein complex was made with secondary antibody conjugated to the fluorophore Alexa Fluor 488. The immunofluorescence analysis showed that in protoscoleces the Eg14-3-3ε1 and Eg14-3-3ε2 proteins present a wide cytoplasmatic distribution and mainly around the nucleus. These proteins were not located in calcareous corpuscles and/or hooks. These proteins were also detected in the germinative layer of the hydatid cyst. Experiments using western blotting are being carried out using extracts from protoscoleces and germinal layer, and also proteins from hydatid fluid, to analyze the possible presence of Eg14-3-3ε1 and Eg14-3-3ε2 proteins in these hydatid cyst components. **E-mail:** bvalandromeneghetti@gmail.com

FASCIOLASIS

Fasc001- **A multidisciplinary approach for an epidemiological survey of fasciolosis in a rural area**

Carnevale S[1,2], Cabrera MG[1], Cucher MA[2], di Risio C[3], Malandrini JB[4], Etchart C[3], Pantano ML[1], Velásquez JN[5]
[1]Instituto Nacional de Enfermedades Infecciosas - ANLIS "Dr. Carlos G. Malbrán", [2]CONICET, [3]Hospital de Agudos "Dr. José María Penna", [4]Universidad Nacional de Catamarca, [5]Hospital de Infecciosas "Dr. Francisco J. Muñiz". Argentina.

Introduction: Fasciolosis is a zoonotic parasitic disease caused by the trematode *Fasciola hepatica.* Although this parasite is prevalent and produces severe economic losses in animals, it is actually emerging as a cause of disease in humans. The main goal of this work was to describe the epidemiological characteristics of fasciolosis in the region of Arroyo El Juncal, La Toma, Province of San Luis, Argentina. **Materials and Methods:** A transversal, quantitative study was carried out by a field work. We included the human population living in the bank of the stream El Juncal (n=42), cattle, sheep and horses of the area (n=19), aquatic vegetables of human consumption, snails (n=34). Stool samples from humans and animals were concentrated by ethyl-ether centrifugation. Human sera were analyzed by ELISA employing recombinant antigen pro cathepsin L1 of *F. hepatica*. Collected snails were taxonomically identified and the PCR was used to determine *F. hepatica* infection based on the CO1 gene. Watercress plants were observed by light microscopy and employed for molecular techniques. The nucleotide sequence of a CO1 fragment was determined. Phylogenetic relationship of *F. hepatica* haplotype present in the area was inferred by the Maximum Parsimony method. **Results:** The prevalence of infection with *F. hepatica* in the inhabitants was 2.38% by stool examination, whereas this value rose to 11.90% by ELISA. The difference between the two techniques was statistically significant (p <0.05). The analysis of concordance between both methods resulted in a kappa value of 0.31, with an observed agreement of 90.48%. The prevalence of infection in farm animals by stool examination was estimated at 5.26%, and referred exclusively to cattle was 8.33%. The snails were determined as *Lymnaea viatrix*. The prevalence of infection was 2.94 by microscopy, but this value reached 61.76% by molecular amplification. The difference between the two techniques was statistically significant (p <0.005). The agreement between methods was not acceptable with a kappa value of 0.04, with an observed agreement of 41.18%. **Main Conclusions:** It was possible to describe the persistence of fasciolosis in the area, considering all factors and hosts involved. According to the values of prevalence, intensity of infection, hygiene and sanitization characteristics, the study area can be considered as a mesoendemic region of human fascioliasis. The study of this zoonosis requires multidisciplinary teams to address the issue from a holistic approach. **E-mail:** jorgeysilvana@speedy.com.ar

Fasc002- **Phenotyping of Liver Fluke (*Fasciola hepatica*) infecting European Brown Hare (*Lepus europaeus*) from Mendoza, Argentina**

Cuervo P[1], Di Cataldo S[1], Fantozzi C[1], Mera y Sierra R[1], Deis E[1], Artigas P[2], Mas-Coma S[2].
[1]Centro de Investigación en Parasitología Regional (CIPaR), Universidad Juan A. Maza, Mendoza, Argentina;
[2]Departamento de Parasitología, Universidad de Valencia, Valencia, España.

Introduction: Fascioliasis, in Latin America caused by *Fasciola hepatica*, represents a worldwide emerging and re-emerging zoonosis, with major endemics of human disease in high altitude Andean countries. Introduced into South America, European Brown Hare (*Lepus europaeus*) populations are growing and expanding all over the subcontinent. The species could represent a reservoir of importance, though usually not considered of relevance on local transmission and dissemination of disease. Each trematode species has its own egg shape and the length and width of the eggs are generally within a specific range. Furthermore, the final host species decisively influences the size of *F. hepatica* eggs and adults. Morphometry of *F. hepatica* adults and eggs recovered from *L. europaeus* is described. **Material and Methods:** Feces from five infected *L. europaeus* and liver from a single adult were preserved in formaldehyde 4%. *Fasciola hepatica* eggs were recovered from feces with Lumbreras' sedimentation technique and filtration. Fluke adults were recovered and counted (only apical portions considered). Measures taken on liver fluke (mm): body length (BL), body width (BW), cone length (CL), maximum diameter of ventral sucker (VSmax), total distance between oral and ventral suckers (OS-VS), distance between oral and ventral suckers (Os-Vs), distance between ventral sucker and posterior end of the body (VS-P) and BL/BW ratio. Measures taken on eggs: length (EL μm), width (EW μm), size = EL*EW (ES μm^2), and ratio = EL/EW (ER). **Results:** Twenty-two liver fluke adults were recovered. Measurements gave the following results (mean ± S.D.): BL 11.98 ± 2.3; BT 5.38 ±1.19; CL 1.54 ± 0,38; VSmax 0.74 ± 0.15; OS-VS 1.85 ± 0.37; Os-Vs 1.11 ± 0.51; VS-P 9.21 ±1.45; BL/BW 2.32 ± 0.63. Measures from 280 eggs (range, mean ± S.D.): EL 90.50-143.67, 119.96 ± 8.92; EW 56.56-86.20, 68.93 ± 4.90; ES 6142.38-11408.70, 8275.11 ± 919.26; ER 1.33-2.27, 1.75 ± 0.16. **Main Conclusions:** Although *F. hepatica* infection in wild *L. europaeus* has been already detected before, few reports concern South American introduced populations, and no thorough studies were found. Morphometric description of adult and eggs are inexistent or, at the least, scarce worldwide. Results indicate a heavy parasitic burden and analyses suggest that measures obtained are amongst the smallest reported in lagomorphs. Crowding effect, which is reflected in a decreased adult development when the number of flukes is high, may explain these findings. This phenomenon is due to the limited microhabitat (liver) offered by the vertebrate host, and the consequent finite number of flukes that can physically fit in. Eggs measures also proved to be within the smallest for the order. This may be related to the reduced uterus development as a consequence of diminished adult size, the crowding effect and the small host body mass.These results highlight the extraordinary plasticity and adaptability of this trematode species to different hosts. Thus, this lagomorph species may be considered a reservoir capable for parasite spillback to domestic cycle. **E-mail:** pablofcuervo@hotmail.com

Fasc003- **Egg-shedding and uterus development in liver fluke human and animal isolates: implication in the epidemiology of fascioliasis**

Pérez-Crespo I, Panova M, Khoubbane M, Peixoto R, Artigas P, Debenedetti A, Mas-Coma S & Valero MA
Departamento de Parasitología, Facultad de Farmacia, Universidad de Valencia, Valencia, Spain

Introduction: Fascioliasis is an important human and animal disease caused by the trematode species *Fasciola hepatica* and *F. gigantica*. At present, fascioliasis is emerging or re-emerging in numerous regions. The highest human fascioliasis prevalence and intensities are encountered in the Northern Bolivian Altiplano, where *F. hepatica* is the only fasciolid species present, and *Galba truncatula* the only intermediate snail host species. In this endemic region, sheep and cattle may be considered the main reservoir host species, with pigs and donkeys playing a secondary role. The emission of *F. hepatica* eggs in faeces is usually subject to oscillations along time in animals as well as humans. Thus, looking for alternative biological markers reflecting eggs shed per gram of faeces (epg) with lower oscillations may

be useful. **Material and Methods:** This study analyzes the possible relationship between liver fluke uterus area and epg. Uterus area (UA) development of adult *F. hepatica* obtained at different days post infection (dpi) in a Wistar rat model with isolates obtained from cattle, sheep, pigs and humans from the endemic human fascioliasis zone of the northern Bolivian Altiplano was analyzed and compared with the number of eggs shed per gram of faeces as obtained through the Kato–Katz technique. The morphometric study of the UA of liver flukes was carried out using image analysis software. The multiple regression model shows that UA is dependent on dpi and isolate. The evolution of UA vs dpi followed a damped model.**Results:** This work shows a positive relationship between liver fluke UA and egg production. The complete absence of eggs in the uteri of some parasite individuals at 300 dpi was observed, which corresponds to the cessation of egg shedding in the advanced chronic stage. **Main Conclusions:** This study shows a relationship between liver fluke UA and egg production, which is consistent with similar findings in other helminths. In this experimental study it was demonstrated that *F. hepatica* UA development along time fitted a saturated model, while body growth follows a logistic model characterized by two phases: the 'exponential' part of logistic growth corresponds to body development during migration through the abdominal cavity and liver parenchyma as well as to development and sexual maturation in the biliary duct system up to the onset of egg production. From this moment onwards, development follows the 'saturated' part of logistic growth with a considerable persistence of body growth after sexual maturity. Oviposition is the inflection point of the logistic growth marking the end of the 'exponential' period and the beginning of the 'saturated' period, i.e. the beginning of egg shedding to the external environment constitutes the biological factor that marks the inflection point. The results obtained suggest the necessity to characterize the isolates employed with regard to geographical as well as host origin in fascioliasis studies in which egg production is used as a biological tag. **Studies were funded by Projects**: No. BOS2002-01978, No. SAF2006-09278 and No. SAF2010-20805 of the Spanish Ministry of Science and Technology, Madrid, Spain; the Red de Investigación de Centros de Enfermedades Tropicales–RICET (Projects No. C03/04, No. ISCIII2005-PI050574 and No. ISCIII-RETIC RD06/0021/0017 of the Programme of Redes Temáticas de Investigación Cooperativa RETICS/FEDER), FIS, Ministry of Health, Madrid, Spain; and Projects No. 03/113, GV04B-125 and GVCOMP2006-106 of Conselleria de Empresa, Universidad y Ciencia, Valencia, Spain. **E-mail:** madela.valero@uv.es

Fasc004- "A Postmortem Assessment of Fascioliasis and other Intestinal Parasites of Cattle in Douala Abattoir, Littoral Region (Cameroon)"

Ndaleh Wozerou Nghonjuyi, Helen Ntonifor
Faculty of Science, University of Buea, Cameroon

Abstract: Cattle constitute a major source of animal protein in the diet of most Cameroonian and many people make their living through the rearing of these animals. Prevalence and intensity of fascioliasis and other intestinal parasites of cattle in Cameroon was assessed. Three hundred and twenty cattle were examined post-mortem, consisting of one hundred females and two hundred and twenty males. Bile and faecal samples were collected to determine the prevalence and intensity of liver and other gastrointestinal parasite infections. 10 mL of the bile of each animal was collected and centrifuged and a drop of it examined at X 10 objective. Liver flukes had a general prevalence of 81.3% distributed thus: single infections with *Fasciola* and *Dicrocoelium* had respectively 12.2% and 25.6% while mixed infection of the two had a prevalence of 43.4%. Two methods were used for stool analysis; formol ether and salt floatation concentration techniques. The following parasites were observed: *Trichostrongylus sp, Haemonchus contortus, Oesophagostomum sp, A.vitulorum, Eimeria spp, Cooperia sp, Dicrocoelium dendriticum* and *Fasciola spp.* The general prevalence of infection was 74.4% and *Haemonchus contortus* and *Trichostrongylus sp* showed the highest prevalence of infection in both techniques. The average prevalence of infections of these two parasites from the two techniques were 56.75% and 50.8% respectively. This was followed by *Eimeria* and *Fasciola* with 15.6% and 15.3% respectively. *A.vitulorum* and *Fasciola spp* showed very low prevalence with salt floatation technique (respectively 0% and 1.6 %). Generally, formol ether technique showed a higher prevalence of infection than salt floatation technique. Males had a higher prevalence and intensity of infection than females with the highest intensity being from *Trichostrongylus sp* (1100 epg of stool). It was observed that salt floatation technique was not sensitive enough for heavy eggs (*Fasciola* and *Ascaris*). Subsidising and educating the Fulani herdsmen by the government on the administration of anthelminthic drugs and better field management will reduce

drug resistance and prevent expenditure on drugs and improve on the quality and quantity of meat produced and consumed by the local population.

Fasc005- **Scanning electron microscopic observation of _Fasciola_ adult worm following treatment in vitro with different anti-parasitic agents.**

El- Komy W, Sabry HY, Fahmy ZH and .Zalat RS
Department of Parasitology, Theodore Bilharz Research Institute, Imbaba P.O.Box.30

Fascioliasis is now considered a public health problem in Egypt with scattered foci along Nile valley. Although triclabendazole is the drug of choice, drug resistance is spreading in veterinary field .Strategies involving drugs include use of alternative anthelmintics or anti-parasitic agents .In this study, the efficacy of ascending doses of nitazoxanide and closantel in comparison to albendazole was assayed in-vitro against different groups of adult _F.gigantica_ worms.Vitality and motility were assessed during various periods ranging from 0 to 24 hours for all in vitro treated and control untreated _Fasciola_ worms ,each group included 12 adult liver flukes . The dose 25 µg/ml of nitazoxanide killed 50% of worms after only one hour post- incubation and after 24 hr with the same dose, 91.6% of worms were dead; closantel killed 5 out of 12 worms following 1h incubation in25 µg/ml while in vitro treatment with the same dose of albendazole killed 3/12 flukes. The highest dose of both nitazoxanide and closantel (50 µg/ml) resulted in 100% worm killing; the same result was revealed also by albendazole. The Scanning electron-microscopic analysis of the flukes revealed an evident disruption of the tegument, swelling and furrowing in all worms embedded in the studied chemotherapeutic agents, compared to un-treated cultured ones. The nitazoxanide in vitro–treated worms showed widening of ventral sucker, the tegument is showing multiple and severe tears. Following in-vitro incubation with closantel, the tegument appeared swollen with blunted spines and foldings are visible with blebbing. Albendazole also accentuated tegumental damage with loss of spine pattern and architecture.In conclusion, nitazoxanide and closantel are shown to be potent fasciocidals, and the tegument of _Fasciola_ worms appears to be targeted by their action,a transmission electron microscopic study in addition to further in-vivo studies would be recommended. **Keywords:** _F.gigantica_ worms, Albendazole, nitazoxanide and closantel. **E-mail:** zeinabfahmyh@yahoo.com

Fasc006- **Clinical presentation of human fascioliasis in patients from Argentina: a retrospective study**

Mera y Sierra R[1,3], Cuervo P[1], Sidoti L[1], Mas-Coma S[2].
[1]Centro de Investigación en Parasitología Regional, Universidad J. A. Maza, Mendoza, Argentina; [2]Departamento de Parasitología, Universidad de Valencia, Valencia, España; [3]Facultad de Ciencias Medicas, Universidad Nacional de Cuyo.

Introduction: Fascioliasis currently affects millions of people worldwide and is considered by WHO a neglected tropical disease. It is endemic in regions of Bolivia, Peru, and Chile, and hyperendemic situations have been described in Andean regions with the highest prevalence in the world. Yet in Argentina, human fascioliasis has been greatly ignored and has not been thoroughly analyzed, traditionally fascioliasis is considered an important disease only in livestock. In humans, fascioliasis can cause a serious medical condition with an acute phase caused by the migration of immature flukes in the liver and a chronic phase when the parasite reaches the bile ducts. Since in Argentina human fascioliasis in of non-obligatory declaration, official reports are nonexistent. The available data is that obtained from the review of the literature. Previous reviews have not been exhaustive, the most extensive accounted for 85 cases. The objective of this study is to describe the clinical characteristics of human fascioliasis in Argentina resulting from an in-depth analysis of the published literature. **Material and Methods:** Sources of the literature review included databases, libraries, web platforms, and personal email requests. Many of the references are local publications and frequently very old and not in electronic databases so manual searches where performed in libraries including symposia, congresses and theses. The publications were read in detail extracting all of the clinical information. **Results:** In total 58 reports were found which described 619 human cases, some with detailed clinical descriptions but in many they are vague or

inexistent. The average time elapsed between onset of symptoms and diagnosis was 1261 days. In 267 cases the gender was specified: 120 (44.94%) males and 147 (55.06%) females. Age was specified in 219 patients with a range was from 3-95 years (mean 37.09, SD 17.07). The main symptoms and laboratory results described are: abdominal pain in 200 patients, eosinophilia in 198, fever in 138, leukocytosis in 128, weight loss in 76, anorexia in 53, asthenia in 86 patients, urticaria in 62, nausea in 38, ictericia in 23, lithiasis in 17, vomiting in 11, headache in 9, diarrhea in 8, constipation in 6. Surgery was indicated in 45 cases due abdominal pain and biliary obstruction suggestive of lithiasis. Six ectopic cases are described, including one in which a fluke was eliminated through the urethra and another of intracranial fascioliasis which proved fatal. Co infection with hidatidosis was found in 14 patients. **Main Conclusions**: Even though the symptoms and laboratory results are similar to those found in other parts of the world, the amount of surgical cases and the delay in diagnosis indicate that human fascioliasis may not be considered by physicians and thus, many cases, particularly in the acute phase, are overlooked. The age of the patients is dissimilar to that found in other endemic zones were mainly children are affected. The amount of cases found is seven times greater than previously reported, thus human fascioliasis may be a much more serious problem in Argentina than previously considered. **E-mail:** fasciola@gmail.com

TAENIASIS AND NEUROCYSTICERCOSIS

Taecyst001- **Characterization of hydrophobic ligand binding proteins of *Taenia solium* that expressed specifically in adult stage**

M Rahman[1]* E.-G.; Lee[2]S.-H. Kim[2], Y.-A. Bae[2], H. Wang[2], Y. Yang[3] *and* Y. Kong[1]
[1]Department of Molecular Parasitology, Sungkyunkwan University School of Medicine and Center for Molecular Medicine, Samsung Biomedical Research Institute, Suwon 446-740, Republic of Korea; [2]Qinghai Province Institute for Endemic Diseases Prevention and Control, Qinghai Centers for Disease Prevention and Control, Xining, China; [3]Parasitology Institute, Guangxi Centers for Disease Prevention and Control, Nanning, China

Summary: *Taenia solium*, a causative agent of taeniasis and cysticercosis, has evolved a repertoire of lipid uptake mechanisms. Proteome analysis of *T. solium* excretory-secretory products (TsESP) identified 10 kDa proteins displaying significant sequence identity with cestode hydrophobic-ligand-binding-proteins (HLBPs). Two distinct 362- and 352-bp-long cDNAs encoding 264- and 258-bp-long open reading frames (87 and 85 amino acid polypeptides) were isolated by mining the *T. solium* expressed sequence tags and a cDNA library screening (*TsHLBP1* and *TsHLBP2*). They shared 94% sequence identity with each other and contained characteristic 2 α-helical domains with strong coiled-coil structures. They clustered into the same clade with those found in *Moniezia expansa* and *Hymenolepis diminuta*. Genomic structure analysis revealed that these genes might have originated from a common ancestor. Both the crude TsESP and bacterially expressed recombinant proteins exhibited binding activity toward the fatty acid (FA) analog, 1-anilinonaphthalene-8-sulfonic acid, which was competitively inhibited by oleic acid. The proteins also bound to *cis*-parinaric acid and 16-(9-anthroyloxy) palmitic acid. Unsaturated FAs showed greater affinity than saturated FAs. The proteins were specifically expressed in adult worm throughout the strobila. The TsHLBPs might be involved in uptake and/or sequestration of hydrophobic molecules provide by their hosts, thus contributing to host-parasite interface interrelationships. **Keywords:** *Taenia solium,* taeniasis, cysticercosis, fatty acids, hydrophobic-ligand-binding-protein, host-parasite interaction. **E-mail:** moizur_bau@yahoo.com

Taecyst002- **Cloning, expression and purification of recombinant antigen of *Taenia crassiceps* for use in serodiagnosis**

Lima, Thiago Rodrigues[1]; Peralta, Regina Helena Saramago[2]; Mohana-Borges, Ronaldo[3]; Peralta José Mauro[1]

[1]. Instituto de Microbiologia Paulo de Góes, IMPPG/UFRJ, [2]. Departamento de Patologia/UFF, [3]. Instituto de Biofísica Carlos Chagas Filho/UFRJ

Introduction: Neurocysticercosis (NC) is caused by the presence of *Taenia solium* in the CNS. Diagnosis requires proper interpretation of clinical, neuroimaging and serological data, in the correct epidemiological context. The development of immunological assays with purified and recombinant proteins and synthetic peptides can improve the assays efficiency, increasing sensitivity and specificity. Studies of cross-reactivity between the vesicular fluid of *Taenia crassiceps* cysticerci and *T. solium* antigens confirmed that both share common epitopes. The aim of this study was to establish protocol for cloning, expression and purification of the 14 kDa recombinant protein of *T. crassiceps* and standardization of ELISA to use in serodiagnosis. **Methods**: The cloning was performed through the synthetic DNA technology (GenScript) with fragment encoding gp14Tcra. The DNA was inserted into the vector pET21d EZ and transformed into the *Escherichia coli* strain DH5α. After cloning, the plasmid was inserted into competent strains of *E. coli* BL21 (DE3) Codon Plus BL21, BL21 pLysS, Origami, Rosetta and C43. For expression of recombinant protein, different conditions for induction were tested: concentration of IPTG, time and temperature. Protein purification was performed by affinity chromatography on Ni-Sepharose and Mono-S-Sepharose columns, using HPLC system. The gp14r protein purity was assessed by SDS-PAGE 15% and also by Western blotting using monoclonal antibodies anti-gp14 and anti-histidine. Purified gp14r was used in ELISA for detection of anti-*T.solium* in serum samples from patients with NC. For ELISA standardization different concentrations of gp14r, serum samples and conjugate dilutions and blocking substances were evaluated. **Results**: The cloning was confirmed by sequencing. The expression under different conditions showed that the Rosetta was the best strain when grown in LB broth with 100 mg of ampicillin and chloramphenicol and induction with 0.1 mM IPTG overnight at 25°C. The SDS-PAGE and Western blotting analysis showed a band corresponding to the gp14r pure protein. In the ELISA the best conditions was: antigen concentration of 5 mg/mL, serum dilution of 1:100, 1:5.000 conjugate and milk as blocking solution. **Conclusion**: The cloning strategy using synthetic DNA technology was effective, allowing obtaining recombinant protein in sufficient amount to use in immunoassays. The gp14r ELISA showed a good performance for antibody detention against *T. solium*, representing an important tool for the diagnosis of NC. **E-mail:** rperalta@vm.uff.br

Taecyst003- **Neurocysticercosis: 20 thousand computed tomography in 20 years**

Schlemper Jr BR, Ribeiro EJC, Koga TKN, Ribeiro MQ, Gutierrez L, Bortoluzzi MC, Rocha RD; Conci MV, Ceccon PNV, Camerini B.
Curso de Medicina/Universidade do Oeste de Santa Catarina, Joaçaba/Santa Catarina, Brazil.
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Introduction: studies conducted in different periods and regions in the State of Santa Catarina - Southern Brazil - showed that human neurocysticercosis (NCC) is endemic, with a positivity rate of 0.24% to 30.31%. Considered the most important parasitic disease of the central nervous system predominates in countries with poor sanitary conditions and is considered liable of eradication (World Health Organization). This study was aimed to verify the prevalence rates and evaluate if the transmission remains stable over the years. **Material and Methods**: data collection of head Computed Tomography (CT) from all patients who underwent the examination, from all causes, in a reference diagnostic imaging center, in the city of Joaçaba, Midwest of Santa Catarina, in 20 years, from 1991 to 2010, obtaining the patients' age and gender. In the statistical analysis were used the Chi-squared test of independence and trend (BioEstat 5.0). **Results**: in 19,798 head CT scans, 1302 (6.57%) were diagnosed with NCC, of which 97.4% (1194) had calcified cysts and 2.6% (108) unique and viable cysts of *T. solium*. The positivity during the study period remained constant and for the period 2006 to 2010, the rates of 7.70%, 7.69%, 6.03%, 8.17% and 6.57%, respectively, were not significant (P=0.2). The more detailed examination of calcified cysts of 22 scans showed: a) limits dimensions were 0.1 cm and 1.0 cm, with a

predominance of 0.3 cm, b) on 16 occasions had multiple cysts ranging from 0.1 to 0.6 cm, c) on 22.7% (5/22) had unique cyst and on 77.3% (17/22) were multiple lesions, with 2-18 cysts, being until 5 in 10 patients (45%), 6-10 in 3 times (13.1%) and more than 10 cysts (11, 14,15,18) in 4 patients, d) there weren't reports of swelling or inflammation around the calcifications and all of them were located in the brain parenchyma. Regarding gender, women had higher prevalence rates, in the order of 7.24% (735/10.146) and of 5.81% (561/9.652) for the men, whose difference was significantly higher in females ($P<0.001$). The analysis of the prevalence of NCC (chi-square partition) between the different age groups detected significant differences between them ($P <0.001$), with rates of 0.35% and 3.12% in childhood and adolescence, respectively, stabilized between 8.13% and 8.44% in the groups of 31-70 years and with a trend of increasing prevalence of parasitic disease with increasing age ($P <0.001$). **Main Conclusions**: NCC has high levels of endemicity in the studied region, a higher prevalence in females, rising rates increased with increasing age and constant over the years follow-up, suggesting the existence of old and permanent foci of active transmission and occurrence of reinfection. It is recommended the urgent adoption of control measures to detect and eliminate foci of transmission. **E-mail:** schlemper.junior@gmail.com

Taecyst004- **Experimental neurocysticercosis: treatment with low dosage of albendazole and praziquantel change the energetic and respiratory metabolism of cysticerci**

Leandro, L.A; Fraga, C.M; Lino Junior, R.S. Vinaud,M.C;.
Instituto de Patologia Tropical e Saúde Pública/UFG, Goiânia-Goiás, Brasil.

Taenia crassiceps is used as an experimental model for neurocysticercosis. In some strains of this parasite, as the ORF, the cysticerci are capable of reproduction by budding. It was made an analysis of the energetic and respiratory metabolism of the cysticerci of Taenia crassiceps inoculated in the brain of BALB/c mice. After 30 days of infection, these mice were treated with low dosage (3.0 and 6.0 mg/kg weight) of albendazole and praziquantel. The objective of this study was to evaluate the production of organic acids of intermediary metabolism (oxaloacetate, malate, fumarate, succinate and citrate), carbohydrates (pyruvate and lactate) and fatty acids (β-hydroxybutirate, propionate, acetoacetate and acetate) performed by cysticerci of T. crassiceps implanted in the CNS of BALB/c mice after the host treatment. With respect to the intermediate metabolism the organic acids detected were oxaloacetate, malate and succinate in all samples and there was an increase ($p <0.05$) in the production of fumarate in the groups treated with albendazole (6.0 mg / kg) and praziquantel (3.0 mg / kg) compared to the control group indicating that there was an intensification in the use of pathways energetically more profitable due to the presence of the drug. In groups treated with albendazole, propionate was detected, suggesting the use of alternative forms of energy production. Regarding the carbohydrate metabolism was observed only lactate production in treated and control groups, indicating anaerobic production of energy. As to the metabolism of fatty acids there was an increase in the production of beta-hydroxybutirate in the groups treated with albendazole indicating that the parasite used fatty acid and the beta-oxidation of the acetyl-CoA as a source of ATP production. The non-detection of beta-hydroxybutirate and acetate in the groups treated with praziquantel probably indicates that the mode of action of this drug made the parasite prefer anaerobic process as evidenced by lactate production. When comparing these results with the metabolic analysis of cysticerci of T. crassiceps removed from the peritoneal cavity of mice treated with the same drugs, it was observed important differences in the metabolism of fatty acids oxidation and anaerobic metabolism indicating that the biochemical behavior of cysticerci is related to its location and the resulting bioavailability of drugs.**E-mail:** leticia.a.leandro@hotmail.com

Taecyst005- **Epidemiological patterns of mortality related to cysticercosis in Brazil, 1999-2007**

Martins-Melo FR, Alencar CH, Ramos Jr. AN, Heukelbach J
Department of Community Health, School of Medicine, Federal University of Ceará, Fortaleza, Brazil; Swiss Tropical and Public Health Institute, University of Basel, Basel, Switzerland; School of Public Health, Tropical Medicine and Rehabilitation Sciences, James Cook University, Townsville, Australia.

Introduction: Cysticercosis of the CNS is the most common neurological disease of parasitic origin in humans, and a neglected public health problem in low and middle income countries in Africa, Asia and Latin America. In these countries, neurocysticercosis appears as a cause of disease in up to 50% of epileptic patients. Given the severity of the disease and the scarcity of population-based studies that analyze the cysticercosis-related mortality, we describe the epidemiological characteristics related to mortality due to cysticercosis in Brazil. **Material and Methods:** Mortality data were obtained from the Mortality Information System of the Ministry of Health (*SIM/MS/DATASUS*). We studied all deaths in Brazil between 1999 and 2007, in which cysticercosis (ICD-10: B69) was mentioned in the Death Certificate, as underlying or associated causes of death (multiple causes of death). We describe the epidemiological characteristics and calculated mortality rates. Trends over time were assessed by polynomial regression. **Results:** There were 1,584 deaths related to cysticercosis, 1,004 (63.4%) as the underlying cause, and 580 (36.6%) as an associated cause. The mean rate was 0.10 deaths/100,000 inhabitants. Neurocysticercosis (B69.0) was responsible for 92.5% of the total number of deaths from cysticercosis. Male gender (54.5%), white skin colour (60.3%), age 30-40 years (20.2%) and residence in the Southeast region (58.1%) were the most common characteristics. Mortality decreased over time on national level (r^2: 55%, p = 0.021). **Conclusion:** The use of multiple causes of death more accurately indicates the epidemiological situation than merely presenting the underlying cause of disease, as most of the deaths from cysticercosis were presented as associated causes. Specific interventions measures are needed to further reduce occurrence of the disease. **E-mail:** rogerlandio@bol.com.br

ANGIOSTRONGYLUS

Angio001- **First report of *Angiostrongylus cantonensis* in Porto Alegre, Rio Grande do Sul, south of Brazil.**

Bianca Cognato[1], Alessandra L. Morassutti[1], Ana Cristina Aramburu da Silva[1], and Carlos Graeff-Teixeira[1].
[1]Faculdade de Biociências PUCRS - Brazil

Angiostrongylus cantonensis is parasitic nematode discovered in pulmonary arteries and hearts of domestic rats in Guangzhou (Canton), China, by Chen in 1935. The life cycle requires intermediate host mollusks and definitive host rodents. Accidental human infection occurs by ingestion of raw or undercooked snails or slugs, paratenic hosts such as prawns, or contaminated vegetables containing the infective larvae (L3).The ingested L3 penetrate into intestinal wall and migrate to the brain and spinal cord where they may develop into fifth-stage larvae (L5) causing eosinophilic mengitis. Parasitological diagnosis is a challenge since larvae forms in the CSF is seldom founded, thus requiring the use of molecular methods for diagnosis. According with (Wang et al, 2008) more than 2820 cases have been reported in approximately 30 countries mostly in Asia and the Pacific Islands. The occurrence of *A. cantonensis* was reported for the first time in Brazil in the state of Espirito Santo. So far Pernambuco, Rio de Janeiro, Santa Catarina and Sao Paulo indicated the parasite has been circulating in those areas in view of the fact that intermediary and definitive host have been found infected. Also human cases were reported in these areas. Recently, we have been engaged in a study of *Strongyloides* spp. For this research was necessary capture rats naturally infected. One of the rats was capture in Vila Fátima, a poor neighborhood of Porto Alegre. The rat was euthanized and taken to necropsy to collect *Strongyloides* spp. worms. During necropsy the lugs reveled a suspected appearance of *Angiostrongylus* infection, thus, lungs were removed and analyzed under a stereomicroscope. In the pulmonary arteries, 11 females and 2 males of *Angiostrongylus cantonenesis* were found. These worms were clarified and mounted as permanent slides in creosoto solution and examined under a light microscope. For measurement proposes drawings of the nematodes were made with *camera lucida*. The average length of the females was 275mm and the males 210mm, which is in accordance with literature to characterize the specie. In addition, we used real time PCR for DNA confirmatory assay. 10,000 first sate larvae (L1) isolated from rat feces were used to infect two mollusks of *Bionphalaria glabratta* specie in order to produce L3. After 30 days snails were digested and L3 (104/rat) were used to infect two rats, *R. norgevicus* Wistar for

maintenance of *Porto Alegre* isolated in our laboratory. This strain could be useful for further studies on phylogenetic dispersion of *A. cantonensis.* **E-mail:** bicognato@hotmail.com

Angio002- **Differential proteomics analysis of female and male adults of Angiostrongylus cantonensis**

Zengmei Song, Changwang Pan, Shaohui Liang, Huicong Huang*
a Department of Parasitology, School of Basic Medical Sciences, Wenzhou Medical College, Wenzhou, Zhejiang 325035, P. R. China

Abstract: In this study, we identified the differentially expressed proteins of female and male adults of Angiostrongylus cantonensis through differential proteomics. We extracted and purified total proteins from male and female adults, separated proteins by two-dimensional difference gel electrophoresis(2D-DIGE) in pH 4-7, analyzed the gel images by DeCyder 7.0 software, and sacrificed the infected rats to count the number of male and female adults. It was found 28 protein spots that were differentially expressed; seven protein spots were then identified by matrix-assisted laser desorption ionization time-of-flight mass spectrometry (MALDI-TOF MS). Five proteins were up-regulated and two proteins down-regulated in male adults compared with female adults. Three of the five up-regulated proteins with known functions ascribed to them were identified as galectin-1, proteasome alpha subunit and peroxiredoxin. The two down-regulated proteins were identified as indoleamine dioxygenase like-myoglobin and galectin. Furthermore, the female was significantly greater than male adults ($P < 0.01$) in the rats. The findings demonstrate the differences in protein expression profiles and the ability to survive in the final host between female and male adults of *A.cantonensis* and may provide a theoretical basis to study their developmental biology further. **Keywords:** Angiostrongylus cantonensis; Differential proteomics; Two-dimensional fluorescence difference gel electrophoresis; Matrix-assisted laser desorption ionization time-of-flight mass spectrometry **E-mail:** hhc@wzmc.edu.cn, wenzhouhhc@sina.com

Angio003- **Phylogenetic relationship of the Brazilian isolates of the rat lungworm *Angiostrongylus cantonensis* (Nematoda: Metastrongylidae) Employing mitochondrial coxi gene sequence data**

Tainá C de C Monte [1]; Raquel O Simões [1]; Arnaldo Maldonado Júnior [1].
[1]Laboratory of Biology and Parasitology of Wild Mammals Reservoirs, Instituto Oswaldo Cruz, Rio de Janeiro

The rat lungworm *Angiostrongylus cantonensis* is a nematode that can cause eosinophilic meningoencephalitis in humans. This nematode has rodents as the main definitive host and mollusks as intermediate host. Here, we report the variability between *A. cantonensis* isolates from different geographical regions of Brazil using mitochondrial cytochrome c oxidase subunit I (COXI) gene sequences. Two distinct clades were identified among 15 different geographical isolates of *A. cantonensis* representing three distinct haplotypes (ac5, ac8 and ac9) based on eight distinct haplotypes (ac1, ac2, ac3, ac4, ac5, ac6, ac7 and ac8) from the previous study. The first clade corresponded to haplotype ac5 and ac8 from Rio de Janeiro, Sao Paulo, Pará and Pernambuco and the second one corresponded to haplotype ac9 from Rio de Janeiro (port area). Interestingly, it was showed that Brazilian haplotype ac5 was closely related to isolates from Asian Continent, Japan and China, and yielded a clade with other Brazilian haplotype ac8. A divergent Brazilian haplotype was elucidated and that was assigned haplotype ac9 which was related to Chinese haplotype ac6 and Japanese haplotype ac7. This fact supports the hypothesis that the genetic variation observed between Brazilian isolates is consistent with the appearance of *A. cantonensis* in Brazil as result of multiple introductions of parasite-carrying rats during commercial maritime trade among endemic regions. The rapid spread of intermediate host, *Achatina fulica*, also seems to contribute to the dispersion of this parasite and infection of the definitive host for different Brazilian regions. **Keywords:** *Angiostrongylus cantonensis*; *Rattus novergicus*; *Achatina fulica*; Brasil. **E-mail:** maldonad@ioc.fiocruz.br

Angio004- **Proteases of *Angiostrongylus costaricensis* nematodes: Potential targets for diagnosis and treatment of abdominal angiostrongyliasis**

Rebello, K.M.[1-3], Branco-Ribeiro E.L.[1], Mota, E.M.[2], Perales, J.[1], McKerrow J.H.[3], Neves-Ferreira A.G.C[1]
Laboratories of [1]Toxinology and [2]Pathology, Oswaldo Cruz Institute, Fiocruz, RJ, Brazil; [3]Department of Pathology, Sandler Center for Drug Discovery, University of California, San Francisco, CA, USA.

Angiostrongylus costaricensis is a nematode that causes abdominal angiostrongyliasis, a widespread human parasitism in Latin America. This study characterized the proteolytic activity of protein extracts of different developmental stages of this helminth. First-stage larvae (L1) were obtained from the feces of infected rodents and L3 larvae were collected from mollusks infected with L1. L1 larvae invade mollusks while L3 invade intestine of mammals. Adult worms were recovered from rodent mesenteric arteries. Protease activity was assayed with several AMC (7-amino-4-methyl-coumarin)-based fluorogenic peptide substrates for cysteine and serine proteases. Using N-t-Boc-Leu-Gly-Arg-AMC, a significant enzymatic activity was observed in the protein extracts of both larval stages (L1 >> L3), with peak activity at pH 8. L1 and L3 activity was inhibited by benzamidine and ortho-phenanthroline, respectively. Neither larval protease was inhibited by E-64 or pepstatin A. This suggests L1 larvae produce a serine protease and L3 a metalloprotease. Adult female extracts were active only against TFA- Tyr-AMC, a substrate for chymotrypsin and cathepsin B, with optimum activity at pH 7.5. The characterization of protease expression throughout the *A. costaricensis* life cycle may reveal key factors influencing the process of parasitic infection. **Keywords:** *A. costaricensis*, proteases. **Support:** Fiocruz, CAPES, CNPq, FAPERJ. **E-mail:** karinamr@ioc.fiocruz.br

OTHER HELMINTHS

Helminth001- **Morphological and molecular characterization of *Paragonimus heterotremus* complex isolated from a new crab host from India**

Devi, K. R.*[,1,2], Narain, K.[2], Nirmolia, T.[2], Mahanta, J.[2] and Agatsuma, T.[1]
[1]Department of Environmental Health Sciences, Kochi Medical School, Oko, Nankoku City, Kochi 783-8505, Japan; [2]Regional Medical Research Centre, N.E. Region (Indian Council of Medical Research)

Introduction: Paragonimiasis is an important public health problem in many countries of the world. In India pulmonary paragonimiasis due to *Paragonimus heterotremus* is emerging as an important disease. Numerous foci of human infection have been detected earlier in Arunachal Pradesh, Manipur and Nagaland. Earlier studies have incriminated *Indochinamon manipurensis* (formerly *Potamiscus maipurensis*) as crab intermediate hosts of *P. heterotremus* from Manipur and Nagaland. In this study we describe morphological and molecular characteristics of metacercariae, adult worms and eggs of *P. heterotremus* recovered from a new crab host of *P. heterotremus* from Arunachal Pradesh and Assam. **Materials and methods:** Fresh water crabs were collected in Arunachal Pradesh and Assam and were examined for lung fluke metacercarial infection. The metacercariae were fed to Wistar rats to develop sexually mature adult worms for morphological and molecular studies. Partial DNA sequences of mitochondrial cox1 and nuclear ribosomal 28S and ITS2 gene were determined for individual metacercariae and adult worms collected. Phylogenetic analysis of *P. heterotremus* lung flukes was carried out using Bayesian approach and maximum likelihood methods. **Results**: Freshwater crab, *Barytelphusa cunicularis* was found to be an important new second intermediate host of *P. heterotremus* in Assam and Arunachal Pradesh, India. Phylogenetic analysis confirmed that *P. heterotremus* is actually a complex of species and the Indian forms showed molecular divergence when compared to their counterparts from China, Vietnam and Thailand. Morphology of adult worms was characteristically similar to forms described elsewhere. However, the eggs showed some differences in morphological features. **Main conclusions:** This study shows that *Barytelphusa cunicularis* is an important new crab host of *P. heterotremus* of India and molecular evidence suggests that *P. heterotremus* is a complex of species and Indian forms represents a separate lineage within the complex. **E-mail:** krekha75@yahoo.co.in

Helminth002- Development of 18s- and 28s-rDNA-targeted PCR detection method for trematode in fishes

Eun-Hee Shin[1,2], Kyoung-Ho Pyo[1], Young-Sang Hwang[1], Jong-Yil Chai[1], In-Gyun Hwang[3], Hwa Jung Lee[4]
[1]Department of Parasitology and Tropical Medicine, Seoul National University College of Medicine, Seoul 110-799, Korea, [2]Seoul National University Bundang Hospital, Seongnam 463-707, Korea, [3]Food Microbiology Division and [4]Scientific food Investigation team, National Institute of Food and Drug Safety Evaluation, Chongwon-gun, 363-951, Korea

A new diagnostic method of intestinal trematode based on PCR-RFLP is necessary for identifying co-infected intestinal parasites. Although many kinds of diagnosis methods are already developed for parasite detection, these methods cannot be used for specifically detecting various parasites at once. Accordingly, in this study, we developed a new diagnostic method using 18s and 28s rRNA-RFLP methods. Fishes were used for isolation of metacercariae (*Clonorchis sinensis, Metagonimus yokogawai, Heterophyes nocens, Pygidiopsis summa, Gymnophalloides seoi*). gDNA was collected from metacercariae for PCR and DNA sequencing. The target gene was 18s and 28s rRNA. The sequences were analyzed by Geneious Pro program. The prediction data (virtual gel system) was confirmed. The 18s and 28s rRNA of five kinds of parasites was sequenced and analyzed for developing RFLP method. All data was compared with in silico (prediction data) data. To diagnose the five kinds of parasites, 4 kinds of restriction enzymes (Acc1, Ava2, MSp1, and Hinf1) for 18s rRNA and 8 kinds of restriction enzymes (Msp1, Ava2, Mbo1, Mse1, Acc1, Hinf1, Xba1, Xho1) for 28s rRNA were used for RFLP analysis. The protocol is clear and easy to apply to detect trematode metacercariae parasitic in intermediate host. This method is very specific detection method for identifying above mentioned parasites, and will be a good detection method used even by peoples who are not experts and don't know the morphology of parasites. **E-mail:** ehshin@snu.ac.kr

Helminth003- *Clonorchis sinensis* antigenic proteins for development of serologic rapid diagnostic kit

Lee JY[1], Kim TI[1], Chong CK[2], Youn H[3], Hong SJ[1*]
[1]Department of Medical Environmental Biology, Chung-Ang University College of Medicine, Dongjak-gu, Seoul 156-756, Republic of Korea; [2]Department of Biochemistry, College of Natural Science, Chungbuk National University, Chungbuk, 361-763, Republic of Korea; [3]College of Veterinary Medicine Seoul National University, Kwanak-gu, Seoul 151-742, Republic of Korea

Human clonorchiasis is a chronic disease endemic in East Asia, and debilitating inhabitants and threatening their health. Early diagnosis and treatment of clonorchiasis is crucial to curb disease development and reduce morbidity. To develop a serologic rapid diagnostic kit for clonorchiasis, we produced recombinant proteins of high antigenic specificity and formulated a multiple antigen cocktail of high sensitivity and specificity by combining single recombinant proteins. *Clonorchis sinensis* transcriptome was analyzed for secretory proteins and 607 ESTs coding putative candidate proteins were retrieved. By two-step PCR, transcription and translation regulatory elements were added to the target cDNA and 434 recombinant proteins were synthesized from the PCR-amplified cDNAs with wheat germ-based cell-free protein synthesis system (CFS). The proteins arrayed on a slide chip were screened for antigenicity against *C. sinensis*-infected patients' sera and 18 antigen candidates were selected, showing over 6.9-fold fluorescence intensity than normal human sera. Antigenicity of the candidate proteins was checked against human sera of clonorchiasis, opisthorchiasis and normal control on a protein array and showed over 80% sensitivity and 60% specificity. Recombinant proteins of the 6 clones were produced in maxi-scale by CFS and evaluated for antigenicity by ELISA against a large number of fluke-infected human sera. CsAg17 showed 77% sensitivity and 71% specificity, challenging to those of the crude antigen (90% sensitivity and 46% specificity). Recombinant proteins of the 5 candidates were produced in *E. coli* and their antigenicity was re-evaluated by ELISA. The CsAg17 revealed 77% sensitivity and more than 95% specificity. A cocktail antigen prepared by mixing same amount of recombinant CsAg12, CsAg15, CsAg17 and CsAg21 proteins showed 74% sensitivity and 97% specificity by ELISA. The rapid diagnostic kits (RDTs) fabricated using the CsAg17 and the cocktail antigens showed 74% and 76%

sensitivity and 98% and 97% specificity, respectively, against *C. sinensis*-infected human sera. RDT using these recombinant antigens deserves to be optimized for field trials. **E-mail:** hongsj@cau.ac.kr

Helminth004- **Immunogenic activity of *Pterobothrium crassicolle* (cestoda, Trypanorhyncha) and cross reaction with *Pterobothrium heteracanthum*, in a mouse model**

Mattos, D.P.B.G[1], Vericimo, M.A.[2], Lopes, L.M.S.[3], São Clemente, S.C.[3]
[1] Instituto Biomédico - Universidade Federal Fluminense, Niterói, Brazil; [2] Instituto de Biologia - Universidade Federal Fluminense, Niterói, Brazil; [3] Faculdade de Veterinária - Universidade Federal Fluminense, Niterói, Brazil.

The cestodes *Pterobothrium crassicolle* and *Pterobothrium heteracanthum* (Cestoda, Trypanorhyncha) are common parasites found in marine teleost fishes of South America. The plerocercoid stage can develop in viscera and musculature of these animals. Some fish-borne parasitic allergens can induce several manifestations in humans, either by the ingestion of raw or cooked fish. Currently, some molecules of other fish parasites can be implicated in allergies and anaphylaxis development, but the allergenic responses of *P. crassicolle* proteins is not yet known. The aim of the study was to determine the immunogenic potential of components present in the crude larval extract (CLE) of *P. crassicole* plerocercoid stages and to verify cross reaction with *P. heteracanthum* in immunized mice. Ten female BALB/c mice were immunizated with extract of *P. crassicolle* plerocerdoid stage (50 µg of CLE with 2,0mg of commercial alum gel suspension/mouse, intraperitoneally) in day 1 and the day 35. In parallel, five animals received only the alum gel suspension as control. Blood samples were colected by retro-orbital bleeding on 0 (before inoculation), 14, 21, 35, 42, 49 and 56 days post immunization (dpi). The serum samples were tested for specific IgG and IgE levels by ELISA. The antigenic protein profile and the immunoreactivity were analyzed by SDS-PAGE and western blot respectively. The same methods were applied to evaluate the possibility of cross reactions with antigens of *P. heteracanthum* plerocercoid stages. The study was approved by the Ethics Committee on Animal Research of the Universidade Federal Fluminense (038/2009). Results: Serum samples of immunized animals with CLE of *P. crassicolle* showed specific IgG and IgE by ELISA, both in primary and secondary responses. SDS-PAGE revealed a protein profile from 50 to 150 kDa for most proteins of *P. crassicolle.* Specific IgG recognized *P. crassicolle* proteins of 120-150kDa, 70-85 kDa, 60 kDa, 50-60 kDa and 50 kDa. The sera of immunized animals showed cross reactivity when tested for *P. heteracanthum* antigens by ELISA. When the same sera were tested for *P. heteracanthum* proteins, specific IgG recognized all immunogenic proteins, despite the different SDS-PAGE protein profile observed for *P. heteracanthum.* Results suggest that CLE of *P. crassicolle* could induce the development of specific IgG and IgE in immunized animals, and both *P. crassicolle* and *P. heteracanthum* share antibodies recognition sites. **E-mail:** danuzamattos@vm.uff.br

Helminth005- **CHD and SET/TAF differential expression during *Mesocestoides corti* (Platyhelminthes, Cestoda) strobilation**

Costa, C.B., Santos, J.H., Monteiro, K.M., Zaha, A., Ferreira, H.B.
Centro de Biotecnologia, Universidade Federal do Rio Grande do Sul, Porto Alegre, RS, Brazil.

Chromodomain-helicase (CHD) and the SET/TAF histone chaperone are proteins known to be implicated in processes of chromatin remodeling and regulation of gene expression associated with the control of developmental processes in different organisms, such as *Caenorhabditis elegans, Drosophila melanogaster*, mouse and human. In *Mesocestoides corti*, a model cestode parasite, CHD and SET/TAF related sequences were isolated in a screening for genes differentially expressed in larvae (tetrathyridia) and adult worms. We are now studying the expression pattern of *M. corti* CHD and SET/TAF orthologues (McCHD and McSET/TAF), in order to assess their potential as molecular markers for the strobilation process of eucestodes, i.e. the development of larvae into segmented and sexually differentiated adults. McCHD and McSET/TAF expression was investigated by immunobloting, immunohistochemistry, using antibodies developed against recombinant versions of the studied proteins, and by RT-PCR. Immunoblots demonstrated 8-fold overexpression of McCHD in tetrathyridia in comparison to adults, and 3-fold

overexpression of McSET/TAF in adult worms in comparison to larvae. Immunostaining of histological sections from tetrathyridia and strobilation worms also showed that McCHD is more expressed in tissues of tetrathyridia, and McSET/TAF is more expressed in tissues of adult worms. Both McCHD and McSET/TAF showed a uniform pattern of immunostaining, no differences in distribution between the tissues. The transcription levels of *McCHD* and *McSET/TAF* genes were assessed in different strobilation stages (bona fide tetrathyridia, tetrathyridia 24 h after strobilation induction, strobilation worms 72 h after induction, and fully segmented worms obtained after 6 days of culture). Both genes were transcribed throughout the strobilation process, with subtle differences in the levels of transcription between the analyzed stages. Real-time PCR will now be performed to better quantify the level of transcription of the studied genes. **Supported by:** CAPES, CNPq. **E-mail:** carol_bcosta@cbiot.ufrgs.br

Helminth006- **Aspects of *Physaloptera mirandai* (nematode:spirurid) revealed by scanning electron microscopy**

Mello, Wildon Novais[a,b]; Torres, Eduardo José Lopes [a,b*]; Pinto, Israel de Souza[d]; Anjos, Débora Henrique da silva [a]; De Souza, Wanderley[a,b,c]; Miranda, Kildare[b,c].
a) Laboratório de Biologia de Helmintos Otto Wucherer- UFRJ, RJ. Brazil; b) Laboratório de Ultraestrutura Celular Herta Meyer-UFRJ, RJ. Brazil; c) Diretoria de Programas do INMETRO, RJ. Brazil; d) Laboratório de Parasitologia - UFES, ES. Brazil.

Species of the *Physaloptera* genus are nematodes that parasitize different mammals. These vertebrate groups play an important role in the dynamics of Tropical Forests and are reservoirs for sylvatic zoonoses that can affect man. *Physaloptera* infection causes significant morbidity and mortality, and their presence in the wall stomach may cause granulomatous inflammation, ulcers and gastric perforation. Light microscopy (LM) is generally the most popular technique used in helminthological taxonomy generally uses for the characterization of morphological and morphometrical parameters, although different groups have used scanning electron microscopy (SEM) to further characterize the detailed structure of the nematode surface. In this work, SEM was used to identify morphological characteristics of *Physaloptera* nematodes and revealed details that may be potentially used for the redescription of the species. For that, marsupials *Metachirus nudicaudatus*, were captured in the Biological Reserve Duas Bocas (permit number 02009.001798/2006), a remaining region of Atlantic Forest in the Espírito Santo State, Brazil, and their stomachs collected. Nematodes found in the stomach were washed in saline and fixed in 70% ethanol. For SEM, samples were post-fixed in osmium tetroxide, dehydrated in ethanol series, critical point dried, mounted in a metal stub, sputtered with gold and analyzed with FEI-Quanta 250. *Physaloptera mirandai* parasitizing the stomach of the *M. nudicaudatus* were identified. Two semicircular pseudo lips, each bearing a pair of papillae, one amphid, one tripartite structure and porous-like regions were identified in the cephalic end. In addition, an imprint of these structures was observed in the fixation region of the nematode in the host stomach wall. 21 papillae, three more than the original description, and two phasmids were observed in the posterior end of the male. In the cuticular surface of the female vulva, one imprint of the posterior end of the male was also observed. Taken together, the results reveal morphological characteristics that may contribute with in novel taxonomical information of the species *P. mirandai*, with further insights into the host stomach alterations and copulatory mechanisms of these parasites. **Financial support:** CNPq, FAPERJ, CAPES-PROCAD.**E-mail:** ejtorres@biof.ufrj.br

Helminth007- **Emerging cardiopulmonary vector-borne nematodes affecting dogs and cats in Europe**

Di Cesare A., Castagna G., Traversa D.*
Department of Comparative Biomedical Sciences, Faculty of Veterinary Medicine, University of Teramo, Piazza Aldo Moro 45, 64100, Teramo, Italy

The parasitic metastrongyloids *Aelurostrongylus abstrusus* (affecting cats), *Angiostrongylus vasorum* (affecting dogs), and the filarioid *Dirofilaria immitis* (affecting both dogs and cats) are presently spreading and emerging in Europe, including previously non-endemic regions. Heartworms (*A. vasorum* and *D. immitis*) and lungworms (*A. abstrusus*) are of relevance if one considers their pathogenic potential, the

hindrances inherent in the diagnosis and the zoonotic role *D. immitis* may play. These nematodes require a biological vector for their development: *A. abstrusus* and *A. vasorum* are transmitted by gastropods, while *D. immitis* by mosquitoes. Hence, the presence and abundance of the vectors influence the likelihood for a pet to be parasitized by a cardiopulmonary nematode. Temperature, moisture and water availability influence development and survival of biological vectors, thus global warming is likely implicated into the dispersion of the infections. Also, changes in vector seasonal population dynamics might indeed currently increase the dispersal and spread of vector-borne nematodes. It has been recently shown that that warm climates facilitate larval *Dirofilaria* development in mosquitoes. Also, it is clear that the infection in several countries of Europe has a seasonal dynamics with peak transmission in summer (i.e. development of nematode larvae in vectors is temperature-dependent) and that the spread of *D. immitis* in the Old Continent is increasing. Analogously, there is evidence of both a rise in the number of cases by *A. vasorum* in known endemic foci and the appearance of new foci in free areas. Indeed, European geographic regions at risk of spread and/or invasion by *A. vasorum* are central-northern countries and Italy. An expansion in the geographical range of *A. abstrusus* has been also demonstrated and, for instance, there are areas where the prevalence of this lungworm can be up to 20%. Although the geographic dispersion of slugs and snails driven by global warming likely play a role in the incidence and distribution of these parasites, further study are warranted to confirm these hypotheses. Other possible factors, e.g. animal travel, international trade, lack of large-scale surveillance and control programs might also play a role in such emergence. Thus, there is significant risk of introduction of these parasites through the movement of infected animals to previously non-endemic areas. Moreover, the introduction of competent vectors through commercial trade goods may favour the establishment and spread of parasites to new regions, as already suggested for *Aedes albopictus* (the Asian tiger mosquito) and *D. immitis*. Given the impact heartworms and lungworms may have on animal health, the zoonotic potential of *D. immitis* and the trend in geographic spread, it is crucial that parasitologists and veterinary practitioners are aware of their importance and of appropriate diagnostic techniques and control plans. **E-mail:** dtraversa@unite.it

Helminth008- **Recovery and identification of helminths in a study of the gastrointestinal tract of dogs**

Coronato, B.; Barbosa, A.S.; Bastos, O.M.P.; Laurentino-Silva, V.; Figueiredo, F. B; Souza, M. B.; Duarte, R.; Cortez, A.; Lopes Torres, E.J.; Anjos, D.H.S.; Uchoa, C.M.A.
Laboratory of Parasitology, Instituto Biomédico, UFF, Niterói- Rio de Janeiro, Brazil.

Introduction: Helmintic infections in companion animals, as dogs, have a great importance for the animal health. The zoonotic potencial of some of these parasites represents a risk for human population, increased by the close proximity between dog and man. The diagnosis of these parasites are usually by fecal examination, which sometimes do not represent the real helminthic fauna, associated to irregular release of evolutive parasitic forms. Furthermore, the parasitological feces examination does not allow the identification of species. **Material and Methods:** The study was carried out in dogs from the Ilha da Marambaia, south of Rio de Janeiro state, Brazil. These adult dogs were naturally infected by visceral leishmaniasis. Therefore, the dogs were euthanized, according to Brazilian Healthy Ministry (recommended by WHO), and necropsied. The study was approved by the Ethics Committee on the Use of Animals/Universidade Federal Fluminense. Nine dogs, seven male and two female were euthanized and the alimentary tract was dissected out. Oesophagus, stomach, small intestine, ceacum and colon were separated. Each portion was opened longitudinally and examined for the presence of worms. The nematodes recovered were fixed in heated AFA solution and cleared in lactophenol d'Amann. The cestodes were chilled and fixed with AFA solution. Identification and counting of parasites were made using morphological analysis. Feces collect from gut were processed by Ritchie modified by Young, Lutz and Sheather modified by Huber techniques. **Results:** The species recovered were hookworm *Trichuris vulpis* and *Dipylidium caninum*. All dogs had hookworms and a total of 110 adults were recovered from small intestine and identified morphologically as *A. caninum*. *D. caninum* was found in the small intestine of one dog, from where 35 adults were collected. *T. vulpis* was observed infecting the large intestine of one dog and only two worms were recovered. Fecal examination identified eggs from hookworm, D. caninum, T. vulpis and Toxocara canis. In two dogs that adult worm was found, the fecal examination did

not detected parasitic forms of these species and in another, only the parasitic form was detected in feces. **Main Conclusions:** The necropsia has been shown as a complementary technique, mainly to identify species. In this study was found a higher frequency of infection by nematodes in dogs, in special for *A. caninum*, parasite highly pathogenic for dogs, and that represents an important agent with zoonotic potential. **E-mail:** biacoronato@vm.uff.br

Helminth009- **Helminth eggs viability in sewage sludge and lettuce (*Lactuca sativa*) grown in soil fertilized with sludge in Curitiba (Paraná, Brazil)**

Canova, T, Castro, EA; Paulino, RC, Thomaz-Soccol, V.
Department of Basic Pathology, Federal University of Paraná, Postgraduate Program in Microbiology, Parasitology and Pathology, Curitiba, Paraná, Brazil

The environmental pollution caused by disposal of waste, especially sewage sludge constitutes a public health problem. An alternative solution would be to use it as fertilizer in agriculture. The resolution no. 375 (CONAMA) sets criteria for the agricultural use of sewage sludge in relation to contamination by pathogens. The objective of this study was to determine the viability of helminth eggs in raw sewage sludge and limed sludge, soil fertilized with sewage sludge and lettuce grown in this soil. The sewage sludge was obtained from the Sewage Treatment Plant Belém (Curitiba, Paraná, Brazil) in four samples (spring, summer, autumn and winter). The soils used for the experiment were as follows: control (soil + earthworm humus), soil + raw sludge, soil + limed sludge, with five replicate each. The lettuce was grown in soil in plastic pot at the research station. After harvesting the lettuce, the soil was analyzed at three depths: 5cm, 10cm and 15cm. Helminth eggs were detected using the Yanko modified method (Thomaz-Soccol *et al.*, 2000). The lettuce was also analyzed by Oliveira and Germano (1992) method. Statistical analysis was performed by nonparametric Mann-Whitney test. In raw sludge collected in summer was found more eggs per gram of dry weight (24.08 eggs/g dry wt) and greater variability of helminths: *Ascaris lumbricoides, Hymenolepis diminuta, Toxocara canis,* Trichuroidea*, Trichuris vulpis*. However, the highest percentage of viable eggs was found in winter (33.3%). There was no statistically significant difference between the average of helminth eggs found in soil + limed sludge and control, in any depth or season. In soil + raw sludge was detect 0.26 eggs/g dry wt. The mean was significantly higher than the soil + limed sludge. On the control soil, although no statistical difference, it was observed an increase in the number of eggs within deeper soil. The same was observed in at least two samplings in soil + raw sludge and soil + limed sludge. No helminth eggs were found in lettuce samples grown in the soil. Further research testing field conditions are necessary to add data to know the real impact of helminth eggs present in sludge in environmental and public health. **E-mail:** ecastro@ufpr.br

Helminth010- **Survey of parasites in coins and bills circulating in the city of Niteroi - RJ**

Sudré, A.P.,Franco B.O.P., Zaniboni B.,Gonçalves D.S., Santos F.L.A.A., Branco L.G.,Guerra R.S., Neiva R.C., Brener B.
Universidade Federal Fluminense – Niterói – Rio de Janeiro - Brazil.

Introduction: Epidemiological studies demonstrate a high prevalence of intestinal parasites in Brazil. Those represent an important public health problem and, in most cases, are related to poor hygiene. Unanimated objects (especially those with higher circulation) become epidemiologically relevant when transmission forms of parasites have great resistance in the environment. Thus, the aim of this study was to verify the frequency of parasite contamination of coins and bills collected from commercial establishments with wide circulation of currencies in the city of Niteroi-RJ. **Material and Methods:** sample collection and processing was performed according to Levai et al (1986), with minor changes. A total of 89 samples (60 bills and 29 coins) were collected at commercial establishments with wide circulation of currencies in different neighborhoods of Niteroi. Bills of R$2,00 and R$5,00 were collected, stored separately in plastic bags and identified until processing. Coins of R$0,50, R$0,10 and R$1,00 collected from each place were stored in plastic bags and processed together. The bills and the set of coins from each place were washed with 15-30mL distilled water using disposable brushes with nylon bristles

(Bitufo®) and metal tweezers. The resultant washing liquid was centrifuged (2.000rpm/2min.), the supernatant was discarded and 7mL 10% formalin was added to the sediment. Five slides from each sample were analyzed under optical microscope. **Results:** From the 60 bills analyzed, 4 (6,7%) were positive for nematode larvae and 3 (5%) for mites. From these samples positive for nematode larvae, 2 were R$ 2,00 bills and 2 were R$5,00 bills, all of them were from different commercial establishments and neighborhoods. The larvae observed in those samples were partially altered and a better identification was not possible. The three samples positive for mites were R$5,00 bills, all of them from different commercial establishments and neighborhoods. One bill of R$5,00 was positive for strongylid egg, which contained a partially altered larvae inside. All the coins analyzed were negative after double reading of slides by two different readers. Main **Conclusions:** The presence of nematode larvae, mites and strongylid egg indicated that bills and coins can be potential carriers of parasitic structures capable of infecting humans. Because their rapid and indiscriminate circulation, bills and coins are potential vehicles for transmission of parasites, confirming previous results published by others researchers. **E-mail:** asudre@id.uff.br

MYCOSIS

CANDIDIASIS

Candida001- **Prevalence of candida species of the oral cavity of HIV seropositive patients**

Guerra, Ana Lucia Tercas[1] , Macau, Weline Lopes[2] , Marques, Sirlei Garcia[3] - Silva, Conceição de Maria Pedrozo[4]
1Universidade Federal do Maranhão, São Luis, Brasil. 2Universidade Federal do Maranhão, São Luis, Brasil. 3Hospital Universitário Presidente Dutra, São Luis, Brasil. 4Universidade Federal do Maranhão, São Luis, Brasil.

Introductio: The genus Candida it is the fungi of type yeasts and that participate in the normal human microbiota can cause disease (candidiasis) in situations that depress the immune. Such infections can be simple of clinical point of view, as the colonization of mucous, or of complex way, with systemic frameworks resulting in the invasion of various organs. In this context, the oral candidiasis has the main etiologic agent the Candida albicans, that is an opportunistic micro-organism, which to infect not depends only on its virulence, but above all, of the variables of the host. Among these variables, the bearers of the Acquired Immunodeficiency Syndrome (AIDS) have a high susceptibility to develop fungal infections due to the low number of lymphocyte -T CD4. In these patients, it is estimated that candidiasis occurs with a prevalence of 80% to 90% being that 10% to 20% of these patients die from fungal infection. Therefore, this study aimed to verify the prevalence of Candida species from the oral cavity of HIV seropositive patients of a hospital from Sao Luis - MA City. **Materials and Methods:** It was obtained oral secretion from 50 HIV seropositive patients of hospital Getúlio Vargas, from the São Luís/MA. The samples were collected by swab technique and were kept in agar saubouraud dextrose 2% (Difico) for 48 h at 37 ° C. The isolates of Candida of the HIV seropositive patients were identified by chromogenic Candida Cromagar ® medium and by the Vitek II YBC. **Results:** From the total of patients studied (n = 50), was found a prevalence of 76% (38) of patients with oral candidiasis, of whom were isolated 6 Candida species (C. albicans, C. glabrata, C. krusei, C. tropicalis, C. famata and C. parapsilosis). The total number of isolates was 48, because some patients presented more than one species of Candida. Thus, in 2.5% (1) of the patients were isolated four species of Candida, in 2.5% (a) were isolated three species, in 21% (8) were isolated two species and in 74% of patients were isolated only one species of Candida. Among the total of isolates, the species Candida albicans was the most prevalent corresponding to 60.5% (29) isolates, followed by the species C. glabrata, C. Krusei, C.tropicalis, each one with 10.5% (5) of prevalence, the species C. famata, and C. parapsilosis showed lower prevalence, both corresponding to

4% (2) of the isolates. **Conclusion:** Considering the results of this study, can be conclude that there was a high prevalence of HIV seropositive patients with oral candidiasis, being Candida albicans the most prevalent species. Thus, due to the fact that infection can progress to a systemic framework, this reality becomes worrying, should be effective measures adopted for its control. **E-mail:** analuciatercas@gmail.com, welinizinha@hotmail.com

Candida002- **Epidemiological characteristics of candidúrias in university hospital in Campo Grande, Mato Grosso do Sul**

Lima, GME; Nunes, MO; Nunes, JO; Paniago, AMM
University Hospital Maria Aparecida Pedrossian / UFMS. Campo Grande, Mato Grosso do Sul, Brazil.

Introduction: Candiduria is the growth of *Candida spp* on culture of urine collected for proper technique, and it may or may not be involving signals and / or symptoms of urinary tract infection. It is a frequent event among patients exposed to risk factors, and up to 20% of hospitalized patients may have candiduria along the hospital, particularly those admitted to intensive care unit. **Objective:** To describe species, susceptibility profile and epidemiological features of cases of candiduria in the University Hospital (NHU / UFMS) in Campo Grande, Mato Grosso do Sul, in the period from July to December 2011. **Materials and Methods:** We analyzed the urine samples whose culture was positive for *Candida spp* in the Book Sample of the Clinical Laboratory of NHU. Patient data were obtained from the examination request form. Results: We registered 60 cases of candiduria in the period, most often found in the adult ICU (38.3% / 23), the Emergency Medical Service unit (2 5% / 15) and Medical Clinic (15% / 09) of the hospital. Most patients were female (51.7% / 31), ranging in age from three months to 93 years. Among the cases of candiduria, it was observed high percentage (71.7% / 43) of patients over 60 years, as opposed to low frequency in those with less than 20 years (5.0% / 03). The cultures had colony counts greater than 100,000 CFU / mL (86.9% / 53) and isolated Candida species were *C. albicans* (36.7% / 22), *C. tropicalis* (28.3% / 17), *C. glabrata* (21.7% / 13), *C. krusei* (5.0% / 03), *C. lusitaniae* (3.3% / 02) *C. parapsilosis* (1.7% / 01), *C. guilliermondii* (1.7% / 01) and *C. kefyr* (1.7% / 01). There was one case of *C. krusei* that evolved to mixed infection by *C. tropicalis* and *C. krusei* in a cardiology ICU. All isolated Candidas were sensitive to Amphotericin B. Three cases of *C. krusei* and one of *C. glabrata* were resistant to fluconazole. One case of *C. glabrata* susceptible dose dependent to fluconazole and one case of this species with resistance to voriconazole were detected. Exam Analysis of Urine Sediment (EAS) were observed in leukocyte count greater than five per field (87% / 47), yeast being displayed in most samples (96.7% / 58). Only one sample showed no yeasts on microscopy and in six samples EAS was not performed. **Conclusions:** The study of Candidurias, as well as determining the susceptibility profile of *Candida spp* in hospitalized patients, helps to compose the regional overview of this infection, since NHU / UFMS is a referral hospital in MS. It is noteworthy that urine samples with pyuria on microscopy and yeast should be subjected to fungal culture. **E-mail:** geespindola@hotmail.com

Candida003- **Prevalence and antifungal susceptibility profile of *Candida* spp. isolated from patients with candidemia**

Silveira M.[1], Correa A.F.[1], Rocha C.[1], Nagen V.D.[1], Fortaleza C.M.C.B.[2], Levorato A.D.[2], Mendes R.P.[2], Moris D.V.[2]
1. Hospital Estadual de Bauru, Bauru – São Paulo State, Brazil. 2. Departamento de Doenças Tropicais e Diagnóstico por Imagem – Faculdade de Medicina de Botucatu – UNESP, Botucatu, São Paulo State, Brazil.

Introduction: Yeasts of the genus *Candida* are able to disseminate into the bloodstream in susceptible hosts, which has increasingly been observed in recent years. Candidemia studies have documented geographic differences in epidemiology, underscoring the need for surveillance to monitor trends, especially in intensive-care units (ICUs). We conducted prospective candidemia surveillance at Bauru State Hospital, São Paulo, Brazil to assess the incidence, species distribution and frequency of antifungal resistance. **Methods:** A prospective laboratory-based surveillance was carried out from June 2011 to February 2012. A case of candidemia was defined once we obtained a positive *Candida* isolated from the patient's bloodstream. Incidence rates were calculated per 1,000 patient-days. Antifungal susceptibility to

fluconazole (FLC) was performed using the broth microdilution assay, according to the AFST/EUCAST guidelines. **Results:** Ten cases of candidemia were detected from June 2011 to February 2012. Four cases of candidemia episodes were recorded at adult ICU, four at pediatric ICU and two at the burn care unit. Patients' age ranged from 30 days to 87 years old. The incidence rate was 1.51 cases per 1,000 patient-days at adult ICU, 3.00 cases per 1,000 patient-days at pediatric ICU and 3.79 cases per 1,000 patient-days at burnt care unit. *C. glabrata* was identified in four patients, *C. albicans* in three and *C. tropicalis* in other three. All isolates were susceptible to FLC. **Conclusions:**. The higher frequency of non-*Candida albicans* species agrees with findings of other studies. The numbers of isolates are not enough to analyze the susceptibility showed by *C. glabrata* to FLC. **E-mail:** danimoris@yahoo.com.br

Candida004- Species distribution of *Candida* spp. isolated from burn patients at a State Hospital.

Rocha C.[1], Silveira M.[1], Correa A.F.[1], Nagen V.D.[1], Fortaleza C.M.C.B.[2], Levorato A.D.[2], Mendes R.P.[2], Moris D.V.[2]
1. Hospital Estadual de Bauru, Bauru – São Paulo State, Brazil.2. Departamento de Doenças Tropicais e Diagnóstico por Imagem – Faculdade de Medicina de Botucatu – UNESP, Botucatu, São Paulo State, Brazil.

Introduction: Owing to the destruction of the skin barrier and depressed systemic immune function following burn injury, major burn victims are prone to infection by various pathogenic microorganisms specially *Candida* spp. **Patients and methods:** We carried out a prospective study at Bauru State Hospital, São Paulo, Brazil, to assess the incidence and species distribution of *Candida* spp. isolated from burn patients. The study was performed from June 2011 to February 2012; incidence rates were calculated per 1,000 patient-days. The patients' age ranged from 7 to 87 years old. **Results:** Six samples of *Candida* spp. were isolated from six burn patients. The positive samples were isolated from urine (n=3), blood (n=2) and catheter (n=1). The incidence was 11.38 cases per 1,000 patient-days. *C. albicans* was the most common species (n=4), followed by *C. glabrata* (n=2). **Conclusions**: This study suggested that *Candida albicans* is the most prevalent isolate from burn patients at Bauru State Hospital. The prospective study of the *Candida* spp. prevalence is ongoing, including susceptibility to fluconazole and other antifungal compounds. **E-mail:** danimoris@yahoo.com.br

Candida005- Species distribution and antifungal susceptibility profile of oral *Candida* isolates from HIV-infected individuals.

Moris D.V.[1], Melhem M.S.C.[2], Martins M.A.[2], Souza L.R.[1], Szeszs M.W[2], Carvalho L.R[3], Mendes R.P.[1]
1. Tropical Diseases Area – Faculdade de Medicina de Botucatu – UNESP, Botucatu, São Paulo State Universiy Brazil. 2. Adolfo Lutz Institute, São Paulo State Healthy Secretariat, São Paulo, Brazil. 3. Departamento de Bioestatística, Botucatu, Instituto de Biociências, São Paulo State University – UNESP, Brazil.

Oropharyngeal candidiasis continues to be a common opportunistic infection in the oropharynge of HIV infected. Although *Candida albicans* remains the most common causative agent, other non-*albicans* species have been also identified. The aims of this study were to evaluate the prevalence of the different *Candida* spp. in the oral cavity of HIV infected individuals and to determine the minimal inhibitory concentration to four antifungal agents. A total of 300 samples were isolated and evaluated as to susceptibility using the microdilution method as to AFST/EUCAST. Comparison of frequencies was carried out by the qui-square test and significance was set at $p<0.05$. Prevalence of *C. albicans* was 89.0%, *C. glabrata* 6.0%, *C. tropicalis* 4.3% and *C. krusei* 0.7%. Prevalence of resistance and susceptibility dose-dependent, taken together, to fluconazole was 0.75% in *C. albicans*, 50.0% in *C. glabrata*, 0.0% in *C. tropicalis* and 100.0% in *C. krusei* [*C.glabrata*>(*C. albicans*=*C. tropicalis*)]; as to ketoconazole, it was 0.75% in *C. albicans*, 0.0% in *C. tropicalis*, 0.0% in *C. glabrata*, and 50% in *C. krusei* [*C. albicans*=*C. glabrata*= *C. tropicalis*]; as to itraconazole, 1.9% in *C. albicans*, 72.2% in *C. glabrata*, 0.0% in *C. tropicalis*, and 50.0% in *C. krusei* [higher incidence of resistance in *C. glabrata*]; as to amphotericin B, all the isolates were susceptible. Cross-resistance to the three azole compounds was observed in two *C. albicans*. Cross-resistance to two azole compounds was showed by nine *C. glabrata*

isolates. Our results show predominance of *C. albicans* in the oral cavity of HIV infected, the presence of cross-resistance to azoles agents, and a prevalence of resistance that suggests the evaluation of antifungal susceptibility testing whenever antifungal treatment with azoles is planned. **E-mail:** danimoris@yahoo.com.br

Candida006- **Frequency of candidiasis in newborn babies in Regional Hospitals of Brasilia, between 2008 and 2011**

Rezende, SM[1], Zia, KM[1], Machado, ER[1,2]
[1]Nursing, Faculdade Anhanguera de Brasília, Taguatinga, DF, [1,2]Faculdade de Medicina, Universidade de Brasília, Brasília, DF, Brazil.

Introduction: Candidiasis is an opportunistic dermatophytosis caused by *Candida* spp. This disease occurs among all groups and ages, being most prevalent in newborns and is related to low levels of immunity due to low weight and antibiotic use. It is a nosocomial infection, considered a public health problem. **Objective:** The aim of this study was to verify the frequency of candidiasis in newborns treated at Regional Hospitals of the Ceilândia and Taguatinga cities of the Federal District, Brazil. **Methodology:** This was a descriptive and quantitative study. Data were collected from medical records, obtained from the Archival System of the Neonatal Intensive Care Units of the Public Hospitals of Ceilândia and Taguatinga cities, Brasilia, DF, during the period from 2008 to 2011. **Results:** A total of 785 medical records of newborns were analyzed; 360 (45.9%) boys and 425 (54.1%) girls. Gestational at birth was 32 to 41 (71.9%) weeks. Of the total, 481 (61.3%) of the babies were premature with gestational ages of less than 37 weeks at birth; 480 (61.1%) cases consisted of babies of less than 2.5 kg at birth, and 274 (34.9%) of the babies had normal weights. Four hundred six (51.7%) of the births were by cesarean and 376 (46.8%) were by normal childbirth. There were 230 (29.3%) women with urinary tract infections, 48 (6.1%) cases of bacterial vaginosis and 35 (4.5%) cases of other forms of infection. Of the 785 newborns evaluated, 457 (58.2%) had sepsis, 526 (67%) had symptoms of gas exchange such as hypoxia, asphyxia, and acute respiratory failure, and 85 (10.8%) had the two symptoms combined with pneumonia. There were 359 (45.7%) cases of jaundice, 406 (51.7%) cases of deep vein thrombosis, anemia, abscess, ruptured membranes, atelectasis and hypoglycemia, four (.5%) had grayish skin, two (.25%) had leucorrhea, 40 (5.1%) had whitish plaques and 31 (3.9%) had hyperemia of the genitalia. (The organs affected by candidiasis were three (0.4%) cases?). There were 63 (8%) oral cases, 44 (5.6%) genital cases and 37 (4.7%) systemic cases. Of the total group, 327 (73.5%) with low weight had sepsis, and 118 (26.5%) of those with sepsis had normal weight. There were 351 (70.6%) with low birth weight who had used parenteral antimicrobial therapy, 146 (29.4%) of those with normal weight had used antimicrobial. **Conclusion:** The incidence of candidiasis in newborns is directly associated with risk factors such as low weight at birth, prematurity, the presence of signs of sepsis, and use of combined antimicrobial therapies. **Keywords:** neonate, *Candida* spp, Risk Factors, Regional Hospital of Brasilia. Low weight, prematurity, antifungal. **E-mail:** sinione_morais@hotmail.com

Candida007- **Profile of oral health vs presence of *Candida* spp in users of dentures acrylic resin bases**

Lurdete M. R. Gauch[1], Simone Soares Pedrosa[2]..Silvia Helena Marques-da-Silva[3].
Universidade Federal do Pará- Faculdade de Odontologia;[1] , Universidade Federal do Pará- Faculdade de Odontologia[2]; Instituto Evandro Chagas- Seção de Bacteriologia e Micologia[3].

Introduction: The major concern of surgeons dentists today is the prevention of oral cavity diseases Denture stomatitis presents as an inflammatory reaction in denture-bearing patients, under maxillary prostheses with *Candida albicans* being the principal etiological agent. Denture stomatitis occupies a prominent place among the oral infections due to the increased prevalence of cases. **Objective:** The aim of this study was to establish a profile of the oral health of the population of wearers of dental prostheses with acrylic resin bases who was attending in the service of oral rehabilitation of dental school at the Federal University of Para in 2011. **Materials and Methods:** For observation of the oral health status and frequency of *Candida* spp was made anamnesis, oral mucosa clinical examinations and Denture hygiene

practice. The prostheses were evaluated qualitatively and quantitatively. Swab alginate calcium was used to collect substrates from inside the base of the prostheses and oral mucosa of 100 patients and these samples were cultured on Sabouraud dextrose agar and incubated at 30 °C. Yeasts were identified by Vitek II System after 24 hours of cultivation. **Results and discussion:** Fungal growth was more frequent in the bases of the prostheses (p = 0.0017), and the frequency of *Candida albicans* was significantly higher (p <0.0001) even when other species non-*Candida albicans* were present. Ninety eight percent (98%) of patients had poor hygiene. From functional point of view 66% of the prostheses were unsatisfactory. **Conclusion:** Results indicated that denture stomatitis has high prevalence in users of denture acrylic resin and *Candida albicans* was the most prevalent yeast. A correct oral hygiene is important for the control of the yeast present on the denture. **Key-words**: oral health; dentures; acrylic resin bases; *Candida* spp; **E-mail:** lrgauch@ufpa.br

Candida008- **Oral *Candida* colonization in Brazilian head neck cancer irradiated patients**

Alcure[1]*, M.L.; Moraes[1], R.R.; Pancini[1], L.N.N.; Rebello[2], C.F.; Fux[1], B., Lemos[1], E.M.; Menezes[3], D.B.; Schreiber[4], A.Z.
[1]Federal University of Espírito Santo, Vitória, Espírito Santo, Brazil. [2]Radiotherapy Center, Santa Rita Hospital, Vitória, Espírito Santo, Brazil. [3]Federal University of Pelotas, Pelotas, Rio Grande do Sul, Brazil. [4]University of Campinas, Campinas, São Paulo, Brazil.

Abstract: Head and neck cancer (HNC) patients commonly present several oral complications associated to antineoplasic treatment. Radiotherapy (RT) causes salivary impairment with consequent oral discomfort and microbiota imbalance. The reduction of salivary antimicrobial functions has been related with increase of oral infections, especially by *Candida* species. The aim of this study was to identify *Candida* spp. present on saliva of Brazilian HNC patients undergoing RT in cervico-facial region. Forty-four sequentially patients were evaluated for *Candida* before (stage 1), during (stage 2, between 15th and 22th session) and immediately after RT (stage 3). Samples of whole unstimulated saliva were collected and standard microbiological procedures performed. Initial identification was performed with cromogenic medium followed by analyze in Vitek® system. Screening to *C. dubliniensis* was performed with CA-INT primers. One hundred fifteen samples were collected. Thirty-seven (84.1%) patients were colonized by *Candida* in some period of study. We observed significant increasing of heavy counts (≥500UFC/ml saliva) patients (p=0.0017) during the time. One hundred thirty yeast isolates were found in 84 positive samples and the specie more frequent was *C. albicans* (50%). However, a wide spectrum of non-*albicans Candida* was identified, mainly *C. tropicalis, C. parapsilosis*, *C. krusei*, *C. glabrata* and *C. guilliermondii* which together represented 31.5% of all samples. Other uncommon species also had been identified such as *C. haemulonii* and *C. utilis* among other ones. *C. dubliniensis* was not detected. A wide spectrum of yeast colonize oral cavity of irradiated patients, some of which present intrinsic antifungal resistance. Thus, the oral cavity may acts as a reservoir of strains potentially pathogenic which may proliferate and disseminate depending of the host conditions. Epidemiological surveillance is important to determine appropriate prophylactic protocols to reducing morbidity and mortality associated with fungal infections. **Financial support:** Fundação de Amparo à Pesquisa do Espírito Santo - FAPES. Process Number: 39342107/2007. **E-mail:** lealcure@gmail.com

Candida009- **Fungemia by *Candida pelliculosa* in a neonatal intensive care unit**

Silva CM[1], Carvalho Parahym AM[1], Leão MPC[1], Tinti NO[1], Amorim RJM[1], Neves RP[1]
[1]Universidade Federal de Pernambuco, Recife, Brazil.

Introduction: The incidence of neonatal candidiasis is associated with significant morbidity and mortality. However infections caused by *Candida pelliculosa* in neonates, premature infants, and immunocompromised patients are rare. Usually, such patients are treated with amphotericin B or fluconazole with good clinical outcomes. Nonetheless, treatment failures may occur as well as cases of breakthrough fungemia in patients receiving prophylaxis with fluconazole. Here we report cases of fungemia among neonates caused by *C. pelliculosa* with a possible clonal origin. **Case reports:** Five

babies hospitalized in the Neonatal Intensive Care Unit (NICU) from the Instituto de Medicina Integral Professor Fernando Figueira were diagnosed with candidemia between April and June 2010. Direct examination of the clinical samples collected revealed yeasts in all five cases. After purification of the cultures the yeasts were identified as *C. pelliculosa* according to morphological, physiological, biochemical and molecular characteristics. Genetic analysis of the blood isolates showed that all five were positive for the marker $(GTG)_5$, but only four were positive for the M13 marker which suggests that in our study four of the five yeasts isolated probably had the same clonal origin. Four neonates were premature and with very low birth weight and the other has congenital malformation. Antifungal susceptibility testing for amphotericin B (UnitedMedical), fluconazole (Pfizer), voriconazole (Pfizer) and anidulafungin (Pfizer) was performed by the broth microdilution method following the CLSI (Clinical laboratories and standards institute) guidelines found in the document M27-A3. Quality control was performed by testing CLSI-recommended strains *C. tropicalis* ATCC750 and *C. parapsilosis* ATCC22019. The drug susceptibility profiles of the five isolates were similar. All of them were susceptible to amphotericin B, fluconazole and anidulafungin, but were resistant to voriconazole. After the diagnosis and the susceptibility essays the patients were treated: one initially treated with fluconazole (6 mg/kg) for 10 days and for a further 15 days with amphotericin B (0,5 mg/kg), other for 28 days with fluconazole (6 mg/kg) and for a further 21 days with amphotericin B (0,5 mg/kg), other with fluconazole (6 mg/kg), other with fluconazole (6 mg/kg) for 24 days, and other with fluconazole (6 mg/kg) for 20 days. All babies had a good outcome after the treatment. **Main conclusions:** *C. pelliculosa* can cause outbreaks in NICUs. Amphotericin B and fluconazole are able to promote a healing of our patients who had fungemia caused by *C. pelliculosa*. The treatment instituted after antifungal susceptibility testing probably contributed for cure. **E-mail:** carolinamsilva87@yahoo.com.br

Candida010- *Candida* infection at a State Hospital, in an eight-month period.

Correa A.F.[1], Silveira M.[1], Rocha C.[1], Nagen V.D.[1], Fortaleza C.M.C.B.[2], Levorato A.D.[2], Mendes R.P.[2], Moris D.V.[2]
1. Hospital Estadual de Bauru, Bauru – São Paulo State, Brazil. 2. Departamento de Doenças Tropicais e Diagnóstico por Imagem – Faculdade de Medicina de Botucatu – UNESP, Botucatu, São Paulo State, Brazil.

Introduction: Invasive infections are an increasing problem in tertiary care hospitals in Brazil and in the world. The predominant etiologic agents in the nosocomial environment include the genus *Candida* that is the fourth most common isolate. This study evaluated the distribution of *Candida* spp. identified from patients admitted at Bauru State Hospital, São Paulo, Brazil, from June 2011 to February 2012. **Methods:** A total of 115 samples were isolated: 79 (68.7%) from urine, 10 (8.7%) from blood, 6 (5.2%) from catheter and 20 (17.4%) from other clinical specimens. The patients aged from 30 days to 94 years old (60.12 ± 22.80). **Results:** The species isolates were *C. albicans* (62.6%), *C. tropicalis* (20.0%), *C.glabrata* (9.6%), *C. parapsilosis* complex (3.5%), *C. krusei* (3.5%) and *C. guilliermondii* (0.8%). A higher incidence of *C. albicans* was observed in patients with candiduria (62.0%) and from catheters (100.0%) while non-*Candida albicans* species predominated in cases of candidemia (70.0%). **Conclusions:** *C. albicans* predominates in urine and catheters specimens while non-*Candida albicans* in candidemia. Susceptibility studies are ongoing and certainly will help in the choice of the antifungal treatment. **E-mail:** danimoris@yahoo.com.br

Candida011- **Optimization of M13-fingerprint reaction for the characterization of *Candida tropicalis* isolates: a useful tool for monitoring fungemias in neonatal.**

Sousa, DRT[1]; Pereira, VN[2]; Santos, MC[2]; Souza, JVB[3].
UEA[1];FVS-AM[2]; INPA[3]. Manaus, Brazil[1,2 e 3].

Introduction: Candidemia is an emerging infection in neonatology, due to multiple risk factors for fungal infections in newborns (NB), such as catheters, parenteral nutrition, antibiotics and very low birth weight. The main fungi species that cause infections in newborns are: *Candida albicans* (75%), *C. tropicalis* (10%) and *C. parapsilosis* (6%). In tertiary hospitals, the genus *Candida* is responsible for about 80% of documented fungal infections, representing a challenge for clinicians from different specialties due to

difficulties in diagnosis and treatment of infections caused by these agents. The aim of this study was to optimize the M13-fingerprint reaction for the characterization of *Candida tropicalis* isolates. **Methodology:** In the assays it was used a strain of *C. tropicalis* ATCC13803. *Extraction of DNA*: It was used an extraction kit based on the use of membranes (QIAamp Blood and Tissue, Qiagen, Hilden, Germany). *Optimization*: The concentration of DNA template, M13 primer and the annealing temperature were optimized using a 2^3 factorial design with central point in order to obtain amplification products suitable for analysis (Phoretix 1D Software). The lower-upper levels tested were 16-144 ng template DNA, 0.1 to 1.5 mM *primers* and reaction temperature 35-65°C. *PCR*: The reaction had a final volume of 50 µl consisting on PCR buffer (10 mM Tris-HCl, pH 8.3, 50 mM KCl), 1.5 mM $MgCl_2$, 200 µM dNTPs, 5U amplitude-DNA tagged polymerase and 5% glycerol. The samples were submitted for a initial denaturation 94°C for 5 min, 40 cycles were performed which consisted in DNA denaturation 94°C for 60 sec, annealing according to the factorial design and extension for 60s at 72°C for 2 min, finally a final extension was performed at 72°C for 10 min. *Electrophoresis*: The PCR products were analyzed by electrophoresis on 1% agarose gel. It was used as DNA marker Gene Ruler DNA Ladder Mix (SM0331, MBI Fermentas, St. Leon-Rot, Germany). **Results:** The annealing temperature, the primer content and the interaction between the primer and the temperature had a statistical significant (95% confidence) influence on the amplification products obtained. According to the analysis of the factorial design (ANOVA R^2 = 99.85%), the optimized conditions for the realization of the reaction were DNA template 20 ng, M13 primer 1.5 mM and annealing temperature of 35^oC. **Conclusion:** It was optimized the reaction of M13 fingerprint for the characterization of isolates of *Candida tropicalis* using a factorial design. The effects of the factors primer content and annealing temperature were the most important to obtain suitable amplification products in the experimental conditions. **E-mail:** diego_rayan@hotmail.com

Candida012- **Genotyping and antifungal susceptibility profile of sequential *Candida albicans* isolated from the oral cavity of HIV-infected individuals.**

Moris D.V.[1], Melhem M.S.C. [2], Martins M.A. [2], Souza L.R.[1], San-Blas G.[3], Szeszs M.W [2], Carvalho L.R [4], Pimenta-Rodrigues M.V.[1], Mendes R.P. [1]
1. Tropical Diseases Area – Faculdade de Medicina de Botucatu, São Paulo State University – UNESP, Botucatu, São Paulo State, Brazil. 2. Instituto Adolfo Lutz, São Paulo, Brazil. 3. Venezuelan Institute for Scientific Research, Center for Microbiology and Cell Biology, Caracas, Venezuela. 4. Biostatistics Department, Instituto de Biociências , São Paulo State University – UNESP, Brazil.

Although most of the HIV-infected individuals are colonized or infected in the oral cavity by multiple strains of *Candida albicans,* little is known of their micro-evolution over time. This study aimed to evaluate the genotypic profiles of *C. albicans* sequentially isolated throughout the course of HIV infections, and to determine their minimal inhibitory concentrations (MIC) to amphotericin B, fluconazole, ketoconazole, and itraconazole, using the AFST/EUCAST microdilution method. A total of 142 oral swab samples were isolated from 59 HIV-infected individuals with or without symptoms of oropharyngeal candidiasis, throughout a 48 month period and up to five visits for each patient. *C. albicans* isolates were phenotypically and genotypically identified; the genetic similarities of yeast isolates within and between sequential clones of *C. albicans* were assessed by DNA fingerprinting using the random amplification of polymorphic DNA (RAPD) technique. Twenty clusters were identified, with multiple genotypes isolated simultaneously from the HIV-infected individuals. Profile analysis revealed that yeasts isolated over sequential visits from symptomatic or asymptomatic individuals showed 78% or 87% relatedness, respectively. The degree of similarity among *C. albicans* was higher for isolates from colonization than for those from infection. Genetically identical *C. albicans* samples also formed connected sub clusters in sequential visits. These data suggest diverse evolutionary genetic trends in *C. albicans* sequentially isolated from the oral cavity of HIV infected individuals. All isolates were susceptible to amphotericin B, fluconazole, ketoconazole, and itraconazole and maintained their susceptibility all along. **E-mail:** danimoris@yahoo.com.br

Candida013- **Hemolytic and DNAse Activities in Candida spp**

Riceto, E. B1.; Pedroso, R. S.1; Penatti, M.P.A1.; 1Technical School of Health,
Federal University of Uberlândia, Minas Gerais – Brazil

Introduction: Candida species are important pathogens for immunocompromised patients and patients in the intensive care unit. Several virulence factors produced by species of this genus have been studied in order to examine the implication on the severity of the infection. The hemolytic activity is one potential virulence factor related to obtaining iron from hemoglobin in erythrocytes released after cell lysis. The DNAse is an enzyme that degrades DNA of the host thereby contributing to virulence. **Objectives:** To determine hemolytic activity and DNAse activity of clinical isolates of Candida species. **Materials and Methods:** We analyzed 50 clinical isolates of Candida species, including C. albicans (15), C. tropicalis (15), C. parapsilosis (10), C. glabrata (5), C krusei (5). The determination of hemolytic activity was performed on sheep blood agar (Sabouraud dextrose agar-SDA, glucose 3% and sheep blood 7%). Ten microliters of yeast suspension in saline (108 cells/microliter), were deposited in five equally spaced points in the ASD-blood agar, incubated at 30°C for 72 hours. The results were expressed as a haemolytic index (Ih) calculated by the ratio of colony diameter / colony diameter (mm) plushalo of hemolysis. Thus, Ih equal to 1.0 means that the isolate has no hemolytic activity, between 0.63 and 1.0, moderate hemolytic activity, and less than or equal to 0.63, severe hemolytic activity. For DNAse activity was used DNAse agar under the similar conditions, however the cultures were incubated for 7 days, with results expressed by positive or negative activity. **RESULTS:** The 50 clinical isolates showed hemolytic activity on most moderate and negative for DNase. Thus C. albicans showed (0.73 hemolytic index and 26% positive DNAse), C tropicalis (hemolytic index of 0.71 and 20% positive DNAse), C parapsilosis (hemolytic index of 0.77 and 10% DNAse positive) C glabrata (0.73 haemolytic index of 100% DNase and negative), C krusei (hemolytic index of 0.73 and 40% positive DNAse). **Conclusion:** All isolates of Candida species showed in vitro hemolytic activity . Most isolates of Candida spp. studied shows no DNAse activity. **E-mail:** rpedroso@estes.ufu.br

Candida014- **Antifungal susceptibility of clinical samples of *Candida albicans*, from various sites anatomy**

Rosa, F.C[1].; Castelo-Branco, P.V[1].; Veras, L.M.[1]; Andrade-Monteiro, C.[1]
[1]Centro Universitário do Maranhão-UNICEUMA/São Luís-Brasil

Introduction: Candida species are present as commensals on mucosal surfaces, human epithelium and other animals, Candida albicans being the most frequent. It is estimated that 20-50% of the population living with the yeast in the mouth. Immunosuppressed individuals such as those with Acquired Immunodeficiency Syndrome (AIDS) have a high susceptibility to develop fungal infections due to the low number of CD4 T lymphocytes. In these patients, with prevalence candidiasis is 80-90%. The most commonly used drugs in the treatment of infections is Candida albicans, itraconazole and fluconazole by inhibiting the synthesis of ergosterol, which is an essential component of the fungal cytoplasmic membrane. The aim of this study was to determine the sensitivity profile to antifungal agents used in the clinic. **Methodology:** We used 35 clinical samples of Candida albicans from different anatomical sites (7 urine, oral secretion 28, 22 HIV + patients and HIV-6) given by a laboratory in São Luís - MA. All yeasts were subjected to susceptibility testing by broth microdilution technique, according to the protocol M27-A3 (CLSI 2008) establishing cutoffs for interpreting the results of Candida spp. Thus, the isolates were classified as sensitive (S), sensitive dose dependent (SDD) and resistant (R). **Results:** Among the 35 samples analyzed with fluconazole, an isolate was classified as resistant (HIV + oral secretions), and a dose-dependent (urine sample), and 33 strains were sensitive. In contrast, tests with itraconazole (not yet completed) revealed that the 17 strains (sec. Oral HIV +) analyzed; only two were considered sensitive, five were resistant and the remaining 10 were classified as susceptible dose dependent. **Conclusion:** Considering the general profile of sensitivity, 98.1% of the isolates were susceptible to fluconazole. Resistance to fluconazole was restricted to only one isolate, which means that the drug remains effective against most species of Candida albicans. A significant percentage of isolates of C. albicans (sec.oral

HIV +), was resistant to itraconazole 4.75% and only 1.9% of the isolates tested so far, were susceptible to itraconazole. **E-mail:** costarosa.fernanda@gmail.com

Candida015- **Anidulafungin susceptibility of *Candida* isolates from neonates hospitalized in intensive care unit**

Silva CM[1], Carvalho Parahym AMR[1], Jucá MB[2], Neves RP[1]
[1]Universidade Federal de Pernambuco, Recife, Brazil. [2]Hospital Agamenon Magalhães, Recife, Brazil

Introduction: Fungal sepsis is becoming increasingly frequent during the neonatal period. This rising incidence has led to major changes in strategies for antifungal therapy. Thus, a new class of drugs, the echinocandins, including anidulafungin has been developed. Anidulafungin is recommended for the treatment of candidemia and esophageal candidiasis in neutropenic adults. However, there are few studies of this drug in neonates and children, and most recommendations for its use derive from experience in adults. In this study we evaluated the *in vitro* activity of anidulafungin against *Candida* spp. obtained from blood cultures of patients hospitalized in neonatal intensive care units. **Material and methods:** Before obtaining the samples, the research was approved by the research ethics committee of the Instituto de Medicina Integral Professor Fernando Figueira. Thirty strains of *Candida* spp. isolated from blood cultures of newborns hospitalized in NICUs of two hospitals in Recife were sent to the Medical Mycology Laboratory at the Federal University of Pernambuco (UFPE) and processed for direct examination without addition of staining or clarifier. Cultures were prepared using Sabouraud Dextrose Agar-SDA with chloramphenicol (50 mg/ml^{-1}) and incubated at 30 and 35°C in an aerobic atmosphere for fifteen days. The purified colonies were identified by classical taxonomy and by the automatic method VITEK 2. From these strains were identified: eleven isolates of *Candida albicans*, eleven of *C. parapsilosis*, five of *C. pelliculosa*, one of *C. glabrata*, one of *C. guilliermondii* and one of *C. tropicalis*. All strains tested are preserved under mineral oil and stored in the URM Culture Collection - UFPE. The minimal inhibitory concentration (MIC) of the isolates was determined using the microdilution method according to the instructions content in the document M27-A3 from the *Clinical Laboratory Standards Institute*. **Results:** All isolates of *C. albicans*, *C. pelliculosa*, *C. glabrata*, *C. guilliermondii* and *C. tropicalis* were susceptible to anidulafungin with concentrations ranging from 0.01 to 1 µg / ml. Resistance was observed in seven of the eleven isolates of *C. parapsilosis* which had MIC> 2 µg / ml and four of these had MIC > 8 µg / ml. **Main conclusions:** A majority of isolates tested was susceptible to anidulafungina, including an isolate of *C. glabrata* which has been reported to be resistant to azoles. Anidulafungin may be an alternative for the treatment of newborn babies suffering from invasive candidiasis, but more studies are needed to ensure the proper administration of this antifungal agent. The *in vitro* antifungal susceptibility was able to identify resistance in isolates of *C. parapsilosis*, but *in vivo* essays should be considered in future studies. **E-mail:** carolinamsilva87@yahoo.com.br

Candida016- **Patterns of adherence of clinical isolates of C*andida spp* to glass coverslips**

Vale, I. N. F.[1], Menezes, V. M.[1,2], Castelo-Branco, P. V.[1], Figueiredo, P. M. S.[1]; Andrade-Monteiro, C.[1]
[1] UNICEUMA - Centro Universitário do Maranhão, Pró-Reitoria de Pós-Graduação, Pesquisa e Extensão, São Luís, Maranhão, Brasil, [2] FEBAC - Faculdade de Educação de Bacabal, Direção Acadêmica, Bacabal, Maranhão, Brasil

Introduction: Adhesion has been identified as a potential virulence factor for developing candidiasis, since is a primary mechanism of infection, especially in immune-compromised patients. The present study reports on an in vitro adherence assay of clinical isolates of *Candida* from many different anatomical sites with the goal of comparing this virulence propriety among those isolates. **Material and Methods:** For the adhesion assay, sterile round glass coverslips were placed into 24 wells micro titer plates and 40 µL of the standardized cell suspension plus 960 µL of BHI medium were added to each well. For controls, glass coverslips were similarly processed but in the absence of *Candida* cells. The microtiter plates were incubated at 37°C for 18 h. After incubation, medium was removed and the microtiter plates were washed once with ultrapure water to remove non-adhered cells and the coverslips were stained with 1% of crystal

violet for 5 minutes. The coverslips were then washed twice with sterile water to remove the excess of staining and put onto slides for visualization under light microscopy. The adhesion ability was categorized according to the number of cells read per fields in weak, only 01 to 10 cells per 50 fields; moderate, more than 10 cells per 30 fields or strong, above 25 cells per 20 fields read. **Results:** Adherence ability was quantified in 118 clinical strains of *Candida*. Four different species of Candida were examined (*C. albicans, C. tropicalis, C. parapsilosis* and *C. glabrata*) to adherence to coverslips. *C. tropicalis* isolates showed greater capacity to adhere to inert material, with 91% of the strains being positive, followed by *C. parapsilosis* with 89% of isolates showing positive adherence, *C. albicans* with 76% and, finally, *C. glabrata* with 61% of samples showing adherence on inert material. Among 93 strains with the ability to adhere, 44 presented a pattern of localized adherence (47.31%), 24 (25.8%) showed an aggregative pattern and only 9 had (9.7%) type pseudo-hyphal. *C. parapsilosis* was the species with the highest variability of adherence patterns between their isolates and five of them (29.4%) had a pattern of pseudo-hyphae. **Main Conclusions:** Non-*Candida albicans Candida* (NCAC) isolates adhered to a higher extent (81,4%) compared with those of *C. albicans* (76,3%). *C. glabrata* showing the lowest and *C. tropicalis* highlighted among NCAC species with 91% of samples showing adhesion and of these 20% showed strong adhesion. **E-mail:** iven.neylla@gmail.com

Candida017- **Virulence factors of *Candida* species obtained from patients with solid neoplasms or lymphomas**

Souza, A.P.M.[1]; Brandão, I.S.L.[1]; Magalhães, O.M.C.[1]
1 Departamento de Micologia, Universidade Federal de Pernambuco.

Introduction: Most pathogens present a series of molecules and specific strategies to assist in colonization, invasion and pathogenesis. Within the genus *Candida*, the main factors include biofilm formation and production of extracellular enzymes such as proteinases and phospholipases. The aims of this study were to detect the biofilm formation and proteinase and phospholipase activity by 18 isolates of *Candida* species derived from clinical samples of patients with solid tumors or lymphomas. **Material and Methods:** Detection of biofilm formation was performed using semi-quantitative method based on staining by fuchsin. To detect proteinase activity the substrate utilized was bovine serum albumin and for detection of the phospholipase activity, lecithin was used as substrate. After performing the inoculum at three equidistant points in the medium contained in Petri dishes, plates were incubated at 37 ºC for 7 days, and then we observed the formation or absence of halo around the colony. When present, the halo was measured and applied in the formula AZ = colony diameter/colony diameter + area of precipitation. **Results**: All isolates were able to form biofilm, ranging from strong (4), moderate (13) and weak (1) capacity. The isolates of each species behaved similarly. Seventy-eight percent of isolates presented proteinase activity, which ranged between very weak (6), weak (7) and strong (1). Only four isolates showed no proteolytic activity, *C. haemulonii* (2), *C. guilliermondii* (1) and *C. tropicalis* (1). All *C. albicans* isolates showed proteinase activity, other producing species were *C. famata*, *C. tropicalis* and *C. parapsilosis.* Phospholipase activity was detected in 44% of the tested isolates, which ranged between very low (4), weak (1), strong (2) and very strong (1). The expression of phospholipase was observed in only four of the 10 isolates of *C. albicans* and it was not possible to detect phospholipase activity in isolates of *C. tropicalis*. Seven isolates presented simultaneously three parameters considered virulence factors, *C. famata* URM 6556 stood out in quantitative terms. Only three isolates showed no phospholipase or proteinase activity, including the two strains of *C. haemulonii* and the strain of *C. guilliermondii*. **Main Conclusions**: Biofilm formation and production of extracellular enzymes such as proteinases and phospholipases are important virulence factors, even when infection occurs in patients with immune deficiency. **E-mail:** olimicomed@yahoo.com.br

Candida018- **Utilization of PCR-RFLP for the identification of fungemia agents**

1Sousa, DRT 2Santos, MC 3Souza, JVB , 4Santos, MS
1Universidade do Estado do Amazonas – Manaus, Brasil, 2Universidade do Estado do Amazonas – Manaus, Brasil, 3Instituto de Pesquisas da Amazônia – Manaus, Brasil, 4Instituto de Pesquisas da Amazônia – Manaus, Brasil

Introduction: Fungemia is the presence of fungi in the blood. In recent years, the incidence of this kind of infection has increased and become one of the major causes of morbidity and mortality in immunocompromised patients. The most important fungemias in AIDS patients are: candidiasis, cryptococcosis and histoplasmosis. The diagnosis using the direct microscopy and culture, in most part of the cases, are slow and presents problems of sensitivity and specificity. Molecular methods are useful in the diagnosis increasing the sensitivity, specificity and velocity in the diagnosis. The aim of this study was to evaluate the possibility of identification fungemia agents, using PCR-RFLP. **Methodology:** The assays were carried out using strains of *Candida albicans*, *Candida tropicalis*, *Candida glabrata*, *Candida parapsilosis*, *Candida krusei*, *Candida guilliermondii*, *Cryptococcus neoformans*, *Cryptococcus gattii* and *Histoplasma capsulatum* from the microbial collection that belongs to the Instituto Nacional de Pesquisas da Amazônia (INPA). The DNA extraction was performed using a kit based on the use of membranes (QIAamp Blood and Tissue, Qiagen, Hilden, Germany). The PCR reaction had a final volume of 25 μL consisting of PCR buffer (10 mM Tris-HCl, pH 8.3, 50 mM KCl), 1.5 mM $MgCl_2$, 0.5 μM primers, 200 mM dNTPs, 2.5U DNA polymerase and 20 ng of fungal DNA template. The samples were submitted for initial denaturation 94°C for 5 min, 35 cycles were performed which consist of DNA denaturation 94°C for 30 seconds, annealing at 50°C for 30 seconds and extension at 72°C for 1 min, finally it was performed a final extension at 72° C for 10 min. The PCR products were individually digested with 10 U of restriction enzyme *Ddel* for 3 hours at 37°C. The digested PCR products were analyzed by electrophoresis on 2% agarose gel and stained with bromide ethidium. It was used as DNA marker Gene Ruler DNA Ladder Mix (SM0331, MBI Fermentas, St. Leon-Rot, Germany). **Results:** It was obtained a unique RFLP profile for each of the species that were investigated: *Candida albicans* 450, 400, 275 and 200 bp, *C. tropicalis* 425, 350, 275 and 200 bp, *C. glabrata* 25, 375 and 100bp, *C. parapsilosis* 550, 350 and 275 bp, *C. krusei* 425, 300 and 100 bp, *C. guilliermondii* 400, 350 and 100 bp, *Cryptococcus neoformans* 550, 400 and 100 bp, *Cryptococcus gattii* 475, 425, 300 and 100 bp, *Histoplasma capsulatum* 475, 425, 300 and 100 bp. **Conclusion:** In conclusion, the RFLP investigated in the present study was able to identify nine fungemia agents. **E-mail:** diego_rayan@hotmail.com

Candida019- **Prevalence and antifungal susceptibility profile of *Candida dubliniensis* isolated from the oral cavity of HIV- infected individuals.**

Moris D.V.[1], Melhem M.S.C. [2], Martins M.A. [2], Souza L.R.[1], Szeszs M.W [2], Carvalho L.R [3], Mendes R.P. [1]
1. Tropical Diseases Area – Faculdade de Medicina de Botucatu – UNESP, Botucatu, São Paulo State Universiy Brazil, 2. Adolfo Lutz Institute, São Paulo State Healthy Secretariat, São Paulo, Brazil, 3. Departamento de Bioestatística, Botucatu, Instituto de Biociências, São Paulo State University – UNESP, Brazil.

Candida dubliniensis is a recently described species of yeast. This emerging oral pathogen shares many phenotypic and biochemical characteristics with *Candida albicans*, and molecular methods are needed to distinguish between these two species. In our study, 318 *Candida* spp. isolates were obtained from oral cavities of HIV-infected individuals, and 270 of them were identified as *C. albicans* by classical methods. All of the *C. albicans* isolates were subjected to DNA extraction and PCR identification. The isolates identified as *C. dubliniensis* were also tested to determine the minimal inhibitory concentrations of amphotericin B, fluconazole, ketoconazole, and itraconazole using the microdilution method AFST/EUCAST. Only three isolates were identified as *C. dubliniensis*. Thus, its prevalence was 0.9% out of the 318 *Candida* spp. isolates and 1.1% out of the 270 isolates phenotypically identified as *C. albicans*. All of the *C. dubliniensis* isolates were susceptible to the antifungal compounds tested. This study shows that *C. dubliniensis* in our region has low prevalence and high susceptibility to antifungal compounds. **E-mail:** danimoris@yahoo.com.br

Candida020- **Studies on colony maintenance of *Aedes aegypti* focusing on biological aspects under laboratory conditions in the Amazon**

França, L. P. [1]; Rodrigues, I. B. [2]; Tadei, W. P. [3]
[1, 2, 3] **Instituto Nacional de Pesquisas da Amazônia, Laboratório de Malária e Dengue – INPA/LMD/CNPq-PIBIC. Manaus, Amazonas - Brasil.**

Introduction: Mosquitoes are responsible for serious public health problems worldwide. The importance of studies for the maintenance of *Aedes aegypti* Linnaeus, 1762 species colony in mass is currently the most important condition for the development of research related to control of this vector. By demanding a large number of specimens of the insect target, this study aims to evaluate biological aspects that enable the maintenance of colonies of *A. aegypti* with the genetic diversity similar to that found in nature, under laboratory conditions. Methods: The eggs of *A. aegypti* used in this study were collected in two neighborhoods of Manaus, where the rate of dengue is high. Eggs were collected from oviposition traps placed in homes and taken to the insectary where they were held following the techniques of the Laboratory of Malaria and Dengue - INPA. Biological aspects were addressed: (1) The evaluation of the survival of the colonies, by determining the time of reintroduction of individuals in cages, from nature and maintained by inbreeding; (2) Evaluation of diet offered to adults of *A. aegypti* as follows (a) Fruit + hamster (2 times a week) + sugar water, (b) sugar water + hamster (3 times weekly) and (c) sugar water + hamster (once a week) and (3) population index to be assessed by the pupae amount (30, 50, 70, 90, 110) introduced in cages. The tests aimed at obtaining higher oviposition of *A. aegypti.* Results: The results showed for the time needed to reintroduce the individuals on cages was on average 43 days for generations F1, F2 and F3. The results for the three diets offered to adults of *A. aegypti* in the insectary at INPA was sugared water and a blood meal once a week, getting the highest average number of eggs - 735 eggs. The population index showed that the highest average number of eggs was obtained by placing 110 pupae. Conclusion: The obtained colony *A. aegypti* must maintain the introduction of new individuals every 43 days on diet sugar water + hamster (once a week) and the number of pupae maintained in each cage is of 110. **Financial Support:** CNPq/FAPEAM Rede Malária, CTPETRO. **E-mail:** francabio@hotmail.com

DERMATOPHYTOSIS

Dermat021- **Etiological agents of dermatophytosis in Military Troops**

Leite-Jr, D. P., Nani, R. E. & Hahn, R. C.
Mycology Laboratory / Investigation - PPG – School of Medicine, Federal University of Mato Grosso (UFMT), Brazil

Introduction: Dermatophytes represent a group of keratinophilic fungi capable of invading the superficial layer of the skin, hair and nails of humans and animals. Some of these fungi are cosmopolitan, whereas the distribution of other fungi is largely dependent on genetic factors, sex, age, immune system, bioclimatic conditions, social and economic conditions, promiscuity, human migration patterns, contact with domestic animals or contaminated environments. There is a high prevalence of dermatomycosis in tropical regions, and military personnel are susceptible to this kind of infection due to the type of occupational activities in which they are involved. **Methods:** The direct examination of the 221 samples obtained was conducted by preparing fresh slides, clarified with KOH at 20% (skin) or 40% (nails). The clinical materials were seeded in duplicate in Sabouraud Dextrose agar medium and in Mycosel agar medium. The identification of the etiologic agents was performed according to the Riddell technique. **Results:** 99/221 (44.8%) of the dermatophyte infection agents distributed in the three taxonomic genera that cause tinea were recovered. The Trichophyton genus was the most representative, and *T. rubrum* species 33 (33.3%) the most prevalent. The other species found were: zoophilic agents: *Microsporum canis* 8 (8.1%), *T. mentagrophytes* var. *mentagrophytes* 5 (5.1%), *T. verrucosum* 11 (11.1%); Geophilic agents: *Microsporum gypseum* 14 (14.1%) and Antropophilic agents *Epidermophyton floccosum* 6 (6.1%), *Trichophyton mentagrophytes* var. *interdigitali* 9 (9.1), *Trichophyton tonsurans* 13 (13.1%). Among the most affected anatomical sites were: skin 82 (82.8%) and nails 17 (17.2%). **Conclusion:** In Brazil, there are still no recorded data available on fungal infections afflicting military personnel who work in security and rescue activities. This study reports for the first time on the incidence of dermatophytosis among military personnel in the Central-West region of Brazil. The occupational activities of these military individuals, in addition to the hot and humid climate of the region, can predispose them for these types of

fungal infections. **Keywords:** Tineas, dermatophytosis, Mato Grosso, Brazil. **E-mail**: djbiologico@gmail.com

Dermat022- **Dermatophytes isolates from animal patients on University of Brasília Veterinary Hospital**

Martins, G.P., Faria, A.P P., Klüppel, L.M., Santos, A.S., Tokatjian, Castelo Branco, R.L., M.L., Mello, M.R.S., Marques, A.D.S.S., Drummond, V.O., Andrade, H.H., Perecmanis, S.
University of Brasília, Distrito Federal, Brazil

Introduction: Dermatophytosis or "Ringworm" is a superficial skin infection of animals and humans. The ringworm is caused by keratophylic fungi known as dermatophytes. The disease is more common in tropical and subtropical climate regions, especially in countries with humid and hot weather. Among dermatophytes two genera, *Trichophyton* and *Microsporum*, are the most common isolate. 15% of human dermatophytosis clinical diseases are of zoonotic origin. The ringworm is the third more common skin condition in children under 12 years and the second on adult population. Although 30 species of dermatophytes are known to cause infections on mammals and birds, few species are routine findings. In Brazil *M. canis* is the most common finding in dogs and cats, on wildlife animals the *Microsporum* genus is the main etiological agent. The most common clinical presentation is multifocal alopecia, erythema, follicular hyperkeratosis, crusts. The animals may present acute self-limiting infections, pruritus is usually absent, chronic ringworm infections may lasts for months or years, animals of any age, gender or breed are susceptible to dermatophytes, young immunocompromised or older animals are more affected. The relevance of dermatophytosis infections and its presence on University of Brasília Veterinary Hospital (HVET) patient population motivated this study with the purpose of identifying the dermatophytosis profile. **Material and Methods:** 202 animals with clinical suspicion of dermatophytosis were sampled for fur, skin or feathers, the biological samples were collected on contact plate, hair plucks or superficial skin scrapings and transported to the laboratory on sterile Petri dish. The samples were inoculated on Mycosel agar, incubated at room temperature for at least 21 days and checked daily for fungal growth. The genus and species identification were performed on the basis of macroscopic and microscopic characteristics, the slides prepared by duct tape method stained by methilene blue or lactophenol cotton blue. **Results:** Of 202 samples, 32 (15,84%) were positive for dermatophytes, 18 (56,25%) were dogs and 14 (43,75%) were cats. Among positive samples, 12 (37,5%) were male and 20 (62,5%) were females. The isolates species 81,82% were *Microsporum canis*, 12,12% *Microsporum* spp. and 6,06% *Trichophyton* spp., 72,73% of dermatophytes samples grown on the dry season and 27,27% on the wet season. **Main Conclusions:** The positive frequency in this study is similar to values found on literature. It was observed more positive samples on females, although most authors found no significant difference among genders. On the wet season, October to March, fewer dermatophytes were isolated than on lower precipitation months; the Distrito Federal has a lower mean precipitation than most Brazilian states on the dry season. The low values of relative humidity may cause skin alterations that favor the dermatophyte infection. **E-mail:** gustavo737@gmail.com

Dermat023- **Frequency of Major Agents Dermatophytes in Patients Served in Julio Muller University Hospital in Cuiabá-MT**

[1]Simi, W.B.; [1] Hoffmann-Santos, H.D.; [1] Hahn, R.C.
Mycology Laboratory – Medical school – Federal University of Mato Grosso

Dermatophytes are fungal infections that affect the stratum corneum of humans and animals, such as skin, hair and nails. Dermatophytes appear as filamentous fungi, keratinophilic, hyaline, septate and sometimes with arthroconidia. Belong to the genus Dermatophytes, Tricophyton, Microsporum and Epidermophyton. The objective of this study was evaluate the frequency of isolation of fungi causing dermatophytosis in patients treated in outpatient infection disease and dermatology of Julio Muller University Hospital in Cuiabá-MT. **Methods and Materials:** this is observational, cross sectional study. The inclusion criterion for selection of population was the isolation of dermatophytes species identified in the service of medical mycology in HJUM-UFMT, in period of October/2006 until February/2012. Results

and Discussion: A total of 77 patients achieved clinical and microbiological confirmation of dermatophytosis. 53% (n=41) were female, 46,8% (n=36) were male. 67,5% (n=52) belong to age group between 19-59. The most widely used clinical specimen for mycological diagnosis was skin scales 76,6% (n=59), followed by fragments nail 23,4% (n=18). The anatomical sites most often affected were lowing lings (41,6%; n=32) and upper (24,7%; n=19), scalp (9,1%; n=7), buttocks (6,5%; n=5), abdomen and groin (5.2%; n=4), back (3,9%; n=3), chest (2,6%; n=2), and face (1,3%; n=1). The predominant species were *T. rubrum* (74,0%; n=57), *M. canis* (14,3%; n=11), *T. mentagrophytes* (7,8%; n=6), *E. floccosum* (2,6%; n=2) e *M. gypseum* (1,3%; n=1). The cases of dermatophytosis caused by species of study can be explained by the global distribution of this species, which has a preference for topical and sub-tropical climate, with high temperatures and high humidity, striking features of the climate of the state. The lower limbs were most affected, probably due to moisture and poor situation of the same. The species that stand out in cases of dermatophytosis are *T. rubrum, M. canis and T. mentagrophytes* followed by others species. These species stand out precisely because they are cosmopolitan and bioclimatic conditions conducive to adaptation are favorable in the region of Mato Grosso. **Conclusion:** The specie *T. rubrum* has proven the major etiologic agent of dermatophytosis in ambulatory of HJUM-UFMT, this results corroborates those cited by several Brazilian studies which indicate the prevalence of this dermatophytes species in lesions mainly involving the skin of feet and nails. **Key words:** Dermatophytosis, HJUM, Mato Grosso. **E-mail:** walquirya.bio@gmail.com

SPOROTRICHOSIS

Sporo024- **Sporotrichosis in Espírito Santo: a three-decade study**

Caus, Antonio Luiz de Oliveira; Sossai, Beatriz Bergamini; Araújo, Mariceli; Falqueto, Aloísio.
Hospital Universitário Cassiano Antônio de Moraes (HUCAM), Programa de Pós-graduação em Doenças Infecciosas (PPGDI) – Vitória, Espírito Santo, Brazil

Introduction: Sporotrichosis is a subacute or chronic infection caused by the dimorphic fungus *Sporothrix schenckii*, particularly in temperate and tropical areas. This mycosis develops mainly through traumatic penetration of the fungus into the dermis after wounds or abrasion of the skin produced by infected organic materials, but it is also related to zoonotic transmission and occupational accidents. Clinically it may occur in different forms: cutaneous lymphangitic disease, fixed cutaneous, extra cutaneous and disseminated form. The diagnosis solely rests on the isolation of the agent in culture of infected tissues or pus. Saturated Solution of Potassium Iodide (SSKI) or Itraconazole are frequently used as therapy, but others drugs are also effective (Amphotericin B, Terbinafine and Fluconazole). In Brazil, Sporotrichosis is well documented in rural areas but, recently, epidemic urban cases were reported in Rio de Janeiro, transmitted by cats. It is a rare condition and there are no studies that evaluate its clinical and epidemiological aspects in Espirito Santo state (ES), Brazil. **Material and Methods**: Descriptive case-series study to determine the clinical and epidemiological aspects of patients with Sporotrichosis seen at the University Hospital of Vitória (HUCAM), from 1982 – 2011. Data were collected on a specific protocol for the disease in which it was standardized the methods for diagnosis and treatment. Demographic information data were collected to determine the geographic distribution of the disease in the Espirito Santo state. **Results**: Among the 155 cases of Sporotrichosis confirmed by fungal culture of infected tissues, the age ranged from 6 to 77 (median 33 years), 125 (80,6%) were male, 118 (76,3%) were white and all of them were living or working in rural areas. Besides, most of the patients (64,6%) were from a specific mountainous region of the state. The duration of symptoms before medical care was, on average, of 64 days. The lower limbs were the most commonly affected site (n = 77), followed by the upper extremity (n = 74) and thorax (n = 3). In all, 112 patients (72,3%) had the lymphangitic type; 44 (26,4%) had fixed cutaneous form and only 2 (1,3%) had the disseminated type. Treatment with oral SSKI was implemented for all patients with 100% of success. **Main conclusions**: SSKI has shown to be an effective and safe drug for Sporotrichosis treatment. As a rare condition from areas of difficult medical assistance, it is usually lately diagnosed, what leads to extensive and deforming scars as a consequence. The high prevalence in a concentrated geographical area suggests the existence of natural niches of the

fungus and it can be a facilitator reasoning for an epidemiological diagnosis of this mycosis in this region. **E-mail:** tonicaus@gmail.com

Sporo025- **Clinical and therapeutic response of human sporotrichosis from urban area, from São Paulo**

[1] Freire J. G, [1]Oyafuso L.K, [2]Katz G., [2]Cardoso V.A, [1,3]Lindoso, J.A.L
[1] Instituto de Infectologia Emílio Ribas-SES/São Paulo/Brasil , [2] Coordenadoria de Vigilância em Saúde, SMS/São Paulo/Brasil , [3] Laboratório de Soroepidemiologia e Imunobiologia-LIM 38 HC-FMUSP/São Paulo/Brasil.

Introduction: Sporotrichosis is a subcutaneous mycosis caused by *Sporothrix schenckii,* a dimorphic fungus widely found in the nature, mainly in soil and plants. The infection generally occurs by fungal implantation into the skin through trauma. Some animals have been related to zoonotic transmition of *S.schenckii*, and the most common are the cats. There are four clinical presentations: fixed cutaneous, regional lymphangitic, disseminated disease and extracutaneous disease. In the present study, we report 22 cases of human sporotrichosis, transmitted by cats, which seems to be the beginning of an outbreak of the disease in São Paulo – Brazil. **Materials and methods:** The patients were seen from June 2011 to January 2012, at the Emilio Ribas Institute of Infectious Disease in São Paulo - Brazil, and submitted to clinical evaluation, blood biochemistry and biopsy. The biopsy fragments were submitted to histopathological and mycological examinations, culture and PCR. **Results:** From the 22 patients studied, six were man, sixteen were women, and all were aged 10-71 years (median of 41 years for both sexes). The lesions appearance varied, including nodular, ulcerous, gummy and plaques. Fifteen patients presented nodular or ulcerous lesions without lymphatic involvement. Seven patients showed fixed lesions with lymphatic dissemination. And the most frequently site of the lesions were forearms. The evaluation time of the lesions ranged from 2 weeks to 8 months, with a median of 3 weeks. And all the patients related contact with cats, but only fourteen animals appeared to be infected. The patients were treated with intraconazole at a dose of 400mg/day for at least four months, depending of the clinical cure. All patients responded well to the treatment. **Conclusion:** Sporothricosis used to be a disease associated to the transmission by *S. schenckii* found in soil and plants, but nowadays we have observed that it is becoming an emerging zoonosis transmitted mainly by *S. schenckii*-infected cats. Thus, it is necessary active actions from public health administration departments to improve the treatment of the infected cats and prevent human infection, to avoid an outbreak like the one that occurred in Rio de Janeiro - Brazil in the last century. **E-mail:** joycegf@hotmail.com

Sporo026- **Immune reconstitution inflammatory syndrome in a patient with disseminated sporotrichosis as the initial presentation of AIDS**

Silva, CR; Silveira, GG; Valviesse, VRGA; Lyra, MR; Brandão, LGP; Varon, A.
Instituto de Pesquisas Clínicas Evandro Chagas/Fiocruz – Rio de Janeiro, Brazil

Introduction: Sporotrichosis is an endemic fungal infection in the State of Rio de Janeiro. The disseminated form is related to immunodeficiency and it is considered an opportunistic infection in AIDS patients. Worsening of skin lesions and appearance of new ones during the treatment of sporotrichosis and HIV has been identified as immune reconstitution inflammatory syndrome (IRIS). **Material and Methods:** We present a case report of disseminated sporotrichosis as initial manifestation of AIDS associated with IRIS after introduction of HAART. **Results: Case report**: A 37-year old male patient, recently known to be HIV-infected, was admitted in our Institute with a history of four months of low fever and disseminated ulcerated skin lesions with central necrosis and fifteen days of headache, weakness and arthralgia. He was diagnosed with sporotrichosis on skin biopsy and blood culture. Initial CD4+ count was 66 cells/mm³. During hospitalization, he was treated with conventional amphotericin B for 12 days (interrupted because of acute renal dysfunction), followed by itraconazole (200 mg per day). After two weeks of antifungal treatment, he started antiretroviral therapy. He had clinical improvement with partial regression of the skin lesions. After 21 days of hospitalization, he was discharged in use of HAART (stavudine, lamivudine, lopinavir and ritonavir), itraconazol, amoxicillin-clavulanic acid for secondary skin

infection, and drugs for primary prophylaxis of opportunistic infections. After five weeks, he was readmitted at the same hospital with poliarthritis involving knees and elbows, associated with worsening of the former lesions and appearance of new ones. At this time, he had CD4 count of 125 cells/mm³. He was treated with corticosteroid with immunosuppressive dose with a clinical recovery and was discharged after four days, with the diagnosis of IRIS. **Main Conclusions:** This case illustrates a rare manifestation of IRIS associated with disseminated sporotrichosis. More studies should be developed to understand better the manifestations of this mycosis in HIV-infected patients. There are few reports about IRIS associated to this opportunistic infection, but we speculate that this could be more frequent, as the mycosis and HIV infection are endemic in Rio de Janeiro. **Email**: camilarisi@yahoo.com.br

Sporo027- Comparison of the responses to MST among patients with ATL, sporotrichosis and other skin diseases, attended at the outpatient clinic of Evandro Chagas Clinical Research Institute, Oswaldo Cruz Foundation (IPEC/Fiocruz), from September 2007 and July 2010

Antonio LF[1], Pinto PGP[1], Pimentel MIF[1], Sodré AM, Fagundes A[1], Vasconcellos ECF[1], Lyra MR[1], Valete CM[1], Pacheco, SJB[1], Schubach AO[1].
[1] Evandro Chagas Clinical Research Institute, Oswaldo Cruz Foundation, Rio de Janeiro, Brazil

Abstract: American tegumentary leishmaniasis (ATL) is a disease endemic in Brazil, being a major public health problem. Several diseases share with it similar clinical features, and differential diagnosis is sometimes difficult. Montenegro skin test (MST) remains one of the main tools available to help in differential diagnosis due to its high sensitivity, specificity and low cost. This is a prospective longitudinal descriptive study with a convenience sample, to compare the responses to MST among patients with ATL, sporotrichosis and other skin diseases, attended at the outpatient clinic of Evandro Chagas Clinical Research Institute, Oswaldo Cruz Foundation (IPEC / Fiocruz), from September 2007 and July 2010. The test consists in the inoculation of 0.1 ml of *Leishmania* antigen through intradermal route; 48 hours after application, a measurement of induration in millimeters in the site of inoculation was performed, and it was considered positive if equal to or greater than 5 mm. We compared the results of MST in 164 patients, including 85 with ATL, 32 with sporotrichosis and 47 with other dermatoses. The highest values of MST were found in patients with ATL (mean 16.41 mm), in comparison with patients with sporotrichosis (average of 3.31 mm, $p < 0.000$) and patients with other skin lesions (average of 5.72 mm, $p < 0.000$). The MST has proven to be a good test to aid in the differential diagnosis between the LTA, as sporotrichosis and other dermatoses. **E-mail:** maria.pimentel@ipec.fiocruz.br

Sporo028- Differences in interferon gamma expression between sporotrichosis and American tegumentary leishmaniasis patients detected by Elispot assay – an alternative tool for differential diagnosis

Morgado F.N.[1,3]; Schubach A.O.[2]; Pimentel M.I.[2]; Lyra M.R.[2]; Vasconcellos E.C.[2]; Rosalino C.M.V.[2]; Conceição-Silva F.[1*].
[1]Laboratório de Imunoparasitologia, Instituto Oswaldo Cruz/FIOCRUZ, Rio de Janeiro (RJ) – Brazil [2]VigiLeish, Instituto de Pesquisa Clínica Evandro Chagas/FIOCRUZ, RJ- Brazil, [3]Escola de Medicina – Fundação Técnico-Educacional Souza Marques, RJ- Brazil.

Introduction: Clinical presentation of American tegumentary leishmaniasis (ATL) and sporotrichosis (SP) can be very similar. As in Rio de Janeiro (Brazil) ATL and SP shares the same endemic area, the identification of etiologic agent is crucial. When it's not possible, an alternative method should be available for differential diagnosis. **Material and Methods:** In order to verify an alternative tool for differential diagnosis between SP and ATL, we quantified the number of IFN-γ and IL-10 PBMC responder cells to *S. schenckii* antigen (Ss-Ag) and *L. braziliensis* antigen (Lb-Ag) through Elispot assay comparing the results obtained from SP patients, ATL patients, other etiologies patients (OE) and healthy individuals. Five groups were formed: 1- lymphocutaneous form of SP (LC, n=9); 2- Fixed form of SP (F, n=10); 3- cutaneous form of ATL (n=17); 4- OE (n=5); 5- healthy (n=14). **Results:** Spontaneous secretion of IFN-γ by SP and ATL was higher than healthy subjects ($p < 0.05$). When only specific-antigen

stimulation was considered, ATL presented higher numbers of IFN-γ secreting cells than F (p= 0.024) and lesser numbers of IL-10 secreting cells than F (p = 0.0001) and LC (p = 0.001) patients. Furthermore, the IFN-γ Elispot assay for diagnosis presented 100% of sensitivity for LC, F and ATL patients. Five ATL, four LC and two F patients presented positive responses for both antigens. However, in all these cases the specific-antigen stimulation was higher than that elicited by the nonspecific-antigen, suggesting that Elispot assay could be a useful tool for diagnosis when the causative agent is not identified. Finally, Ss-Ag was able to stimulate IL-10 expression in all studied groups, including healthy individuals. **Main conclusions:** Our data demonstrated that: 1- The number of IFN-γ responder cells in PBMC was able to discriminate ATL and SP patients since even in those patients presenting positive response for both antigens, the specific response was always higher, 2- IL-10 responder cells stimulated by Ss-Ag were positive in all groups, including controls, suggesting that *S. schenckii* could be able to modulate the immune response also by inducing IL-10 expression by human cells. Taken together the results indicated that Elispot assay could be a useful tool for diagnosis when the primary tools fail to identify the causative agent. **E-mail:** fconcei@ioc.fiocruz.br

Sporo029- **Evidence for *Bartonella* infection in a Brazilian endemic area for sporotrichosis**

Favacho, A. R. M.[1], Kitada, A. A. B.[2], Rozental, T.[1], Pereira, S. A.[2], Pessoa Jr., A.A.[1], Almeida, E.B.[1], Gomes, R.[1], Barros, M.B. L.[3], Schubach, A.O.[2], Lemos, E.R. S.[1].
[1]Laboratório de Hantaviroses e Rickettsioses (LHR), Instituto Oswaldo Cruz, FIOCRUZ; [2]Laboratório de Pesquisa Clínica em Dermatozoonoses em Animais Domésticos (Lapclin-Dermzoo), Instituto de Pesquisa Clínica Evandro Chagas, FIOCRUZ; [3]Escola Nacional de Saúde Pública Sérgio Arouca (ENSP), FIOCRUZ; Rio de Janeiro – RJ, Brazil.

Introduction: Human cases of bartonellosis and sporotrichosis have been diagnosed, especially in Rio de Janeiro, Brazil. *Bartonella* spp. is the etiologic agent of cat scratch disease (CSD) and it is transmitted to humans through the bite or scratch of infected cats. The CSD incidence is not well known in Brazil and underreporting can occurs. Sporotrichosis is a mycosis caused by *Sporothrix schenckii*. This is transmitted by traumatic inoculation of soil, plants, and organic matter contaminated or cats infected with the fungus. In the last 13 years have been diagnosed more than 2.200 human cases at Instituto de Pesquisa Clínica Evandro Chagas IPEC/Fiocruz. Because of the similarity between the skin lesions observed in CSD and the lymphocutaneous form of sporotrichosis, and also the history of prior contact with infected cats, the differential diagnosis is recommended. The aim of this study was to investigate the prevalence of *Bartonella* spp. in 15 patients with epidemiological history and skin lesion consistent with sporotrichosis, which *Sporothrix schenckii* was not isolated in culture at IPEC/Fiocruz from January 2000 to May 2004. **Methods:** In the first visit, all patients had samples collected for mycological culture. From the stored serum of each patient was applied indirect immunofluorescent assay at Laboratório de Hantavirose e Rickettsioses (LHR)/Fiocruz using a commercial kit *B. henselae* IFA IgG (Bion®, USA) with a screening cut-off titer of 1:64. DNA serum was extracted using QIAamp DNA Blood Mini Kit (Qiagen), following the manufacturer`s instructions. The polymerase chain reaction using specific primers for the 60kDa protein gene (*htr*A) of *B. henselae* and *B. quintana* was negative. **Results:** Four patients were seroreactive for *Bartonella* spp., one of them with a high title 1:512. These patients reported previous contact with cats. Additionally *S. schenckii* was isolated in culture from only one patient, suggesting co-infection *S. schenckii* and *Bartonella* spp. This study has a limitation due to the absence of a second sample of each patient to allow the verification of a possible seroconversion. **Conclusions:** The results suggest the need of more attention at the time of diagnosis within the context of the epidemic of sporotrichosis experienced in the state of Rio de Janeiro, because CSD cases may also be occurring as demonstrated in this study. **E-mail:** afavacho@ioc.fiocruz.br

Sporo030- Feline sporotrichosis treatment with intralesional amphotericin B and oral itraconazole

Rocha, R.F.D.B.[1], Pereira, S.A[1]., Reis, E.G.[1], Pereira, C.O.A.[1], Boechat, J.S.[1], Perié, C.S.F.S[1], Viana, P.G.[1], Silva, D.T[1]., Gremião, I.D.F.[1]
[1] Laboratory of Clinical Research on Dermatozoonosis in Domestic Animals, Evandro Chagas Clinical Research Institute/Oswaldo Cruz Foundation, Rio de Janeiro, Brazil

Introduction: Sporotrichosis, caused by the fungus *Sporothrix schenckii*, affects diverse species of mammals, including humans. Sporotrichosis is frequent in Brazil, the largest number of cases having been reported in Rio de Janeiro, where the first epidemic of sporotrichosis in humans was a result of zoonotic transmission because of the close contact between people and sporotrichosis afflicted cats with skin and mucosal lesions. Itraconazole is effective and safe, compared with other oral antifungal agents, and is therefore the drug of choice for the treatment of the disease, especially in situations where cost is not an issue. However, the clinical response is unsatisfactory in some cases. In cases of feline sporotrichosis refractory to itraconazole, combined subcutaneous or intralesional (IL) administration of amphotericin B might be an alternative. In this study, we described the IL administration of the drug in combination with oral itraconazole in cats with refractory sporotrichosis, which presented as persistent skin lesions. **Material and Methods:** Twenty-six cats with diagnosis of sporotrichosis confirmed by isolation of S. schenckii in culture and presence of skin lesions refractory to treatment with oral itraconazole for a minimum period of 8 weeks were included in this study. For IL administration of amphotericin B, 5 mL 2% lidocaine hydrochloride and 5 mL distilled water were added to a flask containing 50 mg of the drug to obtain a final concentration of 5 mg/mL amphotericin B and 1% lidocaine. The animals were sedated with 10% ketamine hydrochloride (10–15 mg/kg) and 1% acepromazine (0.1 mg/kg) intramuscularly. Amphotericin B was directly infiltrated into the lesions with a 0.38 x13 mm (27.5 G1/2) needle attached to a 1mL disposable syringe until lesion swelling was achieved. The needle was moved in different directions to guarantee infiltration of the whole lesion. Intralesional amphotericin B was applied either once a week or every other week until complete healing of the lesion. **Results:** Twenty-two (84.6%) of the 26 treated cats achieved clinical remission, 16 (72.7%) of which were cured and in 6 (27.3%) presented recurring lesions at the same site, the recurrence appearing 2 (n = 2), 3 (n = 2) and 5 (n = 2) months after clinical cure. Three (11.5%) animals' owners abandoned treatment and there was a lack of clinical response in one (3.8%). No deaths occurred during the study period. **Conclusions:** In the ten years the LAPCLIN-DERMZOO-IPEC/Fiocruz has been monitoring the sporotrichosis epidemic, several cases of cats with refractory focal lesions have been seen despite conventional oral antifungal treatment. Hence, IL amphotericin B is a promising alternative for the treatment of feline sporotrichosis refractory to azolic antifungal agents and further clinical trials should be carried out to determine the ideal concentration/formulation of this drug for this application. **E-mail:** raphael.rocha@ipec.fiocruz.br

Sporo031- *Bartonella* SPP infection in cats with sporotrichosis from Rio de Janeiro – Brazil

Kitada, A.A.B.[2], Favacho, A.R.M.[1], Pessoa Jr, A.A.[1], Gomes, R.[1], Honse, C. O.[2], Gremião, I.D. [2], Lemos, E.R.S.[1], Pereira, S.A.[2].
[1]Laboratório de Hantaviroses e Rickettsioses (LHR), Instituto Oswaldo Cruz, FIOCRUZ; Rio de Janeiro - RJ, Brazil, [2] Laboratório de Pesquisa Clínica em Dermatozoonoses em Animais Domésticos (LAPCLIN - DERMZOO), Instituto de Pesquisa Clínica Evandro Chagas, FIOCRUZ; Rio de Janeiro – RJ, Brazil.

Introduction: Cat scratch disease (CSD) is a zoonosis caused by *Bartonella henselae* and *B. quintana* in South America. It is transmitted to humans through the bite or scratch of infected cat. The flea *Ctenocephalides felis* may to be involved in this cycle. CSD affects children and young adults more often, but many cases may go undiagnosed in older adults. Sporotrichosis is a mycosis caused by *Sporothrix schenckii*. This is transmitted by traumatic inoculation of soil, plants, and organic matter contaminated or cats infected with the fungus. Since 1998 there has been an epidemic of sporotrichosis in the metropolitan region of Rio de Janeiro, affecting cats, dogs and humans. In the last 13 years have been diagnosed more than 2.200 human cases and 3.000 feline cases of sporotrichosis at the Instituto de

Pesquisa Clínica Evandro Chagas (IPEC), Fundação Oswaldo Cruz (FIOCRUZ). Studies of bartonellosis in cats in Brazil are scarce and no evidence the sporotrichosis and bartonellosis co-infection has been related. The purpose of this study was to investigate the seroprevalence of *Bartonella* spp. in cats with sporotrichosis treated at the Laboratório de Pesquisa Clínica em Dermatozoonoses em Animais Domésticos /IPEC /FIOCRUZ during period from October 2007 to December 2011. **Material and Methods:** Serum samples of cats *S. schenckii* positive, confirmed by isolation method, were tested by *Bartonella* infection at the Laboratório de Hantaviroses e Rickettsioses, Instituto Oswaldo Cruz /FIOCRUZ, using a commercial kit *B. henselae* indirect immunofluorescent assay for IgG (Bion®, USA) with a screening cut-off titer of 1:64. **Results:** At present moment serum from 95 cats were tested, 81 males and 14 females, between 7 and 96 months of age (median=24) from the Rio de Janeiro metropolitan region. Of these, 62 cats (65,3%) were seroreactive. **Conclusions:** These preliminary results indicate that this zoonotic agent is present in high prevalence in cats with sporotrichosis in the state of the Rio de Janeiro, which makes this population a potential source of infection for this neglected zoonosis. **E-mail:** amanda.akemi@ipec.fiocruz.br

Sporo032- **Superposition of leprosy-sporotrichosis endemies: a 3 case series report**

Di Luca DG[ab], Nery JAC[a], Galhardo MCG[c], Freitas DFS[c], Filho FB[a], Sales AM[a]
[a] **Ambulatório Souza Araújo, Laboratório de Hanseníase, Instituto Oswaldo Cruz (IOC), Fiocruz, Rio de Janeiro, Brazil,** [b] **Medicine Faculty, Universidade Federal Fluminense, Niteroi, Brazil,** [c] **Instituto de Pesquisa Clínica Evandro Chagas (IPEC), Infectology Department, Fiocruz, Rio de Janeiro, Brazil**

Introduction: Most reported sporotrichosis cases come from South American countries, the USA, India and Japan. Since 1998 epidemic sporotrichosis transmitted by cats has been observed in Greater Metropolitan Rio de Janeiro, Brazil. South America and India are also endemic areas for leprosy; however the association of sporotrichosis in individuals with an actual or past history of leprosy is a rare event with few cases reported in literature. **Material and methods:** Medical records were searched from the database of the leprosy and sporotrichosis outpatient clinics at Fiocruz, Rio de Janeiro, Brazil from 2010 to 2012 for cases of leprosy and sporotrichosis in the same patient. Data were collected from three patients and the authors present their clinical and histopathological presentations. **Results:** The authors report three cases of sporotrichosis in patients with a previous diagnosis of leprosy. All patients reported contact with cats. *Sporothrix schenckii* was confirmed by tissue culture. All patients were treated with the multibacillary multidrug therapy for leprosy and terbinafine and/or itraconazole for sporotrichosis. Patient one was a female of 87 years old who presented a past history of a borderline leprosy. She completed leprosy treatment in 2006. In December, 2011 she presented ulcerated lesions and subcutaneous nodes along lymphatic vessels of the left forearm. The second patient was a male of 56 years old who had finished lepromatous leprosy treatment in 2001. In 2011, he presented a nodular ulcerated lesion in the right arm, with a diagnosis of lymphocutaneous sporotrichosis. The third patient was a 39 year old male with a history of a treated leprosy 12 years earlier. He presented an ulcerated lesion in the right hand with nodular lesions in the right arm, and a cystic lesion in the left leg, with a diagnosis of disseminated cutaneous sporotrichosis. **Main conclusions:** Besides few cases described in literature, the study shows an actual situation of a superposition of endemic diseases in Greater Metropolitan Rio de Janeiro. A history of leprosy and sporotrichosis infection in the same patient can occur and health professionals need to be alert to this possibility. One of the patients also shows an uncommon situation of a disseminated cutaneous sporotrichosis in an immunocompetent patient, just with a past history of leprosy, condition increasingly seen in the zoonotic transmission of sporotrichosis. **E-mail:** dilucadaniel@gmail.com

PARACOCCIDIOIDOMYCOSIS

Paracoco033- Healing criteria in Chronic Paracoccidioidomycosis: a great challenge

Siqueira VS[2], Barbosa CV[2], Santos LS[1], Ambrósio AVA[2], Oliveira TS[2], Nery RS[3], Siqueira WC[2], Cruz SG[2], Camelo CCS[2], Cunha PF[2], D'Antônio ACC[2], Pedroso ERP[1, 2,4.]
[1]Programa de Pós-graduação em Ciências da Saúde: Infectologia e Medicina Tropical da Faculdade de Medicina da Universidade Federal de Minas Gerais (UFMG), Belo Horizonte, Brasil; [2]Faculdade de Medicina da UFMG, Belo Horizonte, Brasil, [3]Faculdade de Ciências Médicas de Minas Gerais, Belo Horizonte, Brasil, [4]Hospital das Clínicas da UFMG, Belo Horizonte, Brasil.

Introduction: Paracoccidioidomycosis (PCM) is a systemic mycosis caused by *Paracoccidioides brasiliensis.* Duration of treatment classically depends on clinical, radiological and immunological improvement and ranges from 6 to 18 months or more. **Methods:** We present two clinical cases from patients receiving appropriate treatment according to the literature that developed relapse or recurrence of PCM. Case 1: NG, 62 Y.O, male, planter/retired, born in Itambacuri, living in Manhumirim, MG. Presented with a vegetating lesion on the upper lip, with fever and progressive weight loss. The biopsy revealed PCM. The patient was being treated with 100 mg itraconazole MID for 4 years, with clinical improvement, when he developed a papule on the left conjunctiva, proven to be PCM on histological analysis; Case 2: WP, 60 Y.O, male, painter, born in Rio Acima, living in Mariana, MG. The patient had laryngeal PCM and was treated with ketoconazole for six months with clinical improvement. After 9 years, he presented with dysphonia, dyspnea and weight loss. A new biopsy revealed PCM recurrence. **Discussion:** Studies on duration of treatment in PCM and appropriate drug regimens are inconclusive, in part due to the small samples of patients and the short term follow-up after treatment. In the first case described, 100mg itraconazole MID proved to be sub therapeutic after 4 years of medication continuation. In the second, there was recurrent PCM nine years after a six month treatment trial with ketoconazole. **Conclusions**: PCM healing criteria constitute a great medical challenge. Clinical improvement seems to be insufficient to assure cure, since some yeast can remain latent and be reactivated afterwards. Therefore clinical criteria alone can lead to inadequate treatment regimens, with too short duration or sub therapeutic doses. The presented cases appoint to necessity of more accurate healing indicators. Immunological markers have been studied with this purpose. CXCL9 and the soluble receptors TNF-R1 and TNFR-2 were found to lower during treatment reaching basal concentrations after 36 months treatment with sulfamethoxazol/trimethoprim. Recurrence rate in 121 patients treated for 3 years in "Centro de Treinamento e Referência em Doenças Infecciosas e Parasitárias" of Hospital das Clínicas/UFMG is zero after 1 to 15 years follow-up. **E-mail:** valcoltec@yahoo.com.br

Paracoco034- Anal paracoccidioidomycosis as the primary manifestation of the disease

Vieira JNJ, Correia AVGM, Machado JRA, Costa CHN, Sousa FJA, Serafim GML, Rego MAS.
Instituto de Doenças Tropicais Natan Portella (IDTNP), Teresina, Piauí, Brazil.

Introduction: Paracoccidioidomycosis is a systemic mycosis caused by *Paracoccidioides brasiliensis*. The predominant form of the disease in adults is chronic and, if not diagnosed and treated appropriately, can lead to severe disseminated forms, with progressive involvement of the lungs, skin and other organs[1]. Anal forms of the disease are an unusual presentation and there is still controversy about it being a primary manifestation, resulting from poor hygiene, or secondary, from an initial lung lesion[2]. **Background:** This is a case study of a patient with HIV which acquired an ulcer after perianal abscess drainage, with *Paracoccidioides brasiliensis* being isolated after histopathological study, despite this kind of injury being an unusual manifestation. **Objectives:** Report the evolution of a case of anal Paracoccidioidomycosis in a patient with HIV. **Methodology:** This is a retrospective case study of a patient admitted in the ward of IDTNP in the city of Teresina-PI. **Patient:** Female patient, 30 years, from the municipality of Santa Luzia - MA, came to IDTNP on 03/10/2011 complaining of headache, fever and

convulsions. HIV was diagnosed using rapid tests. Skull CT scan done on 9/30/2011 showed hypodense areas causing a mass effect from possible neoplastic, ischemic or inflammatory etiology. Patient also had extensive perianal ulcer communicating with vaginal introitus, according to patient's report, it was due to an "abscess" site, which had appeared 4 months ago, after being surgically drained. Colonoscopy done on 12.07.2011 showed longitudinal laceration coated by fibrin with the presence of granulomatous process at the anal canal. Histopathological study revealed *Paracoccidioides brasiliensis* on 31/10/2011. Despite this finding, patient did not show pulmonary disease. **Results:** Antiretroviral and Neurotoxoplasmosis therapy were done throughout hospital stay. Associated with the reported regimen, Acyclovir 1g/daily was held for 32 days by the suspicion that the ulcer was caused by *Herpes Simplex Virus*, however with the histological findings Itraconazole 200mg daily was started, then surgical repair was performed with satisfactory outcome. **Conclusion:** We report a case of co-infection HIV / paracoccidioidomycosis with perianal lesions which showed no relationship to previous lung infection, thus characterizing it as a primary manifestation of the disease. **References:** 1.YASUDA, M.A.S. et al, Guidelines in Paracoccidioidomycosis, Journal of the Brazilian Society of Tropical Medicine 39 (3) :297-310, May-jun, 2006. 2. Vieira, R.A.C. et al, Anal paracoccidioidomycosis. An unusual presentation of disseminated disease, Journal of the Brazilian Society of Tropical Medicine 34 (6): 583-586, Nov-Dec, 2001. **E-mail:** gisellaserafim@yahoo.com.br

Paracoco035- **Semi-Automatic Quantification of Sequelae of Paracoccidioidomycosis**

Oliveira M[1], Alvarez M[1], Pina DR[2], Morceli J[2], Cavalcante RS[3], Mendes RP[3]
[1]Physics and Health Physics Department - Instituto de Biociências – São Paulo State University (UNESP) , [2]Diagnostic Imaging Area and [3]Tropical Diseases Area – Faculdade de Medicina de Botucatu – UNESP.

Introduction: Paracoccidioidomycosis (PCM) is a systemic mycosis, which primarily affects the lungs. Even after effective treatment, this disease leaves sequelae such as fibrosis and emphysema. The visual assessments of lung images, taken by an expert in radiology, are very subjective. The scanning of high-resolution computed tomography (HRCT) of lung parenchyma is the diagnosis method with greater sensitivity and specificity, especially in the diagnosis of chronic interstitial lung diseases. Computer-aided diagnosis systems can produce a more objective assessment of the abnormal patterns found in HRCT images. This study aims to compare subjective and quantitative analysis of residual lesions caused by PCM. **Methods:** Ten exams of male HRCT patients aged between 30 to 65 years old were assessed by three specialists in chest radiology. Scale of 0-5 was used to quantify the amount of fibrosis in each lobe of the lung whilst a scale of 1-4 was used to quantify the emphysema present in the total structure. After the expert analysis, an algorithm was developed using MATLAB environment to quantify the areas of fibrosis and emphysema in the lung separating it from the normal tissue by its densities and morphological operators. To improve the performance and prove the efficiency an algorithm was developed by a virtual phantom. The biggest difference between the real value of the phantom and the value obtained by the algorithm quantifier was 10%. **Results:** The comparisons between the radiologists and algorithm quantifications carried out on retrospective exams of HRCT presented 80% agreement in emphysema and 58% agreement in fibrosis. Contingency tale analyses were carried out and the scores were dependant for the two types of structures [significance was set up at $p \leq 0.05$]. **Conclusions:** Our results suggest that the radiologists overestimate the areas affected by emphysema and fibrosis due to their visual subjective assessment. In addition, the algorithm quantification was not dependant on the operator while the quantifications performed by different radiologists usually present significant disagreement. **Email:** mip.ricardo@gmail.com

Paracoco036- **Severe eosinophilia associated with disseminated paracoccidioidomycosis**

Saraiva IS; Saraiva IE; Duani H; Morais-Caporali J; Freitas KM; Carneiro P; Bacelar B; Lambertucci JR.
Residency of Infectious Disease and Tropical Medicine, Hospital das Clínicas da Universidade Federal de Minas Gerais, Belo Horizonte, Brazil

Introduction: This report describes the case of a young woman with severe eosinophilia associated with disseminated paracoccidioidomycosis. **Materials and methods:** This study was based on review of medical records. **Results:** A 25-year-old woman from a small town in the state of Minas Gerais, Brazil, presented with 3 days of vomits and diarrhea followed by cough and fever for 2 weeks. The blood cell count was significant for eosinophilia (10,000/microliter). Computed tomography and ultrasound revealed mediastinal and abdominal lymphadenopathy, hepatosplenomegaly and enlarged periportal lymph nodes. Serologies for several infectious diseases were negative. Examination of the stool showed no parasites. Cultures of blood, stool and sputum were negative for bacteria, mycobacteria and fungi. She was treated with antibiotics, as well as antiparasitics, with no improvement. She developed a papular rash, worsening eosinophilia (20,000/microliter), and also cholestasis, daily fever, and peripheral lymphadenopathy. She was submitted to liver, skin, cervical lymph node and bone marrow biopsies, and all of them showed paracoccidioidomycosis. Treatment with itraconazole was initiated, after which the patient had a substantial clinical improvement and was discharged home a few days later. Follow-up complete blood count confirmed total recovery with normalization of the eosinophil count. **Conclusions:** Paracoccidioidomycosis is a systemic infection that can cause elevation of eosinophil count, but it is not common to see such a severe eosinophilia associated with the infection. In this case the patient lived in an urban area and had no obvious epidemiologic risk for paracoccidioidomycosis. So, disseminated paracoccidioidomycosis should be included in the differential diagnosis of hypereosinophilia, especially at endemic regions. **E-mail:** isadorasaraiva@gmail.com

Paracoco037- **Specific clinical presentation of Paracoccidioidomycosis in Brazilian Amazonia**

Oliveira, R.E.N.N., Barros, V. Silva, R.L , Santos, S.B. , Silva, T.C , Romanholo, H.S.B. , Rodrigues, A.M.
FACIMED, School of Medicine, Cacoal - Rondônia, Brazil, UFMG. School of Medicine, Belo Horizonte-MG, Brazil

Introduction: Paracoccidioidomycosis is the most prevalent systemic mycosis in Brazil and an emergent tropical disease in Brazilian Amazon, with a significant morbidity and mortality. Recent descriptions had shown that Paracoccidioides species in this Brazilian region have different phenotypic and genotypic profile, but there are still few evidences of clinical aspects of this disease in our region. **Material and Methods:** We conduct an observational retrospective clinical study of cases treated in the Outpatient Specialized of the Cacoal – RO, southern Amazon in the period January 2000 to June 2010. The research was conducted by a retrospective study with a descriptive quantitative analysis through the 175 records available at the reference service. **Results:** The mean age of patients was 51.90 for men and 66.74 for women, the proportion man: woman is 13,5:1. More than half (53.72%) of patients were rural workers, and the remainder (47.28%) lived in urban areas and had different activities. The chronic form (adult form) prevailed in all patients (100%), less than other parts of Brazil (Mato Grosso do Sul – 84,6%, Brasilia – 77%). The main clinical form were pulmonary (62.85%), as in other parts of Brazil, but the incidence of Laryngeal disease (10,9%), skin(11,4%) and lymphatic(5,7%) disease were markedly less frequent than in other parts of Brazil. **Main Conclusions:** Besides different mycological characteristics, there is evidence in our case series that clinical manifestations of Paracoccidioidomycosis are not the same in Amazon as in other parts of Brazil. We notice none juvenile form in all our patients, and there are much less extra pulmonary forms than reported in other areas of Brazil. This clinical finds must be studied in deep to determine other clinical aspects relevant to diagnosis, treatment and follow up of our patients. **E-mail:** gsveredas@ig.com.br

Paracoco038- **Three case reports of Paracoccidioidomycosis in young adults from Tocantins**

Moura, VA; Araujo Neto, AR; Novais, PO; Muniz, GF; Silva, RC; Coutinho, OMVC; Milagres, FAP.
Universidade Federal do Tocantins and Hospital Geral de Palmas, Palmas, Tocantins, Brazil

Introduction: Paracoccidioidomycosis (PCM) is a systemic infectious disease, granulomatous type, caused by the dimorphic fungus *Paracoccidioides brasiliensis*. Predominates in males between 30 and 50

years of age. In adults, the predominant clinical presentation is chronic. In juvenile is presented in the acute or subacute. When not diagnosed and treated appropriately, can lead to severe and lethal disseminated. The major risk factor for acquiring the disease is the professions related to the management of soil contaminated with the fungus. It has been reported in areas of more recent occupation, subject to deforestation, as the states of Maranhão, Tocantins, Pará, Mato Grosso, Rondônia, Acre and Amazonas, where PCM can be considered an emerging systemic mycosis. **Materials and Methods:** Description of three cases of male patients, farmers, young adults, from countryside of Tocantins. Patients OAS and ACCC, both 23 years, two months ago with asthenia, anorexia, vomiting, weakness, weight loss, fever, jaundice, hepatosplenomegaly, ascites, and lymphadenopathy associated with nodular lesions, wart-crusted and ulcerated disseminated. Moreover, the first patient had pulmonary and kidney damage. RCN, 40 years, presented symptoms of syncope, headache, nausea and vomiting for 3 months before the hospitalization, right cerebellar hyperdensity on CT and cerebellar lesion suggestive of neurogenic lesions on RMI. Histopathological examination of fragments (skin lesion in the first case, splenic in the second and cerebellum in the third) showed chronic granulomatous inflammation and fungal spores as thick walls showing budding, was diagnosed PCM, been treated with amphotericin B. Although specific therapy and supportive treatment, patients OAS and ACCC unsatisfactory evolved to death. RCN recovered uneventfully and was discharged to outpatient follow and maintenance treatment with itraconazole. **Results:** Description of the acute/subacute disseminated disease and rare cerebellar form. **Conclusions**: The diagnosis of juvenile and disseminated forms of PCM should always be considered in children and young adults from endemic areas and presenting febrile lymphoproliferative syndrome associated with anemia and skin lesions. The PCM is acquired by inhalation of conidia and often causes impairment of the reticuloendothelial system, with the injury occurring at the level of the oropharyngeal mucosa and hematogenic spreading. There may be involvement of the central nervous system, affecting the spinal cord, brainstem, cerebellum, and most commonly, the cerebral hemispheres. Thus, the PCM must be diagnosed early and appropriate treatment instituted to prevent its development and possible complications such as death. **E-mail:** vinysao@gmail.com

Paracoco039- **Juvenile form of paracoccidioidomycosis, a case report**

Pereira, FWL[1]; Souza, AES[1]; Abreu, CC[1]; Moraes, AC[1]; Cavalcante, AO[1]; Moura, FSL[1]; Nunes Filho, DM[1]; Cronemberger, LMLA[1]; Moraes, DC[1]; Nunes, AL[1],2; Macedo, AS[1],2.
1Universidade Fedeal do Piauí - Teresina, Piaui, Brazil. 2Hospital Infantil Lucidio Portela - Teresina, Piaui, Brazil.

Introduction: Paracoccidioidomycosis is a systemic infection caused by the dimorphic fungus Paracoccidioides brasiliensis. The juvenile form is rare and accounts for less than 10% of cases. **Materials and Methods:** This study is a case based on the description and analysis of clinical data from a patient with paracoccidioidomycosis at Lucidio Portela at Children's Hospital in Teresina in March 2012**. Results:** A 6-year-old female patient, native Paraupebas-PA, resided for one year in Altos-PI. She sought medical attention on February 19, 2012 with complaints of fever for two months and lost 12% of body weight in this range (current weight of 15kg). Evolved with bilateral tumors in the cervical region in 15 days. It was found pale skin mucus lining (+ + / + + + +), low weight, hepatosplenomegaly, enlarged and painless axillary, cervical, inguinal and abdominal lymph nodes on examination. It was aroused the diagnosis of hematologic neoplasia. Admission tests: hemogram with leukocytosis and thrombocytosis, renal and hepatic function and determination of electrolytes unchanged. C-reactive protein showed titration 1:32 (196mg / L). It was introduced ampicillin and amikacin. It was held myelogram on February 24, 2012, with normal result. Serology for toxoplasmosis, rubella, herpes simplex and syphilis were negative, while serology for cytomegalovirus showed reagent IgM. The antibiotic theraphy was changed, suspending ampicillin and amikacin and introducing ceftriaxone. CT of the abdomen was performed on March 2, 2012 and confirmed the enlarged lymph node. It was proceeded a biopsy of cervical lymph node chain followed by histopathological analysis, which revealed granulomatous lymphadenitis suggestive of paracoccidioidomycosis. This was followed by research serology for paracoccidioidomycosis with positive result (titration 1:128). Concomitant treatment began with amphotericin B at a dose of 0.5 mg / kg with progressive increase of 0.25 mg / kg / day until a dose of 1mg/kg. The child evolved with resolution of symptoms and subsequent regression of enlarged lymph node in two days.

Conclusion: This case is relevant because it is about the juvenile form, which is considered uncommon and accounts for less than 10% of cases of this disease. **KEYWORDS:** paracoccidioidomycosis, juvenile, dimorphic. **E-mail:** camila.cunha.abreu@hotmail.com

Paracoco040- **Paracoccidioidomycosis in a renal transplant recipient. A case report**

Lastória LC[1], Andrade LGM[2], Marques MEA[3], Morceli J[4], Mendes RP[1]. [1]Tropical Diseases Area
[2]**Department of Internal Medicine – Nephrology; [3]Department of Pathology; [4]Image Diagnosis Service Faculdade de Medicina de Botucatu – São Paulo State University – UNESP.**

Introduction: Paracoccidioidomycosis (PCM) usually compromises healthy individuals from well known endemic areas. Report of PCM cases in immunocompromised patients are scarce and constitute the aim of this study. **Case report:** A 38-year-old male, from São Manuel municipality, Botucatu Region, had a membranoproliferative glomerulonephritis diagnosed in 1998, which evolved to chronic renal failure. He was submitted to a renal transplantation from a living related donor on November 22, 2006, followed by immunosuppression therapy. On March 9, 2010 he was attended due a 5-month history of weight loss and a 2-week unproductive cough and fever at evenings. Physical examination revealed a temperature of 36.8^{o}C, pulse rate of 76/min., respiratory rate of 20/min., and blood pressure of 120x80mmHg. Except for hyperchromic papules with elevated and well defined borders in the abdominal region, an exulcerated lesion with a 1.0 cm diameter and central crust in the right lumbar region, and fine rales in the right apex, the remainder of the examination was within normal limits. Chest radiograph showed bilateral cavitary nodules and an alveolar opacity in the right inferior lobe. Bronchoscopy revealed only a chronic bronchitis; bronchoalveolar lavage showed no tumoral cells or acid-fast bacilli. Chest CT revealed thick-walled cavitary nodules and masses, small centrilobular nodules and areas of consolidation surrounded by ground-glass opacities, and some patchy air-space consolidations. Double agar gel immunodiffusion test, carried out with *P. brasiliensis* culture filtrate antigen, showed specific serum antibodies at a 1/16 dilution. Histopathological examination of a biopsied skin lesion revealed typical *P. brasiliensis* yeast forms. At that time the patient was receiving mycophenolate (720mg q12hrs), tacrolimus (3.0mg q12 hrs) and prednisone (5.0mg q24hrs). PCM therapy was carried out with the trimetoprim-sulfametoxazole combination (240 - 1,200mg q12hrs). Skin lesion and fever disappeared after two weeks of treatment. Body weight and chest radiograph became normal. The patient completed 1.0-year follow-up. **Conclusion:** In its endemic regions, PCM must be considered as potential diagnosis of diseases presented by immunocompromised patients. TMP-SMZ was a good choice for treatment because of its efficacy and absence of interaction with the immunosuppressed drugs used. **E-mail:** tietemendes@terra.com.br

Paracoco041- **Disseminated paracoccidioidomycosis and chylous ascistes: case report**

Barbosa CV[2], Siqueira VS[2], Santos LS[1], Ambrósio AVA[2], Nery RS[3], Oliveira TS[2], Camelo CCS[2], Dantônio ACC2, Siqueira WC[2], Cruz SG[2], Fróes A[2], Pedroso ER[1,2,4]
[1]**Post-Graduation Program in Health Sciences: Infectology and Tropical Medicine, Faculty of Medicine, Federal University of Minas Gerais (UFMG), Belo Horizonte, Brazil; [2]Faculty of Medicine, UFMG, Belo Horizonte, Brazil; [3]Faculty of Medical Sciences of Minas Gerais, Belo Horizonte, Brazil; [4]Clinics Hospital, UFMG, Belo Horizonte, Brazil.**

Introduction: Caused by *Paracoccidioides brasiliensis,* paracoccidioidomycosis (PCM) is a deep mycosis endemic in Latin America and predominant in the central-southern Brazil. **Material and Methods**: This is a case report of a patient, born in Alvinópolis, Minas Gerais, Brazil, diagnosed in 2007 at age 18, with the generalized form of the disease. In October 2006 presented asthenia, abdominal pain, fever, night sweats, and lymphadenopathy and loss weight. Abdominal ultrasonography demonstrated hepatosplenomegaly, multiple nodules in the liver and a hypoechoic image near the navel. Laboratory tests showed leucocytosis with significant eosinophilia and elevation of transaminases, markers of liver cancer were normal. Abdominal CT scan showed extensive lymphadenopathy in abdominal cavity and

retroperitoneum, hepatomegaly and periportal hypodensity probably related to lymphedema. The presence of the fungus *P. brasiliensis*, was confirmed by lymph node biopsy in December 2006. Due to the severity of the symptoms and the need of intravenous amphotericin B he was hospitalized. Remained hospitalized during two months and evolved with important chylous ascites and pleural effusion during this time. He received a cumulative dose of 3000 mg of amphotericin B. In March 2007, was referred to the Ambulatório de Paracoccidioidomicose do Hospital das Clínicas of UFMG. In the same day started oral treatment for PCM with Sulfamethoxazole + Trimethoprim 400+80 mg two pills of 12 in 12 hours. Ascites was reduced progressively until complete regression after 1 year and 2 months of treatment. In August 2007 the disease was inactive and in May 2010, after 38 months of treatment, medication was discontinued. Currently the patient is in control of cure, attending the outpatient clinic every 6 months. **Results and Main Conclusions:** The evolution of juvenile PCM with thoracic duct obstruction and chylous ascites formation in general, is associated with fibrosis and difficulty of maintenance of lymphatic drainage. In this case the specific treatment was able to reverse not only the evolution of PCM as its severe, disfiguring and stigmatizing sequel. Shows that treatment should be persevering, even though being presented one case and that there is possibility to regression of obstructive lesions **E-mail:** carol_vb@msn.com

Paracoco042- **Central nervous system paracoccidioidomycosis: three cases report in Rondônia, 2011.**

Gomes Júnior AM[1,2], Pedro RAM[1,2], Moreira JED[1,2], Carvalho MSS[1,2], Barbieri AB[3,4], Durlacher RR[2,3,4].
1-Universidade Federal de Rondônia (UNIR), Porto Velho-RO. 2-Liga Acadêmica de Doenças Infecciosas e Parasitárias de Rondônia (LADIR), Porto Velho-RO 3-Faculdades São Lucas (FSL), Porto Velho-RO. 4-Centro de Medicina Tropical de Rondônia (CEMETRON), Porto Velho-RO.

Introduction: Paracoccidioidomycosis (PCM) is the most important systemic mycosis in Brazil. The country represents the endemic largest area in the world, with 80% of the cases, where there was an increase of incidences in the last ten years in Rondônia state, in the Amazon region. PCM is caused by a dimorphic fungus (*Paracoccidioides brasiliensis*) encountered in rural areas and the most common lesions frequently occur in the lungs, bucopharinx mucosa and linphonodes. Although possible, central nervous system lesions caused by PCM are rare (less than 1%). We report three cases of neuroparacoccidioidomycosis treated between 2009 and 2011 at the Tropical Diseases Center (CEMETRON), the state reference center. **Material and Methods:** We present in this descriptive study the record of three patients with neuroparacoccidioidomycosis where the fungus was observed under a microscope associated with computer tomographic scanning (CT) lesions. **Results:** RF, JMS e NC, 34, 45 and 61 years old, all males, had at the first day examination long history of symptoms (6 to 12 months). RF reported long period productive cough, headache, and chorea; JMS related important weight loss, adenomegaly, inferior members' *parhesy* and *parhestesy*, and dry cough; and NC related dry cough, oral lesion and right *hemiparhesy*. All patients were examined several times and were submitted to clinical and complementary examination before coming to CEMETRON. After coming to the state reference center, the CT images showed hypodense pseudotumoral lesions with different sizes, proportional to the symptoms in the cerebellum and parietal cerebral hemisphere with mass effect and perifocal edema. We showed under microscopy levedural forms compatible with *P. brasiliensis* by sputum direct examination from RF, linphonodes direct examination from JMS and direct examination of oral lesion from NC. The patients recovered from systemic and neurological symptoms within two months of specific treatment with itraconazol 200 mg *per* day. The cases are being conducted at ambulatory consults with significative clinical and tomographic improvement. **Conclusion:** This central nervous system PCM cases demonstrate how complex could the diagnosis be when a rare location is evolved. The knowledge about the state's epidemiological profile, associated with a detailed clinical examination, and adequate complementary examination support allowed the diagnosis of neuroparacoccidioidomycosis, and the adequate and opportune therapeutic, in order to minimizing the sequels. **E-mail:** rdurlacher@yahoo.com.br

Paracoco043- **Neuroparacoccidioidomycosis Simulating Malignant Brain Tumour: A Case Report**

Ramos, R. R.[1]; Santiago, C. F. G.[2]
Universidade Estadual de Montes Claros - UNIMONTES, Montes Claros, Brazil[1], Santa Casa de Montes Claros, Montes Claros, Brazil[2]

Introduction: The paracoccidioidomycosis is a chronic infection caused by Paracoccidioides brasiliensis more prevalent in Latin America, where it is endemic. The first site of infection is often the lungs after inhalation of the spores. Then it can affect other organs including the central nervous system whose involvement ranges from 9 to 36% of the cases. The diagnosis of neuroparacoccidioidomycosis is usually difficult because no imaging exams present features that allow this diagnosis, so direct detection of the fungus by biopsy or resection of the granuloma is needed. **Material and Methods:** The medical records of a patient that was hospitalized were reviewed. The data obtained were compared with the typical clinical presentation of the disease. **Results:** We report a clinical case of a 48-year-old Brazilian man who has worked in mining for over 20 years. He was admitted after a persistent holocranial headache with about one month of evolution and two seizure episodes on the day of admission, followed by left homonymous hemianopsia. He had no fever. Thus, a magnetic resonance imaging was performed and it disclosed a heterogeneous lesion on the occipital lobe, with well-defined limits, peripheral gadolinium inflow ring-shaped, a smaller adjacent lesion and perilesional edema. These characteristics led to the suspicion of a malignant neoplasm, so the patient was submitted to excision of the lesion; however the histopathological identified Langhans cells and also gemmules and spores of Paracoccidioides brasiliensis, establishing the diagnosis of neuroparacoccidioidomycosis. The treatment was introduced with sulfamethoxazole-trimetoprim and fluconazole, and the patient keeps the treatment in outpatient. **Main Conclusions:** This report alarms to the necessity of including the neuroparacoccidioidomycosis in differential diagnosis of expansive processes of the central nervous system due to the high mortality rate, the evolution of diagnostic imaging methods and the constant confusion with malignancies. **E-mail:** renato.ribeiro.ramos@live.com , cesarscbh@yahoo.com.br

Paracoco044- **Paracoccidioidomycosis and Hanseniasis: A Co-infection Case Report, Rondônia, Brazil, 2011.**

Gomes Júnior AM[1,2]; Novais DT[1,2]; Pedro RAM[1,2]; Nogueira AF[4]; Narahashi K[3]; Durlacher RR[2,4,5]
1-Universidade Federal de Rondônia (UNIR), Porto Velho-RO. 2-Liga Acadêmica de Doenças Infecciosas e Parasitárias de Rondônia (LADIR), Porto Velho-RO. 3-Policlínica Oswaldo Cruz (POC), Porto Velho-RO. 4-Centro de Medicina Tropical de Rondônia (CEMETRON),Porto Velho-RO, 5-3-Faculdades São Lucas (FSL), Porto Velho-RO.

Introduction: Paracoccidioidomycosis (PCM) is the most important systemic mycosis in Brazil. The country represents the endemic largest area in the world, with 80% of the cases, where there was an increase of incidences in the last ten years in Rondônia state, in the Amazon region. In this area, hanseniasis another endemic disease is frequent, where the incidence rate is one of the highest of the country. Despite this, we rarely observed both diseases simultaneously. This report case is to describe a rare case of chronic multifocal co-infection of paracoccidioidomycosis and multibacillar hanseniasis (MBMH). **Material and Methods:** Descriptive study based on clinical and complementary physicals from a patient treated at the Tropical Diseases Center (CEMETRON), the state reference center. **Results:** EFM, male, 40 years-old, from Mato Grosso State, admitted at CEMETRON with 6 months cough record, thoracic pain and cervical limphonodomegaly. In general the patient presented good condition, tongue lesion; in cervical region, lymphonodes with suppuration on the left and with inflammation signals on the right; hypochromic stains with imprecise limits, hipoesthesy and rarefying density on the thoracic and inferior members' hair. During the neurological physical examination the patient *presented* posterior and medium tibial nerves lesion. In the diagnosal approach, were evidenced funguses morphologically compatible with *Paracoccidioides brasiliensis* in cervical lymphonode and sputum sample. The computerized tomography scanning from the thorax revealed pulmonary nodules at both sides and areas of consolidation. The MBMH dimorphic diagnosis was confirmed by specialists based on clinic (red lesion, plain, associated to the hipoesthesy). For the treatment, it was chosen cotrimoxazol for PCM and poliquimiotherapy for

MBMH. The patient tolerated well the drug association. He presented good clinical improvement and he was oriented to ambulatory following. **Conclusions:** Under PCM disease clinical manifestation, detailed clinical examination found significative signals and symptoms that were not common to this disease. After detailed investigation the diagnostic of co-infection was made with hanseniasis. This disease association is not common even in endemic regions. These cases show us how a detailed clinical examination was important. **E-mail:** rdurlacher@yahoo.com.br

Paracoco045- **Prevalence of blood group antigens in paracoccidioidomycosis-patients**

Fulfaro JE[1], Giacomini JL[1], Sylvestre TF[1], Cavalcante RS[1], Carvalho LR[2], Defune E[3], Mendes RP[1].
Faculdade de Medicina de Botucatu – São Paulo State University – UNESP, [1]Tropical Diseases Area; [2] Biostatistical Area; [3]Botucatu Blood Bank.

Introduction: Paracoccidioidomycosis (PCM), systemic mycosis with antigen-dependent immunosuppression, has not been evaluated as to genetic factors of susceptibility and resistance. **Objectives:** We investigated the prevalence of different red blood cells surface antigens in PCM-patients as to clinical forms and severity. **Patients and Methods:** A total of 108 patients with PCM confirmed by the identification of typical *Paracoccidioides brasiliensis* yeast forms in different clinical materials and/or anti-*P. brasiliensis* antibodies demonstrated by the double agar gel immunodiffusion test, in any phase of the disease, were enrolled in this study. Co-morbidities, except alcohol intake and smoking habit, were exclusion criteria. Clinical forms and severity were classified as to Mendes et al. (1994). Three groups were constituted: G_1- 21 patients / acute/subacute form (AF) with the severe presentation; G_2- 87 patients / chronic form (CF), divided into moderate and severe presentations; G3 - control group - 157 donors from Botucatu Blood Center. ABO, MNS, Rh, Kell, Lewis, Duffy and Kidd were the blood group systems evaluated by using the ID-Micro-Typing System[TM] (ID-MTS) Gel Test[TM]. We compared the frequencies by Fisher's exact test or chi-square test and Goodman test; significance was set up at $p \leq 0.05$. **Results:** The comparison of patients with PCM against the controls revealed that patients had a lower prevalence of Fy^b antigens (49.4% vs 71.4%, p = 0.0007), JK^a (54.1% vs 70.7%, p = 0.013), Le^b (41.9% vs 66.3%, p = 0.0001) and, finally, a tendency toward a lower frequency of K antigen (10.2% vs 18.5%, p = 0.064) and in systems with no difference in prevalence between clinical forms, Rhesus – "e" antigen, Duffy - Fy^b antigen and Kidd - Jk^b antigen, it decreases as the severity of clinical presentation. Therefore, our findings suggest a possible protective role of these antigens. The prevalence of other red cell surface antigens did not differ from the control group. **Conclusion:** The frequency of the A, B, H, AB, D, C, c, E, Fy^a, Jk^b, M, N, S, s, and Le^a antigens did not differ from the control group. However, the antigens Fy^b, Jk^a and Le^b were less frequent at PCM-patients than the control group, and the K antigen expressed a tendency toward a lower frequency. There was higher prevalence from the "e", Fy^b and Jk^b at those who got the severe acute/subacute form followed by patients with moderate chronic form and severe chronic form respectively. **E-mail:** mip.ricardo@gmail.com

Paracoco046- **CD23 soluble quantification in bronchoalveolar lavage and plasma in the course of experimental paracoccidioidomycosis**

Queiroz-Jr, L.P.1; Silva, M. F.2; Nani, R. E.1 and Hahn, R. C.1.
1- Research Laboratory / Mycology Medicine College - - Federal University of Mato Grosso, Cuiabá - Mato Grosso. 2- Laboratory of Biopathology - University of Uberaba, Uberaba - Minas Gerais.

Introduction: Previous works on same research area showed the involvement of the populations of macrophages CD11b+ and CD23+ in the course of experimental infection by Paracoccidioides brasiliensis in mice genetically resistant and susceptible. Going further, the present work focuses on the soluble fraction of CD23 (sCD23), the activation and the expression CD23 mRNA in these populations of macrophages in mice resistant and susceptible to the fungus. **Materials and Methods:** We used 78 adult male mice, strains ASn, B10-A and Swiss, infected by conidia of P. brasiliensis by nasal instillation and control animals treated with saline 0,9%. After kinetic ranging from 1 hour to 45 days post infection, the bronchoalveolar lavage (BAL) and serum were collected and storage at –86°C to quantify by direct ELISA

the sCD23 and IgE by electrochemiluminescence. Lung fragments were collected from each animal for histopathological studies. Cell culture of BAL was performed for quantification of nitrite (NO2-) and for mRNA extraction and RT-PCR for CD23. **Results:** The results indicated that was not detected significant amount of sCD23 in the BAL and in the serum of animals infected by the fungus compared to control animals in the different experimental protocols. The amount of IgE was increased in the Swiss animals infected and this increase was correlated to the nitrite production in BAL. The expression of CD23 mRNA was decreased in both strains B10-A and ASn, especially when compared to expression of β-actin and CD11b. **Main Conclusions:** The overall results seem to indicate that the sCD23, unlike the initial hypothesis is not directly involved in the selective recruitment of macrophages in the lung, but may be involved in the mediation of the cellular signaling that result in a change of the production of NO2- and amount of total IgE in the animals infected by conidia of P. brasiliensis. **E-mail:** luizpadua.biomedico@hotmail.com

Paracoco047- Hematological evaluation of paracoccidioidomycosis-patients (PCM-p) before and during follow-up of cotrimoxazole (CMX) or itraconazole (ITC) therapy

[1]Sylvestre TF, [1]Levorato AD, [1]Moris DV, [1]Azevedo PZ, [1]Cavalcante RS, [2]Carvalho LR, [1]Mendes RP.
[1]Tropical Diseases Area – Botucatu Medical School; [2]Department of Biostatistic, Institute of Biosciences São Paulo State University – (UNESP)

Introduction: ITC and CMX are antifungal drugs used to treat PCM-p. This study aims to evaluate hematological variables before and during treatment. **Methodology:** We studied 200 confirmed or probable PCM-p, 55 of them with the acute/subacute severe form (ASF), and 145 with the chronic form (CF), 39 of them severe (CSF), 97 moderate (CMF), 9 mild (CMiF). Forty patients received ITC and 160 CMX. Hemoglobin (Hb), hematocrit (Ht), red blood cells (RBC), leukocytes (Lk), band (BN) and segmented neutrophils (SN), eosinophils (E), basophils (B), lymphocytes (L), monocytes (M), platelets (Plt) and erythrocyte sedimentation rate (ESR), as to the upper normal limit, were evaluated. Patients were studied before treatment (M_0); M_1: 4-6, M_2: 7-10, M_3: 11-14, M_4: 15-18, M_5: 19-22 weeks after treatment; at clinical cure and normal ESR (M_6). Medians were compared by Kruskal-Wallis, Mann-Whitney and Friedmann tests; significance was set up at $p < 0.05$. **Results:** 1. At M_0: a) Hb: lower levels [$p < 0.001$] in ASF (11.1g/dL) than in CMF (14.8g/dL) and CMiF (14.5g/dL); b) Ht: lower values [$p < 0.001$] in ASF (33.5%) than in CMF (45.3%); c) RBC: lower counts [$p < 0.01$] in ASF ($4.27.10^6$) than in CMF ($4.98.10^6$); d) E: higher counts [$p < 0.01$] in ASF (720) than in CMF (261); e) Plt: higher counts/mm^3 [$p < 0.02$] in ASF (375.10^3) than CMF (249.10^3); f) ESR: higher values in ASF (3.09) than CSF (1.02), CMF (0.75) and CMiF [$p < 0.001$]. 2. *Effect of therapy:* a) Hb: increased levels in ASF at M_6 in CMX-p [$p = 0.001$] and ITC-p [$p = 0.007$]; b) Hb: increased levels in CF at M_5 and M_6 only in CMX-p; c) Ht: increased to normal data at M_6 in ASF in CMX-p [$p < 0.001$] and ITC-p [$p < 0.001$]; d) Ht: increased to normal values in CF only in CMX-p at M_6 [$p < 0.001$]; e) RBC: increased to normal values in ASF at M_6 in CMX-p [$p < 0.01$] and ITC-p [$p = 0.01$]; f) Lk: counts decreased in ASF at M_6 in CMX-p [$p = 0.03$] and ITC-p [$p = 0.04$]; g) Lk: counts decreased in CF at M_6 only in CMX-p [$p = 0.02$]; h) SN: decreased counts at M_3 [$p = 0.015$] in CF in CMX-p; i) L: counts increased in ASF only in ITC- p at M_5 [$p = 0.023$]; j) L: mild increase from M_1 to M_3 in CF only in CMX- p [$p = 0.029$]; k) Plt: counts decreased from M_0 to M_6 only in CMX-p with ASF [$p < 0.001$] and CF [$p < 0.001$]; l) ESR: decreased values from M_0 to M_6 only in CMX-p in ASF [$p < 0.001$] and in CF [$p < 0.001$]. **Conclusions:** Before treatment ASF showed more severe anemia, higher eosinophil and platelet counts and ESR values than CF. Both treatments led the hematological variables to normal limits. **Email:** mip.ricardo@gmail.com

Paracoco048- Low positivity of serological markers in patients with Paracoccidioidomycosis in Brazilian Amazonia

Barros, V. ,Oliveira, R.E.N.N. ,Silva, R.L , Santos, S.B. , Silva, T.C , Romanholo, H.S.B. , Rodrigues, A.M.
FACIMED, School of Medicine, Cacoal-Rondônia, Brazil, UFMG School of Medicine, Belo Horizonte-MG, Brazil

Introduction: Paracoccidioidomycosis is the most prevalent systemic mycosis in Brazil and an emergent tropical disease in Brazilian Amazon, with a significant morbidity and mortality. Serology is one of the most important resources to diagnosis and to determine follow-up and cure for Paracoccidioidomycosis. In southern and southeastern parts of Brazil, reported sensibility and specificity of serological markers are near 100%. In Amazon clinicians notice that the positivity of serological markers are usually low, and recent descriptions had shown that Paracoccidioides species in this Brazilian region have different phenotypic and genotypic profile, some of them related to different antigenic presentation of fungus, but there are still few evidences of clinical significance of this aspect of Paracoccidioidomycosis in our region. **Material and Methods:** We conduct an observational retrospective clinical study of cases treated in the Outpatient Specialized of the Cacoal – RO, southern Amazon in the period January 2000 to June 2010. The research was conducted by a retrospective study with a descriptive quantitative analysis through the 175 records available at the reference service. **Results:** In the group of 175 patients with Paracoccidioidomycosis, we find 26 patients with serological studies performed before the beginning of treatment and positive mycological diagnosis made by direct examination of clinical material or culture or both. The only serological technique used was radial immunodiffusion. In this group of patients only 4(15,4%) patients have positive serological reactions. **Main Conclusions:** Besides different mycological characteristics, there are evidence in our case series that serological response to Paracoccidioidomycosis are not the same in Amazon as in other parts of Brazil. We notice that the prevalence positive serological markers are much lower in our case series than reported in other areas of Brazil. This clinical finds must be studied in deep to determine other clinical aspects relevant to diagnosis, treatment and follow up of our patients. Probably a new group of antigens based on Paracoccidioides species obtained in our region could have a better profile. **E-mail:** gsveredas@ig.com.br

Paracoco049- Immunological and clinical follow-up to assess treatment response in paracoccidioidomycosis patients at the hospital of the Federal University of Minas Gerais, Brazil

Santos LS[1], Ambrósio AVA[2], Barbosa CV[2], Siqueira VS[2], Siqueira WC[2], Cruz SG[2], Oliveira TS[2], Nery RS[4], Camelo CCS[2], Dantônio ACC[2], Fróes A[2], Góes AM[3], Pedroso ER[1,2,5]
[1]Post-Graduation Program in Health Sciences: Infectology and Tropical Medicine, Faculty of Medicine, Federal University of Minas Gerais (UFMG), Belo Horizonte, Brazil; [2]Faculty of Medicine, UFMG, Belo Horizonte, Brazil; [3]Biochemistry and Immuoloy Department, Biological Sciences Institute, UFMG, Belo Horizonte, Brazil; [4]Faculty of Medical Sciences of Minas Gerais, Belo Horizonte, Brazil; [5]Clinics Hospital, UFMG, Belo Horizonte, Brazil.

Introduction: Paracoccidioidomycosis (PCM) is a systemic disease caused by the fungus *Paracoccidioides brasiliensis.* A major challenge in the clinical management of PCM patients is to determine the treatment duration, especially due to the frequent relapses. Serological concentrations of the chemokine CXCL9 and soluble receptors sTNF-R1 and sTNF-R2 demonstrated correlation with disease activity in chronic PCM patients followed-up during treatment. Other chemokines also showed promising usefulness to follow-up patients after treatment, since their increasing in serum may be related to disease recurrence. The objective of this study was a 36-month prospective immunological and clinical assessment in cured patients after completing treatment, including the frequency and clinical characteristics of PCM relapses and their correlation with chemokines and soluble TNF receptors. **Casuistic and Methods:** This study has been conducted at the 'Centro de Treinamento e Referência em Doenças Infecciosas e Parasitárias' of the hospital of the UFMG. After completing the full 36-month treatment, 18 patients from different municipalities of Minas Gerais state, Brazil, were assessed every six months during 36 months (from March 2009 to March 2012), to assess immunological and clinical parameters. Serological concentrations of chemokines and soluble TNF receptors were measured using an ELISA kit (Kits DuoSet®,R&D Systems, USA), at the end of treatment (initial moment) and 6, 12, 18, 24, and 36 months after the initial moment, together with a systematic anamnesis and physical examination. **Results:** The frequency and clinical characteristics of PCM relapses and their correlation with serological concentrations of sTNF-R1, sTNFR-2, CXCL9, CCL24, CCL11 and CCL3, together with the findings in the anamnesis and physical examination are going to be presented and discussed in detail, taking into account previous studies. **Conclusions:** This is a pioneer study applying chemokines and soluble TNF receptors to do a long follow-up of treated patients and assess the possible value as

biological markers of future disease relapses. Since cure control of PCM has not been established yet, the immunological parameters have a strong potential of becoming useful tools in the management of PCM patients. **E-mail:** lilianufop@yahoo.com.br

Paracoco050- **Paracoccidioidomycosis: Case report**

Athias, R.T.; Soares, F.A.H.; Gonçalves, F.V.; Gonçalves, B.V.; Sampaio, E.C.[1]; Casagrande, B.V.P.; Júnior, I.B.M.
Centro Universitário do Estado do Pará, Belém, Pará, Brazil.

Introduction: Paracoccidioidomycosis is the most important systemic mycosis in Brazil and it is caused by a dimorphic fungus called Paracoccidioides brasiliensis. The infection generally begins with the inhalation of the fungus spores with a primary pulmonary lesion and posterior lympho-hemato-genic dissemination. Manifests in an acute or chronic form, in the chronic form progression are slow, affecting only the lungs or other organs, like the oral and nasal mucosa, skin and lymph nodes. **Materials and Methods:** A case of disseminated paracoccidioidomycosis, South American type, confirmed through biopsy and histopathological of the cervical lymph node chain, anamnesis, physical, laboratorial and radiological exams which identified the organs affected was analyzed. **Results:** Patient, 24 years old, lumber mill worker, native of Tailândia – PA, Brazil, began with weight loss, asthenia and malaise, which evolved with diffuse abdominal pain and bloating. Later on presented high fever (hyperthermia), lymphadenopathy flugose floating in the neck and groin, jaundice, choluria and generalized erythematous popular skin lesions. Referred to Hospital Beneficente Portuguesa, already presenting signs of sepsis, comatose (Glasgow 8) and dyspnea. It was requested imaging tests that showed hepatosplenomegaly, homogeneous pleural effusion in the posterior left lung base and atelectatic opacities in the posterior inferior left lung base. Moreover, it was requested an histopathological biopsy of cervical lymph node chain which revealed the presence of *Paracoccidioides brasilienses*, diagnosing disseminated South American paracoccidioidomycosis. He was treated with Meronem, Fluconazole, Amphotericin B, sulfamethoxazole, trimethoprim, Targocid and teicoplanin. Under went thoracentesis with drainage of 1500 ml of bloody fluid content. After 68 days of hospitalization, the patient was stable, afebrile, eupneic, anicteric, with unchanged neurological examination; he presented regular breath sounds bilaterally with no adventitious sounds in the pulmonary auscultation and negative urine culture. Thus, discharged and sent for outpatient treatment at the Instituto Evandro Chagas. **Conclusion:** It is estimated that paracoccidioidomycosis reaches approximately 10 million people and is endemic in parts of Latin America, including Brazil, mainly in the Midwest, South and southeast, and rarer in the north and northeast, although records of its occurrence have increased. More often the development of disease in male adults with activities related to agriculture, being most prevalent among 30-50 years. This disease if effectively controlled with antifungal medication, but relapses are frequent and can leave fibrotic sequelae or cause the patients to decease. **E-mail:** rafaelathias@hotmail.com

HISTOPLASMOSIS

Histo051- **Spatial Distribution of the Histoplasma Infection in Fortaleza, Northeastern Brazil**

Leitão TMJS; Soares AD; Zancopé RO; Alencar CH.
Federal University of Ceará, Fortaleza, Brazil. Oswaldo Cruz Foundation, Fiocruz. Rio de Janeiro, Brazil. Swiss Tropical and Public Health Institute, University of Basel, Basel, Switzerland

Introduction: Disseminated Histoplasmosis has been a common presentation in AIDS patients with advanced immunosuppression in the State of Ceará (Northeastern Brazil). A recent study demonstrated a prevalence of histoplasmin skin test reactivity of 11.8% in HIV patient with CD4 counts > 350 Cell/mm3 residents in Fortaleza, capital of Ceará. Despite the high numbers of disseminated histoplasmosis cases in this area, few studies have addressed the epidemiology of this fungus in this State.This study intent to

evaluate the spatial distribution of a specific group of inhabitants of Fortaleza, reactive to histoplasmine intradermal test. **Materials and Methods**: A cross-sectional study was performed in 58 residents, (professional and students) from three health institutions of Fortaleza, during June, 17/2010 to March, 31/2011 that presented a positive result for histoplasmine intradermal test (Mycelial phase antigen supplied by FioCruz, Rio de Janeiro). The cases were identified spatially through the address using the free software Google Earth. The points were sent to the program TerraView with subsequently construction of Kernel maps. This analysis produced a continuous surface from the items identified in space, creating a density map of the cases. The analysis of the case distribution was done according to the current politico administrative division in the city (districts), which delimits six areas in the city with similar socioeconomic characteristics. This study is a part of a project, financed by the Brazilian Research Council (CNPq), process n° 476730/2009-0. **Results**: The study population was adults with a median age of 43.46 year old and 74.19% of females. Positive cases were identified through all the districts of Fortaleza. Three areas show more concentration of cases. The first and most significant (19 cases), occurred in neighborhoods near the two studied Health institutions; several other neighborhoods in its surroundings also showed a higher density of cases. A second area (14 cases), this time far from places of study, also had high density, as well as a third area (7 cases) also away from the place of study. There was only one district that featured lower density of cases, and without significance. Most areas with the highest density of cases occurred in the districts with the lowest human development index. **Conclusion**: The spatial distribution of the participant histoplasmine positives of this study was limited to three specific areas (districts) in the city. Further studies concerning the fungus distribution in these places are still necessary. **E-mail:** tsilva@ufc.br

Histo052- **Relations between social and environmental indicators and distribution of cases of disseminated histoplasmosis associated with aids in Fortaleza / CE from 2000 to 2007**

Correia, FG[1]; Martins-Melo, FR[1]; Silveira, CM[1,] Leitão TM[1]
1. Department of Public Health, School of Medicine, Federal University of Ceara, Fortaleza, Ceará, Brazil.

Introduction: Disseminated histoplasmosis (DH) is a systemic mycosis caused by a dimorphic fungus *Histoplasma capsulatum*. Since the beginning of the HIV epidemic in Ceará, the HD has been detected frequently in patients with aids, suggesting the state of Ceará in a highly endemic area for this fungus. This study aimed to describe the spatial distribution of cases of HD/aids co-infection in at a referral hospital in the state of Ceará in the period 2000 to 2007 and analyze them under the influence of some environmental indicators. **Materials and Methods**: The analysis of the case distribution was done according to the current politico administrative division in the city (districts), which delimits six areas in the city with similar socioeconomic characteristics. Fortaleza is divided into 116 districts and six Regional Executive Secretariats (SER), the municipal administrative units directly responsible for the implementation of public services in each area. The locations of cases were georeferenced using TerraView software. The kernel intensity estimator was used for identifying clusters of cases with greater intensity. Socio economic data was provided by the Brazilian Institute of Geography and Statistics (IBGE). **Results**: Regional I and V were 42 cases (19.9%) each, while the Regional II had 14 cases (6.64%), Region III had 44 (20.85%) and Region VI, 32 cases (15.17%). It is particularly noticeable a concentration of cases among the districts of Demócrito Rocha e Joquei Clube (where is located the Parangaba lake), Pan Americano (located between Parangaba and Pici lakes), Rodolfo Teófilo (which presents the main body of water pond Porangabuçu), Carlito Pamplona (presented a body water named João Lopes) and Parreão (next to Opaia lake). According to environmental indicators, the worst rates of sanitation coverage occurred in the Regional V (28.9%) and III (39.9%). The Region VI showed the worst indicators of sanitation coverage (22%), water supply (90.6%) and waste collection (91.36%) in the city. With regard to the Human Development Index (HDI), the Regional VI (0.462) and V (0.440) show the lowest values of HDI. **Conclusion**: The distribution of HD / AIDS co-infection is heterogeneous concerning to social and environmental indicators stipulated in this study, however appears to follow a close relationship with water bodies and urban streams. Using the technique of spatial analysis is shown as a good tool for a correct understanding of HD/aids co-infection dynamics and strategies for surveillance. **E-mail:** gustavsilveira@yahoo.com.br

Histo053- **Epidemiological aspects of patients with disseminated histoplasmosis associated with aids in a referral hospital in Fortaleza / CE from 2000 to 2007**

Correia FG[1], Martins-Melo FR[1], Silveira CM[1], Leitão TM[1]
1. Department of Public Health, School of Medicine, Federal University of Ceara, Fortaleza, Ceará, Brazil.

Introduction: Disseminated histoplasmosis (DH) is an aids-defining opportunist infection of HIV patients from endemic areas. Since the beginning of the HIV epidemic in Ceará, DH has been detected frequently in patients with aids. Descriptive and analytical study was conducted based on data obtained from the Medical and Statistical Support System of the Infection Diseases São José Hospital (SAME/HSJ). This study aimed to evaluate socioeconomics and epidemiogical characteristics of patients with DH and HIV/aids co-infection in a referral hospital of Fortaleza, Ceará, between 2000 and 2007. **Material and Methods**: Description and cross sectional study was carried out by analysis of medical records, conducted with 191 patients coinfected with HD/aids hospitalized at a referral hospital for infectious and parasitic diseases in the state of Ceará in the period from 2000 to 2007. **Results**: Most of the patients were male (59.2%), aged 30-39 years (45.5%; mean age 44.6 years; standard deviation ± 13 years), low education: <8 years (60.7%) and with an income of one to three minimum wages (60.5%). Most admissions for HD/aids occurred in 2005 (18.5%), while 41.9% of total cases died. **Conclusion**: This study demonstrates that disseminated histoplasmosis associated with HIV/aids affects a portion of the population with low socioeconomic level, at the height of the working potential. The understanding of the epidemiological reality of this period can help prevent the decrease in HD and high mortality of its cases.
E-mail: gustavsilveira@yahoo.com.br

Histo054- **Histoplasmosis in patients admitted to the Júlio Müller university hospital (HUJM), Cuiabá, MT, Brazil**

Nani, R. E. [1] , Tadano, T.[2] & Hahn, R. C. [1,2]
1. Mycology Laboratory / Investigation - PPG – School of Medicine Federal University of Mato Grosso (UFMT), Brazil. 2. Júlio Müller University Hospital, UFMT, Brazil

Introduction: Classic histoplasmosis is a fungal infection caused by the dimorphic fungus *Histoplasma capsulatum*, which has a special pathogenic affinity for the reticuloendothelial system (RES). Infection by this fungus occurs through spore inhalation and several factors influence the establishment and evolution of disease, including the number of spores inhaled and the host immune status. In most individuals, this clinical form is benign, but some can present the disseminated form of the infection, including the very young and elderly (children under 1 year-old and adults over 60) and immunocompromised patients; i.e., those treated with corticosteroids, leukemia and transplant patients, those administered chemotherapy and patients with AIDS. **Methods:** Presentation of a retrospective study involving isolates from several clinical specimens from January 2007 to December 2011. Mycological diagnosis of histoplasmosis is based on detecting its causative agent, *Histoplasma capsulatum*, in biological materials. To achieve this, two different methods are used simultaneously: direct examination and culture. The direct examination involves making smears stained with Giemsa. In culture, samples are cultured at 37°C using either Sabouraud dextrose or Mycosel® medium. **Results:** Of the 31 patients diagnosed with histoplasmosis, 20 (64.5%) had AIDS. Different biological materials were used in the laboratorial diagnosis, including: **marrow aspirate**, among the 21 (51.2%) samples evaluated, 14 (66.7%) were positive and five (23.8%) negative by direct examination and two were not performed, while all were positive in the culture assays; **bronchoalveolar lavage**, five (12.2%) samples were evaluated, direct examination revealed four (80.0%) positive samples and one (20.0%) negative, while culture assays were positive for three samples (60.0%) and two were not performed; **blood**, nine (22.0%) samples were cultured only and all were positive; **cerebrospinal fluid**, two (4.9%) samples were evaluated, only one was positive by direct examination, while both were positive by culture; **skin biopsy**, one (2.4%) sample was positive by direct examination and culture; **mucosal scraping of tongue lesion**, one (2.4%) sample was positive by direct examination, a culture was not performed; and **lymph node biopsy**, two (4.88%) samples were evaluated, one positive and one negative by direct examination and both positive by culture. A total of 41 samples were

evaluated, 38 (92.7%) with positive culture and three were not performed. In the direct examination, 31 smears of different samples were stained with Giemsa, 22 (70.9%) were positive and nine (29.1%) were negative. **Conclusion:** At the HUJM, analysis of different clinical samples by direct mycological examination showed good positivity (70.9%), but it was both important and necessary to perform culture assays ("gold standard") to confirm the laboratorial diagnosis. **Keywords:** Histoplasmosis, culture, direct examination. **E-mail:** r.nani@hotmail.com

Histo055- Detection of *Histoplasma capsulatum* in rodent and bat populations of Buenos Aires City, Argentina

Suárez-Alvarez RO[1,2], Toranzo AI[1], Salas HD[1], Agra MM[2], Canteros CE[1], Suárez OV[2].
[1]. Departamento Micología. INEI-ANLIS "Dr. Carlos G. Malbrán", Buenos Aires, Argentina. [2]. Laboratorio de Ecología de Poblaciones. Departamento de Ecología, Genética y Evolución. Facultad de Ciencias Exactas y Naturales. Universidad de Buenos Aires, Argentina

The fungus *Histoplasma capsulatum*, is a mammal fugal pathogen causative of histoplasmosis. The saprophytic-mycelial phase develops in environments associated with guano of birds and bats. Infection is acquired by inhalation of conidia and hyphal fragments that enter in susceptible host to initiate the change to parasitic-yeast phase. Histoplasmosis is the fourth most common deep mycoses diagnosed in Argentina; where the fungal infection was associated with the rural population, however, now began to see clinical cases in patients with different causes of immunocompromised without history of having lived or visited rural areas. So far, it is unknown the true implication of bats or rodents in the ecology of *H. capsulatum* in Buenos Aires city. The aim of this study was to explore *H. capsulatum* infection in rodents and bats associated to urban niches in the City of Buenos Aires, Argentina. We captured 50 rodents and 48 bats in different areas of the city. In accordance with the international rules of capture and management of bat species, 26 bats (females or young males) were released to not alter the population dynamics. All animals were identified based on their external morphological features. After capture, all animals were sacrificed by cervical dislocation and samples of spleen and liver were removed aseptically. Each organ specimens were processed for the *H. capsulatum* detection by microbiological and molecular studies (nested-PCR targeting a fragment of *Hcp100* gene, specific for *H. capsulatum*). *Histoplasma capsulatum* could not be recovered from culturing of any animal organs. By other hand, nested-PCR was able to detect *H. capsulatum* DNA in different rodent species captured: 13/30 *Mus musculus*; 1/18 *Rattus norvegicus* and; 2/2 *Oligoryzomys flavescens* and, in 8/22 bat species, all which were identified as *Tadarida brasiliensis*. The fragment amplified of the *Hcp100* gene was sequenced and compared with sequences deposited in the Genbank, which confirmed that the amplified DNA corresponds to *H. capsulatum*. Fungal culture is the gold standard for demonstrating a state of fungal infection, this method as a mayor limitation in its low sensitivity because a high fungal burden is needed in tissue samples to obtain a successful fungal isolation. In previous reports, *Hcp100* marker showed a high sensitivity and specificity for *H. capsulatum* detection in tissue samples. The results showed that *M. musculus* is the wild rodent most susceptible to infection by *H. capsulatum*, this is because this species can live in urban areas and search for food and water in the green areas, which are more exposed to this fungus. It should be noted that 100% of samples positive for *H. capsulatum* were captured in the green areas. According to the results obtained *M. musculus* could be included as potential reservoirs and dispersers of this fungus in urban areas as well as bats. **Acknowledgements:** This research was supported by the grant: "Alberto J. Roemmers" foundation. **E-mail:** ccanteros@anlis.gov.ar

Histo056- A Brazilian case of feline cutaneous histoplasmosis

Souza, E. W [1]., Gremião, I.D.F[1]., Cunha, S.C.S[1]., Silva, D.T[1]., Petry, L.C[1]., Pereira, S.A[1].
[1] Laboratory of Clinical Research on Dermatozoonosis in Domestic Animals, Evandro Chagas Clinical Research Institute/Oswaldo Cruz Foundation, Rio de Janeiro, Brazil

Introduction: Histoplasmosis is a systemic, non-contagious mycosis caused by the fungus *Histoplama capsulatum*, which infects humans and animals, and it is transmitted through the inhalation of spores. The fungus lives in nitrogen-rich soil, as in chicken coops. Bats serve as reservoirs of the fungus, spreading it through the feces. Infection occurs through inhalation, the lungs and lymph nodes being the first organs to

be affected. Cough, dyspnea, exercise intolerance, weight loss, lymphadenopathy and fever are common symptoms. Skin lesions in animals are not common. Considering the importance of histoplasmosis for Veterinary Mycology as well as the scarcity of case reports in small animals, we described a case of feline cutaneous histoplasmosis. **Material and Methods:** A three-year old, mixed breed, female and spayed indoor cat, weighing 3 Kg, was taken to a private veterinary clinic in Rio de Janeiro with a history of sneezing, dyspnea and increased respiratory sounds. The clinical examination revealed hyperemia in the left nostril and a loud inspiratory noise. A thoracic radiography was requested. After fifteen days, the cat was with mild dyspnea, apparent fatigue, loss of appetite and dysphagia. There was a swelling of the right supraorbital region, unilateral left sided conjunctivitis and enlarged submandibular lymph nodes. A fine needle aspiration cytology of the supraorbital nodule was performed. **Results:** The complete blood count results revealed monocytosis, the thoracic radiographys were within normal limits and the skull radiography showed increased radiopacity in the soft tissue adjacent to the right eyeball. The cytology showed mixed inflammatory cells, with predominance of intact neutrophils, presence of reactive macrophages that phagocytosed yeast-like organisms and rare plasmacytes. A new sample was obtained for fungal culture. Itraconazole 10 mg/kg once daily was prescribed. The result revealed *Histoplasma sp.* Serum concentrations of alanine aminotransferase and alkaline phosphatase were the normal limits. After seven days, due to the worsening of clinical symptoms, a therapy was started with amphotericin B (AMPH B) 0.5 mg/kg SC diluted in 200 mL of 0.45% NaCl / 2.5% glucose, three times a week for two weeks. Itr and metoclopramide SC were continued. Serum creatinine concentrations were monitored weekly, but showed no alterations during the treatment. After two weeks, there was a clinical improvement. Therapy with AMPH B was discontinued, and Itraconazole continued to be administered via feeding tube along with food. After four months, the supraorbital nodule healed completely and so did the sneezing and dysphagia. The total time of the antifungal treatment was six months. There was no recurrence of the disease until the present moment. **Conclusions:** Cutaneous histoplasmosis in felines is a rare condition in Brazil. In view of the scarcity of reports and aiming to alert veterinarians, this disease should be included in the differential diagnosis with other feline dermatopathies. **E-mail:** esewaite@gmail.com

CRYPTOCOCCOSIS

Cryptoc057- **Distribution of endemic cryptococcosis in the state of Pará from 1999 to 2011**

Furtado, K.; Pereira, C. O. G.; Carneiro, R. S. R.; Torres, I. T.; Medeiros, R.

Introduction: Cryptococcosis is a significant life-threatening fungal infection that affects humans and a large variety of animals. It is caused by two species of Cryptococcus, C. neoformans and C. gattii, the last one is mainly seen in immunocompetent patients and regarding its geographical distribution, it is considered a tropical pathogen. C. neoformans, however, induced cryptococcosis worldwide and it is an important cause of morbidity and mortality in immunocompromised individuals. **Material and Methods:** Retrospective, analytical, epidemiological, cross-sectional chart review of apparently immunocompetent patients with cryptococcosis admitted in a reference hospital for infectious diseases in Pará State, Brazil, during period of 1999 to 2011. The exclusion criterion used was the presence of HIV infection or other risk condition for immunosuppression (chronic diseases, immunosuppressive drugs, pregnancy). **Results:** From the 127 patients, 126 were from the state of Pará and one came from the state of Maranhão (São Pedro). Since the region with the highest number of cases was the Northeast, which presented 55 (43.8%), while the South-west did not present any case. The metropolitan area showed 48 (38.1%) cases. From the 86 patients with identification of species, 11 had genotype defined. Of this amount, 7 (63.6%) were C. gattii species, with 100% of the genotypes being VGII, while the other four (36.4%) patients were C. neoformans var.grubbii, 100% of the genotypes being VNI. When we analyzed the distribution of genotypes by region, it was observed that from the VGII, 4 (57.1%) are in the Northeast, one (14.3%) in the Metropolitan, 1 (14.3%) in the South-east and one (14.3 %) in the Lower Amazon. As for the distribution of NIV 3 (75%) is in the Northeast, while 1 (25%) is in the Lower Amazonas. **Main Conclusions:** It was observed that the region near the state capital, Northeast and

Metropolitan, were responsible for most of the cases. This fact can be associated to the proximity of these regions with the reference center for infectious diseases in Belém. **E-mail:** ritaclosset@uol.com.br

Cryptoc058- **Early and late evaluation of cryptococcosis in non-AIDS patients**

Cavalcante RS[1], Defaveri J[2], Coelho KYR[2], Moris DV[1], Mondeli AL[3], Carvalho LR[4], Mendes RP[1].
[1]**Tropical Diseases Area,** [2]**Department of Pathology and** [3]**Department of Clinical Medicine – Faculdade de Medicina de Botucatu – UNESP,** [4]**Biostatistical Area – São Paulo State University (UNESP)**

Introduction: Cryptococcosis-CRC is a severe systemic mycosis which mainly affects. AIDS-patients, but also organ transplant recipients and nontransplant hosts. This study aims to characterize CRC in non-AIDS patients at a university hospital. **Patients and Methods:** A retrospective study of 27 CRC patients seen at the Tropical Diseases Area – Faculdade de Medicina de Botucatu – UNESP from 1989 to 2010 was carried out. CRC was confirmed by the identification of *Cryptococcus* spp by India ink test in cerebrospinal fluid-CSF and/or Mayer's mucicarmine stain in histopathological examination and/or the detection of cryptococcal polysaccharide capsular antigen by latex agglutination in CSF and/or serum. **Results:** CRC patients aged from 15 to 72 years (Md=51). The frequency of females was 59% and males 41%. Frequency of predisposing diseases was 37% and the main underlying conditions were Systemic lupus erythematosus plus corticosteroid therapy (30%) and malignancy (30%). The isolated pulmonary form was observed in 10 (37%) patients. Cough (44%), chest pain (39%) and dyspnea (28%) were the most frequent complaints in pulmonary involvement patients. The disseminated form was present in 17 (63%) patients, seven of whom showed exclusive central nervous system involvement, being headache (87%) and visual loss (44%) the main complaints. The other 10 patients revealed the systemic disseminated form. The length of disease was longer in patients without immunossupression than immunocompromised patients (12 vs 2.5 weeks, p=0.03). Among 10 patients with isolated pulmonary form, 4 were treated with fluconazole (FLC), three with itraconazole (ITC), one with FLC followed by ITC and one with amphotericin B deoxycholate (AmBd) followed by FLC; the treatment was succeeded in 10 patients. Among 17 patients with disseminated form, 10 were treated with AmBd followed by FLC, four with the association AmBd plus 5-fluorcitosine (5FC), three of whom followed by FLC. One patient was treated with AmBd only and other with FLC only. The treatment was succeeded in 14 of 17 patients (82%). Two patients died, one by increased intracranial pressure and other by pulmonary embolism. One patient died before treatment. Sequelae was more frequent in CNS involvement patients than others (46.0% vs 0.0%, p=0.01). **Conclusions:** These results show the clinical CRC polymorphism and the need to investigate this disease in non-AIDS patients. **E-mail**: mip.ricardo@gmail.com

Cryptoc059- **Cryptococcal meningitis in immunocompetent patients in Pará-Brazil: Description of 62 cases from 2002 to 2009**

Pereira, C. O. G; Torres, I. T.; Carneiro, R. S. R.; Furtado, K.; Medeiros, R.

Introduction: Cryptococcosis is a fungal disease of systemic character with worldwide occurrence, caused by the fungi of *Cryptococcus* genus. The disease has assumed an important role because it is considered one of the most common mycoses in immunocompromised patients. However, a considerable proportion of patients with this disease pose no risk factor for immunodeficiency. In this case, the main etiological agent *Cryptococcus gattii* is causing cryptococcosis mainly in the form of meningoencephalitis. **Material and Methods**: We have retrospectively studied the medical records of 62 patients admitted in a reference hospital from Pará State-Brazil, from July 2002 to November 2009, with diagnosis of cryptococcal meningitis by culture, direct search by staining with India ink or latex agglutination in the cerebrospinal fluid (CSF). It was used as exclusion criteria the presence of HIV infection or other immunosuppression condition (chronic diseases, immunosuppressive drugs, pregnancy). **Results:** Most patients (58.1%) were male and the predominant age range was 0-12 years (41.9%). All came from the State of Para, with 43 (69.4%) from urban area. Headache was the most common symptom (98.4%), followed by fever (88.7%) and vomiting (87.1%). *Cryptococcus gattii* have been identified in 60,46% of the cases. Amphotericin B was the primary drug used (93.5%). Death occurred in 19.4% of patients, with high mortality in the age group from 0 to 12 years old (41.7%). There were neurological sequelae in 36

(58.1%) patients, the most frequent hydrocephalus (41.9%) and change in visual acuity (37.1%). **Main Conclusions**: Cryptococcal meningitis was more frequent in men, children and individuals coming from the urban area. Our data reinforce the cryptococcal meningitis as an important cause of morbidity and mortality among immunocompetent adults and children and emphasize the endemicity of *C. gattii* in the State of Pará, demonstrating the need of early diagnosis for the disease. **E-mail:** cyliaogp@gmail.com

Cryptoc060- **Epidemiological surveillance and evaluation of cryptococcal meningoencephalitis in Hospital Federal dos Servidores do Estado**

Escosteguy CC[1], Pereira AGL[1], Sousa MDG[2], Passoni LFC[2], Moreira BRS[2], Santana VD[2], Braga RCC[1], Pimenta OP[1]
[1]Serviço de Epidemiologia, Hospital Federal dos Servidores do Estado, Ministério da Saúde, Rio de Janeiro, RJ, Brazil. [2]Serviço de Doenças Infecto-Parasitárias, Hospital Federal dos Servidores do Estado, Ministério da Saúde, Rio de Janeiro, RJ, Brazil.

Introduction: Cryptococcal meningoencephalitis is the most frequent manifestation of cryptococcosis, which is a global invasive mycosis associated with significant morbidity and mortality. It is an important opportunistic infection in human immunodeficiency virus (HIV)–infected individuals but it also occurs in non–HIV infected. This study aims to describe the profile of cryptococcal meningoencephalitis in a federal general hospital in Rio de Janeiro city, in the context of meningitis epidemiological surveillance. **Material and Methods:** The universe of the study was the notified cases of meningitis in the local database of the National Information System of Notifiable Diseases (SINANNET); from a total of 192 confirmed cases of meningitis notified from january/2007 to december/2011, 24 were diagnosed as cryptococcal meningoencephalitis. Statistical analysis was carried out with EpiInfo 3.4.1. **Results:** 19 were male (79.7%); the median age was 32 years (range 19 months-70 years); 17 were HIV-positive (70.8%). Among the 7 HIV-negative cases, detected comorbidities were: 1 HIV-exposed infant, 1 autoimmune hepatitis and 1 concomitant neurosyphilis. Clinical presentation involved headache (75.0%), fever (41.7%), meningeal syndrome signs (37.5%), vomiting (37.5%), convulsion (33.3%), impaired consciousness (29.2%), focal neurological deficit (16.7%), hypoacusis (8.3%). Cerebrospinal fluid was clear in most cases (95.8%) and lymphocytic in 83.3% with a median protein concentration of 92 mg% (range 27-741). Positive results were obtained in fungal cultures in 20, latex agglutination test in 2 and China ink smears in 2. The mortality rate was 29.2% (HIV-positive cases: 35.3%x HIV-negative:14.3%). Mortality was lower in cases presenting meningeal syndrome signs (11.1%). The median interval between onset of symptoms and death was 48 days. The most frequently used antifungal drugs were fluconazole and amphotericin B; HIV-cases also received antiretroviral drugs. **Main conclusions:** The proportion of HIV-positive patients was 2.4:1 and the overall mortality was high, despite the specific treatment. The use of SINAN at the local level was considered useful and pertinent, and able to feedback the services with clinical indicators. We discuss the challenges of the management of cryptococcal infection, the importance of early diagnosis and treatment. **E-mail:** cescosteguy@hse.rj.saude.gov.br

Cryptoc061- **Molecular identification and biofilm production from *Cryptococcus* isolates of cryptococcal meningitis**

Silveira-Gomes, F[1]; Pessoa, C C B[2]; Conceição, E C[2]; Bahia, J[2]; Marques-da-Silva, S H[2]
1.Federal University of Pará, Belém, Brazil; 2. Evandro Chagas Institute, Belém, Brazil.

Introduction: *Cryptococcus neoformans* and *Cryptococcus gattii* are pathogenic yeasts that infect both immunocompromised and healthy individuals. Actually, *C. gattii* has been shown to be less susceptible to antifungal agents than *C. neoformans* and, the ability in to produce biofilm have been related to less susceptible to antifungal. These facts show the need of to produce the correct identification of the species. Canavanine-glycine-bromothymol blue agar (CGB) was proposed to distinguish the two species and is used in many laboratories; moreover, study showed that multiplex-PCR is more specific. **Objective**: The aim of the present study was to compare the discrimination between *C. neoformans* and *C. gattii* using CGB agar and multiplex-PCR, and your correlation with biofilm production from two species identified. **Material and Methods**: A total of 13 clinical isolates obtained from patients with cryptococcal

meningitis were included; all isolates were cultured on Sabouraud-2% dextrose agar at 30°C for 24-48 h before of DNA extraction (phenol-chloroform protocol), culture on CGB and biofilm production. Multiplex-PCR reactions were carried out in a volume of 25 µl, based in the specie-specific primers (CNa-70S and CNa-70A for *C. neoformans* – 695 bp; CNb-49S and CNb-49A for *C. gattii* - 448 bp). CGB agar was produced as described on literature and, reactions were considered positive if a vivid cobalt blue color was produced after 48h of incubation at room temperature (*C. gattii*) and negative if the color of the CGB agar remained yellow (*C. neoformans*). Biofilm production was evaluated after incubation of yeasts in polystyrene tubes containing YPD broth incubating at 37°C for 48h. The test tubes were emptied and stained with safranin 0.5% observing the adherence of isolates. **Results**: An agreement of 100% were observed between molecular and biochemical (CGB) identifications. Seven (7/13) isolates were identified as *C. gattii* and six (6/13) as *C. neoformans*. Five (5/7) isolates of *C. gattii* and three (3/6) isolates of *C. neoformans* produced biofilm. *C. neoformans* isolates showed more high intensity in the biofilm produced than *C. gattii* isolates. **Main conclusions**: Our results indicated the occurrence of *Cryptococcus* causative of cryptococcal meningitis with ability of to produce biofilm and thus demonstrated the possibility of the presence of isolates less susceptible to antifungal. The presence and difference in the intensity of the biofilm formation stronger supports the need of to execute the correct identification of the species to generate more accuracy diagnostic. In this study, a method widely used (CGB) showed be useful from discriminate correctly between two species, presenting advantages as low complexity and cost-effective on clinical. **Key-words**: *C. neoformans*; *C. gattii*; Biolfim production; correct identification. **E-mail**: fabiolasilveiragomes@hotmail.com

Cryptoc062- **Pulmonary mass: *Cryptococcus gattii* in an immunocompetent patient**

Prado, H.P.G; Medeiros, E.M.A.; Rubin, E.F; Santana, V.D.; Monteiro, F.S.; Sousa; M.D.G; Moreira;B.R.S; Sidi, L.C.; Passoni, L. F. C.
Department of Infectious Diseases - Hospital Federal Dos Servidores Do Estado Do Rio De Janeiro – Rio de Janeiro, Brazil

Introduction: The lung masses are entities daily and often caused by cancer. Since the differential diagnosis includes various infectious etiologies (tuberculosis, paracoccidioidomycosis, cryptococcosis, aspergillosis, actinomycosis, schistosomiasis, atypical mycobacteriosis, histoplasmosis and nocardiosis for example), it becomes crucial a microbial analysis of the biopsy material. **Case report:** Man, 71, mechanical scales, retired, white, married, born in Canoas, Southern Brazil, residing in Rio de Janeiro in a metropolitan area for over 20 years, demand service with a history of loss weight (18 kg), bilateral chest pain and sporadic fever, there was four months. Smoker (5 cigarettes / day), regular use of antihypertensive drugs (anlodipine and atenolol). Chest radiography with left lung mass apical and juxtapleural. Underwent bronchoscopy (10/02/2010) with a strong suspicion of lung cancer, where it was seen a vegetating lesion, histopathology of which revealed the presence of Cryptococcus, having been referred to service of infectious and parasitic diseases (DIP) of Hospital dos Servidores do Estado (HSE) in 10/03/2010 for treatment. On physical examination, weight loss, disorientation, behavioral changes, sometimes aggressive, neck stiffness ++/4 and no focal neurological deficits. Laboratory tests without change, except for creatinine of 1.5 mg / dl (associated with hypertension) and sodium of 122 mcg / l (associated with dehydration and/or adrenal cryptococcosis). Elisa Anti-HIV negative. Fundus with optic disk edema and hemorrhage peridiscal bilaterally, vessels normal contours and calibers. CT scan normal. CT of the chest with a large juxtapleural mass at the apex of the left lung. Blood cultures were negative. Analysis of CSF pleocytosis (78 cells) lymphocytic (89%) and protein (158 mg%), direct examination with India ink showing Cryptococcus. Culture with growth of Cryptococcus. By means of CGB in the service of mycology FIOCRUZ was identified the species Cryptococcus gattii. The patient was treated with amphotericin B (flucytosine is not available in the State of Rio de Janeiro) for 4 weeks (cumulative dose 1.2 g), followed by intravenous fluconazole 400 mg daily after confirmation of CSF sterilization. On the 26th day of fluconazole, due to worsening of general condition and level of consciousness, amphotericin B was reintroduced - lipid complex (Abelcet ®) 5mg/kg/day - and kept fluconazole. No clinical conditions for surgical resection of lung mass. Received this treatment for 1 month with good clinical response followed by hospital. Currently, following in attendance, it is well, alert, oriented, active, with significant weight gain (15kg from the hospital), in use of oral fluconazole 200 mg daily (reduced 1 year after

discharge), with mass reduction of approximately 90% , little residual juxtapleural image associated with pleural thickening. **Conclusions:** We emphasize the need to evaluate the microbial lung biopsy, the investigation of CNS in a cryptococcosis case, even in the absence of neurological symptoms, the current recognition of *C. gattii* as a species and the importance of this identification for future clinical and epidemiological studies, the possibility of effective clinical treatment, and lastly the lack of flucytosine in the State of Rio de Janeiro, as a bad prognostic factor**. E-mail:** marcosdavi2006@yahoo.com.br

Cryptoc063- **In hospital clinical presentation and outcomes of cryptococcosis**

[1] Maia, GBR; [2]Akiti, T; [2]Barreiros, MGO, [1] Chebabo, A; [1]Cavalcanti, MG
[1] Serviço de Doenças Infecciosas e Parasitárias, [2] Laboratório de Micologia, Hospital Universitário Clementino Fraga Filho (HUCFF/UFRJ), Rio de Janeiro, Brazil.

Introduction: Cryptococcosis is a life-threatening disease in immunocompetent and immunodeficient individuals. Albeit its importance, most clinical trials study cryptococcal infection in HIV positive individuals, in pre-highly active antiretroviral therapy (HAART) era. Data on clinical presentation and outcomes in different populations (HIV negative) is still missing. In addition, species-related infection is less well known in several centers as a result of a lack of laboratory support. As a consequence, limited information prevents real knowledge of cryptococcosis in distinct populations attending health care facilities. Also, it precludes a rational disease management. **Objective:** To determine clinical presentation and outcomes of cryptococcosis in a Brazilian University Hospital. **Material and Methods:** We retrospectively reviewed medical and laboratory records from hospital database (HUCFF, UFRJ). Cryptococcus spp identification was performed by culture isolation followed by morphological and physiological tests and growth in canavanine-glycine-bromothymol blue (CGB) media. **Results:** From 2003 to 2012, 79 individuals had the diagnosis of cryptococcosis, and data from 74 of 79 individuals recovered. Forty (54%) were men and median age was 39.9years. HIV positive (HIV+) individuals comprised 67. 57%, and among HIV negative (HIV-) individuals, immunocompetent individuals represented 9.46% and non-HIV immunosuppressed group, 23% of the study population. Cryptococcal meningoencephalitis was the most common clinical presentation in HIV+ and HIV- individuals (82 and 51.85%, respectively). Detection of fungemia occurred in 33/74 individuals (44.59%) being the solely manifestation of infection in three HIV+ individuals. In 26 out of 74 cases (35.13%), cryptococcosis presented as a disseminated infection being HIV co-infection the main risk factor (76.92%). Extra neural cryptococcosis was mainly represented by pulmonary infection (11/74 cases, 14.86%). *Cryptococcus neoformans* was identified in 68/74 cases (91.89%), and 70.59% of all isolates were from HIV+ individuals. Nonetheless, *C.neoformans* was also detected in 4 previous health individuals. *C. gattii* was diagnosed in 6 cases (8.10%), and 3 out of 6 cases occurred in immunocompetent individuals; 2/6 cases, in HIV coinfected individuals, and in one transplant recipient. Cure was achieved in 73.53% of the study population. However, clinical relapse and death occurred in 18, 06% and 17, 57% of the study population, respectively. Both outcomes were mostly associated to HIV co-infection (84, 62%, 11/13 cases, either clinical relapse or death). **Conclusion:** Altogether the findings suggest that more invasive forms of infection are associated to HIV co-infection, which also contributes to poorly clinical outcomes. *C.neoformans* is the principal agent of cryptococcosis in HIV + individuals but *C.gattii* occurs equally in immunocompetent and immunodeficient individuals. **E-mail:** cavalcanti.marta66@gmail.com

Cryptoc064- **Environmental search in a case of cerebral cryptococcoma by *Cryptococcus gattii* identified by molecular tools in Rio de Janeiro, Brazil**

[1]Mesquita EC; [1]Barbosa GG; [1]Nunes EP; [2]Ricci G; [2]Nishikaku A; [2]Melo ASA; [2]Colombo AL; [1]Amâncio RT, [1]Carregal E; [1]Trilles L; [1]Wanke B; [1]Lazera MS
[1]Instituto de Pesquisa Clinica Evandro Chagas IPEC/FIOCRUZ, [2]Universidade Federal de São Paulo, Medicina, São Paulo, Brazil

Introduction: Cryptococcosis is a global invasive mycosis associated with important morbidity and mortality. Two species are clinically relevant: *Cryptococcus neoformans,* strongly associated with HIV infection with an estimated burden of 1 million cases globally, and *C. gattii*, associated with both

immunocompetent and less frequently in immunocompromised hosts. We report a case of cerebral cryptococcoma in an immunocompetent host, with molecular identification of *Cryptococcus gattii*, but the attempt to recover this species from patient's domestic environment permitted the isolation of *C. neoformans*. **Material and Methods:** Clinical data were collected from medical records. Conventional histopathology of surgically removed cerebral tissue showed infection by *Cryptococcus* sp. but culture was not performed. One paraffin-embedded sample was further submitted to DNA extraction and purification with QIAamp[TM] DNA mini Kit (Qiagen). Molecular species identification was performed by nested-PCR and sequencing of the ribosomal DNA gene. In the first round, the fungal universal primers ITS 1 and ITS 4 were used. Specific *Cryptococcus* spp. primers were used in the second round. The amplicons were sequenced and the sequences presenting identity higher than 98% in GenBank analysis (NCBI) were considered for correct identification at species level. Simultaneously, humid swabs for samples collection and plating on Niger seed agar medium were used to search for *Cryptococcus sp.* from patient's dwelling. **RESULTS:** A 45-years-old HIV-negative woman lifelong living in Rio de Janeiro presented at the outpatient clinic in Nov. 2008 with two months progressive occipital headache and ataxia. No other neurological abnormalities were noted. Head CT and MRI revealed a left parietal occipital expansive mass of 5.0 x 5.0 cm suggestive of cerebral neoplasm. Histopathology of the cerebral biopsy showed numerous encapsulated budding yeast cells on PAS, Grocott´s silver and Mayer's mucicarmine stains, confirming *Cryptococcus* spp., identified as *C. gattii* by molecular techniques. Curiously the environmental search yielded *C. neoformans* but not the expected *C. gattii*. Treated for four weeks with amphotericin B plus fluconazole followed by suppressive therapy the patient presented an excellent outcome, remaining asymptomatic three years after hospital discharge. **Main Conclusions:** Despite the isolation of C. neoformans from droppings of captive birds in the patient dwelling, and the predominance of *C. neoformans* in Rio´s urban environment, *C. gattii* infections have increased recently. **E-mail:** marcia.lazera@ipec.fiocruz.br

OTHER MYCOSIS

Myco065- Occurrence of *Aspergillus flavus* in pistachio and peanut from Sanandaj province, Iran

[1,2]Davari B , [1]Khodavaisy S, [2]Ghahramani E, [1]Hossainzade B, [1]Rezai Sh, [1]Ahmadi F, [1]Validi A.
[1]**Department of Medical Mycology, Parasitology&Entomology, Kurdistan University of Medical Sciences, Sanandaj, Iran,** [2]**Environmental Health Research Center, Kurdistan University of Medical Sciences, Sanandaj, Iran.**

Introduction: Species of the *Aspergillus flavus* produce secondary metabolites called aflatoxin that has powerful teratogenic, mutagenic and hepato-carcinogenic effects. The aim of this study was to evaluate the *Aspergillus flavus* of pistachio and peanuts from Sanandaj, Iran. **Materials and methods:** Pistachio and peanut nuts samples were obtained from dried fruit retail shops of Sanandaj, 2011. One hundred grams from each sample were sterilized in a 0.4% sodium hypochlorite solution for 2 minutes. Subsequently, the sample was rinsed once in distilled water and followed to dry. Each sample was grinded into powder by vortex and then 1g was poured into 100ml of sterile distilled water and stirred. Following, 1 mL of supernatant was inoculated into Petri dishes containing Sabouraud dextrose agar then incubated at 25°C for five days. The grown fungi were identified by standard mycological techniques based macroscopic and microscopic morphology. **Results:** A total of 132 peanut (n=81) and pistachio (n=51) samples, fungi were detected in almost 72% of the samples. The *Aspergillus flavus* was the most predominant isolate from peanut (19%) and pistachio (22%) samples. There was a significant relationship between *A. flavus* contaminations in the peanuts and pistachio with high humidity. **Conclusion:** Because of the isolation of high percentage of *A. flavus* as the main aflatoxins producer in nature we recommend also the need of good storage practices in order to prevent the occurrence of aflatoxins in peanuts and pistachio. **Keywords:** *Aspergillus flavus*, pistachio, peanut, Sanandaj. **E-mail:** davaribehroz@yahoo.com

Myco066- **Epidemiologic features of imported mycetoma in France**

Develoux M [1], Buot G [1], Enache-Angoulvant A [2], Hennequin C [1].
1Department of parasitology-mycology, Hôpital Saint-Antoine, Assistance publique-hôpitaux de Paris, 184 rue du Faubourg Saint-Antoine, 75012 Paris, France, 2Department of parasitology-mycology, Hôpital de Bicêtre, Assistance publique-hôpitaux de Paris, 78 rue du Général Leclerc, 94275 Le Kremlin Bicêtre

Introduction : Mycetoma is a rare imported infection in Europe. We conducted a retrospective study of patients diagnosed in our department during a ten-year period. **Patients and methods:** All observations with confirmed mycetoma were analyzed from 2002 to 2011. Histological examination was systematically performed; grains were cultured in six cases. **Results:** Twelve cases of mycetoma were collected during the study period: 11 men and 1 woman, with age ranging from 29 to 69 years. Eight of them originated from Africa (Mali: 5, Senegal: 1, Chad: 1, Algeria: 1), two from Asia (Pakistan, Sri-Lanka) and two from west French Indies. Foot was the main site of involvement except in one patient (lower back). Seven were eumycetoma (6 black grains mycetoma and 1 white grain diagnosed only with histological examination). Concerning the black grain mycetoma cultures identified *Madurella mycetomatis* in four cases, *Exophiala jeanselmei* in one. Cultures were negative in the last black-grain case but appearance of grains in tissue sections evocated *Madurella sp.* Molecular identification was performed in four cases, it confirmed etiological diagnosis in three cases with positive cultures (*M mycetomatis*: 2, *E jeanselmei*: 1) but one strain was identified as unknown *Madurella* sp. Etiological diagnosis of actinomycetoma was based only on histological examination of grains. *Actinomadura madurae* was identified in three cases and *Nocardia* sp in two. Two patients had a hepatic transplantation; clinical symptoms (foot tumefaction) appeared after the transplantation and initiation of immunosuppressive drugs. **Conclusion:** Our series is representative of imported mycetoma in France with a majority of patients originated from endemic areas of West Africa and a predominance of black grain mycetoma. Mycetoma in immunosuppressed patients are exceptional and have never been described before in hepatic transplant recipient. Other recent data of imported mycetoma in France are presented. **E-mail:** michel.develoux@sat.aphp.fr

Myco067- **Lobomycosis: immunohistochemical evaluation of Factor XIIIa+ dermal dendrocytes in cutaneous lesions**

Barboza T[a,b], Quaresma JAS[c], Duarte MIS[a], Sotto MN[d], Silva WLF[a], Silva AAL[a], Brito AC[c], Unger D[c], Oliveira C[c], Xavier MB[c], Pagliari C[a,b].
a-Fac. de Medicina da USP, Depto. de Patologia; b- Programa de Pós-graduação em Ciências da Saúde/IAMSPE; c- Núcleo de Medicina Tropical/UFPA; d- Fac. de Medicina da USP, Depto. de Dermatologia.

Introduction: Lobomycosis is a chronic infection of tropical regions, caused by the fungus *Lacazia loboi*. The infection is characterized by keloid, ulcerated, verrucous, nodular or plaque cutaneous lesions. The diagnosis is made by direct or histopathological examination, where it is possible to observe granulomas with multinucleated giant cells and chains of yeast-like cells. The local immune response is not totally explored and the immunopathogenesis is poorly understood. Previously, we studied Langerhans cells in such lesions and suggested that *L. loboi* probably presents some escape mechanism of the local immune system to evade the antigen presentation by those cells. That result was an urge to study another important dendritic cell population, the factor XIIIa+ dermal dendrocytes, which also have the capacity to present antigens. **Material and methods:** Twenty-two biopsies of cutaneous lesions were selected from the files of Núcleo de Medicina Tropical, UFPA. Factor XIIIa+ dermal dendrocytes were detected by a specific antibody (Biogenex) and an immunohistochemistry protocol. Positive cells were semi quantified and the results were compared to specimens from normal skin and cutaneous lesions of patients with paracoccidioidomycosis (PCM) that share some characteristics with lobomycosis. **Results:** Seventeen biopsies presented an intense number (+++) of yeast-like cells and five presented low fungal parasitism (+). It was possible to detect cells expressing factor XIIIa in eight biopsies, five of them with numerous positive cells (+++) and three with few positive cells (+). We could observe a tendency for association between high number of factor XIIIa+ dendrocytes and low number of yeast-like cells. On the contrary, biopsies with an intense fungal parasitism presented factor XIIIa+ dendrocytes scarcely distributed or they were absent. When compared to normal skin, the positive cells in the lesions presented hypertrophy,

similar to PCM lesions. **Main conclusions:** Factor XIIIa+ dermal dendrocytes are present in lobomycosis cutaneous lesions but seem to be related to low number of yeast-like cells. The phagocytic or antigen presentation capacity, demonstrated in other mycosis such as PCM, seem to be altered in the presence of high fungal parasitism. **E-mail:** tania-biomed@hotmail.com

Myco068- Human chromoblastomycosis: expression of the Th17 pattern of cytokines in the *in situ* immune response in skin lesions

Silva AAL[a], Sotto MN[b], Duarte MIS[a], Criado PR[b], Silva WLF[a], Pagliari C[a]
Fac. de Medicina da Universidade de São Paulo, Depto. Patologia (a) and Depto. Dermatologia (b) São Paulo, Brasil.

Introduction: Chromoblastomycosis (CBM) is a chronic, granulomatous mycosis of the skin that is frequently observed in tropical areas. The immunopathology of CBM is poorly understood. Recently it was demonstrated that a Th1 response induced by dendritic cells is responsible for an appropriate immune response. It has been speculated the role of IL17 and IL23 in fungal infections. In paracoccidioidomycosis (PCM), another important human fungal infection that shares some characteristics with CBM, those cytokines play an important role. IL17 restrain the fungi, although high levels of this cytokine have been demonstrated as responsible for tissue injury. The Th2 pattern of cytokines is observed in lesions with a severe form of CBM and a Th1 pattern in mild form. We intended to contribute to the characterization of *in situ* immune response in CBM skin lesions, considering the participation of cells producing IL17 and IL23 and exploring their role in the pathogenesis of CBM. **Material and Methods:** We performed an immunohistochemical study in 15 specimens of skin lesions from patients with CBM to evaluate the presence of cells expressing IL17 and IL23. The control group included normal human skin. The positive cells were semi quantified and the results related to IL17 were compared to what we have previously described in PCM. **Results:** The dermis presented an intense inflammatory infiltrate, with fungal parasitism in all specimens. Mononuclear cells expressing IL17 were visualized in all lesions, increased in number when compared to normal skin and similar to PCM lesions. We could also detect the expression of IL17 in polimorphonuclear neutrophils, mainly in the suppurative area of granuloma. The expression of IL23 was rarely detected in the inflammatory infiltrate. **Main Conclusion:** Considering the elevated number of cells expressing IL17, the results suggest that the Th17 pattern of cytokines seems to play a role in the *in situ* immune response in CBM, probably as secondary cells in the clearance of fungal antigens. **E-mail:** enylla@hotmail.com

Myco069- Pulmonary infection due to an emerging fungal in a patient with non-hodgkin lymphoma: first case report

Carvalho Parahym AM[1],Silva CM[1], Domingos IF[1],Gonçalves SS[2],Rodrigues MM[3], Morais VLL[3], Neves RP[1]
[1]Universidade Federal de Pernambuco, Recife, Brazil; [2]Laboratório Especial de Micologia, São Paulo, Brazil; [3]Hospital Universitário Oswaldo Cruz, Recife, Brazil.

Introduction: Invasive fungal infections are increasingly being reported in recent decades. This increase is attributed to host defense impairment due to intensive cytotoxic chemotherapies, hematopoietic stem cell transplantation, ablative radiation therapy, and use of corticosteroids and new immunosuppressive agents. Most of these infections occur in patients with hematologic malignancies. During the last 20 years, other opportunistic fungal pathogens, such as *Fusarium spp.* and *Zygomycetes*, have also emerged whereas infections caused by other fungi are still rare. *Pseudozyma aphidis* is opportunistic yeast usually isolated from plants and rarely from human samples. Invasive human infections due this species are rare. In this study is related the first case of pulmonary infection due to *P. aphidis* in a non-Hodgkin lymphoma patient. **Case report:** A 17-year-old man treated with chemotherapeutics for non-Hodgkin lymphoma was interned in public pediatric oncology center, Recife, Brazil. The patient had a central venous catheter inserted into the jugular vein and had persistent fever, cough and bloody sputum. Broad-spectrum antibiotics were administered empirically intravenously. The hemogram counts were $800/mm^3$ for neutrophils and $29,000/mm^3$ for platelets. After symptoms worsened, the patient was

admitted to the Intensive Care Unit of the same hospital with respiratory insufficiency due to a probable pulmonary infection. Sample of pleural fluid was aseptically collected via thoracentesis. The sample was processed immediately after collection by standard methods of mycological diagnosis (direct examination and culture). Microbiological identification was achieved using traditional taxonomy, and through the sequencing fragments of the internal transcribed spacer region of the rDNA using primers ITS-1 and ITS-4. The direct examination showed various hyaline blatoconidia and in culture were visualized moist yeast-like colonies, tan-yellow and wrinkled. Wet mount showed fusiform spindle-shaped blastoconidia that were elongate and slightly irregular. According to these morphological, phisiologycal and biochemical characteristics this isolated was identified with *P. aphidis.* A BLAST search produced a 100% match between all the *P. aphidis* ITS rDNA sequences in the GenBank database. The DNA sequence was submitted to GenBank with the accession number (JQ743064). The isolate was submitted to the Culture Collection URM of Department of Mycology, Federal University of Pernambuco, Brazil, with record number 6351. The patient was treated with a 20 day course of intravenous amphotericin B lipid complex (5mg/kg/day). This antifungal therapy resulted in a successful outcome. **Main conclusions:** In summary, pulmonary infection due to *P. aphidis* can occur in patients with non-Hodgkin lymphoma. This case indicates that physicians caring for cancer patients need to be aware of these unusual yeasts as a potential source of respiratory infection. **E-mail:** aana_mrc@hotmail.com

Myco070- **Phaeohyphomycosis by Exophiala Jeanselmei, a case report**

Bezerra, G. H., Eulalio, K. D., Silva, B. J. C., Soares, L. M. M. , Oliveira, R. M. A.,
NOVAFAPI-Teresina-Piauí-Brasil

Introduction: The phaeohyphomycosis is an opportunistic infection that occurs mainly in immunosuppressed patients, causing mostly subcutaneous lesion and usually single. Itraconazole is a broad spectrum of drugs and medication is more effective for Exophiala spp. **Case report:** R.N.O., 59, male, born in Teresina, resident in Teresina, PI, worked an agent of endemic SUCAN he is retired. Patient with diabetes, kidney transplant did in three years ago, he made use of Cyclosporine, Prednisone, Cophenolate and hypoglycemic oral, he was needing insulin for one month. He refer a cystic lesion in the left ankle six months ago, he was assessed by orthopedist. This doctor made a resection surgery that occurred one month ago. The histopathology suggestive of fungal lesion, he made new resection with shipment of material culture, in which the fungus was isolated *Exophialia jeanselmei*. **Discussion:** the subcutaneous phaeohyphomycosis is becoming increasingly common in kidney transplant patients undergoing treatment immunossupressor. The fungus was isolated by culture and it was identified Exophiala jeanselmei. The patient makes use of itraconazole. **Keywords:** Phaeohyphomycosis; *Exophiala jeanselmei*; Transplanted kidney. **E-mail:** guilherme.h.b@hotmail.com

Myco071- **Case-report of rhinosinusitis caused by *Schizophyllum commune***

[1]Tagliarini JV, [2]Bosco SMG, [3]Assis Jr CA ,[4]Yamashita S, [1]Nakajima V, [5]Javarone A, [2]Bagagli E, [3]Mendes RP .
[1]**Department de Oftalmologia e Otorrinolaringologia; [2]Disciplina de Imunologia, [3]Disciplina de Moléstias Infecciosas e Parasitárias, [4]Disciplina de Diagnóstico por Imagem. [2]Institute of Bioscience of Botucatu, [1,3,4]Faculdade de Medicina de Botucatu –São Paulo State University – UNESP; [5]Otorrinolaringologista/profissional liberal.**

Introduction: Infections caused by filamentous basidiomycetes have been rarely reported. This study reports an infection caused by *Schizophyllum commune*. **Case report:** A 27-year-old male with a medial deviation of his left eye, erythematous macula and mild itching was treated on December 25, 2009 as conjunctivitis, without improvement. On January 4, 2010 he also presented proptosis of the left eyeball. As cranium MRI showed a solid heterogeneous mass occupying part of the left orbital cavity, a 15-day treatment with itraconazole-ITC 200mg daily was started. On February 6, 2010, the tumor was surgically removed. Tissue mycological examination identified *Schizophyllum commune*. Molecular identification was performed by amplification of the ITS-5.8S rDNA; PCR products were sequenced and compared by the Blastn program in the GenBank, with a 100% identity to *S. commune*. On August 7, 2010 he was operated on and amphotericin B deoxycholate was introduced, with improvement. Five days later, due to

kidney injury, it was substituted by ITC 200mg orally every 12 hours. After two weeks of treatment he was operated on again to remove the necrotic tissue, which was mycologically negative. The patient has been improving under ITC-treatment, without nasal complaints. **Discussion:** Few cases of infection caused by *S. commune* have been reported, most of whom involving the upper respiratory system. Prevalence seems to be higher among females and older patients, differently from our case. We have observed improvement after ITC treatment, as previously reported. However, surgical procedures are mandatory to treat these patients. **Conclusion:** *S. commune* must be considered as the etiological agent of rhinosinusitis. However, *Aspergillus* spp are much more frequent. **E-mail:** tietemendes@terra.com.br

DISEASES BY BACTERIA

Epidemiology and Control of Leprosy

Leprosy001- **Leprosy in Brasil, Analysis of frequency between 2001 and 2009**

Cassenote, AJ*[1], Pinto Neto[2,3], JM and Martins, AP[3]
1. Fernandópolis Integrated Faculty, Fernandópolis Educational Foundation, Fernandópolis – Brazil, 2. Medicine College of Camilo Castelo Branco University, Fernandópolis. São Paulo – Brazil, 3. Postgraduate Program in Infectious and Parasitic Diseases, Medicine College of São Paulo University, São Paulo - Brazil.

Introduction: Leprosy is still a significant public health problem in Brazil, despite the progress achieved since the implementation of the Multidrug therapy in 1991 and the process of decentralization / devolution of health services and actions of the Health System from the last decade of the twentieth century, which provided a significant expansion of the network of public health or to the SUS, the country still failed to meet at the national level, the goal of having a prevalence of less than 10 case/100,000 population (in this study). **Materials and methods:** This was an ecological study to analyze the frequency of leprosy in Brazil. The indicators used for analysis were the incidence rate [(new cases / total of susceptible) * 100,000] and prevalence [(total cases / total population) * 100,000] for the period of the disease in question. Data were obtained from the consultation in DATASUS. The variables used were the number of new cases, number of existing cases and the Brazilian population according to the Federation. The maps were produced in the application ArcMap 9.2 (ESRI, 1999-2006) using the municipal grid digital Brazil 2005, obtained from the Brazilian Institute of Geography and Statistics (IBGE). **Results:** Between 2001 and 2009 there were 409,332 leprosy new cases in Brazil. For the indicator of incidence between the years 2001 and 2003 was observed a slight increase, from 26.2 to 29.5 new cases per 100,000, occurred in the six years following the fall of 10/100.000 (26.2 to 19.8 new cases per 100,000). The prevalence of the disease nationwide had significant changes especially after the year 2003. In 2004, the confidence intervals of incidence and prevalence approached and, from the year 2007, these indicators would be similar. The decrease the prevalence was approximately 20 cases per 100,000 (39.9 to 19.4 cases/100.000). All states showed a decline in the incidence, the most significant ware Roraima (87.9 to 38.2 new cases per 100,000) Mato Grosso (90 to 135 new cases/100, 000) and Pará (84 to 56 new cases /100,000). In 2001 the states where the disease was more prevalent in Mato Grosso do Sul (270 cases per 100,000), Rondônia (105 cases per 100,000) and Pernambuco (94.6 cases/ 100,000), while in 2009 the ranking for this indicator brought MatoGrosso (87 cases/100, 000), Tocantins (67.4 cases per 100,000) and Maranhão (62.9 cases/ 100,000). **Main conclusions:** leprosy is an important disease in the country and even after eliminated of the national level, the goal of prevalence still has important challenges facing state and local levels as the data point above. We consider essential the training of the health professionals in the University so that we can improve the network of health services, early diagnosis, and the rates of cure, control and prevention of communicating physical disabilities. **E-mail:** cassenote@usp.br

Leprosy002- The challenge to obtain mortality data in leprosy, a survey about the number of leprosy patients who died in Uberlândia – Minas Gerais, from 2000 to 2010

Costa**, A.C.G.R.; Prado**, C.M.; Obregon**, C.A.; Costa**, M.P.; Scanavez**, P.M.; Ambrosio**, M.R.; Costa*, A.V.; Gonçalves*, M.A.; Goulart*, I.M.B.
*National Reference Center in Sanitary Dermatology and Leprosy, Clinic´s Hospital, Federal University of Uberlândia, Uberlândia, Minas Gerais, Brazil, **Clinic´s Hospital – Federal University of Uberlândia, Uberlândia, Minas Gerais, Brazil.

Introduction: The study of mortality statistics in leprosy is important because it represents an opportunity to evaluate the progression of leprosy over time, since this is a chronic disease and, therefore, causes economic, social, psychological and biological damage, especially in countries where its expression is endemic, as in Brazil. However, statistics may present contradictions related to reliability and standardization of data. **Material and Methods:** Through the Diseases Notification System (SINAN) were obtained the leprosy patients treated at CREDESH/UFU. This information was crossed with the Mortality Information System (SIM), in the Municipal Health Secretariat (SMS) of Uberlândia, to check which patients had died. For a more accurate survey, other lists of deaths were obtained from the Regional Health Superintendence (SRS) of Minas Gerais, from the Software (Sw) of CREDESH and from the Hospital Information System (SIH) of the HC/UFU. The death certificates of the patients surveyed were found in Civil Registry (CR) and in SMS. **Results:** According to SINAN, 770 leprosy patients were notified. The SIM showed that 2.86% (22/770) of them died during the period 2000 to 2010. Furthermore, the list of SRS had 30 deaths; the information of Sw reported 38 and data of SIH, 29. The consolidation of database resulted in a total of 68 deaths, which showed that all lists were incomplete. In detail, only 4.41% (3/68) of deaths were contained in all four databases; 10.29% (7/68) of them appeared only in the SRS, Sw and SIH databases; 7.35% (5/68) only in the SIM, SRS and Sw; 20.59% (14/68) only in the SRS and Sw; 2.94% (2/68) only in the SIM and Sw; 1.47% (1/68) only in the SIM and SIH; 1.47% (1/68) only in Sw and SIH; 25.00% (17/68) only in the SIH; 16.18% (11/68) only in the SIM; 8.82% (6/68) only in the Sw and the other 1.47% (1/68) of them appeared only in the SRS database. It's also important to note that 32.35% (22/68) of deaths weren't notified in SINAN and that were found only 86.76% (59/68) of death certificates, part in SMS and the other in CR. **Main Conclusions:** It's real the difficulty to obtain reliable statistics on mortality from leprosy. This complicates the epidemiological studies and definitions of public policy, so is necessary to improve the filling of databases of mortality and standardize a single database, able to inform the mortality from leprosy. **E-mail:** nhaclara@gmail.com

Leprosy003- Supplementary studies to promote interventions towards leprosy control in Belmonte, Cluster 4, State of Bahia.

Illarramendi X1, Moreira SJM1, Moraes MO', Carlla SZ, Seixas P2, Sarno EN1.
1. Leprosy Laboratory, IOC/FIOCRUZ, Rio cle Janeiro, RJ, Brazil. 2. Municipal Health Secretary, Belmonte, Bahia.

Introduction: The municipality of Belmonte, State of Bahia was identified as a high risk area in Cluster #4. Several strategies were applied in order to evaluate and reduce the transmission and the prevalence of leprosy in the area. Barrolandia was the city with the highest leprosy prevalence, therefore it was chosen for evaluation of the epidemiological situation of the municipality. **Material and Methods:** A cross-sectional study of the contacts of patients diagnosed in Barrolandia between 1/1/2005 and 31/12/2009. In average 3 household contacts were reported by 352 leprosy patients registered during the study period. Out of the 179, contacts registered, 33 had already been treated for leprosy as coprevalent or incident cases. Samples of slit-skin smears from both earlobes and venous blood were collected from the contacts. ML flow test was performed to evaluate presence of anti-phosphoglicolipid l (PGL-l) antibodies and PCR was done to amplify the CT16s DNA portion. Frequency distributions of the presence of DNA or antibodies against *Mycobacterium leprae* according to different variables were evaluated. **Results:** A total of 14,8 contacts, 59.5% females, mean age of 29;9 (4-85) years were evaluated. For various reasons such as change of diagnosis, change of address or death, 65 contacts were excluded. Leprosy was

suspected in 12 contacts with skin lesions and was confirmed in 4 cases by histopathology and clinical criteria. Among the 114 contacts evaluated for anti-RGL-I antibodies 19.3% were positive, of which 4 had suspicion of leprosy. A total of 3 out of 63 (5%) slit-skin smears were positive to CT16s DNA, including one of the suspected cases. Two (67%) were contacts to multibacillary patients. No antibodies were detected in two of these contacts. **Main Conclusions:** Evaluation of contacts continues to be cardinal for the early diagnosis of leprosy. The results point out to the need of estimating the prevalence of infection and the remaining transmission in endemic areas, for which case surveys in contacts of leprosy patients are useful. **E-mail:** euzenir@ioc.tiocruz.br

Leprosy004- Spatial distribution of leprosy in Manaus of 1990 to 2009

Pereira, N.V. Lima, S.C.
1 Enfermeiro, Mestrando em Geografia. Docente na Escola Técnica de Saúde da Universidade Federal de Uberlândia. 2 Geografo, Docente do Instituto de Geografia da Universidade Federal de UberLândia.

Introduction: Leprosy is an infectious, transmissible, a chronic disease manifested mainly by skin lesions with decreased sensitivity to heat pain and tactile. The first cases of leprosy are described in 600 BC in India, but only know its cause since 1873, when the Norwegian Gerhard Hansen identified the M. leprae as etiologic agent. In Brazil, the first cases were recorded in 1600 in Rio de Janeiro. However, the concern of the then Brazilian government with the disease began with D. John V - Colonial Brazil, and concerned only the segregation measures the patient, where, years later, it created the first military hospital, a place designed to accommodate patients of Lazarus or lepers. The Amazon of course must have received the leprosy of Para, where abundant in the early nineteenth century. Relations between Belém, Santarém and Manaus were intense at this time, given the development of trade. The city of Manaus is an example of a developed urban area in the middle of the forest that currently has an environmental price paid very high because of urban sprawl that has suffered over the past 20 years, the exclusionary model of urban development is the structuring of urban arrangements marked by a "mosaic" of landscapes and revealing of generating socio-spatial segregation. **Material and Methods:** The aim of this work is the epidemiological profile of leprosy in Manaus, between the years 1990 to 2009. It is a retrospective, descriptive and quantitative analysis, performed from the secondary database Information System for Notifiable Diseases - SINAN the Leprosy Control Program of the Foundation Alfredo da Matta in the period 1990 to 2009, covering all new leprosy cases diagnosed in Manaus. **Results:** The profile of new cases of leprosy was characterized by individual males, aged 20 to 34 years, who developed the clinical tuberculoid paucibacillary and operational classification, grade 0 disabilities. The pattern of spatial distribution of the number of new cases of leprosy denotes the pattern of urban expansion in Manaus, in the 1990s showed the areas south and west as the area of highest incidence and from the 2000s began to concentrate cases disease in eastern and northern areas of recent expansion of the city. **Conclusions:** After all the analysis of the characteristics of new cases of leprosy in Manaus, we found that, even with the reduction in the number of cases and consequently, lower detection rates of new cases remains a complex maintainer of the spread of the disease in the city. Much has been done but much still has to do to achieve the rate recommended by the World Health Organization which is 1 case per 10,000 inhabitants. Keywords: Leprosy. Spatial distribution. Manaus. E-mail: norielvp@hotmail.com.

Leprosy005- Spatial distribution of leprosy in a high-risk transmission area: Identification of spatial clusters

Alencar CH, Alencar MJ, Ramos Jr. AN, Lange W, Heukelbach J
Department of Community Health, School of Medicine, Federal University of Ceará, Fortaleza, Brazil; Swiss Tropical and Public Health Institute, University of Basel, Basel, Switzerland; Nederlandse Stichting voor Leprabestrijding – Brazil; Institute of Geography, University of Cologne, Germany; School of Public Health, Tropical Medicine and Rehabilitation Sciences, James Cook University, Townsville, Australia

Introduction: In endemic regions, leprosy is usually distributed in geographically defined high risk clusters. This study aims to identify the evolution of spatial and temporal patterns of occurrence of leprosy in an area of high transmission in Brazil. **Material and Methods:** The study area includes 373 municipalities located in a major leprosy endemic cluster in the states Maranhão, Pará, Tocantins and

Piauí. Data were obtained from the state databases of notifiable diseases (Sistema de Informação de Agravos de Notificação – SINAN) and merged into one dataset. We calculated six disease indicators according to the "Enhanced Global Strategy for further Reducing the Disease Burden due to Leprosy" by WHO. For spatial analysis of leprosy indicators, mean rates were calculated for the periods 2001-2003, 2004-2006 and 2007-2009. To verify the existence of spatial dependence from the mean coefficients values of the indicators of leprosy, we used the Getis-Ord local index – Gi*. **Results:** From 2001 to 2003, the overall detection rate per 100,000 inhabitants showed the presence of two low incidence clusters in a region encompassing the state capital of São Luís and neighboring municipalities and another one affecting municipalities of Piauí, Maranhão and Tocantins. We also identified a cluster of high incidence risk located in the southeast of Pará. A similar pattern was found in the following periods, with the emergence of new high risk clusters in Maranhão and Tocantins. The proportion of indeterminate leprosy cases showed a higher concentration in the state of Tocantins, during the three periods, whereas the proportion of multibacillary cases showed a reverse pattern. The proportion of contacts examined was not statistically significant for high values in the first period. **Conclusion:** Spatial analysis of the indicators showed the spatial trend of the indicators of leprosy in the three study periods. We identified several high risk municipality clusters within a highly endemic leprosy region. Leprosy control programs need to intensify control actions in these priority areas. This study forms part of the MAPATOPI project, co-financed by the Brazilian Research Council (CNPq) and the Department of Science and Technology of the Brazilian Ministry of Health (DECIT). Process: 576377/2008. **E-mail:** carllosalencar@hotmail.com

Leprosy006- **Spatial Analysis of new cases of leprosy and detection of areas with larger risk of disease in the city of Vitoria, ES in the period between 2005 and 2009**

Sampaio PBI   Madeira ESII   Zandonade EI
I Post Graduation Program for Public Health of the Federal University of Espirito Santo, (UFES) Vitoria, ES, Brazil, II Medical Degree at UNIVIX, Vitoria, ES, Brazil

Introduction: Leprosy still is a relevant public health issue in Brazil and in this city, despite the decrease tendency, its level of endemicity is superior to the average in its region. This study aimed at analyzing the spatial distribution of new cases of leprosy and the detection of areas with larger risk of disease in the city of Vitoria. **Methods:** The study is descriptive and ecologically based in the spatial distribution of leprosy in the city of Vitoria, ES between 2005 and 2009. The data sources used came from the State Health Secretary of Espirito Santo records available. A global and local empirical Bayesian method was used in the spatial analysis to produce leprosy risk estimation; the fluctuation effect was smoothed from the detection coefficients. **Results:** The study highlighted the areas with more intensity of disease in thematic maps, showing the growth detection coefficient. A concentration of cases going from low and medium to high detection coefficients was observed, pointing to foci with larger disease occurrence. **Conclusion:** The spatial analysis for leprosy contributed to the understanding of spatial effects of the disease due to its influence in the neighboring areas. It is possible to identify the disease as being heterogeneous, thus confirming the severity of the situation in the city. This methodology favors the establishment of control strategies with better cost-benefit relation once it shows which specific areas have priority, thus planning actions to interfere in the transmission chain. **Keywords**: leprosy, epidemiology, spatial distribution. **Financial support**: Project supported by the Health Ministry and State Health Secretary SESA-ES, by the State Program for Leprosy Control in Edital MCT/CNPq/CT – Saúde/ MS/ SCTIE DECIT nº. 034/ 2008, complementary studies to subsidize interventions aiming at leprosy control in the cities in the cluster nº.4 (ES, BA and MG) **Email:** polianebsampaio@hotmail.com

Leprosy007- **Spatial-temporal distribution of late diagnosis of leprosy in a high transmission area in Brazil**

Alencar CH, Ramos Jr AN, Heukelbach J
Department of Community Health, School of Medicine, Federal University of Ceará, Fortaleza, Brazil; Swiss Tropical and Public Health Institute, University of Basel, Basel, Switzerland; Anton Breinl Centre for Public

Health and Tropical Medicine, School of Public Health, Tropical Medicine and Rehabilitation Sciences, James Cook University, Townsville, Australia

Introduction: The rate of new leprosy cases with visible (grade-2) disabilities per 100,000 inhabitants can be used to estimate under-detection and late diagnosis. We identified groups of municipalities with high relative risk (RR) of late leprosy diagnosis in a high-risk transmission area. **Methods**: The study area included 373 municipalities of a hyperendemic cluster defined by the Brazilian Ministry of Health, in four Federal States (Maranhão, Pará, Tocantins and Piauí). Data were obtained from the Notifiable Disease Database (SINAN), 2001-2009. Spatial-temporal clusters and RRs were calculated by spatial scan method (software SaTScan-9.0.1). A mobile circular window of 100 km and a maximum of 50% of the population at risk used as parameters **Results:** We identified 24 significant clusters of late diagnosis. The main cluster (RR=2.98, p=0.001; years: 2001-2004) comprises eight municipalities in Pará State, with an annual detection rate of new cases with grade-2 disabilities of 282.9/100,000 and a population at risk of 249,700 inhabitants. The second most likely cluster also belongs to Pará (RR=2.86, p=0.001 years: 2001-2004), including four municipalities and a population of 226,039 inhabitants, with an annual rate of 271.6/100.000. A third cluster (RR=2.07, p=0.001 years: 2001-2004) consisted of 15 municipalities distributed among the states Maranhão, Pará and Tocantins, with a risk population of 560,133 and an annual rate of 195.2/100,000. The fourth cluster (RR=1.83, p=0.001 years: 2002-2005) is composed of 25 municipalities located in the center of Maranhão (population at risk: 657,923 inhabitants; annual rate: 173/100,000), and the fifth most likely cluster (RR=2.36, p=0.001 years: 2001-2004) in the southeast region of Pará State and center-east of Tocantins State (population at risk: 153,979 inhabitant; annual rate: 226.2/100,000). **Conclusion**: We identified municipality clusters of late diagnosis, located inside a known leprosy high-risk area. National and State leprosy control programmes urgently need to intensify control actions in these high risk municipalities to reduce further transmission and disabilities. This study forms part of the MAPATOPI project, co-financed by the Brazilian Research Council (CNPq) and the Department of Science and Technology of the Brazilian Ministry of Health (DECIT). Process: 576377/2008. **E-mail:** carllosalencar@hotmail.com

Leprosy008- **Leprosy in children in the state of Ceará, period 2001 to 2010**

Solon, ALL, Person, ML, Vilar, DCLF, Holanda, SGS, Ponte, MSR, Evangelista CMN, Melo, IMLA, Osorio, MM
Ministry of Health of the State of Ceará, Fortaleza-Ce-Brazil

Introduction: Leprosy is a disease that affects humans thousands of years, the causes, symptoms and treatment are still not well known by most people. One of the most important epidemiological indicators in terms of signaling dynamics of recent transmission is the occurrence of cases in children under 15 years of age. This indicator signals the existence of active sources of human infections. In Ceará, the disease is endemic, despite decades of efforts undertaken by the operational and epidemiological state Department of Health and Municipal. To assess the epidemiological situation of leprosy in children under 15 years in Ceará, from 2001 to 2010. **Methods:** A descriptive study where data were collected and analyzed by the National Disease Surveillance System of the Department of Health of the State of Ceará. **Results:** In the last ten years, in Ceará, on average, 155 children were diagnosed with leprosy each year. In the analysis of data from this period, 1551 cases were reported, with a detection rate of 5.8 / 100,000 inhabitants and 5.3 / 100,000 in 2001 and 2010, respectively. 795 cases are male and 756 female. The operational classification, 62% were paucibacillary and multibacillary 38% of cases. There was a predominance of tuberculoid and dimorphous forms, followed by indeterminate. The age group most affected was 10 to 14 years with 65% of cases. Household contacts were examined 58.5%. **Conclusions:** There was a small decline in detection rate, remained at high level within the parameters of the Ministry of Health Regarding the contacts examined, it is recommended that health professionals take on all the contacts of children 15 years. It is known that the treatment is essential to the patient to close the source of infection and stop the transmission of the disease. It is important to remember the actions of health education and mobilization among the population for it to feel responsible in the fight for control of leprosy. **E-mail** : analidia.solon@saude.ce.gov.br

Leprosy009- Leprosy in children under 15 years of age: a challenge for leprosy control

Illarramendi X, Hacker MA, Duppre NC, Nery JAC, Sales AM, Sarno EN.
Leprosy Laboratory, IOC/FIOCRUZ, Rio de Janeiro, RJ, Brazil.

Introduction: Leprosy detection rate in children under 15 years of age is an important indicator of the transmission in the community and the efficiency of control programmes. Defining the differences between children diagnosed from passive and active case detection programmes may provide important information for establishing strategies for timely detection. **Materials and Methods**: The profile of all new untreated leprosy patients and of contacts under 15 years of age registered at the Souza Araujo Leprosy Outpatient Clinic in Rio de Janeiro during 1987-2010 was evaluated. Children diagnosed under the contact surveillance programme (CSP) were compared to the children referred by other centers or that arrived spontaneously (passive detection -PD). In addition, all of the child contacts of leprosy patients were evaluated to compare the profiles of the healthy (HC) and the leprosy children, clustering by index case. Chi-square test and logistic regression were applied. **Results**: Out of the 2777 patients registered during the period, 341 (12.3%) were children under 15 years of age. A total of 128 were diagnosed from the CSP and 159 from PD, of which, only 23.9% had known contact with a leprosy patient. Most of the children 163 (56.8%) were males. The PD children were significantly older (p=0,010) than the CSP children (mean age 8.9±3.79 and 7.8±3.4 years, respectively). Although most of the children were paucibacillary (75.9%), a significantly higher (p=0.032) proportion of PD children (65%) than CSP children (35%) were multibacillary (MB), and had a higher (p=0.004) bacterial index (median=1.92 and 0.75, respectively). An alarming 8.8% of the PD children had already developed grade 2 disability (G2D), while only 1 CSP case (0.9%) diagnosed in 1987 had G2D (p=0,010). A total of 7174 contacts were evaluated in the Clinic during the period, out of which 2345 were children, belonging to 982 index cases (clusters). At first examination, 88 (3.8%) children were diagnosed with leprosy (coprevalent cases – CP). No difference was observed regarding gender (p=0,938), but CP were significantly (p=0,023) older (mean 8.1±3.65 years) than the HC (7.15±4.06 years). The presence of a scar from previous BCG vaccination was significantly (p<0.0001) more frequently found in HC (92%) than in CP (67%). A higher proportion of the CP (93%) than of the HC (71%) were contacts of MB index cases (p<0.001). In addition, the CP index cases had significantly higher (p=0.003) bacterial index. Interestingly, no difference was observed when comparing the frequency of G2D of the index cases between the groups (p=0.656). **Main Conclusions**: Monitoring childhood leprosy is crucial for better control and understanding of the transmission of the disease. Contact surveillance is a primary strategy for early detection of leprosy in children but further interventions should be applied for increasing timely diagnosis in children. **E-mail:** euzenir@ioc.fiocruz.br

Leprosy010- Leprosy evaluation of the population of in the age of 15 years of a city of Northeast, Brazil

[1]Dantas, J. C. M.; [1]Jácome, T. N.; [1]Florencio, J; [1]Freitas, H. B. A.; [1]Chaves, A. E. P.; [2]Neto, J. C. L; [2]Simões, R. F. M.
1Universidade Federal de Campina Grande - Campina Grande/PB, Brasil, 2Universidade Estadual da Paraíba – Campina Grande/PB, Brasil

Introduction: Leprosy is an infectious disease mainly caused by Mycobacterium leprae, an obligate intracellular parasite that has high infectivity and low pathogenicity. It is important to emphasize that leprosy can affect people living in low socioeconomic conditions and, if not diagnosed early and treated late, may leave sequelae in these individuals. According to the Ministry of Health, 37610 new cases were detected in Brazil in 2009, of which 2669 were of children under 15 years of age. **Materials and Methods:** A descriptive, documentary and epidemiological study, with quantitative approach, in leprosy patients under 15 years old and living in the city of Campina Grande, Paraíba.The authors used the leprosy notification forms from the Information System for Notifiable Diseases (SINAN NET) available in the Municipal Health Department during the period 2006 to 2010. **Results:** During the period, we recorded a total of 654 new cases, of which 5.3% occurred in children younger than 15 years.Of these, 45.8% are male and 54.2% were female. 91.4% were aged between 10 and 15 years. According to race,

57.1% are brown, 31.4% are white and 8.6% black. In terms of education level, 62.8% had not completed elementary school and 20% had incomplete secondary education. All cases occurred in residents of urban areas. The operational classification for treatment was 71.42% paucibacillary / PB (Indefinite-34, 28%, tuberculoid-17, 14% and 20% not rated), 28.52% multibacillary / MB (borderline-14, 29% and Virchowian-14, 29%). The degree of disability assessed at diagnosis showed that 91.43% had Grade 0, 5,72% Grade I and 2.85% were not evaluated. For modes of detection of new cases, the referral was the main way (45.71%), followed by spontaneous demand (42.85%). **Conclusions:** The number of cases that are appearing in the population under 15 years suggests that children may be contacts of cases still undetected. The detection modes recorded indicate that possibly the active search and examination of contacts are not as recommended by public health services. Educational activities must be conducted in all segments of society and in the communities, in order to reduce the number of cases and the possible reactions of the disease. **E-mail:** taciton@hotmail.com

Leprosy011- **Leprosy evaluation in cases of population over 60 years in the city of Campina Grande-PB, Number of cases, the operational classification, diagnosis and degree of disability**

[1]Dantas, J. C. M.; [1]Jácome, T. N.; [1]Florencio, J; [1]Freitas, H. B. A.; [1]Chaves, A. E. P.; [2]Neto, J. C. L; [2]Simões, R. F. M.
1Universidade Federal de Campina Grande - Campina Grande/PB, Brazil, 2Universidade Estadual da Paraíba – Campina Grande/PB, Brazil.

Introduction: Aging is an event caused by multiple factors, which can affect various body systems. The increasing elderly population has occurred in recent decades quite fast. As the population ages, there is the emergence of some diseases that are related to conditions bio-psycho-social and economic, among them is leprosy, marked by great social discrimination for many years in our country and if not diagnosed and treated in time, can bring many negative consequences in the lives of elderly and other patients in other phase of life. Leprosy is an infectious disease caused by Mycobacterium leprae, and is considered a major public health problem, especially in developing countries, for its high incidence, prevalence and the fact that been a disease that affects peripheral nerves, may leave the patient with disabilities. Because of the increasing elderly population and health published leprosy problem, this research aimed to know the number of cases, the operational classification of leprosy, its model of diagnosis and assessment of disability in the elderly reported leprosy in the city of Campina Grande, Paraíba. **Materials and Methods:** The present work is a documentary study, descriptive epidemiology, with quantitative approach. The sample consisted of 134 chips Notification/Investigation of leprosy, who were in the Information System for Notifiable Diseases, during 2006 and 2010. To collect data, we designed a tool with all the information that meets the proposed objective for this study**. Results:** The results were analyzed quantitatively and subsequently analyzed in accordance with the literature in this study and showed that 73.2% of the sample has between 65~75years and 26.8% are greater than 75. The gender analysis showed that 52.2% (70) were male, and 47.8% (64) female. Regarding the classification, 7.4% (10) of leprosy cases in the elderly are the Indefinite Form (I), 10.4% (14) are of the tuberculoid form (T), 35.0% are of borderline form (D), 19.5% (26) are the lepromatous form and 27.0% (37) of the elderly didn't have the form identified during the reporting / investigation of the case. **Conclusions:** Given the variables shown in this study, we observed that the city of Campina Grande had a higher percentage of multibacillary leprosy cases in the elderly, therefore it is necessary a greater investment in education actions in health, that may have a clinical diagnosis of early disease, and consequently fewer complications in the lives of these elderly. **E-mail:** taciton@hotmail.com

Leprosy012- **Leprosy detection rate in the period 2001 to 2011 in Fernandópolis, São Paulo, Brazil**

Martins, AP[1], Pinto Neto[2,3], JM and Cassenote, AJ*[1]
1. Fernandópolis Integrated Faculty, Fernandópolis Educational Foundation, Fernandópolis – Brazil, 2. Medicine College of Camilo Castelo Branco University, Fernandópolis. São Paulo – Brazil, 3. Postgraduate Program in Infectious and Parasitic Diseases, Medicine College of São Paulo University, São Paulo - Brazil.

Introduction: Brazil has an uneven distribution of leprosy among the five macro-regions, between the states and its 5,564 municipalities, and configures itself as the first place in the world ranking, with a prevalence 1.24 cases/10000 inhabitants, of which 252 municipalities are given priority for leprosy (34.9% of the population, 53% of new leprosy cases); existing 2203 (39.6%) with at least one reported case. In São Paulo, the distribution is also uneven among its 645 municipalities. In this state, in 2011, the detection rate was 3.91 cases per 100,000 inhabitants. In Fernandópolis, northwest of the State, with 65,717 inhabitants the leprosy is an important public health problem since 1970. The city was among the first to deploy the chemotherapy treatment in 1991. The detection rate of annual cases per 10,000 inhabitants has a utility to determine the secular trend of the endemic and measure the intensity of case detection activities, as well as analyze the geographical and temporal variations in the distribution of detected cases of leprosy cases in population. The aim of this study was to present and analyze the detection rates of leprosy in the municipality of Fernandópolis / SP, in the period 2001 to 2011. **Materials and methods:** This is a descriptive, retrospective study, which used to collect data from the Information System for Notifiable Diseases (SINAN) and population based on demographic projections of SEADE. The indicator used to measure the disease frequency was detection rate (DR) [(new detected cases/total population)*100,000]. **Results:** was found that in 2001 the DR was 4.68 cases/10,000 and in 2011was 4.46 cases/10,000 inhabitants. During this period changes occurred with statistical significance (CI: 95%): between 2001 and 2004, with maximum detection cases was of 10.84. In the period 2005 to 2008 there was a decrease in the detection, with observed maximum of 4.60 cases/10,000 inhabitants (do not touching the IC lower limit in the previous years – 2001 to 2003). In the years 2009 to 2010 there was a light increase in detection. **Main conclusions**: leprosy remains an important endemic disease in this city despite it not being part listed among the priority municipalities nationwide. The implementation of educational measures in health facilities, vehicles of mass communication, social facilities such as schools, churches, businesses, community centers and community are fundamental for the detection of new cases is seen that in the years 2002 and 2003 increase in detection can be attributed to the intense realization by students and faculty an undergraduate degree in nursing, social educational activities such equipment, especially in churches. **E-mail:** cassenote@usp.br

Leprosy013- **Leprosy cases in Iguatu, rural northeast Brazil (2006 – 2010)**

Cavalcante AA, Monteiro LD, Souza LB, Alencar CH, Heukelbach J, Barbosa JC
Department of Community Health, School of Medicine, Federal University of Ceará, Fortaleza, Brazil; Swiss Tropical and Public Health Institute, University of Basel, Basel, Switzerland; School of Public Health, Tropical Medicine and Rehabilitation Sciences, James Cook University, Townsville, Australia; Tropical Medicine Foundation of Tocantins; Federal Institute of Education Science and Technology of Tocantins Federal Institute of Education Science and Technology of Tocantins; Hospital for Tropical Diseases of the Tocantins.

Introduction: The municipality of Iguatu, in rural Ceará State (northeast Brazil) has a population of 95,000. It is located in a high risk area of leprosy, and classified as hyperendemic. Here we describe the epidemiological profile of people affected by leprosy in the municipality. **Material and Methods**: The study was conducted using data from the Notifiable Disease Database (SINAN). There were 488 new cases diagnosed from 2006 to 2010. **Results:** The mean detection rate was 135.1/100,000 inhabitants in the general population and 11.2/100,000 inhabitants aged <15 years. A total of 90 (18.4%) were illiterate. Tuberculoid clinical form occurred in 173 (35.5%) cases, borderline in 162 (33.2%), indeterminate in 129 (26.4%) and lepromatous in 23 (4.7%). A total of 67 (13.7%) had grade 1 disability and another 20 (4.1%) grade 2 disability at diagnosis. At release from treatment, there were 27 (5.5%) cases with grade 1, 12 (2.5%) with grade 2 and 78 (16%) were not assessed. Of the 1,848 registered contacts, 1,534

(83%) were examined. **Conclusion:** Considering the epidemiological indicators pointing to active leprosy transmission in the municipality, disease control measures need to be continued intensively. The frequency of visible physical deformities (grade 2) was relatively low at both diagnosis and release from treatment, indicating timely diagnosis in most cases. Contact tracing can be considered satisfactorily, indicating improved decentralization and systematization of the municipal leprosy control program. The control of leprosy should be contemplated with a view to comprehensive care in Iguatu. **E-mail:** alberiobs@hotmail.com

Leprosy014- **Leprosy and pregnancy at the Para state: an epidemiological perspective**

Palácios, V. R. C. M.[1]; Bichara C. N. C.[1]; Fontelles, M. J. P.[1]; Dias, R. S.[1]; Maia, B. T. B.[1]; Sousa Junior, A. S.[2]; Veiga, N. G.[1,2]
¹ Universidade do Estado do Pará - UEPA, Belém, Pará, Brasil, ² Instituto Evandro Chagas - IEC, Ananindeua, Pará, Brasil

Introduction: Leprosy is still a public health problem in the world, where India and Brazil have the highest incidence and prevalence. In this context, the Amazon accounts for 35% of leprosy cases reported worldwide. Studies on the association between leprosy and pregnancy are rare and old, setting an epidemiological silence related to issues of social production of disease. **Materal and Methods:** Data came from the National System of Notifiable Diseases and Brazilian Institute of Geography and Statistics databases. This study investigated the association between leprosy and pregnancy at the state of Pará, using the spatial units of analysis. They were first considered the 143 municipalities that subsequently were grouped into 12 regions of integration in the period 2007 to 2009. Data from three socio-demographic variables, ten operational and four epidemiological indicators were analyzed. It was also created the Detection Coefficient of the Association between of Leprosy and Pregnancy (DCLP) to analyze the magnitude of this association. **Results:** in 2007, seven counties were hyperendemic, six very high and one high. In 2008, five municipalities were hyperendemic, six very high and nine high. In 2009, two counties were hyperendemic, six very high and eight high. The temporal average of DCLP, two counties had the hyperendemic pattern, and three clusters of medium endemicity were found. The pattern of low endemicity was most common in average, and the distribution of the association was present in most municipalities in all years. Regarding socio-demographic and operational variables, all "p" values were higher than 0.05. It is noteworthy that of the total of 149 cases, 135 (90.6%) are contained in the "non-realized" and "unknown" to bacilloscopy, and only 47 patients (31.5%) were examined for the affected nerves. **Main conclusions:** it was observed that there were differences in the overall pattern of leprosy and when associated with pregnancy. Leprosy was not significant to the state of pregnancy, but pregnancy can change the course of this disease, with complications such as the Lucio's Phenomenon. One suggestion would be the inclusion of dermato-neurological exam in Prenatal Program, especially in endemic regions such as north, northeast and central-western Brazil, since today the Family Health Strategy (FHS) is considered the most important action of monitoring to achieve the municipalities in implementing the measures defined by National Surveillance programs. The low coverage of Pará by FHS and insufficient professional qualification and training endanger such surveillance measures, since the data on the poor performance of examination for the affected nerves and baciloscopy. Finally, the results obtained in the epidemiological analysis of the studied association may be useful for decision-making processes in public health, however, point to the need for continuing studies of systematic character giving the opportunity to reread this disease. **E-mail:** verareginapalacios@gmail.com

Leprosy015- **Knowledge and prejudice about Hansen's disease: a cross-sectional approach among 1st semester academic of Medicine College (Fortaleza, Brazil)**

Pessoa VMA, Neto MO, Moreira LM, Araujo MCF, Rocha NALD, Rocha TB, Pamplona LGC.

Hansen's disease, leprosy, or Poorly Lazaro is an infectious disease caused by the bacteria *Mycobacterium leprae* that affects skin and nerves and can cause severe damage according to individual resistance. Currently, leprosy is considered endemic, and Brazil is the second in numbers of cases, just

behind India. The aim of the study was to analyze the level of knowledge and prejudice over the medicine students of the first semester of the Faculty of Medicine Christus (Fortaleza, Brazil) about Hansen's disease. It was conducted a cross sectional study, using questionnaires of 12 questions answered by 57 students (90,47% of the class), who accepted to participate, in the period from 15 to 17 February 2012. Data were analyzed using Epi Info version 3.5.1. The results showed that 75.4% of students knew the main sign of the disease (sensitivity without spots). About the forms of contagion, 26.3% of students reported handshake or hug, demonstrating some level of prejudice, and 7.0% mosquito bite, showing low knowledge about the subject. In relation to prevention, 30.4% indicated the option hygiene and 28.6% reported only avoiding contact, showing ignorance. It was observed, also, a greater availability of student participation in support groups for leprosy. It was found that, although most of the respondents have knowledge about the disease, many students have reasonable lack of knowledge about the mode of transmission, treatment, recognition and prevention of disease, influencing the level of bias among respondents. This indicates a need for greater commitment to the promotion of awareness campaigns to decrease the social stigma surrounding leprosy and diffusion of information related to care, prevention and prognosis of the disease, including the academic environment, even among students of the first half due to relevance of the disease, based on current epidemiological data. **E-mail:** pamplona.luciano@gmail.com

Leprosy016- **Factors associated with migration among those diagnosed with leprosy, central Brazil**

Murto,C [2,4], Ariza,L [1], Alencar,CH [1], Chichava,OA [1], Oliveira,AR [1],da Silva,LFM [3],Heukelbach, J [1,5]*
1. Department of Community Health, School of Medicine, Federal University of Ceará, Fortaleza, Brazil, 2. Swiss Tropical and Public Health Institute, Basel, Switzerland, 3. State Leprosy Control Program; State Health Secretariat of Tocantins, Palmas, Brazil, 4. University of Basel, Basel Switzerland

Introduction: Migration has been identified as a social determinant influencing Neglected Tropical Diseases (NTDs) and is considered a risk factor for leprosy infection. In Brazil, where leprosy remains a public health problem, the significance in understanding these dynamics in leprosy transmission is important, as migration complicates disease control. **Materials and Methods:** A cross-sectional study was conducted among those newly diagnosed with leprosy (n=1074) in 79 endemic municipalities in central Brazil between September-December 2009. Respondents were identified through the National Information System for Notifiable Diseases database and questionnaires were used to determine demographic, socioeconomic, cultural and clinical factors associated with migration before and after diagnosis with leprosy. **Results:** More than three-fourths of respondents were migrants since birth/born in a municipality different from their current residence, with sixteen percent migrating within 5-years before diagnosis and less than five percent migrating after diagnosis. Migration within 5-years before diagnosis was associated with ages 30-44 (OR: 2.8, 95% CI: 7.0), household residence 10-years or less (OR: 18.2, 95% CI: 8.1 – 50.8), after diagnosis migration (OR: 7.9, 95% CI 3.8 – 16.4), and factors associated with poverty , such as not having electricity (OR: 2.1, 95% CI: 1.1 – 3.7), waste collection (OR: 1.6, 95% CI: 1.1 – 2.2), and not living in a brick home (OR: 1.6, 95% CI: 1.1 – 2.3). After adjusting for age, multibacillary leprosy (OR: 1.6, 95% CI: 1.1 – 2.2) and not having public water (OR: 1.7, 95% CI: 1.1 – 2.4) or waste collection (OR: 1.7, 95% CI: 1.2 – 2.4) and residence 10-years or less (OR: 16.6, 95% CI:7.2 – 38.2) were associated with migration before diagnosis. Migration after diagnosis was associated with home residence 5-years or less (OR: 8.7, 95% CI: 2.6 – 29.3) and before diagnosis migration (OR: 7.7, 95% CI: 3.9 – 15.4). Many factors associated with migration after birth was no longer significant after controlling for age, which may reflect historical rural-urban labor movement in Brazil. **Main Conclusions:** Overall findings show that a culture of migration is evident through short residence at current household among recent migrants and migrants returning to their original residence, or "circular" movement, before and after diagnosis. In addition, migration before diagnosis was associated with poverty among adults. Multibacillary leprosy among migrants suggests lack of access to healthcare for early diagnosis among past 5-year migrants possibly attributable to high mobility. Association with one person per household among birth migrants may suggest stigmatization as a result of leprosy. This research is part of the MAPATOPI study co-financed by the Brazilian Research Council (CNPq) and the Department of Science and Technology of the Brazilian Ministry of Health (DECIT). **E-mail:** heukelbach@web.de

Leprosy017- Epidemiological profile of leprosy prevalence in Brazilian cluster city, since 1999 to 2008

Koch; D. F., Bubach; S.
Universidade Federal do Espírito Santo, Brazil, Centro Universitário Norte do Espírito Santo, Brazil

Introduction: The Leprosy disease is a contagious infectious caused by *Mycobacterium Leprae or Hansen's* bacillus, represents a serious public health by affect about 300 thousand people around of the world (WHO, 2005) and the stigma social that presents mainly by inability physical can generate isolation. Many factors favor disease endemicity such as low economic conditions, unfavorable conditions of life as agglomerations and health conditions influence risk of illness. The Brazil has presents lately as the country with the most unfavorable conditions however the historical analysis of leprosy has shown that prevalence of the disease has significantly reduced but in some regions and Brazil states has shown high rates of incidence and prevalence as in the case of São Mateus, town in the north of Espírito Santo show upward trend of prevalence. **Materials and methods**: were realized a retrospective cross-sectional study implemented in São Mateus municipality presents a hyperendemic profile of leprosy (more than 40 cases per 100 thousand inhabitants). The data collection was performed by evaluating of all charts of patients seen and diagnosed by leprosy from 1999 to 2008 by municipal reference. For estimating the prevalence was used of the basic setting of the epidemiological indicators of health ministry guide control of leprosy and the population quantitative data of each year were removed of ibge database. **Results**: during the study period the prevalence of leprosy per 100 thousand inhabitants was 57,50, in 1999; 99,49, in 2000; 147,18, in 2001; 179,75, in 2002; 177,70, in 2003; 182,58, in 2004; 193,96, 2005; 186,49, in 2006; 155,62, in 2007; e de 80,47, in 2008. The trend of prevalence of leprosy during the first 7 years of study shows great concentration of cases. But in the years following there was a drop in prevalence indicating an improvement in access and control of disease. Moreover the highest prevalence were in those over 15 years, in males, and in people with low literacy, confirming what is found in other studies in the state and in Brazil. **Conclusion:** reducing the prevalence of leprosy was made possible by organization of control programs continuity in tracking cases and early detection. The municipality may be endemic area belonging forth Brazilian cluster, developed activities for reduction disease morbidity indicators, but with little success, due significant structural barriers and human resources. So, the performing studies identifying specific features of cases in concentration regions of leprosy is essential to plan specific actions to vulnerable groups**. E-mail:** danielyfontourakoch@yahoo.com

Leprosy018- Epidemiological profile of leprosy in Natal city, 2001 to 2010

Barbosa, IR[1], Barbosa, IV[1].
[1] Prefeitura do Natal, Secretaria Municipal de Saúde, Departamento de vigilância em saúde – Natal/ Rio Grande do Norte/ Brasil.

Introduction: Leprosy presents a tendency to rates detection stabilize in Brazil, but still come in very high levels in the North, Midwest and Northeast. To contribute to disease monitoring and strengthening of epidemiological surveillance, was considered important to describe the epidemiological profile of leprosy in order, to characterize the trend and magnitude of disease in the city. **Objectives:** To describe the epidemiological profile of the population diagnosed with leprosy in the Natal city, Rio Grande do Norte state, northeastern Brazil, from 2001 to 2010. **Methods:** Retrospective descriptive study that used secondary data of leprosy cases registered in Information System for Notifiable Diseases (SINAN). Data were analyzed using the software TabWin e EpiInfo 5.3, and for producing a map of the incidence was used ArcView. **Results:** We recorded 537 cases of leprosy in the period studied, with an average of 50 new cases per year, with average annual incidence of 07 cases / 100,000 populations (Table 01). The distribution of cases by gender revealed that 50.37% of the cases occurred in women (Figure 01). Of the 537 cases reported, 5.58% (n = 30) were younger than 15 years. The most frequent age range was from 20-34 years (29.98%), followed by the range of 50-64 years (23.46%) (Chart 02). The tuberculoid clinical form was detected in 43.39% cases and the dimorphic form in 22.53% (chart 03). The multibacillary classification represented 46.93% of and paucibacillary cases accounted for 52.89% (Chart 04). In the evaluation of disability at the time of notification, 63.87% were in degree zero

and 15.27% in Grade I. The evaluation at the time of healing, 51.21% were in degree zero and 10.99% in Grade I (Chart 05). Regarding the number of injuries presented, 50.28% of the patients no show or not informed number of lesions, 18.25% of patients had single lesions and 14.71% of patients had more than five lesions. The western district registered the highest incidence (7.79 cases / 100,000 inhabitants), followed by the North I District (6.16casos/100000 inhab), the Norte II district (58.18 cases / 100000 inhab), Eastern District (46,12 cases/100000 inhabitants) and the Southern District (37.06 cases / 100,000 inhabitants). The neighborhoods that had higher average incidence rates were: Guarapes Felipe Camarão, Potengi, Cidade Nova and Quintas (Map 01). **Conclusions**: In Natal city, Leprosy presents as an endemic disease and more prevalent in remote areas of the city, predominantly poor housing conditions and family conglomerates; The descriptive epidemiology of leprosy for the city of Natal is compatible with descriptions in other municipalities, although the observed incidence rate is above the limit that is recommended by the Ministry of Health. **E-mail:** isabelleribeiro@oi.com.br

Leprosy019- Diagnosis of leprosy in municipalities other than the patients' residence: spatial analysis, 2001 – 2009

Alencar CH, Ramos JR. AN, Sena Neto SA, Murto C, Heukelbach J
Department of Community Health, School of Medicine, Federal University of Ceará, Fortaleza, Brazil; Swiss Tropical and Public Health Institute, University of Basel, Basel, Switzerland; School of Public Health, Tropical Medicine and Rehabilitation Sciences, James Cook University, Townsville, Australia.

Introduction: Integrated care of leprosy patients is a priority of the Brazilian Leprosy Control Program, but a series of factors such as migration may hamper control activities. To characterize spatial patterns of notification of leprosy in a highly endemic area, we analyzed the flow of leprosy-affected individuals from the municipality of their residence to the municipality of disease diagnosis. **Material and Methods:** The study was based on data from the National Information System for Notifiable Diseases (2001-2009), affecting the Brazilian Federal States Maranhão, Pará, Piauí and Tocantins. **Results:** Of the 373 municipalities in the area, 349 (93.6%) had at least one resident affected by leprosy reported in another municipality (4,325 cases-5.2% of total cases). Municipalities with most cases reported outside of their residence were located in Maranhão: Timon (248) and São José de Ribamar (201). Municipalities that received most cases for diagnosis were the state capitals of Maranhão and Piauí, São Luis (719) and Teresina (516). The state capital of Goiás state, Goiânia, notified the diagnosis of 146 cases residing in the endemic cluster, with a distance of more than 1,000 km. **Conclusion:** There is considerable flow of leprosy patients from their residence to other municipalities for diagnosis and treatment. Major municipalities are attracting patients mainly from neighboring areas. There is also a considerable interstate patient flow from highly endemic areas to regions with lower disease incidence. Besides implications for transmission dynamics, the observed flow indicates gaps in the decentralization of integrated care to leprosy-affected individuals and difficulties associated with patient monitoring during and after multidrug therapy. This study forms part of the MAPATOPI project, co-financed by the Brazilian Research Council (CNPq) and the Department of Science and Technology of the Brazilian Ministry of Health (DECIT). Process: 576377/2008. **E-mail:** carllosalencar@hotmail.com

Leprosy020- Density and spatial distribution of leprosy cases in four municipalities of the state of Maranhão

Alencar CH, Swartz K, Ariza L, Murto C, Ramos Jr. AN, Heukelbach J
Department of Community Health, School of Medicine, Federal University of Ceará, Fortaleza, Brazil; Swiss Tropical and Public Health Institute, University of Basel, Basel, Switzerland; School of Public Health, Tropical Medicine and Rehabilitation Sciences, James Cook University, Townsville, Australia

Introduction: Clustering of leprosy cases in an area may favour disease transmission. We sought to identify the presence of areas of highest density of cases in four hyperendemic municipalities in the state of Maranhão in northeast Brazil. **Materials and Methods**: We conducted a population-based study in the municipalities of São José de Ribamar, Codó, Santa Inês and Bacabal. All leprosy cases diagnosed in 2009 and 2010 were spatially located via GPS mapping. Kernel maps were constructed to form a

continuous surface from the items identified in space, creating a density map of leprosy cases. **Results**: São José de Ribamar (97 cases, 59.5 cases/100,000 inhabitants in 2010) showed two areas of high concentration of cases, both localized in the highest demographic density areas. Almost all leprosy cases of the municipality were localized in these both areas. One concentrated 60 cases, bordering the municipality of the state capital São Luís. The other had 35 cases in the downtown area. The city of Bacabal (122 cases; 121.9 cases/100,000 inhabitants in 2010), presented concentration of cases in the southern region (53 cases), two medium density areas in the northern region (16 and 26 cases) and another small one in west (10 cases). Santa Inês (74 cases, 95.7 cases/100000 inhabitants in 2010), presented cases dispersed throughout the city, despite an area of high concentration in the southern region (15 cases) and two others of medium density (8 and 15 cases). The city of Codó (118 cases, 99.9 cases/100,000 inhabitants in 2010), showed a concentration of cases in the southern area (43 cases) and another area with medium density (16 cases) in the northwest. **Conclusion**: Within these typical middle-sized municipalities, most leprosy cases occurred in geographically defined high risk neighbourhoods. The identification of high concentration areas of leprosy cases may help in its control by intensifying disease detection activities and contact tracing on these neighbourhoods. This study forms part of the MAPATOPI project, co-financed by the Brazilian Research Council (CNPq) and the Department of Science and Technology of the Brazilian Ministry of Health (DECIT). Process: 576377/2008. **E-mail:** carllosalencar@hotmail.com

Leprosy021- **Epidemiological patterns of leprosy - Araguaína, Brazil, 2004 – 2009**

Monteiro, L. D; Martins-Melo F. R.; Alencar C. H; Souza, L. B; Cavalcante, A. A; Barbosa, J.C; Ramos Jr, A. N; Heukelbach J.
Department of Community Health, School of Medicine, Federal University of Ceará, Fortaleza, Brazil; Swiss Tropical and Public Health Institute, University of Basel, Basel, Switzerland; School of Public Health, Tropical Medicine and Rehabilitation Sciences, James Cook University, Townsville, Australia; Tropical Medicine Foundation of Tocantins.

Introduction: Tocantins is the second Brazilian state with the highest detection rate of leprosy is considered hyperendemic and several municipalities have entered into a high risk area of leprosy transmission. The objective of this study was to analyze trends in indicators of leprosy in the municipality of Araguaína from 2001 to 2010. **Material and Methods:** The 1,431 new cases diagnosed was obtained from the Notifiable Diseases Information System (SINAN). Population data were obtained from the Brazilian Institute of Geography and Statistics (IBGE The indicators analyzed were: overall detection rate, detection rate <15 year-olds, grade 2 disability/population at diagnosis, and proportion of grade 2 disability among the assessed cases. We used linear regression for trend analysis. **Results**: The overall detection rate tended to decline during the period (r^2=0.43, p=0.042), in 2001 the rate of new cases was 159.9 and in 2010 was 97.0/100,000 inhabitants. The detection rate in children under 15 was 15.6 and in 2010 was 24.8/100,000 inhabitants, and remained similar in this period (r^2=0.16, p=0.254), the rate of new cases with grade 2 in population was 5.2 in 2001 and 6.6 in 2010 per 100,000/inhabitants (r^2 =0.01, p=0.890) and the proportion of new cases with grade 2 among those assessed was 49% in 2001 and 69% in 2010 (r^2=0.00, p=0.890), both tended to have stability. **Conclusion:** Although there is a slight decrease in overall detection rates in the last 10 years, epidemiological and operational studies indicate vulnerability of the city with the need for strengthening disease control strategies. The goal of reducing the grade 2 disabilities in population in 35% by the year 2015 is a challenge to be achieved by local health services, taking into account the stagnation of this indicator, the particular characteristics and operational problems. **E-mail:** lorenadmonteiro@gmail.com

Leprosy022- **Epidemiological profile of leprosy in Fortaleza – CE, 2006-2010**

Q Souza,L. B;Alencar C.H; Monteiro,L. D; Cavalcante, A. A; Barbosa, J.C; Ramos Jr, A. N; Heukelbach J.
Department of Community Health, School of Medicine, Federal University of Ceara, Fortaleza, Brazil; Swiss Tropical and Public Health institute, University of Basel, Basel, Switzerland; Anton Breinl Centre for Public Health and Tropical Medicine, School of Public Health, Tropical Medicine and Rehabilitation Sciences, James Cook University, Townsville, Australia, Department of Community Health, School of Medicine, Federal

University of Ceara, Fortaleza, Brazil, Department of Community Health, School of Medicine, Federal University of Ceara, Fortaleza, Brazil;

Introduction: The State of Ceara is fourth in the ranking of registered cases of leprosy among the northeastern states and in 13 of the national ranking. The capital Fortaleza had growth trend of leprosy cases over the past 10 years, was the city that had more cases of the disease in 2011 in terms of absolute number of endemic and presents parameters considered "very high" according to definitions of the Ministry Health. **Objective:** To describe the clinical and epidemiological characteristics of patients diagnosed with leprosy by the health services of Fortaleza, in the years 2006 to 2010. **Material and Methods:** A descriptive cross-sectional, secondary data from the information System for Notifiable Diseases (SINAN). The study population consisted of new cases diagnosed in the period 2006-2010. Population data were obtained from the Brazilian Institute of Geography and Statistics (IBGE). **Results:** The detection rate averaged 32.5 / 100,000 inhabitants in the general population and 7.7/100,000 inhabitants under 15 years in the study period. Of the 4,949 new cases, 2,530 (51.1%) were male and 2,419 (48.9%) were female. The age groups 30-44 and 45-59 years were most affected in 1267 (25.6%) and 1365 (27.6%) cases respectively. Most people lived in urban areas 4,055 (81 .9%), 141 (2.8%) in rural and 740 (14.9%) were not informed. The prevalence of clinical forms was 339 (6.8%) as undetermined, 1,266 (25.6%) tuberculoid, 2,142 (43.3%) borderline and 814 (16.4%) lepromatous, no classification for 112 (2.3%) cases. At diagnosis, 4,467 (90.3%) cases were evaluated for physical disability, of whom 933 (18.8%) had grade l and 354 (7.1%) grade ll. At discharge were assessed only 2179 (44.0%) cases. In the output type, 3259 (65.9%) were for healing, 374 (7.6%) transfer, 166 (3.3%) leaving 45 (0.9%) died and 1,105 (22.3%) had no record. Of the 17,525 contacts recorded, only 8076 (46.0%) were examined. **Conclusion:** The indicators pointed to the active transmission of the disease in the county. There was a higher prevalence of smear positive cases and a significant number of cases with physical deformities featuring the late diagnosis. He called attention to the precariousness of the indicator for assessing the degree of physical disability in high, low cure rates and contacts evaluated, as well as gaps in terms of filling in data in SINAN. This study reinforces the need for decentralization of leprosy control in Fortaleza, in order to be paid to practical assistance to meet the demands of the biopsychosocial person affected and their families. **Email:** heukelbach@web.de

Leprosy023- **Quality control of the bacteriological diagnose of leprosy in Cuba**

OM. Suárez [a]*; AE. Entenza [a]; JL Ruiz [a] y EI. Montoro [b]
a: Laboratorio Nacional de Lepra. Departamento de Bacteriología-Micología. Instituto de Medicina Tropical "Pedro Kourí". La Habana. Cuba, b: Departamento de Bacteriología-Micología. Instituto de Medicina Tropical "Pedro Kourí". La Habana. Cuba

Introduction: in most of countries, mainly in those of high prevalence and low resources, the observation of bacilluses acid resistant alcohol, and the clinic, constitutes the basic tools for the detection of patient multibacillary. Baciloscopy is also employed to evaluate the answer of this type of patient in front of the polychemotherapy. In the improvement of this diagnostic it is required the quality control, the objective of our work is to reflect in a synthetic way the strategy adopted in Cuba by the National Laboratory of Leprosy (LNL), and the reached achievements. **Materials and Methods**: It was designed a protocol of quality control like support in the algorithm work, in the laboratories of the national net and an automated system that stores, processes and inform the microbiologic results of the patients and of the laboratory. We analysed 1555 samples received in the LNL in 2011, which were evaluated keeping in mind macroscopic and microscopic parameters and the rules of quality and the agreement of the bacteriological and morphological indexes were standardized. All the data were introduced in the automated system InfoLepra. **Results**: It was obtained, the establishment of a protocol of administration of quality for all the laboratories of the national net (exposed in a work flow, next to the charts that show the parameters to measure in the quality of the baciloscopy), the design and application of the InfoLepra, unified the information and the models that the laboratories should send to the superior levels and their feedback. **Conclusions**: To intend to the competent authorities of the MINSAP to implement the system InfoLepra in all laboratories and the protocol of quality control in the national net. **E-mail:** odelaisy@ipk.sld.cu

Clinical and Pathogenesis of Leprosy

Leprosy024- Association of leprosy and confinement due to leprosy with hepatitis B co-infection in Southern Brazil

Leitão, C; Ueda, D; Moraes Braga, AC; Maluf, ECP; Vieira, ER; Boldt, ABW; Messias-Reason, IJT.
Clinical Hospital - HC / Universidade Federal do Paraná - UFPR, Curitiba, Brazil.

Introduction: Leprosy is accompanied by cellular immunity defects, which may increase the susceptibility of patients in developing co-infections. The association of leprosy with hepatitis B virus (HBV) infection has previously been described in different populations, but is unknown for South Brazil. **Material and Methods:** In this study, the prevalence of leprosy-HBV co-infection was determined in 199 Southern Brazilian leprosy patients from the Universidade Federal do Paraná's Clinical Hospital, Paraná's Hospital of Sanitary Dermatology and Regional Center of especialities-Barão (39% female, 61% male; average age of 52±16 years) and in 681 matched blood donors from the HC-UFPR Hemotherapy Service (39.5% female, 60.5% male; average age of 45±12 years). Diagnosis at presentation was lepromatous leprosy for 119 patients (59.8%), tuberculoid leprosy for 15 (7.5%), and borderline leprosy for 30 (15.1%); 12 patients (6%) had an undetermined form of leprosy and 23 (11.6%) were unspecified. The patients and controls were screened for the HBV markers HBSAg and a-HBc, using ELISA. Positive samples were retested and a-HBc+ only samples were tested for the hepatitis B surface antigen a-HBs. **Results**: We found 79 (39.7%) HBV+ leprosy patients (93.7% of them were a-HBc+, meaning a past HBV infection), compared with 43 (6.3%) HBV+ blood donors (97.7% of them, a-HBc+). This leads us to suggest a strong association between leprosy and HBV infection (OR= 9.8, IC95%= 6.4–14.7; p<0.004). There was also an association between HBV infection and lepromatous leprosy, compared with the other forms (unspecified patients were excluded) (55/119 or 46.2% vs. 15/57 or 26.3%; OR= 2.4, CI95%= 1.2–4.8; p=0.017). We also found that confinement due to leprosy was associated with HBV infection (38/61 or 62.3% vs. 41/138 or 29.7%, OR= 3.9, CI95%= 2.1–7.4; P=0.015). **Conclusions**: Leprosy patients are susceptible to develop HBV infection, especially lepromatous and institutionalized patients, who probably present a higher risk of being exposed to the hepatitis B virus. This clearly emphasizes the need of special care to leprosy patients in preventing HBV co-infection in South Brazil. **Financial support:** CAPES/CNPq.
E-mail: iarareason@hc.ufpr.br

Leprosy025- Susceptibility to leprosy and HBV co-infection is associated with MBL deficiency

Boldt, A.B.W.1; Leitão, C.1; Ueda, D.1; Moraes Braga, A.C. 1; Stahlke, ERS2; Messias-Reason, IJT1.
1 Hospital de Clínicas, Federal University of Paraná, Curitiba, BR, 2 Departamento Estadual de Saúde do Paraná, Curitiba, BR.

Introduction: Mannose-binding lectin (MBL) increases ingestion of intracellular pathogens acting itself as an opsonin and/or by complement-driven opsonization. We formerly identified an association between low MBL levels and protection against severe leprosy. Leprosy is accompanied by cellular immunity defects, which may increase the susceptibility of patients in developing co-infections. The association of leprosy with hepatitis B virus (HBV) infection has previously been described in different populations but susceptibility conferred by host genetic polymorphisms is not known. **Material and Methods**: Of the 190 leprosy patients screened for the HBV markers HBSAg and a-HBc, 39% were a-HBc positive (with a past HBV infection). Of these, 71.6% were lepromatous, 10.8% borderline, 5.4% indeterminate, none tuberculoid (but 10.8% were unspecified), according to the criteria of Ridley and Jopling. The polymorphisms at the MBL2 promoter and exon 1 region were assessed by sequencing. MBL levels were measured using ELISA in 102 leprosy, HBV negative patients and 67 coinfected patients. Statistics was done using the Arlequin v.3.1 software package, Fisher exact tests and Mann-Whitney non-parametric test. **Results**: Genotype distribution was in Hardy-Weinberg equilibrium. The LYQC haplotype, which leads to a p.Gly57Glu substitution in the collagenous region of the protein and to MBL deficiency, was

associated with the susceptibility to HBV co-infection (13/148 or 8.8% in the co-infected vs. 6/232 or 2.6% in the leprosy HBV- patients, OR= 3.63, 95%CI= 1.4-9.8, P= 0.008). This was also reflected by the distribution of LYQC-presenting genotypes: 12/74 or 16.2% vs. 4/116 or 3.4%, respectively, OR= 5.4, 95%CI= 1.7-17.5, P=0.003). **Conclusions**: These results lead us to suggest that, although low, genetically-associated MBL levels are protecting against leprosy infection and the lepromatous form of the disease, they can act as a double-edge sword and actually increase the susceptibility to other co-infections, as HBV. This clearly emphasizes the need of special care to MBL-deficient, leprosy patients in preventing HBV co-infection in South Brazil. **Financial support:** CAPES/CNPq. **E-mail:** iarareason@hc.ufpr.br

Leprosy026- **Leprosy and leishmaniasis, endemics infections affecting the same patient in Rio de Janeiro: a 2 case series report**

Di Luca DG[ab], Nery JAC[a], Sales AM[a], Filho FB[a], Lyra MR[c], Pimentel MIF[c]
[a] **Ambulatório Souza Araújo, Laboratório de Hanseníase, Instituto Oswaldo Cruz (IOC), Fiocruz, Rio de Janeiro, Brazil** [b] **Medicine Faculty, Universidade Federal Fluminense, Niteroi, Brazil** [c] **Instituto de pesquisa Clínica Evandro Chagas (IPEC), Infectology Department, Fiocruz, Rio de Janeiro, Brazil**

Introduction: Leprosy is an infectious disease caused by *Mycobacterium leprae*, affecting over 12 million people in the world. American tegumentary leishmaniasis (ATL) is a zooanthroponosis endemic in the tropics and neotropics, which has an estimated increase of 1.5 million cases every year in all world. The two diseases are endemics and coexistent in Rio de Janeiro, however a leishmaniasis and leprosy infection in the same patient is a rare event with few cases reported in literature. **Material and methods:** Leprosy and the leishmaniasis outpatient clinics at Fiocruz, Rio de Janeiro, Brazil had their database searched in order to find medical records from 2008 to 2012 for cases of leprosy and leishmaniasis in the same patient. The included patients had their clinical data collected and described. **Results:** Two cases of leishmaniasis and leprosy in the same patient are reported. Both patients had an ATL diagnosis. Patient one was a 70 year-old male who presented a nasal obstruction and epistaxis since 2002. He had a past history of borderline borderline leprosy treated in 2000 with the multibacillary multidrug therapy. He developed nasal crusting, diffuse infiltration, fetid smelling and hypoacusis and had an ATL diagnosis in 2010 through a *Leishmania brasiliensis* PCR search of a nasal biopsy. Treatment was conducted with meglumine antimoniate (MA). The second patient was a 59 year-old male who had a leishmaniasis diagnosis made by a lesion biopsy culture in 2006, although he had negative result of the Montenegro skin test. He had 4 ulcerated lesions distributed in the lower part of abdomen and both legs. Treatment and 2 other retreatments were done with MA and the patient also needed an intralesional injection of MA. In 2011 he presented a lesion with sensitivity alteration in the dorsal region, with a diagnosis of tuberculoid leprosy, treated with the paucibacillary multidrug therapy. **Main conclusions:** Doctors need to be attentive to two endemic diseases affecting the same patient simultaneously, even if in different periods of life. Particularly, mucosal lesions are challenging. The possibility of this overlapping must be always kept in mind. **E-mail:** dilucadaniel@gmail.com

Leprosy027- **Leprosy reaction in multibacillary patients coinfected with HIV**

Menezes VM[1],Nery JAC[1], Sales AM[1], Hacker MA[1], Galhardo MCG[2], Sarno, EN[1].
1-Laboratório de Hanseníase, Instituto Oswaldo Cruz (IOC), Rio de Janeiro, Brasil; 2- Departamento de Infectologia, Instituto de Pesquisa Clínica Evandro Chagas (IPEC), Fundação Oswaldo Cruz (FIOCRUZ), Rio de Janeiro, Brasil

Introduction: In the last decade, *M. leprae* and HIV coinfection gained attention due to the relation of reversal reaction and the use of antiretroviral therapy (TARV), mainly in paucibacillary patients. However, few studies about coinfected multibacillary patients were published in the literature. **Material and methods:** A case series study, including all multibacillary leprosy (bacilloscopic index>0) patients coinfected with HIV admitted in the Leprosy Outpatients Clinic Unit at Fiocruz from 1997 until June of 2011. Data from all patients followed up were collected from patient charts. All patients followed a routine dermatological and neurological evaluation. Leprosy was diagnosed and classified according to Ridley-

Jopling criteria. Mitsuda test and initial bacilloscopic index (IBI) were performed at the time of leprosy diagnosis. Disability grade was evaluated by the time that leprosy was diagnosed and at the end of leprosy multidrug therapy (MDT). Statistical descriptive analysis was done using SPSS 16.0. **Results:** 15 multibacillary leprosy patients coinfected with HIV were included in present series. Most of them (73.3%) were men and the mean age was 34.2 (29-39.4). 80% of the patients had no reaction to the Mitsuda test and the mean IBI was 1.9. 60% of the patients had the initial disability grade ≥1. According to the criteria of Ridley and Jopling, 40% of the subjects were classified as *borderline borderline* (BB), 33.3% *lepromatous borderline* (BL) and 26.7% as *lepromatous lepromatous* (LL) leprosy. A great majority of the patients (80%) presented leprosy reaction during the follow up. Leprosy reaction incidence density rate was 75/100 persons-year. From those who developed reaction, 58.3% presented type 1 reaction and 41.7% developed type 2 reaction. Five patients (41.7%) developed reaction before MDT, 33.3% in use of MDT and 25% after MDT. Half of the patients presenting reaction had >20 disseminated cutaneous lesions and 2 (16.6%) patients presented ulcerated skin lesion. Half of the patients needed to be hospitalized for leprosy reaction treatment. The mean time of prednisone use for type 1 reaction treatment was 7 months (2-12) and of thalidomide use for type 2 reaction was 30.4 months (6-106). 3 patients presented type 1 reaction as manifestation of immune inflammatory syndrome. 75% of the subjects were in use of TARV by the time they developed reaction. The mean lymphocyte CD4 count at the time of reaction presentation was 348 (140-742) cells and 3 patients had undetectable HIV viral load when developed reaction. **Conclusions**: Leprosy reaction might occur more frequent in multibacillary patients coinfected with HIV. It is worth noting that in the present series, patients treated with prednisone or thalidomide had a favorable evolution despite disease severity. Further prospective studies are required to more adequately evaluate leprosy reactions in multibacillary coinfected patients. **E-mail:** vmenezes@ioc.fiocruz.br

Leprosy028- **Serological evaluation of ND-O-BSA antigen in serum samples from patients with different clinical forms of the leprosy.**

Bezerra, JM [1,4]; Kanunfre, KA [2]; Cutrin, FA [3]; Ferreira, AW [2,4]
Federal University of Maranhão, Imperatriz, Brazil[1]; Tropical Medicine Institute, University of São Paulo, São Paulo, Brazil[2]; Centro de Dermatologia Sanitária de Imperatriz, Brazil[3], Department of Infectious and Parasitic Diseases, School of Medicine, University of São Paulo, São Paulo, Brazil[4]

Background: Leprosy is chronic infectious disease caused by Mycobacterium leprae. It remains an important public health problem in many countries in Asia, Africa and Latin America. In Brazil, the new cases detection rate for leprosy is high in North, Middle-West and North-East regions. According to Brazilian Ministry of Health surveillance data the state of Maranhão has the third highest rate of new cases detection in people less than 15 years-old, indicating active transmission in this area. Due to the limitation of traditional methods for leprosy diagnosis, efforts have been done to develop auxiliary tools for leprosy diagnosis in high endemic areas. In the current study, we have examined the serological response (total gamma globulin anti-M. leprae) against ND-O-BSA in serum samples from leprosy patients. **Material and Methods:** Sixty-one leprosy patient (26 multibacillary patients encompassing BB, BL. LL forms; 27 paucibacillary patients encompassing BT, TT forms; and eight patients classified as indeterminate form) and twenty-one non endemic control individual sera were obtained after blood was drawn. The leprosy patient sera used in this study were derived from recently diagnosed and previously untreated individuals. Leprosy patients were recruited at Centro de Dermatologia Sanitária de Imperatriz. Maxisorp 96-well plates were coated with 2μg/ml of natural disaccharide with octyl linkage (NDO) of PGL-I, conjugated to BSA (kindly supplied by John Spencer, Colorado State University -USA) in bicarbonate buffer. Serum samples were diluted at 1/200 and incubated for 2h at room temperature. Plates were washed and new incubation with horseradish peroxidase-conjugate total gamma globulin at 1/5,000. After washing, plates were developed with peroxidase color substrate and the reaction was quenched by the addition of 2N H_2SO_4. **Results:** Cut-off value was determined at 1,0 optical density based on Receiver Operating Characteristic Curve. Considering diverse disease spectrum of leprosy the sensibility in multibacillary patients was 96% (25/26), 63% (17/27) in paucibacillary patients and 37% (3/8) in patients classified as indeterminate form. The overall specificity was 90%. **Conclusions:** Our results obtained in multibacillary patients are promising considering the requirements for a serological test. Patients

classified as paucibacillary and indeterminate forms are needed a better definition of clinical and epidemiological criteria to validate the results obtained. **Financial Support:** Fundação de Amparo à Pesquisa do Maranhão- FAPEMA. **E-mail:** mbjanaina@usp.br

Leprosy029- **Immunoexpression of neurotrophins and transforming growth factor in cutaneous lesions of patients with various forms of leprosy**

Aarao, T.L.[S*1].; Soares, L.P.M.A[2].; Moraes,L.S[1].; Pinto,D.S.[3]; Fuzii,H.T[1].; Quaresma, J.A.S[1].
1 UFPA-NMT (Federal University of Pará- Institute of Tropical Medicine), 2UEPA (State University of Pará), 3UFPA-ICS (Federal University of Pará-Institute of health sciences)

Leprosy is a slow and progressive infectious disease that affects the skin and peripheral nervous system. It is an important public health problem in Brazil and in countries around the world due to its capacity of causing permanent physical disability and to present high endemic levels and varied distribution. In Brazil, the State of Para stands out for its high number of cases. Its clinical manifestations are correlated with dusting immunological patterns. The characteristic nerve damage of leprosy is the cause of the deformity in patients. It is related to the invasion of Schwann cells (SC) by Mycobacterium leprae. This process produces marked changes in lesional expression of various factors such as TGF-β, NGF, and its receptor. This study aimed to evaluate the correlation between TGF-β, NGF and NGF-R in clinical forms of leprosy. It was analyzed samples consisted of 50 skin biopsies from leprosy patients assisted at the Clinic of the Tropical Medicine Center-UFPA with confirmed diagnosis of leprosy according to the classification of Madrid. The tissue was marked by immunohistochemical technique in paraffin material according to the protocol of Su-Ming Hsu, et.al, 1981., aiming the anti-TGF-β, anti-NGF and anti-CD271 (for neurotrophin and its receptor) markers. The statistical analysis was performed by the nonparametric Mann-Whitney test and Pearson's linear correlation. The results showed a positive linear correlation between NGF and its receptor in patients with leprosy ($r = 0.7988$, $p < 0.0001$) as well as in several clinical forms of the disease. The study also showed that the rate of NGF and NGF receptor is under direct influence of TGF-β activity in the lesions of patients with various forms of leprosy. Furthermore, the simultaneous expression of these factors during the injury may influence the regenerative process. A better understanding of the *M.leprae*, TGF-β, NGF and NGF-R effects on the CS and especially molecular and cellular mechanisms involved in the interaction M. leprae and CS, as well as the pro-inflammatory and immunosuppressant functions of these factors can contribute to the development of more appropriate and efficient therapeutic strategies. **E-mail:** tinaraleila@hotmail.com

Leprosy030- **Immunoreactivity of dendritic cells in foveolar lesions in borderline leprosy**

Botelho GIS[1], Soares LPM[1], Aarão TLS[2*], Pinto DS[3], Quaresma JAS[2], Carneiro FRO[1]
1UEPA (State University of Pará), 2UFPA-NMT (Federal University of Pará- Institute of Tropical Medicine), 3UFPA-ICS (Federal University of Pará-Institute of health sciences)

Introduction: Leprosy is an infectious disease caused by *Mycobacterium leprae*. It is characterized by skin lesions and neurological disorders. The borderline leprosy is highly complex and is manifested by numerous lesions infiltrated with poorly defined outer edges and an apparently healthily central region, configuring the so-called foveolar lesions. The aim of this study was to analyze the immunoreactive of dendritic cells in the apparently healthy central area and infiltrated edge of the foveolar lesions in patients with borderline leprosy. Material and Methods: Analytical cross-sectional study was carried out with 22 skim samples taken from foveolar lesions of 11 patients with confirmed diagnosis of leprosy. It was used the anti-CD1a and anti-FXIIIa to quantify dendritic cell in skin fragments. Results: We obtained a predominance of CD1a+ and FXIIIa+ cells in the edge of foveolar lesion compared with the central area of the lesion, but only the comparison of FXIIIa+ had statistical significance (p-value = 0,0126). This quantitative increase of dendritic cells at the edge of lesion can be explained by the standard of immune response to *M. leprae*, where there is a greater inflammatory response in this area, since the distribution of *M. leprae* may be concentrated in this region leading to a greater antigenic exposure. Dendritic cells are important in the pathogenesis of infectious diseases as determinants of a cytokine environment

favorable to Th1 immune response through its interrelation cell x bacillus and cell x cell. The differences observed in this study indicate an effective participation of dendritic cells in response to *M. leprae* and, consequently, in the course of the disease. **E-mail:** tinaraleila@hotmail.com

Leprosy031- **IL-17 and IFN-γ expression in lymphocytes from patients with multibacillary and paucibacillary leprosy**

Almeida Neto,F.B[1]; Oliveira, A. F[1,2]; Lorena,V. M. B[3]; Souza, V. M.O[1,2].; Maia, M. B. S.[1]; Costa, V. M. A.[1,2]
[1]Universidade Federal de Pernambuco; [2]LIKA–UFPE; [3]CPqAM – FIOCRUZ.

Introduction: Leprosy is a disabling and stigmatizing disease caused by infection with *Mycobacterium leprae* that primarily affecting skin, peripheral nerves, eyes, testis etc.. The characteristic immunological and clinical leprosy spectrum, classified the disease ranges from tuberculoid or paucibacillary leprosy to lepromatous or multibacillary leprosy. Th1 lymphocytes are crucial in the immune response against *Mycobacterium*. Nevertheless, IFN-γ alone is not sufficient in the complete eradication of the bacteria, suggesting that other cytokines might be required for pathogen removal. Th17 cells have been associated with *M. tuberculosis* infection, but the role of IL-17-producing cells in leprosy remains to be understood. The aim of this work was determine if there is difference of production of IFNγ and IL17 by CD4+ T cells between, multibacillary in comparison with paucibacillary and healthy contacts. **Material and Methods**: In order to assess the production of IFNγ and IL17 by CD4+ T cells, undiluted whole-blood samples from paucibacillary (6), multibacillary patients (15) and healthy contacts (10) were incubated with 1 mL of RPMI supplemented with FCS 10% in cultures tubes (Falcon BD) and stimulated with Phytohemaglutinin (10µg/mL) or BCG (1µg/mL). After 18 h of stimulation, 0.5µl de BD GolgiStop Protein Transport Inhibitor (BD bioscience) was added for the last 6 h. Red blood cells were lysed by addition FACS lysing solution (BD Biosciences). The cells were fixed (BD cytofix), permeabilized in BD Perm Wash/wash TM and stained with CD4 PERCP-CY5.5 (clone SK3), IL17A PE (clone N49-653), IFNγFITC (clone B27) for 30 minutes. Cells were acquired on a FACScalibur, BD Pharmingen and analyzed. **Results**: Patients with multibacillary lesions present less CD4+IL17+ cells (0,53 ± 0,09) when stimulated with BCG (0,53 ± 0,09) or PHA (0,38 ± 0,06) than patients with paucibacillary lesions that had higher CD4+IL17+ T cells stimulated with BCG (1,13 $\pm$ 0,4) and PHA (0,90 $\pm$ 0,06). The frequency of CD4+IFNγ+ cells were also higher on paucibacillary patients with both stimuli, BCG (1,28 $\pm$ 0,4) and PHA (0,92 + 0,4), in comparison with multibacillary patients BCG (0,41 ± 0,05) and PHA (0,36 ± 0,04) and with health contacts patients were CD4+IL17+ stimulated with PHA (0,35 ± 0,07) , BCG (0,37 ± 0,05) and CD4+IFNγ+ with PHA (0,40 ± 0,07) and BCG (0,32 ± 0,05). **Conclusions:** IFNγ is a critical component of the proinflammatory immune response that provides protection against mycobacteria, and can use as a biomarker to detect protective immune response against *M. leprae*, however, our results suggest that IL17 may also have a role on protection of development of the infection. **E-mail:** vlaudiacosta@uol.com.br

Leprosy032- **In situ detection of cytokine profile of th1 and th2 by immunohistochemistry and its relationship with macrophage activity in polar forms of hansen's disease**

Silva, D.D. O[1].; Aarao,T.L.S*[1].; Soares, L.P.M.A[2].; Pagliari,C.[3].; Quaresma, J.A.S[1]; Duarte, M.I.S[3].
1UFPA-NMT (Federal University of Pará- Institute of Tropical Medicine), 2UEPA (State University of Pará), 3USP-São Paulo University

Leprosy is an infectious disease that has a slow and progressive evolution, with high incidence and prevalence in the states that compose the Legal Amazon. Considering the number of cases, Pará state plays a prominent role in the national context. In order to evaluate the cytokine profile and the macrophages activity in the polar forms of leprosy, and correlate with their histopathological aspects, a cross-sectional study was performed, with a sample of 29 patients who had one of the polar forms of leprosy: tuberculoid (MHT) or virchowian (MHV), Skin biopsies of leprosy lesions were taken from those patients. It was observed, through the analysis of this immunohistochemical material, that the studied

groups showed no significant variation in the levels of IL-10, TGF-β, CD68, iNOS and Lysozyme. The levels of IL-4 were not expressive in the analyzed tissues and the levels of IFN-γ were higher in patients in the MHV group. In the virchowian pole, all cytokines tended towards a negative correlation with the macrophages activity. In the tuberculoid pole, the level of IL-10 showed a negative correlation with the levels of iNOS, IFN-γ and lysozyme, indicating a macrophage activity inhibition for this cytokine. It can be concluded that there is no difference in cytokine expression of TH1 and TH2 profile in polar forms of Hansen's disease and cytokines have a tendency to negative correlation with the activity of macrophages in MHV pole and a tendency to positive correlation in the pole MHT. Further research is needed to clarify why some populations have more susceptibility to leprosy than others. A similar study with a larger number of individuals may have a more significant outcome. **E-mail:** tinaraleila@hotmail.com

Leprosy033- **Susceptibility to leprosy is associated with MASP2 haplotypes.**

Boldt, ABW1; Stahlke, ERS2; Steffensen, R3; Thiel, S4; Jensenius, JC4; Messias-Reason, IJT1.
1 Hospital de Clínicas, Federal University of Paraná, Curitiba, BR, 2 Departamento Estadual de Saúde do Paraná, Curitiba, BR, 3 Department of Clinical Immunology, Aalborg Hospital, Aalborg, DK. 4 Department of Medical Microbiology and Immunology, Aarhus University, Arhus C, DK.

Introduction: Mannose-binding lectin (MBL) increases ingestion of intracellular pathogens acting itself as an opsonin and/or by complement-driven opsonization through the activation of the MBL-associated serine protease 2 (MASP2). We formerly identified an association between low MBL levels and protection against severe leprosy. **Material and Methods:** For all 219 patients (37% female, 63% male; 80.4% Euro-Brazilian, 18.7% Afro-Brazilian, 0.9% Amerindian; average age of 50.5 years, range 15-94), leprosy was diagnosed according to the criteria of Ridley and Jopling. The diagnosis at presentation was lepromatous leprosy for 131 patients (60%), tuberculoid leprosy for 21 (10%), and borderline leprosy for 29 (13%); 14 patients (6%) had an undetermined form of leprosy and 23 (11%) were unspecified. Four hundred and five healthy, symptom-free individuals were assessed as control subjects (37.3% female, 62.7% male; 80.7% Euro-Brazilian, 15.3% Afro-Brazilian, 2.2% Amerindian, 1.7% other; average age of 45 years, range 18-89). We haplotyped 11 MASP2 polymorphisms with multiplex sequence-specific PCR and correlated the haploypes with serum levels of 219 Danish healthy blood donors with previously measured MASP-2 levels using a TRIFMA assay**. Results**: Genotype distribution was in Hardy-Weinberg equilibrium. The frequency of the p.126L variant, associated with low MASP-2 levels, was higher in the patients (18/438 or 4.1% vs. 7/810 or 0.9%, P=0.0002, OR=4.92 [95%CI=2.04-11.86]), as was the frequency of genotypes with p.126L (18/219 or 8.2% vs. 6/405 or 1.5%, P=0.00006, OR=5.96 [95%CI=2.3-15.3]). Genotypes associated with low MASP-2 levels, with CRDLAGCDVHC and/or CRDPAGCDART but without CRDPTDVRC or CQDPTDVRC, were more frequent in the lepromatous patients than in those with the other forms (16/131 or 12.2% vs. 1/64 or 1.6%, P=0.008, OR=8.8 [95%CI=1.1-67.7]). The CRDPAGCYVRT haplotype, associated with intermediate MASP-2 levels, was more frequent in the controls (36/810 or 4.4%), than in the patients (9/438 or 2.1%; P=0.02, OR=0.45 [95%CI=0.22–0.95]). **Conclusions**: These results lead us to suggest that, in contrast with MBL, low MASP-2 levels increase the susceptibility to leprosy in general and to lepromatous leprosy in particular. MASP2 genotypes and MASP-2 levels may be used as biomarkers to predict disease progression and treatment. **Financial support:** CAPES/CNPq. **E-mail:** iarareason@hc.ufpr.br

Leprosy034- **Single Plaque Lesion Suspected of Leprosy: Do Molecular Assays Aid Diagnosis?**

Raquel Rodrigues Barbieri, Alice de Miranda Machado, Bernard Kac, Anna Maria Salles, José Augusto da Costa Nery, Suellen Moreira, Milton Osório Moraes Fernando Augusto Bozza, Euzenir Nunes Sarno,
Fundação Oswaldo Cruz, Instituto de Pesquisa Clínica Evandro Chagas

Introduction: Leprosy is a chronic infectious disease caused by the M. leprae, which infects the skin and peripheral nerves causing disabling deformities. In 2010, more than 200,000 new cases were diagnosed in the world, and despite declining detection rates in recent years, leprosy remains endemic in tropical regions. The disease diagnosis is based on clinical aspects, baciloscopic and histopathological findings.

In tuberculoid and borderline-tuberculoid forms the effective cellular immune response from the host destroys most bacilli, making challenging the differential diagnosis with other skin diseases. In the present study, we describe the epidemiological, clinical and histopathological features of patients presenting a single plaque suspected of leprosy, and the accuracy of the PCR for the diagnosis. **Methods:** Cases were retrospectively recruited from the databank of Fiocruz, from January 2008 to December 2011. Sixty-eight patients with a single suspect leprosy lesion were included. The epidemiological and clinical data were collected from the medical records. Two pathologists reviewed skin biopsies samples (H&E) from each patient and discordant cases were defined based on the analysis of a third pathologist. The following parameters were used as probability score: High Probability (HP) – inflammatory infiltrate invading nerve fillets or erector pili hair; Medium Probability (MP): inflammatory infiltrate granulomatosus and not seen nervous fillets; Low Probability (LP): inflammatory Infiltrate granulomatosus with nervous or inflammatory infiltrate nonspecific architecture and an unidentified nervous fillets; Other Dermatoses (OD): inflammatory infiltrate characteristic of other dermatological diseases. The fragments of skin stocked in nitrogen were carried out for DNA extraction and to perform the real-time PCR-TaqMan System-using primers for 16S genes and 85B. **Results:** Sixty-eight patients (39.7% male and 60.3% female) with a median age of 45.7 (range: 12-77 years) were evaluated. The main body segment affected were the limbs in 85.28% of cases, with the main size of 5.47 cm. From the 68 cases studied, 50% were classified as HP, 15% as MP, 10% as LP for the diagnosis of leprosy, and 25% were classified as OD. The PCR was positive in 66% of the sample. From the PCR positive group, 80% were classified as HP and MP of the diagnosis of leprosy. **Conclusion**: In this study, we found a high percentage of agreement between the histopathological diagnosis and the results of PCR. However, we believe that further studies will be needed to define the precise role of molecular assays for the diagnosis of paucibacilary leprosy. **E-mail:** rrbarbi@gmail.com

Leprosy035- **Type 2 Leprosy Reaction Expressing Itself as Erythema Multiforme**

Serra AC, Chaves GMC, Loureiro RR, Nery JAC
Instituto de Dermatologia Professor Rubem David Azulay

Introduction: Leprosy is an infectious disease caused by *Mycobacterium leprae*. In Brazil in 2010, there were reports of 37,610 new cases of leprosy, with 21,414 being the multibacillary type, which is most related to the reaction of erythema nodosum (type 2). This reaction is characterized by the appearance of painful erythematosus nodules, universally distributed throughout the body with preference for the extensor surfaces of limbs and face. **Objective:** To report a case of leprosy reaction type 2 manifesting on the skin such as erythema multiforme. **Case report:** A female patient, 49 years of age, and a resident of Santa Cruz, Rio de Janeiro, was diagnosed in 2009 with multibacillary leprosy, and was treated with MDT for a period of 1 year. At the end of treatment, she noted an exacerbation of her condition, with intense staining infiltration and erythema, localized on the limbs and torso. The patient used 100mg/day of thalidomide and 20mg/day of prednisone, noting a significant improvement, and then maintained the prednisone to date of the current consultation (the patient has been monitored in another healthcare unit so far). However, 6 months ago, new lesions appeared with the same characteristics noted above. She has been to our clinic for clarification of the case. A dermatological examination revealed erythematous-infiltrated and painful lesions, circumscribed with centrifugal growth, elevated borders with vesicles inside, located on the torso and limbs, which are considered to be typical target lesions or signs of iris of Bateman. The diagnosis was erythema multiforme and the patient was again prescribed 100mg/day of Thalidomide. The patient returned 1 month after the consultation, with significant improvement. **Discussion:** Erythema multiforme consists of a syndrome of acute onset, recurrent, self-limited, lasting's for 1-4 weeks, and predominantly affects young adults, especially during the spring or fall. It is estimated that the main cause is infections (herpes simplex virus, *Mycoplasma pneumoniae*, etc.) with a secondary cause relating to the use of drugs such as sulfa drugs or penicillin. It manifests itself initially as erythematous lesions with centrifugal growth, reaching a few centimeters. Erythematosus border is formed around the central part, which is flatter, and purpuric. This is the classic symptom "target" or "Iris." **Conclusion:** This case is related to the presence of a mycobacterial disease (*M. leprae*) which improved with the use of 100 mg per day of thalidomide. This disease involves the increased presence of cytokines known as TNF-alpha which are greatly diminished with the use of the noted drug. **References:** AZULAY,

Rubem David; AZULAY, David Rubem; AZULAY-ABULAFIA, Luna. Dermatologia. 5ª ed., rev. E atual. Rio de Janeiro: Guanabara Koogan, 2011. pp.349-365. **E-mail:** amanda.cohn@yahoo.com.br

Leprosy036- Cytokines pattern in lymphocytes sub-populations of leprosy patients and household contacts residents in Governador Valadares

Marçal, P.H[1];Froes, C.[1]; Branco, A.C.[3]; Cypriano, R.L.[3]; Sarno, E.[2] ; Fraga, L.A[1]
1Universidade Vale do Rio Doce, Governador Valadares, Brazil, 2Fundação Oswaldo Cruz – FIOCRUZ, Rio de Janeiro, Brazil, 3Centro de Referencia em Doencas endêmicas e Programas Especiais – CREDEN-PES/Secretaria Municipal de Saude de Governador Valadares

Introduction: Leprosy is a chronic infectious disease that primarily affects the skin and peripheral nerves, with clinical manifestations that depends on the host immune response to Mycobacterium leprae. **Material and Methods:** The purpose of this study was to evaluate the immunological profile of individuals diagnosed with leprosy and their household contacts residing in Governador Valadares, MG. We worked with 118 individuals. 35 index cases and 83 household contacts. The pattern of cytokine IFN-γ, IL-4, IL-10 intracytoplasmic (flow cytometer) and in culture supernatants (ELISA) was analyzed in a peripheral blood leukocytes population following specific antigen stimulation. **Results:** Patients classified as tuberculoid showed higher frequency of IL-10 high producers cells after challenge with the *M.leprae* crude antigen. However, it was observed a much greater frequency of IFN-γ higher producers cells in this group of patients, when compared to the frequency of this cytokine high producers cells in groups of lepromatous and borderlines patients. The groups of individuals of this two groups (lepromatous and borderline) showed a higher frequency of IL-4 and IL-10 high producers. A comparison between the household contacts (paucibacillary patients contacts and multibacillary patients contacts), showed a higher frequency of IFN-γ high producers cells in the paucibacillary patients contacts group, indicating a profile of possible resistance against the *M. leprae* infection. In contrast, the multibacillary patients' contacts group showed a higher frequency IL-4 high producers. **Conclusions:** It is known that multibacillary patients' contacts are exposed to high bacterial load, which indicates the possibility of an increased risk of disease in this group. Furthermore, due to relationship to index cases classified as multibacillary, we suggest that there may be a genetic predisposition of these individuals develops in the future leprosy in more severe clinical forms. **E-mail:** phfmarcal@gmail.com

Leprosy037- Detection of mycobacterium leprae DNA in leprosy patients and their asymptomatic household contacts

Gama, R.S[1].; Froes, C.[1] ;Barnabe, N.[1]; Osorio, M.[2]; Branco, A.C[3].;Cypriano, R.L[3].; Sarno, E.[2] Fraga, L.A[.1]
1 - Universidade Vale do Rio Doce – UNIVALE, Governador Valadares, Brazil, 2 - Fundação Oswaldo Cruz – FIOCRUZ, Rio de Janeiro, Brazil, 3 – Centro de Referencia em Doencas endêmicas e Programas Especiais – CREDEN-PES/Secretaria Municipal de Saude de Governador Valadares

Classical bacteriological methods for identification of pathogenic bacteria cannot be applied to the diagnosis of leprosy, especially the inability of in vitro cultivation of *M. leprae*. The histopathology and smear microscopy has been used as auxiliary methods for the clinical classification of cases. The advent of molecular biology techniques with good specificity and high sensitivity has been evaluated as tools for early diagnosis of leprosy. **Material and Methods**: The objective of this study was to evaluate the qPCR as a tool to identify *M. leprae*, and to compare the levels of bacterial DNA in samples of dermal scrapings and blood of patients with leprosy and their household contacts. A total of 156 individuals participated in this study, 43 index cases and 113 household contacts. The qPCR was performed to amplify 16S rRNA fragments, specific for the *M. leprae*. **Results:** In our results PCR was positive with 16S rRNA primer in 21 (48.84%) of 43 patients diagnosed with leprosy while the Baciloscopic method was positive in only 13 (30.23%) patients. In relation to household contacts 27 (23.89%) of 113 subjects had bacterial DNA. The levels of bacterial DNA contacts were similar to those of DNA of PB. We conclude that qPCR was able to detect bacterial DNA in biological samples in which the baciloscopic method was negative. Furthermore, a positive qPCR smear was higher than in index cases under 5 lesions. We found that 23.89% of the contacts showed M. leprae DNA in qPCR and that the level of bacterial DNA in these subjects was similar

to the group level CPB, DM 1 and DM 2. Rather, the level of bacterial DNA was significantly lower than in group MB. **Conclusions:** We suggest the incorporation of this technique in the health system, as well as monitoring and prophylactic treatment of contacts positive qPCR as strategies for early diagnosis and control of leprosy. **E-mail:** luciaalvesfraga@yahoo.com.br

Diagnosis and Treatment of Leprosy

Leprosy038- **Efficiency of the serological study in the active search of leprosy new cases in La Habana**

JL Ruiz [a]; AE. Entenza [a]; L. Hurtado[b]; K. Oramas [b]; Z. Hernández [b] y O. Suárez [a]*
a: Laboratorio Nacional de Lepra. Departamento de Bacteriología-Micología. Instituto de Medicina Tropical "Pedro Kourí". La Habana. Cuba, b: Centro Provincial de Higiene y Epidemiología. La Habana. Cuba

Introduction: The control of the leprosy is based on the secondary prevention, with the early diagnosis and the polychemotherapy. The epidemic surveillance is guided to carry out the active search of cases in populations of risk; by means of the dermato-neurological exam (DNE), being been able to also use other investigation methods. The objective of this work is to demonstrate that the employment of a serological technique (UMELISA Hansen) favors the early diagnosis of patient with subclinical or clinical symptoms. **Materials and Methods**: The study was carried out in the period understood among January 2010 until December 2011, the population belonging to the first attention Pedro Fonseca of Punta Brava was included because it presents a leprous focus and contacts of first order of patient of Havana were also included. The investigation of the suspects was carried out by means of DNE and UMELISA Hansen, to people with high antibodies levels against phenolic glycolipid-I of the M. leprae, were followed with serological techniques and DNE, every 6 months, during one year. **Results**: We analyze 62 of those which 5 were positive and they were confirmed by other techniques (0,97%), those people shows subclinical symptoms of the illness. Of 24 contacts that attended the IPK, 4 cases were detected (16%). **Conclusions**: The serological techniques favored the early diagnosis of the illness in people and groups of risk of developing the leprosy**. E-mail:** odelaisy@ipk.sld.cu

Leprosy039- **Detection of IGG and its subclasses against groes and groel mimetic peptides, a new tool in leprosy diagnosis**

Lobato, J.[1]; Capparelli, F.E[1].; Reis, C.[1]; Costa, M.P.[1]; Spenser, J.S.[2]; Brennan, P.J.[2]; Goulart, L.R.[1]; Goulart, I.M.B[3].
1- Nanobiotecnology Laboratory, Genetic and Biochemistry Institute, Federal University of Uberlândia, Uberlândia, Minas Gerais, Brazil; 2- Mycobacteria Research Laboratories, Department of Microbiology, Immunology and Pathology, Colorado State University, Fort Collins, Colorado, United States of America; 3- Leprosy National Reference Center, Clinic´s Hospital, Federal University of Uberlândia, Uberlândia, Minas Gerais, Brazil.

Introduction: Heat Shock Proteins (HSPs), GroES and GroEL, are   targets of   strong human   T-cell response, and a third of the cells responsive to *M. leprae*, recognize these proteins. **Material and Methods:** Monoclonal antibodies mAbs CS-01 and CS-44 were used to select mimetic peptides that are ligands of their Fab portions, by phage display technique. Sera from 54 patients, 48 household contacts and 27 endemic controls were submitted to ELISA with B2 and A1 mimetic clones of the GroES and GroEL proteins, respectively, for detection of IgG and its subclasses. **Results:** Using the mimetic clone of B2 GroES, the ELISA detected IgG antibodies present in sera of patients, contacts and endemic controls. The IgG antibodies were abundant in sera from multibacillary patients, especially in lepromatous (LL). A decline of IgG1 was found in patients and household contacts that became sick with leprosy and a raise of this subclass was present in sera of household contacts that did not develop the disease. With the mimetic clone of GroEL A1, the reactive antibodies were abundant in multibacillary patients, with a correlation with the bacillary load. **Main conclusions:** In this study we observed that IgG

antibodies against GroEL and GroES can be detected in the diagnosis of leprosy in serological tests produced with mimetic clones of these proteins. And the subclasses of IgG antibodies to GroES can demonstrate a targeting of antigenic molecules that induce the production of protective antibodies. **E-mail:** janaina01@yahoo.com.br

Leprosy040- **The anti-pgl-1 serological Elisa test as an important tool in monitoring the treatment of lepromatous leprosy patients**

Costa*, M.P.; Lobato*, J.; Costa*, A.V.; Gonçalves*, M.A.; Goulart**, L.R.; Goulart*, I.M.B
*National Reference Center in Sanitary Dermatology and Leprosy, Clinic´s Hospital, Federal University of Uberlândia, Uberlândia, Minas Gerais, Brazil; ** Mycobacteria Research Laboratories, Department of Microbiology, Immunology and Pathology, Colorado State University, Fort Collins, Colorado, United States of America.

Introduction: Lepromatous leprosy, if diagnosed and/or treated incorrectly, can result in deformities that make the disease a factor of social stigma and discrimination. **Material and Methods:** The humoral immunity of 21 patients with Lepromatous Leprosy was analyzed in the diagnosis, after twelve months of the treatment, and in the end of it, using anti-PGL-1 ELISA test. Results were correlated with the Bacilli Load (BL) from skin smears of the same patients. Finally, cellular immunity was analyzed using Mitsuda´s test. All the patients with the diagnostic of Lepromatous Leprosy were treatment free, coming from the National Reference Center of Leprosy and Sanitary Dermatology, of the Federal University of Uberlândia. They were all treated with multidrugtherapy during 24 months. Within this period, samples of serum were collected to perform the anti-PGL-1 ELISA and skin smears were performed to obtain the BL, in the diagnosis, middle and in the end of treatment. Mitsuda´s reaction was performed only in the diagnosis and in the end of treatment. **Results:** The BL averages declined nearly 10,8% at the end of 12 months, and about 26,8% in the end of the treatment. Following that fall, the ELISA averages reduced 47,2% after the first 12 doses, and approximately 60% in the end of the treatment. All patients had absence of cellular immunity to Mitsuda, in the diagnosis and in the end of treatment. **Main conclusions:** The correct application of the treatment as well as its monitoring are fundamental strategies towards leprosy control because avoid sequelae, relapses and continuous bacilli transmission. For both, anti-PGL-1 ELISA shown to be an essential assessment tool. **E-mail:** mariana.penacosta@gmail.com

Leprosy041- **Greater risk of recurrence after alternative treatment of leprosy**

Nery J.A.C1; de Paula G.P1; Cunha G.S1; Sales A.M1; Perez V.P.F1; Sarno E.N1.
1Laboratory Leprosy - Ambulatory Souza Araújo - ASA -FIOCRUZ - RJ

Introduction: Recurrence of leprosy is characterized as a set of clinical signs and symptoms in activity after discharge by cure and poorly responsive to corticosteroids. The post-treatment reactional states require a delicate periodic monitoring in order to differentiate recurrence. **Objectives:** To elucidate how the treatments with older regimens or alternative that is not the MDT (multi-drug threapy) / WHO(World Health Organization) standard are more related cases of recurrence. **Materials and Methods:** The study analyzed primary data from records of patients with suspected recurrence of the ASA (Ambulatory Souza Araújo), for the period from November 1986 to June 2011. To complete and confirm the diagnosis, patients underwent a dermatological examination, physical therapy, smear, histopathology, PCR of skin biopsy and immuno-serological tests. **Results:** 44 cases were confirmed as leprosy relapse. 26 were male. The average age at recurrence was 46.2 years. 17patients used other schemes that were not the WHO standard. 10 patients underwent treatment with MDT / 6 doses, 8 and 9 patients with 12 and 24 doses respectively. 36 patients had multibacillary recurrence. The mean BI (bacillary index) of the patients relapse was 1.88. The average time between first diagnosis and the diagnosis of relapse was 11.2 years. **Conclusions:** Although the recurrence rate after treatment of leprosy is low, approximately 40% of relapse after multidrug therapy in our department were among the patients submitted to previous treatment regimens or alternative to the current standards proposed by WHO. Financial **Support:** POM / FIOCRUZ, CNPq **Keywords:** Leprosy, risk relapse, treatment alternative. **E-mail:** gdscunha@gmail.com

Leprosy042- **Leprosy reactions in affected individuals after release from multidrug therapy in Brazil's savannah region**

Monteiro LD, Alencar CH, Almeida ATF, Novaes CCS, Barbosa JC, Heukelbach J
Department of Community Health, School of Medicine, Federal University of Ceará, Fortaleza, Brazil; Swiss Tropical and Public Health Institute, University of Basel, Basel, Switzerland; School of Public Health, Tropical Medicine and Rehabilitation Sciences, James Cook University, Townsville, Australia; Tropical Medicine Foundation of Tocantins State; Department of Health Tocantins; Federal Institute of Education Science and Technology of Tocantins, Brazil.

Introduction: Leprosy reactions are inflammatory conditions that occur during the course of leprosy, and are also observed after release from specific multidrug therapy. We describe the frequency of leprosy reactions at diagnosis, at the end of multidrug therapy and in the period after release from treatment, and the association with physical disabilities. **Material and Methods:** The study was conducted in the municipality of Araguaína, a hyperendemic area in north Brazil. The study population consisted of 282 cured persons after release from treatment, 2004-2009. Data were collected from medical records of individuals. **Results:** There were 170 (60.3%) paucibacillary and 112 (39.7%) multibacillary cases. A total of 56 (19.8%) individuals presented with leprosy reactions at diagnosis. In 53 (94.6%%) the episode remained until the end of treatment and another 35 (12.4%) additionally triggered reactions. Of the 88 (31.2%) cases with reactions at discharge, 72 (81.8%) remained with reaction after release from treatment, and 27 (9.6%) new cases of reactions were observed. Leprosy reactions were associated with a higher prevalence of visible deformities (grade 2) at diagnosis (RR=3.57; 95% CI=1.76-7.24), at the end of multidrug therapy (RR=1.42; 95% CI=0.69-2.91), as well as after discharge (RR=2.55; 95% CI=1.79-3.63). **Conclusion:** Leprosy reactions continue to occur after discharge and are an important cause of the development of disabilities, even in individuals who are considered as "cured". Integrated care including this population at risk is needed. This study forms part of the MAPATOPI project, co-financed by the Brazilian Research Council (CNPq) and the Department of Science and Technology of the Brazilian Ministry of Health (DECIT). Process: 576377/2008. **E-mail:** lorenadmonteiro@gmail.com

Leprosy043- **Trends of physical disability during multidrug therapy against leprosy and after release from treatment - Araguaína, Brazil, 2004 – 2009**

Monteiro, L D; Alencar, C H; Braga, K P; Castro, M D; Barbosa, J C; Heukelbach, J.
Department of Community Health, School of Medicine, Federal University of Ceará, Fortaleza, Brazil; Swiss Tropical and Public Health Institute, University of Basel, Basel, Switzerland; School of Public Health, Tropical Medicine and Rehabilitation Sciences, James Cook University, Townsville, Australia; Tropical Medicine Foundation of Tocantins; Federal Institute of Education Science and Technology of Tocantins.

Introduction: Leprosy is still common in Brazil with about 30.000 new cases per year, causing disabilities physical deformities and stigma. Here we describe the trends of physical disabilities over time: at diagnosis, at the end of multidrug therapy and in the period after release from treatment in Araguaína, a hyperendemic leprosy area in North Brazil. **Material and Methods:** We included 282 patients released from treatment after cure, 2004-2009. Data on physical disabilities expressed as the degree of disability (ranging from 0-2) were collected from medical records and from the Notifiable Disease Database (SINAN). After discharge the physical examination of people was performed following the simplified neurological assessment. We compared the physical disability grade in two stages: from diagnosis to the end of treatment and from the end of treatment to post treatment. To analyze the cases were classified as improvement, worsening or remaining the same degree. **Results:** The mean age was 45.8 (amplitude of 15 to 85) and 145 (51.4%) were male. The operational classification paucibacilar was the most frequent 170 (60.3%). From diagnosis to the end of treatment, 44 cases showed physical disabilities, form these, 19 people (6.7%) remained with the same disability degree, 24 (8.5%) improved, 19 (6.7%) worsened and 3 (1.0%) were not assessed at discharge. Among the ones who got worse, 8 (2,8%) developed visible physical disabilities (grade 2). In the second phase, from the end of the treatment to post treatment, 11 (3.9%) remained with the same degree, 18 (6.3%) improved and 71 (25.1%) worsened. 10 (3,5%) developed visible physical disabilities. **Conclusion:** The negative trend of physical disabilities was

evident in both periods. There is a need to establish intensified measures for the prevention of disabilities during multidrug therapy and after release from treatment. The term "cure" should be taken with care in this context, as long-term and sustainable activities of the health system are needed for a prolonged period, even when individuals are not longer considered to be infected. This study forms part of the MAPATOPI project, co-financed by the Brazilian Research Council (CNPq) and the Department of Science and Technology of the Brazilian Ministry of Health (DECIT). Process: 576377/2008. **E-mail:** lorenadmonteiro@gmail.com

Leprosy044- Analysis of cases of Lucio´s Phenomenon in Fernandópolis – SP, between the years of 2001-2011

Gaggini,MCR; Rabelo,JV; Costa, ADRG; Moimáz,TA; Pinto Neto,JM; Cola,CO; Villani,JP; Lenes,MS; Silva,MM.
Universidade Camilo Castelo Branco

Introduction: The Lucio´s phenomenon, also denominated erythema necrotisans, was first described by Rafael Lucio and Ignacio Alvarado in 1852 in Mexico. It is a variant of type 2 lepra reaction, in patients with lepromatous leprosy. It is characterized by outbreaks of erythematous-purpuric maculae, painful, progressing to ulceration and necrosis. It resembles the severe burned, with protein and electrolyte loss. Generally, the lesions may cease after 1 week of treatment or can get to death by sepsis. **Objective:** The objective of this paper is evaluating incidence of Lucio´s phenomenon in the service of infectious diseases of Fernandópolis – SP over the past 10 years. **Materials and Methods:** Retrospective study, from the patient records of CADIP – Service Center for Infectious and Parasitic Diseases – and Santa Casa de Misericórdia de Fernandópolis, between 2001 and 2011. **Results:** According to review of patient records, in the last 10 years, it was found the occurrence of 5 cases of Lucio´s phenomenon, being 4 men and 1 woman, all aged greater than 45 years. Everyone had lepromatous leprosy, however just one patient was in treatment with MB MDT (Clofazimine, Rifampin, Dapsone). The diagnosis of Lucio´s phenomenon was confirmed by histopathology of the lesion, which presented positive baciloscopy, thrombosis of vessels of dermis, ischemic necrosis, endothelial proliferation and inflammation scarce. Multidrug therapy was introduced, in those patients without treatment, associated with Thalidomide and antibiotic therapy specifies with spectrum for Gram positive and Gram negative. With the evolution of the disease, 3 patients died of bacterial sepsis, secondary to skin infection. The rest remains in follow up with the scarring of necrotic lesions. **Main Conclusions:** It is concluded that the Lucio´s phenomenon, in endemic areas of leprosy, has high incidence, representing a very severe reaction with high morbidity and mortality. However, in most studies the mortality is 95%, and this analysis was of 60% due to antibiotic therapy in early. **E-mail:** mgaggini@terra.com.br

Epidemiology of Tuberculosis

Tb001- Prevalence of tuberculosis-infection among professionals of the Family Health Program in the municipality of Rio de Janeiro

Adriana Ferreira de Souza[1,2], Haroldo José de Matos[1,3]
[1] **Mestrado em Saúde da Família, UNESA,** [2] **Secretaria Municipal de Saúde do Rio de Janeiro,** [3] **Instituto Evandro Chagas**

Introduction: The high incidence rates of tuberculosis (TB) in the municipality of Rio de Janeiro (RJ), 70,7/100.000 inhabitants (2010), the character of occupational disease and occupational risk of TB infection prompted this study, whose objectives were to estimate the prevalence of TB infection among professionals of the Family Health Strategy (FHS) in the health program area (AP 3.3) in the municipality of Rio de Janeiro, and analyze the factors associated with the presence of TB infection in FHS professionals. **Methods:** The sample was consisted of 427 health professionals from the FHS AP 3.3 in

the municipality of Rio de Janeiro. Data were collected through a questionnaire and by applying the tuberculin test (Mantoux technique) in the health professionals who signed informed consent. Data analysis was performed using the program EPI-INFO. The level of significance was 5%. To estimate the prevalence rate was calculated confidence interval of 95%. **Results:** The analysis found the prevalence of TB infection among participants was high (45,3%). In relation to the function/occupation the highest rates were found in nursing technicians (34,1%). Technical oral Health (31,1%), Community Health Agents (28,7%) and nurses (22,8%). Significant risk factors were monitoring TB cases and participating in home visits. **Discussion and Conclusions:** It is concluded that in the municipality of Rio de Janeiro, the prevalence of tuberculosis-infection is high among health professionals of the FHS. The main factors associated with this outcome were the high number of cases of the disease, monitoring of TB patients, carrying out home visits to TB patients, and inadequate structure of units for patient care. With the data shown, it is necessary to implement routine measures that reduce the risk of tuberculosis infection professionals in primary health units, including the tuberculin skin test on admission to the professional, which will help in preventing new cases of TB among health professionals working in the FHS. **E-mail:** haroldodematos@gmail.com

Tb002- Clinical and epidemiological profile of patients with tuberculosis in a health unit of Belém-PA

Nascimento, R.G.; Silva, A.T.; Lima, M.N.A.
Federal University of Pará- UFPA, Belém, Pará, Brazil

Introduction: Tuberculosis is an infectious disease, with slow evolution in cycles and higher incidence in conurbations. Even today it is a serious public health problem, not only in Brazil as in other regions of the world. **Objective:** To describe the epidemiological profile, as well as the clinical profile of patients with tuberculosis met in Municipal health Unit of land in the municipality of Bethlehem (PA), in the period between October 2009 and October 2010. Methodology: analysis of patient records of users of both sexes and all ages with a diagnosis of tuberculosis, duly registered in the vademecum. **Results:** Were analyzed, these 60 53 patient records. 38% were males and 39 62% of females literate. The predominant age group was from 21 to 31 years for both sexes (37 74%). 41.51% were unmarried, 41 50% had elementary incomplete, 35 85% were autonomous and 54 72% owned homeownership. The clinical features of patients involved in the research showed that 77.36% had more than a communicant intradomiciliar 58.7% showed positive sputum smear, how prevalent the pulmonary clinic was with 90.57%, 13 20% are living with HIV to HIV, 60 38% have coughing as the most frequent complaint and 60 38% were chest radiography noted the predominance of schema I use for the treatment of TB with 52 83% and noted that 41 51% of patients in the study are still under treatment. **Conclusion:** The results of this survey reinforce the importance of epidemiological data for actions for the prevention of tuberculosis in the region and bearer assistance in health units, recognizing their ways of handling and limitations. **Keywords:** Health services; epidemiology, tuberculosis. **E-mail:** rodgn@hotmail.com

Tb003- Co-infection TB / HIV in the Northeast region: An approach based on the Information System Notification and Disease Surveillance (SINAN).

Nascimento, A.L.A[1]; Sousa, E.A.M[2]; Schindler, H.C[1]; Montenegro, L.M.L[1].
1Centro de Pesquisas Aggeu Magalhães CPqAM/Fiocruz, Recife, Pernambuco, Brasil, 2Faculdade Maurício de Nassau, Recife, Pernambuco, Brasil.

Introduction: It was expected that TB could be eradicated by the year 2000 in develop countries, but the occurrence of infection with Human Immunodeficiency Virus (HIV) caused a change in the epidemiological trend of TB, with that, again presented itself as an important opportunist infection associate with acquired immunodeficiency Syndrome (AIDS). The Northeast region has ideal conditions for the maintenance of high rates of prevalence TB/HIV, due the large populations depleted, impoverished, and also the precarious public health services, contributing, negatively, to the increasing rates of co infection in those geographical areas. Due to the difficulty to establish the actual epidemiological situation in the northeastern states, the aim of this study was to evaluate the co infection

TB/HIV in these states in the period 2008 to 2010. **Materials and Methods:** It was carried out an epidemiological cross-sectional study descriptive, based on cases of tuberculosis occurred in the Northeast region reported to SINAN in period 2008 to 2010. **Results:** During the study period were reported to SINAN in all nine states in Northeastern Brazil a total of 70,982 confirmed cases of tuberculosis: 23,345 in 2008, 24,376 cases in 2009 and 23,261 cases in 2010. During these three years, the federal unit that most reported cases of the disease was Bahia (18,802 cases) and the state where there was a smaller percentage was Sergipe (2004 cases). The co infection TB/HIV occurred in 4.577 cases, revealing an infection rate of 6,4% with a male predominance (70%). Among the nine Northeastern states, the two states where more occurred cases of TB/HIV co infection were Pernambuco (1.525 cases) and Bahia (982 cases). Together, these states accounted more than 50% of TB/HIV co infection cases in the northeastern states in the period 2008 to 2010. **Conclusions:** Brazil is one of the few developing countries with technology and skilled professionals able to treat effectively an individual TB/HIV coinfected, however it's necessary to have a communication between TB and AIDS program to control both diseases. Thus, we suggest the importance of this study as a tool for planning of public policies targeting the northeastern states with the objective of minimizing inequalities and reduce rates of TB / HIV in these states. **E-mail:** biomedico.andre@gmail.com

Tb004- Risk factors for tuberculosis in indigenous, prison, and urban populations in Dourados, Brazil

Estevan, A. O.[1][†], Alves, A. M.[1], D'andrea, G. Z.[1], Oliveira, V. N.[1], Silva, T. A.[1], Figueiredo, V. M.[1] Croda, M. G.[2], Croda, J. H.[1], Rodrigues, M. P.[1], Teixeira, G. D.[1], Bento, D. R.[1]
[1]Faculty of Health Sciences, Federal University of Grande Dourados, Dourados, Brazil; [2]University Hospital, Federal University of Grande Dourados, Dourados, Brazil;

Introduction: Tuberculosis (TB) is one of the greatest problems in Brazilian public health. The average of incidence in Brazil is 47 per 100.000 inhabitants and the country ranks 19th among the 22 countries with the highest number of TB cases worldwide. The incidence in the state of Mato Grosso do Sul is 43/100.000, while this rate in the indigenous population is 230/100.000. The incidence in the inmate population is at least 20 times greater than in the general population. The aim of this study was Identify the risk factors associated with active TB, what is essential for recommending interventions at disease control. **Methods:** A prospective case-control study was conducted between June 2009 and June 2011 in three distinct Dourados populations (urban, indigenous, and prison). Each case reported to the national disease surveillance program was paired with two controls matched by age and geographical location. The data were recorded by double-entry using EpiData software and were analyzed with SAS software. Categorical variables were expressed as proportions, and quantitative variables were described using means (and standard deviations) or medians (and interquartile ranges). Logistic regression was used to evaluate risk factors. **Results:** 137 cases were identified. The annual incidence of TB in the urban population was 16/100,000 inhabitants. In the indigenous communities, the incidence was 206/100,000 and in the prison population was 1,071/ 100,000. In the urban population, multivariate analysis found that male gender [OR, 5.10; $CI_{95\%}$, 1.89-13.77], alcoholism [OR, 12.31; $CI_{95\%}$, 1.90-79.93], history of contact with TB [OR, 5.41; $CI_{95\%}$, 1.33-22.00], BCG scar [OR, 0.24; $CI_{95\%}$, 0.07-0.83], and previous incarceration [OR, 34.60; $CI_{95\%}$, 3.59-333.86] were significantly associated with TB. Individuals in the indigenous population with a higher risk of developing TB included males [OR, 7.00; $CI_{95\%}$, 2.47-19.83], individuals with low per capita income [OR, 4.60; $CI_{95\%}$, 1.08-19.54] and individuals who were illiterate [OR, 3.49; $CI_{95\%}$, 1.37- 8.89]. In the prison population, no variable was significantly associated with TB. **Conclusion:** These results demonstrate that the incidence and risk factors associated with active TB differ across the three populations. Differences in socioeconomic status contribute to the risk of active TB in indigenous communities, indicating that TB prevention should address the social factors that produce unequal health outcomes among this population. **E-mail:** derson16@hotmail.com .

Tb005- Socio-Epidemiological Profile of Tuberculosis in Maranhão the Period 2005 to 2011

Barbosa, D. R. M.[1]; Almeida, M. G.[2]; Martins, L. M.[1]; Silva, K. N. G.[1]; Medeiros, Nunes, A.F., F. G. S.[1]; Silva, T. M. G. V.[2]; Araújo, A. A.[1]
[1] Institute of Higher Education Multiple (IESM), Timon, Maranhão, Brazil, [2] Federal University of Piauí (UFPI), Teresina, Piauí, Brazil

Introduction: The Brazil is included among the 22 countries that contain 80% of existing cases of tuberculosis (TB) worldwide, ie one third of the world population is infected with Mycobacterium tuberculosis. This allocates the category of offense TB infection that kills the world. It is estimated annually about 50 million infected with the bacillus, with 111,000 new cases and 6,000 deaths. There in the State of 22 cities considered priorities for the National Tuberculosis Control. Among other factors, increased poverty, unequal income distribution, urbanization, famine and misery to corroborate the existence of a higher rates of TB, as well as higher morbidity and mortality. Therefore, this study aimed to address the socio-epidemiological study of TB in the state of Maranhão. **Materials and Methods:** Epidemiological study of a retrospective series conducted in the State of Maranhão, through secondary data on 2005-2011. The data sources were System of Disease Notification and publication of the National Health Foundation. **Results:** In the period covered, have been reported in Maranhão 18 811 (X = 2687) confirmed cases of TB, and 11,419 (60.70%) cases were male and 7,392 (39.30%) female cases. This shows a sex ratio of 1,54:1. The curve is upward prevalence of TB by 2005 (n = 3382), which represents the inflection point from which the rate slowly decays to a minimum of 2389 (12.70%) in 2011. The fall of 29.36% in this short space of time reflects a substantial change in public policies aimed at the subject and expands your network and effectively through the active search for treatment of patients diagnosed. Throughout the period there is a significant relationship between education and TB, marked deviation to the left, with 18.13% illiterate, 25.25% in the range of 1st to 4th grade, all other intervals of schooling remain with little change (X = 5.08), except for the 5th to 8th grade, when there is a new peak of 16.00%. The lower prevalence in higher education occurs when incomplete. Blacks and browns represent respectively 15.15% and 62.62% of the reported cases, accounting for 16 white, 76%, Indians 2.01% to 1.46% and yellows. **Conclusion:** In addition to strictly biological aspects related to infection, TB assumes peculiar characteristics by conditioning lifestyles, family structures reorient and territories in the communities where they have a higher prevalence. Why be transmitted via droplets, close contact of people in an unhealthy environment, with poor medical-sanitary conditions, health education and lifestyles potentially harmful virtually extends far transmissibility of the disease. There was greater compared to the black male race and low education, group subjected to poor living conditions and work, is an important risk group TB. **E-mail:** ddebora.regina@gmail.com

Tb006- Comparing indigenous and non-indigenous health care against tuberculosis in Dourados

Rodrigues, M. P.[1] [†] , Croda, J. H.[1] , Martins, N. G.[1] , Estevan, A. O.[1] , Ota, M. M.[1] , Oliveira, G. C.[1] , Maldonado, V. C.[1] , Cazanti, R. F.[1] , Pardins, J. P.[1] , Lemos, E. F.[1]
[1] Faculty of Health Sciences, Federal University of Grande Dourados, Dourados, Brazil;

Introduction: Several studies have demonstrated the impact of Directed Observed Treatment (DOT) implementation on the reduction of treatment default and case fatality. In Dourados, the National Health Foundation (FUNASA) is responsible for monitoring and treating tuberculosis (TB) at the indigenous reservation. The municipal service is responsible for the treatment and monitoring of non indigenous patients with TB, performing the self-administered treatment or DOT. The aim of this study was evaluate and compare the health care of indigenous and non-indigenous against TB. **Methods**: Prospective cohort study was performed from June/2009 to June/2011, in Dourados. Inclusion criteria were: Patients diagnosed with tuberculosis, notified by the epidemiological surveillance (SINAN) and residing in this city. Participants were interviewed at home using the Primary Care Assessment Tool (PCAT), prepared by Villa & Ruffino-Netto/2009. Data were entered in duplicate in Epidata3.1, and analyzed by SAS 9.1. The chi-square test and Fisher exact tests were used for categorical variants. The t-test or Kruskal-Wallis test

was used for continuous variants. The non parametric variants were measured by the Likert scale. **Results:** 124 participants were included. The sample profile was: 62.1% were male and 37.9% female; 50.8% were indigenous and 49.2 non-indigenous and mean age was 30.1 and 41.6 years, respectively. In the indigenous, the illiterate and monthly per capita rent was 37.9% and $ 56.07 dollars, respectively. In non indigenous, these rates were 12.9% and $ 252.6 dollars, respectively. Comparing indigenous and non-indigenous, the results were: indigenous does not spend money to arrive in the Primary Care Units (PCU) (4.37 ± 1.79 in indigenous versus 3.80 ± 1.75 in non-indigenous, p = 0.018); they usually miss commitment or work due to consults (2.81 ± 2.17 versus 3:50 ± 1.80, p = 0.03). In addition, this population always tend to receive visits from health professionals at home (4:35 ±1:45 versus 1.96 ± 3.17, p = 0.0004) and to be treated at the nearest PCU (4.26 ± 1.73 versus 3.76 ± 1.80, p = 0.04). Furthermore, health professionals ordinarily deliver the daily medications in the home of indigenous, while non-indigenous practice self-administered treatment (4.58 ± 0.89 versus 1.69 ± 1.9, p <0.0001). **Conclusion:** Although the diagnosis access was similar for both populations, treatment success was better in the indigenous. The improvement of diagnosis access could ensure better prognosis. In addition, the quality of treatment should be improved in non-indigenous comparing to indigenous. **E-mail:** donaestoica@hotmail.com

Tb007- **Tuberculosis among indigenous people in the State of Amazonas, Brazil, (2001 to 2010)**

[1,2]Viana PVS; [3]Orellana JDY; [2]Oliveira JD; [1]Basta PC
1Escola Nacional de Saúde Pública, Fundação Oswaldo Cruz, Rio de Janeiro, Brasil. 2Escola de Enfermagem de Manaus, Universidade Federal do Amazonas, Manaus, Amazonas, Brasil. 3Instituto Leônidas e Maria Deane, Fundação Oswaldo Cruz, Manaus, Amazonas, Brasil.

Introduction: Tuberculosis (TB) remains a public health priority in Brazil, reaching levels of concern in certain social groups, particularly among indigenous people. Although precarious, the data available in the National Notification System (SINAN) indicate high incidence rates and higher than those recorded in non-indigenous people. The aim of this study was to describe the epidemiological profile of the TB cases reported in the indigenous population of Amazonas, Brazil. **Materials and Methods**: This is a descriptive and retrospective study that used as data information SINAN in the period 2001-2010. For the calculation of incidence coefficients, was used in the numerator the new cases reported in the period and to define the base of population of the denominator, we used geometric interpolation, with reference to the national censuses of 2000 and 2010. Were selected the following variables: gender, age, group, clinical form, HIV serology, situation of closure and municipality notification. **Results:** Altogether 1767 cases were reported among indigenous people, with an incidence rate of 104.0 / 100 000 inhabitants. It is noteworthy that in the period 2001-2005 the incidence was 119.1 / 100,000, while in the period 2006-2010 was 91.7 / 100,000 Of this total 56.0% of cases were reported in indigenous people males. The most affected age group was 15-59 years (62.9%), and the predominant clinical form was pulmonary (84.9%). The cure rate was 73.7% in the period 2001-2005, and 65.6% between 2006-2010. Also noteworthy is the increase in the proportion of TB deaths by 0.6% during 2001-2005 to 4.7% between 2006-2010. It should be noted the emergence of two MDR-TB cases in the second period. The Co-infection with HIV was reported in 0.6% of reports, with most cases (91%) concentrated in the period 2006-2010. Draws attention to non-realization of serology in 84.1% of notification. As regards to the municipality of residence, 38.0% of cases were reported in São Gabriel da Cachoeira. **Conclusion:** Despite the reduction in incidence in the period 2006-2010 compared to 2001-2005, this indicator remained high throughout the period and was higher than those reported in the Brazil and the State of Amazonas. Cure rates among indigenous people were below those recommended by WHO, especially in the period 2006-2010. Moreover an increment of 7 times the frequency of deaths was observed when comparing the two periods, revealing the severity of cases and service difficulties for the correct follow up. **E-mail:** paulovictorsviana@gmail.com

Tb008- Epidemiologic profile of tuberculosis cases notified in the state of Rondônia, Amazon

Fogaça, RMMD; Vieira, NN; Miranda, NA; Teixeira, IBJ; Sousa, CM
Faculdade São Lucas, Porto Velho, Brasil

Introduction: Currently, tuberculosis (TB) still has been one of the infectious diseases with higher mortality rates in the World. Epidemiological data show us how this disease has behaved for several years, reducing its index in some instances, however, also increasing its drug resistance. The TB is an infectious bacterial disease caused by *M. tuberculosis*, that thrives in environments with popular concentration, poor sanitary conditions and low socioeconomic status and chronic debilitating diseases. The Epidemiological surveillance allows knowing the evolution of the disease, since the data on incidence, morbidity and mortality, distribution and risk factors and trend over time, generating useful information for control actions. In the Amazon region, specifically in the State of Rondônia, occur differences between municipalities, ethnic groups and socioeconomic strata, being this evidenced in variations in prevalence and incidence rates. The study aimed to analyze, during the years of 2001 to 2010, the TB incidence in Rondônia by age bracket, gender, year and cohort study in cases with smear-positive and smear-negative (BK + / -). **Material and Methods**: This research is based on a retrospective study of epidemiological data of TB in Rondônia, which were provided by AGEVISA. The National data were obtained in DATASUS. **Results**: The study by age bracket TB infected cases between the years of 2001 and 2010 showed prevalence in patients aged between 15 and 44, coinciding with the predominant age in HIV-infected, suggesting that both diseases may be associated in the state. The male was the most affected by the disease throughout the period, confirming the national index. The incidence rate of TB in Rondônia between 2001 and 2010 showed a propensity to fall, similar to data from Brazil. The study cohort of pulmonary tuberculosis BK + / - shows a variable index of healing and abandonment. The death notifications vary from year to year, with a gradual increase from 2009. It was also recorded isolated cases of multidrug-resistant TB. **Conclusions**: The reality of Rondônia notified in the system of health control and surveillance shows an intermediate incidence rate and a non-uniform distribution of cases, being this fact evidenced in variations of the index belong the years of study respondents. Since TB has been a problem in Public Health, it's important the revelation its real epidemiological profile, to facilitate the searching for innovative methods of dealing with the disease in the state of Rondônia. **E-mail:** camila@saolucas.edu.br

Tb009- Tuberculosis among the indigenous and extreme poverty in the Brazilian borderland

Melo, T.E.M.P
National Program for Tuberculosis Control, Ministry of Health, Brasilia, Brazil

Introduction: The Brazilian borderland presents itself economically undeveloped, marked by difficulty of access to public goods and services, lack of social cohesion, for public security problems and the precarious conditions of citizenship. It is characterized by its geographical range of a 150 kilometers wide along the 15,719 kilometers of border, covers 11 units of the federation brings together approximately 588 municipalities and 10 million inhabitants. This study focuses on tuberculosis (TB) among the indigenous and extreme poverty in the municipalities the Brazilian borderland. **Material and Methods:** This was an ecological study descriptive data aggregated by area, with the units of analysis of all municipalities the Brazilian borderland that reported new cases of TB among indigenous in 2010. The database refers to cases of TB was obtained from the "Sistema Nacional de Agravos de Notificação" (National System Notifiable Diseases) and was obtained from the Demographic Census 2010. To stratify the database software was used TabWin®, the data were analyzed in Excel® spreadsheets, and to geoprocessing the TerraView®. The variables selected were: municipalities reporting, year of diagnosis: 2010; entry type: new case our not know; color/race: indigenous, foreclosure situation: cure, abandonment, death from TB, died of other causes, multidrug-resistant TB and ignored/white. The municipalities were characterized by: indigenous resident representative, representative of new cases of TB in the indigenous in the general population and expression of extreme poverty municipalities. **Results:** Of the 5,565 Brazilian

municipalities, 588 (10.6%) are located along the border. Of these, 467 (79.4%) have indigenous, 67 (14.3%) reported new cases of TB among the indigenous and eight (1.7%) are border towns. It is noteworthy that the 67 municipalities, 43 (64.2%) have indigenous representation above 5.0% from the total resident population. The extreme poverty in 43 counties ranged from 6.6% to 65.7%. The representativeness of new cases of TB among indigenous in relationship the general population ranged from 0.9% to 100.0%. The incidence rate among the general population ranged from 6.1/100,000 inhabitants to 131.0/100,000. Among the indigenous the incidence rate ranged from 13.4/100,000 inhabitants to 100.000/100.000. **Conclusion:** The strengthening of TB control activities in the Brazilian borderland should be increased, in view of the extreme poverty and lack of access to public goods and services in these territories. **E-mail:** tatiana_eustaquia@yahoo.com.br

Tb010- **Tuberculosis in a mid-sized town of Southeastern Brazil**

Duarte, M. A. G.; Ramos, M. G.; Andrade, V. L.; Xavier, M.O. C.N.; Gollner, A.M.
Faculdade de Ciências Médicas e da Saúde JF; Departamento de Vigilância Epidemiológica e Ambiental da Prefeitura Municipal de Juiz de Fora/Hospital Universitário da UFJF; Hospital Universitário da UFJF; Faculdade de Medicina da UFJF/ Hospital Universitário da UFJF. City: Juiz de Fora, Brazil

Introduction: Tuberculosis, an infectious disease caused by *Mycobacterium tuberculosis*, although typically affecting the lungs (pulmonary tuberculosis) has the potential to affect other sites (extra-pulmonary tuberculosis). It is the second cause of death due to infection worldwide, and the fourth in Brazil (4.6 thousand deaths / year). The appearance of new cases and the increase in the number of deaths, chiefly in developed countries (7-8 million cases and 1.3-1.6 million deaths), led the WHO to declare tuberculosis a worldwide emergency in 1993. In 1996, the WHO launched a tuberculosis control program: directly observed therapy short course (DOTS) strategy, aiming to reach 85% cure rate, 70% case detection rate and 5% dropout rate by 2015. The DOTS strategy was implemented in Brazil in 1998, through the National Tuberculosis Control Plan *(Plano Nacional de Controle da Tuberculose* – PNCT). According to data from the Ministry of Health, Brazil recorded 71,930 new tuberculosis cases in 2010, with 2.4% case-fatality rate. The Southeastern region has the largest number of cases (32,724 in 2010). Although Minas Gerais state has one of the lowest incidence rates (20:100,000 inhabitants), with a sustained case-fatality rate of 1.5%, since 2006, dropout and cure rates are not satisfactory. In order to meet the WHO guidelines, the state implemented, in 2005, the PNCT, which includes increased coverage of humanized and supervised treatment and improvement of the public laboratory network for acid-fast bacilli (AFB) microscopy and culture. The aim of this study was to analyze the present situation of tuberculosis in the municipality of Juiz de Fora-MG, Southeastern Brazil. **Material and Methods:** This was a descriptive statistical analysis of tuberculosis in Juiz de Fora, a mid-sized town which implemented the PNCT. There were 1,214 patients diagnosed with tuberculosis, after meeting the following criteria: productive cough for three weeks or more, fever, weight loss and appetite loss, with microbiological confirmation through AFB microscopy and/or culture of a pulmonary or extrapulmonary specimen, and/or radiological findings suggestive of tuberculosis. **Results:** Cure rates were 78.72% and 80.40%, in 2006 and 2010, respectively. The 2011 data have not been consolidated yet, as 161 patients of the 276 recorded ones are still on treatment. Mean case-fatality rate during the period was 2.23%. Dropout rate was 7% (85 patients). Tuberculosis/HIV co-infection was found in 10%. Tuberculosis/alcoholism was a more frequent association. **Conclusions:** Cure and dropout rates are close to what the WHO recommends, underlying the commitment of the municipality to the PNCT guidelines. **E-mail:** maria.augustagd@gmail.com

Tb011- **Tuberculosis in a prison of Risaralda, Colombia, epidemiology and implications for a control program**

Castañeda-Hernández DM,* Martínez-Ramírez JE,** Rodríguez-Morales AJ.***
***Tuberculosis and Leprosy Program, Secretaría de Salud y Seguridad Social de Pereira and Fundación Universitaria del Área Andina, Seccional Pereira; ** Instituto Nacional Penitenciario y Carcelario (INPEC); ***Infection and Immunity Research Group, Faculty of Health Sciences, Universidad Tecnológica de Pereira**

and Office of Scientific Research, Cooperativa de Entidades de Salud de Risaralda (COODESURIS); Pereira, Risaralda, Colombia.

Introduction: Tuberculosis (TB) is one of the most globally important infectious diseases and its occurrence in risk groups, with HIV/AIDS, indigenous population, individuals living in extreme poverty and overcrowding, such as those in prisons, even more. For these reasons, the objective of this study was to assess the occurrence of TB among the population of prisoners in a local medium security penitentiary of Risaralda, Colombia, 2010-2012. **Materials and Methods:** Epidemiological study on morbidity-mortality and clinical-therapeutical evolution of the prisoners, at the TB program, making clinical, epidemiological and bacteriological diagnosis, was done. Cumulated incidence and mortality rates comparing them with those of the general population at the same municipality were analyzed. **Results:** Between 2010 and 2012, seven prisoners with TB (AFB+), from a total of 1,508 registered prisoners at the penitentiary were diagnosed (cumulated incidence=4.64 cases/1,000pop., 2.99 in 2010 and 2.13 in 2011). Mean age was 40.5 y-old (100% males), all were pulmonary disease. All of them received voluntary counseling and testing for HIV, one of them was HIV+. Three of them are under anti-TB treatment, 2 were transferred, 1 finished treatments and 1 was a therapeutical failure. **Main Conclusions:** Comparing the 2011 TB incidence among prisoners with that of the general population (0.67/1,000pop.) that was 3.19 times higher in that risk population. In 2010 in Pereira was 0.66/1,000pop., then being 4.54 times higher in prisoners. These results have important implications in public health as well in the management and evolution of TB in these individuals, persistence of infection, drug-resistance and potential transmission to those that can be around these prisoners. For these reasons strategies oriented to bring an integral, social, epidemiological, clinical, diagnostic and therapeutic management, are proposed. **Acknowledgments:** Thanks to the INPEC for its cooperation in this study. **Funding:** Cooperativa de Entidades de Salud de Risaralda (COODESURIS). **E-mail:** ajrodriguezmmd@gmail.com

Tb012- **Death by verbal autopsy in tuberculosis on the Fortaleza city - 2009-2011**

Amaral, H.E.G.; Gomes, F.J.; Freitas, V.L.; Andrade, L. G.; Morais, J.P.; Carneiro, M.P; Paiva, R.A.C.; Pinheiro, A.C.; Cavalcante, M.S.; Rouquayrol, M.Z.
Secretaria Municipal de Saúde de Fortaleza

Introduction: Tuberculosis as a public health problem that requires a collective effort to change their patterns endemic. In 2000, the Ministerial Conference on Tuberculosis pointed out the socioeconomic implications and solutions, defining their battle as a global priority. Faced with this situation, the Epidemiological Surveillance of the Fortaleza city in conjunction with the coordination of the six Regional Executive Secretariats decided to conduct an investigation of the growing number of deaths reported to evaluate the clinical framework in the capital, through verbal autopsy. **Material and Methods:** This study consisted of a structured questionnaire administered by professionals in the health units in TB patients in their homes, through the death certificates found in Mortality Information System (SIM) in the period 2009 to 2011. These data were compared with the database of the National Information System for Notification Diseases (SINAN) then notified to the Epidemiological Surveillance Cell of the Department of Health of Fortaleza, where they are tabulated and analyzed in Tabwin (DATASUS) by the technical group. **Results:** During the study period, according to the SIM, there were 339 individuals whose Deaths statements showed Tuberculosis as the cause of death. Of these, only 186 (54.8%) were investigated, representing a little over half of the total, 52 (28.0%) women and 134 (72.0%) in men. Their ages ranged from 15 to 94 years old. The sites of occurrence were: One (0.5%) in an Ambulance, 54 (29.0%) at home, 116 (62.3%) in a hospital, nine (4.8%) were ignored and three (1.6%) were homeless. Another relevant fact was that 67.7% of 186 investigated were previously administered the treatment for tuberculosis which suggest a possibility of a selection and drug resistance of the bacillus and or absence of a directly observed treatment. We examined 372 individuals who had direct contact with the patients, which represented half of them. Regarding income, 69 (37.1%) reported receiving one minimum wage, 27 (14.5%) two times the minimum wage and 76 (40.8%) people were in extreme poverty, which ranged from no minimal monthly salary to receiving assistance from the Family Aid Program. Finally, two were listed Multi Resistant TB, two extra-pulmonary TB, 19 reported use of tobacco and alcohol, seven patients were co-infected with TB - HIV, seven other people on the street and 10 people including pathologies associated with disease mental. 12 were reported with drug addiction. **Conclusion:** TB is associated to poverty and unequal

income distribution. The outbreak of multidrug-resistant tuberculosis makes the problem worse. People affected by TB become sick and die in the most productive age groups of their lives. These points to an urgent discussion on the effectiveness of strategies and policies adopted so far. Thus, it is necessary to invest on sanitation, housing, on improving the qualification services, enable healthcare professionals to monitor surveillance activities, evaluate it systematically, expand the capacity for early detection of tuberculosis, promote healing and increase the respiratory symptomatic search, and effectively perform directly observed therapy for all patients every day. **E-mail:** heloisa_gurgel@yahoo.com.br

Tb013- Description of cases of disease of the state of Pernambuco MNT (July 2010 to October 2011)

Lima, A. S., Neves, M. M. C., Schindler, H. C., Duarte, R. S., Montenegro, L. M. L.
Research Center Aggeu Magalhães / FIOCRUZ, Recife - PE - Brazil

Introduction: The genus Mycobacterium consists of complex species called Mycobacterium tuberculosis and other nontuberculous mycobacteria (NTM). The MNT may also cause disease in humans; they are spread in nature and, unlike the species of Mycobacterium tuberculosis complex, show pathogen variability. The ability of NTM to produce disease is clearly documented in the literature, and its importance has been increasing steadily, with isolates of different species in laboratories, as well as post-surgical infections. **Goal:** The objective of this study was to describe cases of mycobacterial infections by NTM in the state of Pernambuco, in the period June 2010 to October 2011.**Method:** A descriptive study was conducted using confirmed cases of mycobacterial infections by NTM in the State of Pernambuco. The culture of clinical specimens from suspected cases of mycobacterial strains and biochemical tests were performed at the Central Laboratory of Public Health - Dr. Milton FUSAN Sobral Bezerra (LACEN - PE) and molecular identification technique using sequencing of 16S rRNA genes hsp65 and mycobacterial slow growth and rpoB for rapidly growing mycobacteria was performed in the laboratory of the Research Center Immunoepidemiology Aggeu Magelhães. **Results:** We identified 31 strains of NTM isolated from clinical specimens from 16 patients with suspected mycrobacteriosis in Pernambuco state between July 2010 and October 2011. The patients were from public and private hospitals in the state. We observed a frequency of 56.25% (n = 9) of cases in males and 43.75% (n = 7) in women. Pulmonary diseases accounted for as many cases 81.25% (n = 13), while the extrapulmonary represented 18.75% (n = 3) of all cases. With regard to identification of strains using the technique of sequencing, 51.61% (n = 16) were identified as M. kansassi, 19.35% (n = 6) were identified as *M. fortuitum*, 16.12% (n = 5) M. bolletti, 9.67% (n = 3) M. abscessus and 3.22% (n = 1) M. wolenskyi. In most cases of pulmonary disease, 66.66% (n = 8) were isolated from the strain identified as M. kansassi, followed by M. bolletti which was present in 16.66% (n = 2), 8.33% (n = 1) is M. abscessus and 8.33% (n = 1) is *M. fortuitum* was isolated in at least two consecutive samples of sputum. In cases of extrapulmonary disease strains were identified *M. fortuitum* in 66.66% (n = 2) and M. wolenskyi 33.33% (n = 1) cases of extrapulmonary disease in these species were isolated from mammary secretions of patients undergoing breast surgery. **Conclusion:** The analysis of cases of diseases caused by NTM in Pernambuco in this study confirms the importance to investigate and monitor the dynamics and magnitude of these infections in different regions in the country, especially the northeast where there are few studies that reflect the situation of these diseases. There is in the northeast a reference service in the identification and characterization of MNT making it even more difficult and prolonged the diagnosis of these pathologies, besides the lack of epidemiological information, both with regard to the species involved in these diseases as the number of cases and clinical mycrobacteriosis in the states of this region. **Keywords:** NTM, Pernambuco. **Email:** andreasantoslima@hotmail.com

Tb014- Tuberculosis in the elderly: previous experience and knowledge in Recife, Brazil

Cardoso, MD; Ramos, APCJ; Silva, TCJ; França, RS
University of Pernambuco (UPE) - Recife, Brasil;

Introduction: Tuberculosis reaches the twenty-first century as a public health problem not resolved by entering into an epidemiological context itself influenced by socioeconomic and demographic transition, since the world has led to a populational aging. By having its transmission preferentially linked to airway disease in the elderly is a senescent respiratory system, reducing their defense mechanisms, which further increases the risk of infection and disease from reactivation of latent foci. In Brazil, little is known about the different behavior of tuberculosis in the elderly. This study aims to describe previous experiences and knowledge about tuberculosis among elderly users of health services and programs and projects to extend the campus of the University of Pernambuco. **Methods:** A descriptive exploratory study of a representative sample composed of 99 elderly. Data were collected using a structured questionnaire with the signature of TCLE. The questionnaires were entered into EXCEL and analyzed using the SPSS statistical package. **Results:** The mean age was 67.7 years (± 5.4), 74% female, 47.5% were single or widowed, and 13.1% lived alone at home. As for income, 73.7% receive less than two minimum wages, and only 10.2% receive more than three minimum wages. As for education and occupation, 25.3% were illiterate and 24.2% still develop remunerated labor activities. With reference to knowledge about TB, 100% have heard about the disease as a facilitator of information with the TV (70.7%), 93.9% described the disease as infectious and contagious; predominantly bacteria as the causative agent (79, 6%) and the main signs and symptoms cough (97%). Sputum examination was considered the primary means of diagnosis (77.8%), and 78.8% believe that the health post should be sought in the presence of symptoms, and antibiotics (87.9%) treatment to be targeted. Malnutrition (82.8%) was considered the main factor for the emergence of tuberculosis and as prevention ventilated places with 73.7% of the reviews. As for previous experiences and family history, 94.9% reported they were never affected by the disease, however, 39.4% reported case in the family, of which 23.2% had their diagnosis confirmed in hospital and that the same 78 9% are cured. 92.1% believe in the cure of disease. **Conclusion:** Despite the low education, population studied demonstrated a good knowledge about tuberculosis which was acquired mainly through the media, showing that communication programs can be more effective in disseminating information about diseases in the time that this population is exposed. A large proportion of family case report shows the high exposure to the disease in this population. **E-mail:** miriandomingos@yahoo.com.br

Tb015- **Tuberculosis in prisons of Honduras, epidemiology and implications for a national control program**

Zambrano LI,* Reyes-García SZ,* Rodas-Ortez H,* Maldonado M,** Castañeda-Hernández DM,*** Rodríguez-Morales AJ.****
*Faculty of Medical Sciences, Universidad Nacional Autónoma de Honduras (UNAH), Tegucigalpa, Honduras; **National Program of Tuberculosis Control, Secretaría de Salud de Honduras, Tegucigalpa, Honduras; ***Tuberculosis and Leprosy Program, Secretaría de Salud y Seguridad Social de Pereira and Fundación Universitaria del Área Andina, Seccional Pereira; ****Infection and Immunity Research Group, Faculty of Health Sciences, Universidad Tecnológica de Pereira and Office of Scientific Research, Cooperativa de Entidades de Salud de Risaralda (COODESURIS); Pereira, Risaralda, Colombia.

Introduction: Tuberculosis (TB) is one of the most globally important infectious diseases and its occurrence in risk groups, with HIV/AIDS, indigenous population, individuals living in extreme poverty and overcrowding, such as those in prisons, even more. For these reasons, the objective of this study was to assess the occurrence of TB among the national population of prisoners in the 24 correctional centers of Honduras, 2007-2011. **Methods:** Epidemiological study on morbidity trends of TB in prisoners, at the national TB program; where clinical, epidemiological and bacteriological diagnosis, was done. Annual incidence rates were compared with those of the general national population of the country. **Results:** Between 2007 and 2011, 466 prisoners were diagnosed with TB (AFB+), ranging from 72 cases in 2007 to 121 in 2011, which occurred among a total population ranging 10,496 to 13,000 prisoners in that period, which represented incidence rates ranging 686.0 cases/100,000 pop. to 930.8 cases/100,000 pop. The trend for the incidence is not significant, but increasing (r^2=0.6711; F=6.123; p=0.0897). **Main Conclusions:** Comparing the TB incidence among prisoners with that of the general population (which ranged 36.8 to 39.3 cases/100,000pop. for the same period) the difference represented between 17.5 to 24.1 times higher incidence rate among them than in the rest of people. These results have important implications in public health as well in the management and evolution of TB in these individuals,

persistence of infection, drug-resistance and potential transmission to those that can be around these prisoners. For these reasons strategies oriented to bring an integral, social, epidemiological, clinical, diagnostic and therapeutic management, are proposed. **Acknowledgments:** Thanks to the Honduras National TB Program for its cooperation in this study. **Funding resources:** Cooperativa de Entidades de Salud de Risaralda (COODESURIS). **E-mail:** ajrodriguezmmd@gmail.com

Tb016- Epidemiology of tuberculosis among homeless persons, municipality Pereira, Risaralda, Colombia, 2007-2010 and a project proposal for the improvement of its approach and evolution

Castañeda-Hernández DM,* Rodríguez-Morales AJ.**
*Tuberculosis and Leprosy Program, Secretaría de Salud y Seguridad Social de Pereira and Fundación Universitaria del Área Andina, Seccional Pereira; **Infection and Immunity Research Group, Faculty of Health Sciences, Universidad Tecnológica de Pereira and Office of Scientific Research, Cooperativa de Entidades de Salud de Risaralda (COODESURIS); Pereira, Risaralda, Colombia.

Introduction: Tuberculosis (TB) is one of the most globally important infectious diseases and its occurrence among risk groups, with HIV/AIDS, indigenous populations, individuals living in crowding conditions, extreme poverty, such as those homeless persons (HLP), even more. For these reasons, the objective of this study was to assess the occurrence of TB among the registered HLP of the municipality Pereira, 2007-2010 and design a proposal for the improvement of its approach and evolution. **Materials and Methods:** Epidemiological study on morbidity-mortality and clinical-therapeutical evolution of the HLP municipality registered population, at the TB program, making clinical, epidemiological and bacteriological diagnosis. Cumulated incidence and mortality rates comparing them with those of the general population at the same municipality were analyzed. **Results:** During the study period, 74 HLP with TB were evaluated, from a total of 1,470 registered HLP (from the Social Development Secretary of Pereira) (cumulated incidence=50.3 cases/1,000pop., range 5.44 to 22.44; year 2010=16.32). Outcome condition was in 43.2% treatment self-withdrawal (range 36.4%-55.6%), therapeutical failure, 4.1%(0.0-9.1%), deaths, 2.7%(0.0%-8.3%), cured, 39.2%(33.3%-42.4%) and finished treatments, 10.8%(4.2%-25.0%). **Main Conclusions:** Comparing the 2010 TB incidence among HLP with that of the general population (0.6585/1,000pop.) that is 76.45 times higher in that risk population. In the same way, case fatality rate in 2010 was 2.5 times higher than in the general population (3.3%). These results have important implications in public health as well in the management and evolution of TB in these individuals, persistence of infection, drug-resistance and potential transmission to those that can be around these HLP. For these reasons a project of a Center for Attention of HLP with TB, with the objective to bring an integral, social, epidemiological, clinical, diagnostic and therapeutic management, was developed. **Acknowledgments:** Thanks to the Social Development Secretary for its cooperation in this study. **Funding:** Cooperativa de Entidades de Salud de Risaralda (COODESURIS). **E-mail:** ajrodriguezmmd@gmail.com

Tb017- Tuberculosis in migrating population deported from USA to Honduras: epidemiology and implications for a national control program

Zambrano LI,* Reyes-García SZ,* Rodas-Ortez H,* Maldonado M,** , Castañeda-Hernández DM,*** Rodríguez-Morales AJ.****
*Faculty of Medical Sciences, Universidad Nacional Autónoma de Honduras (UNAH), Tegucigalpa, Honduras; **National Program of Tuberculosis Control, Secretaría de Salud de Honduras, Tegucigalpa, Honduras; ***Tuberculosis and Leprosy Program, Secretaría de Salud y Seguridad Social de Pereira and Fundación Universitaria del Área Andina, Seccional Pereira; ****Infection and Immunity Research Group, Faculty of Health Sciences, Universidad Tecnológica de Pereira and Office of Scientific Research, Cooperativa de Entidades de Salud de Risaralda (COODESURIS);

Introduction: Tuberculosis (TB) is one of the most globally important infectious diseases and its occurrence in risk groups, with HIV/AIDS, indigenous population, individuals living in extreme poverty and overcrowding, as well migrant population. For these reasons, the objective of this study was to assess the

occurrence of TB among the migrating population arriving to Honduras after being deported from United States of America, 2005-2011. **Materials and Methods:** Epidemiological study on morbidity trends of TB in a group of migrant population, at the national TB program; where clinical, epidemiological and bacteriological diagnosis, was done evaluating patients at the national airports. Annual incidence rates were compared with those of the general national population of the country. **Results:** Between 2005 and 2011, 493 migrant returning individuals were diagnosed with TB (AFB+), ranging from 32 cases in 2010 to 117 in 2007, which occurred among a total population ranging 14,626 to 50,524 migrants in that period, which represented incidence rates ranging 104.9 cases/100,000 pop. to 444.4 cases/100,000 pop. The trend for the incidence is decreasing, although not significantly (r^2=0.5339; F=5.728; p=0.0621). **Main Conclusions:** Comparing the TB incidence among these returning migrants with that of the general population (which ranged 36.8 to 44.3 cases/100,000pop. for the same period) the difference represented between 2.9 to 14.0 times higher incidence rate among them than in the rest of people. These results have important implications in public health as well in the management and evolution of TB in these individuals, persistence of infection, drug-resistance and potential transmission to those that can be around these migrant individuals. For these reasons strategies oriented to bring an integral, social, epidemiological, clinical, diagnostic and therapeutic management, are proposed.

Tb018- Scientific research in tuberculosis, bibliometric assessment of the Colombian contributions to the literature

Castañeda-Hernández DM,* Bolívar-Mejía A,** Rodríguez-Morales AJ.***
*Tuberculosis and Leprosy Program, Secretaría de Salud y Seguridad Social de Pereira and Fundación Universitaria del Área Andina, Seccional Pereira, Pereira, Risaralda; **Faculty of Health, Universidad Industrial de Santander, Bucaramanga, Santander; ***Infection and Immunity Research Group, Faculty of Health Sciences, Universidad Tecnológica de Pereira and Office of Scientific Research, Cooperativa de Entidades de Salud de Risaralda (COODESURIS), Pereira, Risaralda; Colombia.

Introduction: Tuberculosis (TB) is an important public health problem, globally as well in Colombia. For these reasons more actions in health and research should be intensified. A bibliometric assessment of the Colombian contributions to the biomedical literature on TB with the objective to determinate the level of production on it was done. **Materials and Methods:** Bibliometric study of the Colombian production on TB in the databases MEDLINE/GOPUBMED (1809-2012), SCOPUS (1959-2012), SCIELO Colombia (2004-2012) and IMBIOMED (2005-2012). All kind of studies, analyzing by years, international cooperation (IC), publication origin city (POC), publication journal (PJ) and authors with more contribution (AMC) were included. **Results:** At MEDLINE, 232 articles were found (0.12% from the total on TB, 0.49/100,000 hab.), from them 52.2% were 2005-2012, mean 2007-2011 of 19.6±5.1. IC was recorded in 21.9%. Bogotá, Medellín and Cali published 65.52% of the articles, 16.4% at Biomédica, 5.2% at Revista de Salud Pública and 4.3% at IJTLD. At MEDLINE the AMC was Luís F. García (Universidad de Antioquia). At SCOPUS results were similar to MEDLINE (n=168, 0.08%). At SCIELO only 29 records were found (out of 30) and at IMBIOMED 35 (of 513, 6.8%).**Main Conclusions:** Scientific production on TB in Colombia is low, not just comparing it with developed countries (USA, 4.08 articles/100,000 hab.) but also with others in Latin America with even lower TB incidence such as Chile (34 cases/100,000 hab.) but with a better productivity 2.19 times higher (1.09 articles/100,000 hab.). A higher promotion of research, beginning in undergraduate studies, better interaction between public and private organizations, as well more academic and international cooperation, would allow to decrease those gaps, increase scientific publication and let that the application of that generated knowledge in the same country contribute to improve the TB epidemiology and different aspects of disease.

Tb019- **Clinical and epidemiological analysis of cases of recurrent tuberculosis in the State of Alagoas**

Cortez AMC, Soares CGA, Alves WA.
Federal University of Alagoas, Maceió, Alagoas, Brazil.

Introduction: Tuberculosis (TB) is a important public health problem and since it has been put to sidelines by the Authorities in charge cases has surged due to the AIDS epidemy and multidrug-resistant. According to the Brazilian Health Ministry, 5% of the patients infected by the TB pathogen tend to present the disease some other time in life and this fact is due to either to some endogenous reactivation or some exogenous infection. A number of variables can be responsible for this recurrence and once these variables are identified, the diagnosis will be easier and accurate. In addition, once these variables are discovered, more action can be taken to prevent recurrent cases. In nowadays, the State of Alagoas presents 38 occurrences of all types of TB in every 100,000 inhabitants and 22 just for the bacilleros type. This study aims to improve clinical and epidemiologic information of confirmed Pulmonary TB in the State of Alagoas during the period from 1998 to 2011. **Methodology:** It was realized a descriptive transversal study with recurrent TB cases, considering age, gender, residence area, schooling, clinical TB types, institutionalized patients, and HIV co-infected patients. Data gathering occurred by reviewing an information system for morbidities of mandatory notification –"Sistema de Informação de Agravos de Notificação", available on Brazilian Ministry of Health database website. **Results:** It was notified 11,342cases. Out of these, 6% were recurrent TB and out of those, 43% were related to young patients at age ranging from 20-39, 62% males, and 77% living in urban areas. Regarding schooling, 24% were utterly illiterate. Considering all the cases, 93% were clinical types Pulmonary TB, 5% extrapulmonary and 2% can be a combination of both. Multiresistent TB happened in 1%. 36% were institutionalized patients, from which 1% were in prisons, 0.5% psyquatric fosters, and 62% others. In relation to HIV co-infected cases, 68% were not tested for virus diagnosis, 15% were negative, 5% were HIV positive and 12% of the cases notified were filled in as "Ignored/empty". **Main Conclusions:** TB stills a significant health concern in Brazil especially if considering the recurrent cases. Male-young adults living in the urban areas happens to be the most infected among all people and the risk group to recurrent TB, suffering mainly from pulmonary TB, ending up into extrapulmonary TB. It is also important to mention the occurrence of a super-resistant TB though its lethality (3%). This rate is owed to the National Program against TB, which has been intensified and diagnosed case in the very beginning. Regarding HIV co-infected diagnoses, nothing can be assured so far through retrovirus infection and this inconclusive finding avoids comparisons in the literature. Moreover, researches has shown how fundamental is to scrutinize the cause of TB in institutionalized environments once such places are usually crowded and crowding is well known as a risky factor to TB. **E-mail:** waneska.alves@yahoo.com.br

Tb020- **Clinical and epidemiological profile of health care workers reported with tuberculosis in a general hospital in Rio de Janeiro city**

Simon, AG[1]; Pereira, AGL[2]; Escosteguy, CC.[2]
[1]Residência em Saúde Coletiva/Instituto de Estudos em Saúde Coletiva/Universidade Federal do Rio de Janeiro, Rio de Janeiro, RJ, Brazil; [2]Serviço de Epidemiologia/ Hospital Federal dos Servidores do Estado, Rio de Janeiro, RJ, Brazil.

Introduction: The risk of infection and illness by tuberculosis in health care professionals is an important problem. The implementation of preventive measures, both environmental and individual is essential to control tuberculosis in health care institutions, contributing to the protection of both patients and professionals involved in their care. This study analyzed the clinical and epidemiological profile of health care workers reported with tuberculosis at Hospital Federal dos Servidores do Estado (HFSE), between

2007 and 2011. **Material and methods:** This is a retrospective study, which analyzed the notification forms of tuberculosis, whose categories were those of health professionals, in the local Information System for Notifiable Diseases (SINAN). **Results:** There were 25 notifications in the period 2007 to 2011; 17 were female (68%). Their ages ranged from 21 to 69, most often between 20 and 39 years (52%). In relation to the occupation the most frequent categories were medical professionals (36%), followed by nurse assistants (32%) and nurses (12%). 52% had pulmonary tuberculosis, 24% extrapulmonary and 24% pulmonary and extrapulmonary. Other results indicated that 92% were new cases; 56% had laboratory confirmation; 96% of professionals began treatment in HFSE; 20% were HIV positive; 48% had no information about the follow up. **Main conclusions:** These results highlight the need to implement actions to control tuberculosis in institutions and health care facilities, as the work environment of the studied population. As the pulmonary form was predominant, the interruption of the disease transmission is fundamental in this environment. Moreover, it is necessary a better organization of information about the follow up of cases, an important indicator for decision making in epidemiological surveillance. Protecting health workers from becoming infected by *Mycobacterium tuberculosis* in health care settings should be an activity that is part of the infection control unit through the adoption of specific measures aimed at improving the institutional biosafety, the establishment of protocols diagnosis, isolation and treatment of tuberculosis. **E-mail:** linegabriela@yahoo.com.br

Tb021- Cutaneous tuberculosis with nasal involvement as the first manifestation of AIDS

Duani, H.1, †; Saraiva, I.S.1; Morais-Caporali J.1; Freitas, K.M.1; Carneiro, P.G.1; Saraiva, I.E.1; Do Carmo, P.A.1; Fonseca, M.O1, 2; Tupinambas, U.1, 2.
1Infectious Diseases Department, Hospital das Clínicas, Federal University of Minas Gerais, Belo Horizonte, Brazil, 2School of Medicine, Federal University of Minas Gerais, Belo Horizonte, Brazil.

Introduction: Cutaneous tuberculosis incidence, caused by Mycobacterium tuberculosis (MTB), has risen in parallel with that of pulmonary tuberculosis (TB) and HIV co infection. Current diagnostic methods for pulmonary and extrapulmonary TB are not rapid and accurate, leading to a delay in starting appropriate therapy. Extrapulmonary forms, including cutaneous TB, represent 10% to 20% of the total number of cases. Cutaneous TB represents 1.5% of all forms of TB and is responsible for 0.1% to 1% of all skin disorders. **Materials and methods:** This study was based on review of medical records. **Results:** A 28-year-old man presented with a three-month history of subcutaneous nodules on the trunk and arms, and bleeding nasal ulcers. The lesions appeared as soft painless subcutaneous nodules, progressing to shallow ulceration, with thick crusts and purulent material in trunk, arms, ankle and left leg. The patient reported no other symptoms. Crusted and bleeding lesions were found in the nasal septum bilaterally. There was cervical and axillary lymphadenopathy. ELISA and Western blot were both positive for HIV. There was no clinical or laboratory evidence for autoimmunity, hematological, liver or kidney abnormalities. VDRL, Montenegro and Tuberculin tests were non-reactive. The CD4+ count and HIV viral load were 198 cells/mm3 and 21,140 copies/ml, respectively. Skin biopsies of the arm evidenced chronic necrotizing caseating granulomas. Gram, fungal and acid fast bacilli stains were all negative. Fungal, bacterial and mycobacterial cultures of the abscess were also negative. The patient's chest X-ray was normal. MTB polymerase chain reaction of the skin lesion was positive. Anti TB drugs (rifampicin, isoniazid, pyrazinamide and ethambutol) and HAART (tenofovir, lamivudine and efavirenz) were instituted. The lesions disappeared after two months of treatment, which was continued up to six months. **Main Conclusions:** We report a case of cutaneous tuberculosis as a first manifestation in a patient with AIDS. Occurrence of unusual, large and chronic dermatologic disorders must lead to TB suspicion and consequently HIV co infection. This scenario represents a particular challenge because traditional diagnosis methods are often inconclusive. **E-mail:** †hduani@gmail.com

Tb022- "Disseminated tuberculosis presenting with multiple skin and visceral abscesses in an immunocompetent host"

Varon A[1]; Mesquita EC[1]; Viggiano RLL[1]; Germano VA; Ferreira MF; Souza RV[1]; Lyra MA[1]; Nunes EP[1]
1Instituto de Pesquisa Clínica Evandro Chagas (IPEC / FIOCRUZ), Rio de Janeiro, Brazil.

Introduction: Tuberculosis (TB) is a pandemic threat. In 2010 the global incidence among HIV-negative individuals was 8.8 million cases and approximately 1.1 million deaths. In Brazil, approximately 5.000 people die each year from TB and the State of Rio de Janeiro has the higher mortality rate. Unusual presentations are mainly seen in areas of high prevalence, and lack of suspicion may lead to diagnosis delay. We present a case of an uncommon form of very slow progressive disseminated tuberculosis. **Case report:** A previous healthy 60 years-old woman presented to our hospital with a five years history of erythematous skin nodules disseminated in cervical, axillary and inguinal regions. Biopsy revealed diffuse chronic granulomatous dermatitis with necrosis and culture yielded no microorganism. The patient was lost to follow-up being re-admitted two years later with severe anemia, worsening of the general condition, malnutrition and fistulization of the skin nodules associated with hepatic and iliopsoas abscesses. *Mycobacterium tuberculosis* was now isolated from a large sample of pus from one of the skin nodules and treatment was initiated. Despite the delay in the diagnosis and treatment initiation patient evolved favorably with remission and cicatrization of the skin and visceral abscesses. **Main Conclusions:** In countries with a high prevalence of tuberculosis, this diagnosis must be considered in cases of slow progressive cutaneous infection presenting with superficial and/or visceral abscesses even after failure to isolate the agent, which may be difficult in these settings. **E-mail:** andrea.varon@ipec.fiocruz.br

Tb023- Profile of patients with tuberculosis clinic in the attention of reference huwc - University extension

Sá,G.M.[1]; Lopes,C.D.H.[1]; Castro,F.Q.S.[1]; Cid,D.A.C.[1]; Silveira,G.L.[1]; Leite,G.D.Q.[1]; Maia,T.F.[1]; Pinheiro,V.G.F.[2];
1.Professora-orientadora da Universidade Federal do Ceará, 2.Acadêmico da Faculdade de Medicina da Universidade Federal do Ceará, *Pulmonology Service of Hospital Universitário Walter Cantídeo, Fortaleza, Brazil

Introduction: The Tuberculosis Clinic of the Hospital Universitário Walter Cantídeo (HUWC) of the Universidade Federal do Ceará (UFC) is included in the extension activities of the Area Health UFC and acts as a reference state for the more complex cases of TB network municipal and state levels since 1992. Cases of pulmonary tuberculosis (TB) or extra pulmonary, patients with suspects' disease and those with latent TB are sent there for evaluation and follow-up the treatment. Students from Liga do Pulmão (Extension Project) organize activities, advising patients about the disease, prevention and improving the quality of life. **Objective**: To evaluate the characteristics of patients enrolled for treatment at the TB Clinic to target outreach activities. **Methods**: Data collection of patients registered in the Books of the TB Clinic / HUWC, 1995 to 2010. Survey data: sex, age, history of contact with contagious TB, BCG vaccination, exam, clinical form and treatment. **Results**: Have been evaluated 410 patients, 50.36% were male. The mean age was 43.77 years. The most usual clinical presentations were: lung (65.84% these being 55% of active TB), pleural (21.73%), the ganglion-lung (4.91%), genitourinary system (4.17%) and bone (3.93%). Most were new cases and 3.64% of retreatment / recurrence. Treatment was self-administered and resulted in 75.97% healing, leaving 10.19%, 1.45% died, 12.39% other. Data on vaccination and examination of contacts were incomplete. **Conclusion**: The evaluation of epidemiological data guides the management of patients in the extension of care. Have been observed incomplete data relating to HIV serology, vaccination and contacts, which must be corrected. The performance of the team, including the Scholarship extension, was considered important by the guidelines provided, as noted in the overall outcome of cure treatment of patients. **E-mail:** gabrgms@hotmail.com

Tb024- Status of tuberculosis-HIV infection in the state of Roraima in period 2007 to 2010

Zimmermann F. V, Moura L. L., Carbonell R. C. Mangabeira C. L.
Hospital Geral de Roraima, State Department of Health, Boa Vista Roraima

Abstract: Tuberculosis as an opportunistic infection, is the leading cause of death among people living with HIV. Of the 9.4 million cases of TB worldwide in 2009, 1 millions were co-infected with HIV (1-13%).

This paper reports the reported cases of co-infection with tuberculosis (TB) and HIV in the state of Roraima (RR) during the period 2007 to 2010, based on data from the Information System for Notifiable Diseases (SINAN). There were 42 reported cases of co-infection HIV / TB in the last four years; of 11.9% were relapses, 14.7% were readmissions and 80.9% new cases. The trend was the increase of numbers of new cases, a reduction of relapses, which ranged from 50 to 12.5% of the total reported, with 44% cure rate. It was observed that there is a greater percentage of cured (53%) that of deaths (38%) in new cases of tuberculosis as compared to the total number of reported cases (44% and 49%). Concluding that the immunosuppression acquired infection with the HIV virus is a triggering factor for both reactivation of secondary focus as to acquire a primary infection with Mycobacterium tuberculosis. As currently recommended treatment for latent infection extended to 9 months and early diagnosis. **Introduction**: According to current estimates, the WHO, worldwide there are 42 million people infected with HIV, of which 1/3 shows infection with M. tuberculosis. The annual risk of progression to tuberculosis among patients co-infected with TB-HIV ranges from 5 to 15% depending on the degree of immunosuppression, compared with 0.5 to 1% in uninfected. The increase of tuberculosis transmitted by exogenous or endogenous in HIV-infected patients is increasing over time as the M. tuberculosis is in a latent state in about one third of the world population. **Materials:** We used the information system with EPI-TB as a source of information the individual forms of TB, SINAN. Population - Case co-infection HIV / TB in RR in the period 2007-2010.**Results**: Of the total TB cases reported in RR 7.36% (n = 42) were co-infected with HIV. Even with mandatory HIV testing for 40% of notified TB did not undergo HIV testing. Relapse cases of TB increased from 50% (2007) to 11% in 2010. However, the returns were progressively increased from zero (2007) to 3% in 2010. We observed an increased number of new cases from 50 to 88% in 2010. The gender distribution of 42 cases, 28.6% female and 71.4% male, with the predominant age group between 20 and 49 years of age (90%). Regarding the outcome, 44% developed a cure, 49% died and 5% abandoned treatment. Noting that the cure rate of new cases (53%) was higher compared to the total (49%). As the lower death among new cases coinfected (38%) relative to the total reported (49%). **Conclusions:** A-TB co-infection with HIV remains a public health issue that inspires new measures for early diagnosis, detection of latent infection and effective treatment of TB. However, the test coverage of reported HIV TB should be 100%, RR was 60%. We also observed a high rate of death compared to that of Brazil (32%), being even higher in relapses and returns. There is low cure rate of TB compared with the national average of 85%. This highlights the fragility of primary health care in the state warning of the ma adherence, resistance to drugs of first choice. **E-mail:** fabianavieira24@hotmail.com

Tb025- **Tropical pyomyositis caused by *Mycobacterium tuberculosis***

Ohnishi YO,Beltrão RL, Monte RL, Damian MM.
Tropical Medicine Foundation Heitor Vieria Dourado/Manaus-AM.

Introduction: Pyomyositis is a pyogenic infection of skeletal muscle common in tropical regions, whose most frequent cause is *S. aureus*, which occurs in young immunocompetent male, usually abscesses only located mainly in the lower limbs. The primary pyomyositis due to tuberculosis are rare, accounting for only 1% of musculoskeletal tuberculosis. We report three cases of pyomyositis caused by *M. tuberculosis* in female patients with HIV/AIDS attended at Tropical Medicine Foundation Heitor Vieira Dourado. **Case reports:** JPC, 30, regular using AZT + 3TC and lopinavir/ritonavir, presenting non-measured fever, productive cough and appearance of a painful lump in the anterior cervical region which overlapped the medial head of the sternocleidomastoid. US of the neck lump showed collection of imprecise limits and echogenic content suggestive of pyomyositis, confirmed on CT. Material collected from abscess was positive for Koch's bacillus and treatment for tuberculosis was applied. AFB sputum smear was positive, similar to secretion of the cervical abscess. X-ray and chest CT were suggestive of TB. The patient evolved unfavorably, culminating to death. RCC, 39, regularly using AZT + 3TC and EFZ, in treatment for neurotoxoplasmosis and herpes zoster, CD4 of 137 and undetectable viral load, presenting 2 weeks of productive cough. Suspected of TB. Tuberculin test result was 0mm. AFB sputum smear resulted negative for 2 samples. During hospitalization it was observed erythematous nodule on the right coxofemorally area, painful and hard consistency. After US drainage of the abscess was performed on the *vastus lateralis* muscle showing the presence of AFB. The skin lesion biopsy resulted compatible with TB for which specific treatment was applied. The lesion regressed completely. ESR, 45, CD4:120 and viral load of 198,137 copies, presenting 10 kg weight loss and productive cough for 3 weeks, diarrhea

started after introduction of AZT + 3TC, Lopinavir/r. The patient was in generally poor condition, lung sounds with diffuse rhonchi and abdomen diffusely painful. Presence of painful mass on the right chest wall with 10 cm. Suspected of disseminated TB, *p. jiroveci* pneumonia, pyomyositis. AFB smear was negative in two sputum samples. Tuberculin test was 0mm. US chest revealed pyomyositis and cellulitis on the anterior upper thorax. CT chest with heterogeneous collection occupying subcutaneous and muscle on the right anterior chest wall. The culture of drained material from the abscess detected *M.Tuberculosis.* Antituberculous regimen was introduced but due to hepatotoxicity it was replaced by alternative drugs following preconized norms by Brazilian guideline. However the patient presented worsening of general condition progressing to death. **E-mail:** jorgemarcia@uol.com.br

Tb026- **Tuberculosis and kidney transplantation: the neglect and the high complexity, side by side**

Reis-Santos, Barbara & Maciel, Ethel Leonor
Epidemiology Laboratory of Infectious Disease Postgraduate Program of Federal University of Espírito Santo (Lab-Epi UFES), Vitória, Brazil

Introduction: Chronic kidney disease (CKD) is considered a global pandemic. According estimated, in 2011 there were 10 million of Brazilians with CKD and the kidney transplantation, which is a therapy with high resources and technological devices, is the choice treatment for the mostly of subjects. The tuberculosis (TB) is an infectious injury described between humans since the ancient however remains a global public health problem. Between kidneys recipients the TB prevalence is higher than in general population. Thus, a disease with possible control but neglected like TB can put in check all planning and investment in high complexity therapies like a transplantation. Thus, we aim to identify the kidney transplantation teams' routines for tuberculosis screening and management.
Methods: It is a cross-sectional study. We included all the transplant centers of a Brazilian state. For data collection a questionnaire was applied to the coordinators of the teams. The information was stored in an electronic database. After exploratory analysis, data were evaluated for frequency and calculated measures of central tendency and dispersion with the program STATA11.0. The study was approved by ethics committee in research (N°204/10) and all the participants signed an informed consent. **Results:** There are 5 kidney transplantation teams and all these were included. These teams are composed by nurses, psychologists, social workers, nutritionists and doctors; the latter's being more numerous in all centers. Although there were references to routines tuberculosis screening (80%), these aren't written (100%). Just 20% of teams request tuberculin test in screening before the transplantation; however this screening is just made in live donation receptors. **Conclusions:** We find, then, that formal routines for screening, management and control of TB are practically nonexistent in the centers studied, although the disease is still prevalent in the region and the illness risk of this group is greater. The Brazilian government incrementally increases the investments for increase the transplantations driven by the pandemic of CKD. However the lack controls of diseases like TB can risk all investments and, thus, we can foresee a dangerous future which will be facilitated the necessary conditions for spread of disease. Thereby as important as the higher investments in high-in therapies is the care with those disease which accompanying the population without adequate attention. So both kidney transplantation team and heath managers need to dispense more attention for planning and implementation of prevention and control TB measures between kidney recipients. **E-mail:** bab_reis@yahoo.com.br

Tb027- **Tuberculosis cutaneous in immunosuppressed patients after kidney transplantation**

HE Zogbi, Lapa J, Lemos A, K Grenzi, M Halpern, G Santoro.
Hospital Universitário Clementino Fraga Filho (HUCFF), Rio de Janeiro.

Introduction: The frequency of tuberculosis in transplant patients is approximately 60 times higher than the general population, and in immunosuppressed patients with Mycobacterium tuberculosis tends to compromise extra-pulmonary foci by 50% of cases compared with 15% by immunocompetent hosts. The diversity of presentation and delay in diagnosis contribute to increased mortality in this group of

immunosuppressed patients. **Material and Methods:** Case report of cutaneous and pulmonary tuberculosis in patients with exogenous immunosuppression. **Results:** Patient 65, had a kidney transplant 18 months earlier, in use of tacrolimus and mycophenolate. Arrives at the hospital 03/06/12 days to investigate injury to the left retroauricular started 20 days ago, painful and evolved on the fifth day with high fever daily. On examination the patient was clinically stable, and pulmonary auscultation crackles in the middle third of right hemithorax. The lesion was about 3 cm in greatest diameter, with edges defined background with granulation tissue. It was performed biopsy and CT of the chest, this lesion showed spiculated right upper lobe. Made sputum smear-negative on direct examination. On 03/09/2012 the biopsy of the lesion showed chronic granulomatous inflammation associated with necrosis AFB in the interstitium, consistent with mycobacteriosis. It started after collecting tuberculostatic serum tacrolimus. On 03/15/12 bronchoscopy was performed and displayed in the secondary carina brancacenta injury to the right with edema in the region, bronchoalveolar lavage showed smear positive. The skin lesion progressed to secondary infection, reaching 10 cm in diameter, requiring antibiotic therapy. Patient is discharged with partial improvement of the lesion, fever, improvement of renal function and follow-up. **Conclusion:** The biggest challenge is for the early diagnosis requires a high index of suspicion, since these patients is a clinically atypical, often requiring invasive procedure to confirm the etiology. Another difficulty is the drug interaction. It is known that rifampicin is a strong inducer of enzymes that metabolize tacrolimus, sirolimus, everolimus and cyclosporin, so it is essential to monitor serum of these drugs and increasing the dose as needed. Due to this interaction and the infection itself is often graft rejection in these patients, increasing morbidity and mortality of tuberculosis cases in this population. **E-mail:** hez_zogbi@hotmail.com

Tb028- **Tuberculosis associated with transient hemolytic anemia responsive to tuberculosis chemotherapy: a case report.**

Izabella Picinin Safe[1], Connor O'Brien[2], Fernando Rogério Lara Ferreira[3], Márcia Lidiane Vasconcelos Dias de Souza[3], Rajendranath Ramasawmy[1]
1Fundação de Medicina Tropical Dr. Heitor Vieira Dourado (FMT-HVD), Manaus, Brazil, 2Columbia University College of Physicians and Surgeons, New-York, United states, 3Fundação Hospital Adriano Jorge (FHAJ), Manaus, Brazil.

Introduction: Tuberculosis is a common health problem, especially in developing countries like Brazil. Tuberculosis is well known to have a broad array of manifestations. When tuberculosis patients present with hematologic alterations, anemia of chronic disease is the most common etiology. Hemolytic anemia is an extremely rare but important cause of tuberculosis associated anemia to recognize given its severe implications if left undiagnosed. Adults with transient hemolytic anemia secondary to tuberculosis demonstrate a self-limited hemolysis that is responsive to RIPE without the use of corticosteroids. Children, however, tend to demonstrate a more severe symptomatology that may benefit from corticosteroids. **Materials and methods:** We report here an 18 year-old teenager with pulmonary and intestinal tuberculosis presenting 6.6 g/dL of hemoglobin and a positive direct coomb´s test. Tuberculosis chemotherapy of rifampicin, isoniazid, pyrazinamide and ethambutol (RIPE) was initiated for six months. There was substantial clinical improvement and the medications were well tolerated. The hemoglobin normalized and the coomb´s test became negative over the course of therapy. Corticosteroids therapy was not necessary at any time during treatment. **Main conclusions:** Normalization of the hematologic parameters with only anti-tuberculosis therapy is proof that tuberculosis should be listed among the infectious causes of hemolytic anemia. Hemolytic anemia can be a fatal complication and, in severe cases, the use of corticosteroids may be indicated but should be used judiciously. Tuberculosis chemotherapy appears to demonstrate the greatest efficacy in reversing this condition. Tuberculosis being a common disease, the association with transient hemolytic anemia should be recognized and treated appropriately. **E-mail:** izabellasafe@yahoo.com.br

Tb029- The importance of the histopathologic differential diagnosis of cutaneous tuberculosis and tuberculoid leprosy: a case report

Medeiros, AB; Mendonça, FQ; Mota, LM; Santiago, CCF; Souza, FA
Universidade Estadual de Montes Claros – UNIMONTES, Montes Claros, Brazil

Introduction: Cutaneous tuberculosis (CT) is an infection caused *by Mycobacterium tuberculosis.* It may present in the form of non-specific lesions such as exanthematous eruptions or eczematous and granular reactions. The diagnosis of CT includes clinical evaluation, biopsy of the lesion with histopathologic analysis, microbiological cultures, chest radiography and bacilloscopy. In the differential diagnosis of this disease, we must consider tuberculoid leprosy (TL), an infection caused by *M. leprae*, with a wide range of manifestations – mainly dermatologic. This form is characterized by maculas or few plaques, with different shape and size. TL can be diagnosed by bacilloscopy and histopathologic analysis. **Material and Methods:** The medical records of a patient treated in an outpatient clinic were reviewed. The data obtained were compared with the typical clinical presentation of the disease. **Results:** A 29-year-old man, from Montes Claros, Minas Gerais, Brazil, sought medical advice complaining of erythematous pruritic lesions, with a 4-year history of scaling and irregular edema and satellite lesions, located in the distal right thigh. He was initially diagnosed in 2008 and treated as leprosy without clinical improvement. At the time of diagnosis, skin biopsy showed dense lymphohistiocytic infiltrate, perivascular, adnexa and perineural, forming epithelioid cell granulomas and Langhans cells, consistent with TL. Therapy consisted of dapsone and rifampin for 9 months without success. The patient was hospitalized in 2011 for further evaluation. His PPD was strongly positive, the Montenegro Test was 14 mm, and he had a repat biopsy. Histopathologic examination revealed epidermal hyperplasia, irregular granulomatous process, with epithelioid cells, Langhans cells, and areas of caseous necrosis, suggestive of tuberculosis. Because of the differening results between the two biopsies, repeat slide review concluded that the granulomatous inflammatory infiltrate was clearly perineural on the first slide - suggestive of TL -, but at the second examination, the granulomatous infiltrate with caseous necrosis and ulceration was more consistent with CT. Thus, treatment began for CT. Clinical response has not yet been proven. **Main Conclusions:** This report shows the difficulty of the histopathologic exam to establish a conclusive diagnosis especially in areas where both diseases are endemic. Thus, accurate diagnosis is essential in order to corroborate the etiologic agent so that the proper treatment is instituted, reducing the risk of therapeutic failure. It is also recommended to be aware of strains of *M. tuberculosis* resistant to rifampin. **E-mail:** filan.moc@ig.com.br

Tb030- Miliary Tuberculosis: a case report

Botelho, K.P[1]; Nunes, N.G[1]; Vale, J.S[1]; Nobre, L.V[1]; Fontenele, N.K.P[1]; Sampaio, A.M[1]; Sá, G.M[1]; Sousa, A.Q[1]; Rey, LC[1]
[1]**Faculdade de Medicina – Universidade Federal do Ceará – Fortaleza- Brazil;**

Introduction: Miliary tuberculosis (MTB) is the widespread dissemination of *Mycobacterium tuberculosis* via hematogenous spread. It may occur in an individual organ, in several organs, or throughout the entire body, including the brain. MTB diagnosis is a challenge, because there are varied clinical presentations. This case presents a child's case that was admitted in 2008 in the Pediatric Infectous' service at the Hospital São José with disseminated tuberculosis. **Case:** A 4 year-old girl admitted with low back and chest pain with one month-long, bad general condition, severe weight loss, pale, febrile (T = 40), tachycardiac, dehydrated and dyspneic (with use of accessory muscles). The pulmonary auscultation was rude with expiratory wheezing. The back had a paravertebral tumor with soft consistency. In past history, she had had repetitive respiratory tract infections, a complete vaccination schedule and BCG scar. The family history showed a close contact with two uncles who had tuberculosis (one was treated and the other was being treated). She progressed with respiratory failure and needed ventilarory support for 24 hours**. Laboratory tests:** anemia (Hb = 7.8g/dL); ESR = 119mm/h. The drainage of the swollen at the back withdrew 8 ml of purulent secretion with acid-alcohol–fast bacilli in baciloscopy. A chest CT scan was compatible with milary tuberculosis: bulky mediastinal and thoracic lymphadenopathy with necrosis; moderate pleura empyema; osteolytic lesions in dorsal vertebrae and ribs. Cranial CT scan showed diffuse cortical necrosis with dilated ventricles and abscess in the posterior fossa. The PPD test, the sputum`s baciloscopy and the HIV test were negatives. The scheme was started

with Rifampicin, Isoniazid and Pyrazinamide (20-20-35 mg/kg/day, respectively). With improvement of the general condition and nutrition, the patient was discharged on day 49 of hospitalization. She was readmitted a few weeks later with clinical deterioration (severe acute respiratory failure), due to non-adherence to home treatment and she had a lethal outcome. **Comments:** MTB can occur in the absence of HIV infection when there are other causes of immunosuppression such as renal failure, chronic obstructive pulmonary disease, diabetes, malignant tumors or severe malnutrition. This last one factor may have contributed to the spread of tuberculosis in this case. This report draws attention to the fact that even in the absence of HIV/AIDS; immunosuppression can lead to a spread of miliary tuberculosis and may progress to death. It's essential to emphasize the importance of patient`s adherence to home treatment, since in this case, non-adherence to the treatment have contributed to the death of the patient. **E-mail:**gabrgms@hotmail.com

Tb031- **Genital tuberculosis in menopausal patient, report of two cases**

Sá,G.M.; Silva,A.F.; Cid,D.A.C.; Lopes,C.D.H.; Leite,G.D.Q.; Pinto,L.M.; Mendes,M.S.; Pinheiro,V.G.F.;
Pulmonology Service of Hospital Universitário Walter Cantídeo, Fortaleza, Brazil, and Department of Gynecology Service of Maternidade Escola Assis Chateaubriand, Fortaleza, Brazil.

Introduction: The genital tuberculosis is one of the several presentation forms of tuberculosis. It is estimated that 5% to 13% of patients with pulmonary tuberculosis develop the tuberculosis in the genital tract. Genital organs most frequently affected include fallopian tubes (90%), endometrium (50%), and ovaries (10-30%). The cervicovaginal tuberculosis is rare, representing 3% of the genital cases, with only few cases reported in Brazil. The pelvic-peritoneal form can be confounded with disseminated ovarian carcinoma due to the presenting signs and symptoms that are often nonspecific. There are few cases reported in postmenopausal women in literature. **Objective:** To report two cases of extrapulmonary genital tuberculosis in menopausal patients treated in the Maternidade Escola Assis Chateaubriand, Fortaleza, Ceará, Brazil. **Material and Methods:** Clinical, laboratory, imaging and anatomic-pathologic description of the analyzed cases. **Results: Case 1:** A 70 year-old female menopausal patient, who sought medical attention complaining of fetid vaginal discharge that proceeded to persistent bloody vaginal discharge of moderate amount, for 4 months-long. The gynecological exam showed an ulcerative lesion of about 1cm in diameter with raised edges and reddish bottom located in the anterior lip of the cervix, with active bleeding. The diagnosis was confirmed by the biopsy of the ulcerative lesion, which revealed multiple granulomas with epithelioid cells and Langhans giant cells. The chest X-Ray showed diffuse interstitial infiltrates and cavity in the apical upper lobe of right lung, suggestive of active pulmonary tuberculosis. **Case 2:** A 58 year-old female menopausal patient, who sought medical attention complaining of abdominal discomfort for five months, associated with an increase in abdominal size, fatigue, nausea, vomiting and weight loss (12kg). The video hysteroscopy showed endometrial surface distortion by yellowish polypoid projections, with the presence of material, which aspect was suggestive of caseous degeneration. The diagnosis was confirmed by the positive direct bacterioscopy for BAAR (Acid-Alcohol Resistant Bacilli) and the positive culture of *Mycobacterium tuberculosis* in endometrial secretions. In both cases there was clinical improvement after tuberculosis treatment. **Main Conclusions:** The genital tuberculosis is one of several forms of presentation of tuberculosis and should be considered in the differential diagnosis of genital diseases, despite its rarity. It's important to remember that generally the genital tuberculosis presents itself secondary to the lung disease. **E-mail:** gabrgms@hotmail.com

Tb032- **Evaluation of the messenger RNA (mRNA) of mycobacterium tuberculosis as a marker of healing in patients with pulmonary tuberculosis**

Montenegro RA[1]; Guarines KM[1]; Melo FL[1]; Lira LAS[1]; Nascimento ALA[1]; Santos FCF[1]; Régis CA[1]; Leite RC[2]; Carvalho M S[1]; Montenegro LML[1]; Schindler HC[1]
[1] **Aggeu Magalhães Research Center, Department of Immunology, Oswaldo Cruz Foundation, Recife, PE, Brazil,** [2] **Joaquim Cavalcanti Health Unit of the Health District IV of the Municipal Health Department of the Municipality of Recife, PE, Brazil.**

Abstract: Tuberculosis (TB) is a major public health problem worldwide due to their high rates of morbidity and mortality and transmission rates, although it has an effective treatment and control of the disease. Early diagnosis combined with appropriate therapy is essential for effective control of public programs. The diagnostic techniques, microscopy and culture, used for routine detection of *Mycobacterium tuberculosis* in clinical specimens are lacking in sensitivity and delay in obtaining results, respectively. Culture is considered the gold standard to assess the viability of the bacillus in patients with tuberculosis in the presence of specific treatment, however, being laborious and requires at least 4 weeks for growth of the bacillus, very difficult clinical monitoring and response the patient to antituberculosis drugs. In this context, molecular methods have been developed especially for the technology of polymerase chain reaction (PCR) highlighting the reverse transcription followed by real-time quantitative PCR (RT-qPCR) using the messenger RNA that expresses well bacillus viability. In this work we analyzed the performance of RT-qPCR using gene targeting 85B of *Mycobacterium tuberculosis* detection and response to treatment of pulmonary tuberculosis. Standardization was performed with different concentrations of primers and probe designed by Desjardin *et al.*, (1999). Constructed a standard curve of plasmid DNA generating a detection limit of 10pg/ul (7 x 10^7 copies / reaction), ε = 106, R2 = 0.98%, and slope = -3.18. The system was evaluated in 98 patients with suspected pulmonary TB presenting a sensitivity of 90.2% and a specificity of 87.2% compared to culture. In 56 patients with pulmonary tuberculosis followed for 30 days in specific treatment it was found that the RT-qPCR and the culture showed an excellent agreement, being a decline of viable bacilli in 15 and 30 days after initiation of therapy in most. Thus, these results suggest that the RT-qPCR is a tool that can be used in clinical and therapeutic monitoring as an indicator of bacterial resistance and indicator of the period of transmissibility of *M. tuberculosis* in patients with pulmonary TB undergoing treatment. **E-mail:** rosana@cpqam.fiocruz.br

Tb033- **Preliminary evaluation of the genotype of the position -1082G/A gene IL-10 in patients with active pulmonary tuberculosis and in the control group in Recife/PE**

Montenegro L.M.L.; Nascimento A.L.A.; Vasconcelos R.H.T.; Guarines K.M.; Salazar M.P.; Souza V.M.O.; Moraes C.N.L.; Schindler H.C.
Centro de Pesquisas Aggeu Magalhães – CPqAM/FIOCRUZ. Departamento de Imunologia. Laboratório de Imunoepidemiologia, Recife, Pernambuco, Brasil.

According to the World Health Organization, one third of the world population is infected by the *Mycobacterium tuberculosis (Mtb)*. However it is estimated that, 5-10% of these, may develop the disease. Several cytokines play an important role against the *Mtb.* The CD4+ T cells, Th2 subtype, which produce IL-4, IL-5 and IL-10, inhibits the macrophage microbicidal mechanisms, neutralize the cytokines Th1 subtype and dissolves the tuberculosis granuloma, being responsible for the escape of the *Mtb.* These cytokines has been associated with active tuberculosis. The aim of this study was to evaluate the genotype of the -1082G/A position of the gene for IL-10 in patients with pulmonary tuberculosis and in the control group from Recife/PE. It was selected 14 (58,3%) patients with pulmonary tuberculosis and 10 (41,7%) with respiratory symptoms with non-reactive tuberculin skin test and negative sputum smear or culture for *Mtb* (negative control group). It was excluded the HIV seropositives. Of each patient were collected 4ml of the peripheral blood in a tube with EDTA. It was carried out the PBMC cells isolation, which were used for the extraction genomic DNA and amplification by real-time PCR for the genomic polymorphism determination. Of the 24 patients selected for the study, 15 (62,5%) were male and 9 (37,5%) female, aged between 15 and 78 years. The laboratory test used, 14 (58,3%) were reactors and 10 (41,7%) were non-reactors for the tuberculin skin test and smear sputum test or positive culture in 14 patients (58,3%). Of all analyzed patients, 14 (58,3%) had the genotype AA, 3 (12,5%) GG and 7 GA (heterozigotous). The allelic frequency, 35 (72,9%) had the A allele and 13 (21,7%) the G allele. In patients with pulmonary tuberculosis, 10 (71,4%) had the AA genotype, 3 (21,4%) GA genotype and 1 (7,2%) the GG genotype. In this group, the allelic frequency was 23 (82,1%) for the A allelic and 5 for the G allelic (7,9%). In patients with respiratory symptoms and with another pathology, 4 (40%) had the AA genotype, 4 (40%) had the GA genotype and 2 (20%) had the GG genotype. In this group, the allelic frequency was 12 (60%) for the A allelic and 8 (40%) for the G allelic. In the studied population, was

observed a higher frequency of patients with the AA genotype compared with genotypes GG and GA, correlated with the lower expression of IL-10 in individuals evaluated. **E--mail:** lilian@cpqam.fiocruz.br

Tb034- Spoligotyping of *Mycobacterium tuberculosis* isolated in Evandro Chagas Institute in the period of 2005 to 2010

Conceição, E.C. [1]; Silva, D. C.[2]; Lopes, M.L. [2]; Costa, A.R.F[2]; Lima, L. N. G. C[2]; Lima, K.V.B. [1,2]
University of Pará State, Belém, Pará, Brazil [1], Evandro Chagas Institute, Ananindeua, Pará, Brazil [2]

Introduction: Spoligtyping has been widely used in the molecular epidemiology of TB, to investigate the population structure of *M. tuberculosis* (MTB), focusing on the identification of genotypic lineages and spoligotypes families. One of the high tuberculosis (TB) incidence countries in the world, Brazil is characterized by considerable differences in TB incidence on regional and state level. Pará, is the third state with the greatest rate of incidence of TB in Brazil. Therefore, the objective of this study was to determine the major genotype families causing TB in Pará and to verify the region-associated genotype distribution. **Material and Methods:** All of the MTB isolates evaluated were obtained from clinical specimens collected at the Evandro Chagas Institute, Pará, Brazil, between 2005 and 2010. The extraction of DNA was in according to Sambrook (1989). The spoligotyping technique was performed using Dra and Drb primers followed by membrane hybridization. The results were analyzed using SITIVIT2 and SpotClust. The available epidemiological information was recorded from registers and restricted to age and gender. **Results:** It was received a total of 775 isolates which the majority of cases were in males (61.8%, 479). Females represented 38.2% (*n*=296). The mean age of the study population was 38.4. We observed a total of 217 distinct spoligopatterns, 7.35% (*n*=57) of these corresponded to orphan patterns, 7.35% corresponded to new patterns, while 85.3% belonged to 661 SITs in according to SITIVIT2. The most frequent spoligotype families were LAM (35.3%; *n*=274), followed by the T family (17.3%; *n*=139), Haarlem (H) (10.4%; *n*=81) and EAI (9.4%; *n*=73), which together accounted for 72.4% of all the isolates. Others families found in this study was X, MANU, S and CAS with 59, eight, five and five isolates respectively. We also found the unknown or undesignated group (U) with 45 isolates. Ten Spoligo-International-types (SITs) comprised 49.5% (327/661) of all the identified spoligotypes (SIT42, SIT50, SIT53, SIT64, SIT137, SIT92, SIT 48, SIT95, SIT244 and SIT17). Other SITs found in this study indicated the great genetic diversity of MTB, reflecting the remarkable ethnic diversity of Pará state inhabitants. Among the latter, the SIT2517 which belonged to the T3-ETH lineage was exclusively found among patients residents of Belém in earlier study. **Main Conclusions**: In conclusion, we provide hereby a first insight into the population structure of MTB isolates in Pará, showing the predominance of LAM, T, Haarlem and EAI family which are the three firstly families represent the major genotypes found in Africa, Central America, South America and Europe.

Tb035- SNP typing reveals similarity in Mycobacterium tuberculosis genetic diversity in Portugal and Northeast Brazil

Lopes JS[1*], Marques I[1], Soares P[1], Guimaraes H[1], Costa J[1], Miranda A[2], Alves A[2], Macedo R[3], Antunes AF[3], Duarte TA[5], Barbosa T[4], Nery JS[4], Boechat N[5], Pereira SM[6], Barreto ML[6],   Pereira-Leal J[1], Gomes MGM[1], Penha-Goncalves C[1]
1 - Instituto Gulbenkian de Ciencia, Oeiras, Portugal, 2 - Instituto Nacional de Saude Dr. Ricardo Jorge, Porto, Portugal, 3 - Direccao-Geral da Saude, Lisboa, Portugal, 4 - Fundacao Oswaldo Cruz, Salvador, Brazil, 5 - Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil, 6 - Universidade Federal da Bahia, Salvador, Brazil

Introduction: Human tuberculosis is an infectious disease primarily caused by *Mycobacterium tuberculosis* (Mtb). At the moment, the gold standard of epidemiological genotyping of Mtb is Spoligtyping and MIRU-VNTR. These markers, however, have limited use for phylogenetics and strain identification since their fast substitution rate leads to convergent evolution. Recent studies have introduced the use of single nucleotide polymorphisms (SNP) data for identification of Mtb strain groups. In this work we use SNP typing techniques to characterize and compare Mtb populations from Portugal and Brazil. We complement this analysis by discussing the benefits and caveats of this technique. **Material and**

Methods: We defined a set of 79 previously described SNPs to characterize Mtb samples. Using this set we analyze 1915 samples collected in Portugal. From these, 111 were further characterized using Spoligotypes. The set of SNPs was also used to analyze 141 samples from Brazil. All of these were further characterized using Spoligotypes. **Results:** The most frequent bacterial lineage in both countries is lineage 4 corresponding to around 95% of the analyzed samples. Lineage 1 is also present in both populations equally, but in considerably low frequencies (around 1%). Contrastingly, Mtb bacteria of lineage 2 are only present in the Portuguese population with a frequency of almost 3%. Within lineage 4, the most frequent strain groups in both Portugal and Brazil are LAM, followed by Haarlem and then X. Contrarily to these groups, strain group T shows a very different prevalence between Portugal and Brazil, with a frequency of 7% and less than 1.5%, respectively. A comparison between strain identification using Spolygotypes and SNPs show that the former marker misidentify more than 11% of the samples and are unable to identify almost 1%. Furthermore, SNP typing, as opposed to Spoligotypes can provide phylogenetic relationships between the strain group. By close examination of the genotypes of our samples we seem to observe signs of often disregarded recombination events. **Main Conclusions:** Overall, the use of SNP typing reveals striking similarities between Mtb populations from Portugal and Brazil. We also show that this technique can be useful to reveal signs of recombination events in Mtb. **E-mail:** j.sollari.lopes@gmail.com

Diagnosis and Treatment of Tuberculosis

Tb036- **Laboratorial diagnosis of tuberculosis in cultures by the method Ogawa Kudoh at Fundação de Medicina Tropical Doutor Heitor Vieira Dourado (FMT-HVD) –Manaus - AM**

Ane Caroline C. Aniceto[1]; Pedro O. da S. Neto[1]; Ana C. Lima[1]; Joelma Rocha[1]; Geraldo M. Soares[1]; Rossicleia L. Monte[1].
Gerência de Bacteriologia/FMT-HVD[1].

Tuberculosis is an infectious disease, and, despite being one of humanity's oldest diseases, remains a public health problem. In Brazil this disease accounts for 71.000 new cases/year and 4.600 deaths/year. Although still quantitative figures, statistics indicate that Brazil, between 2008 and 2010, managed to reduce the incidence of 38.82/100.000 inhabitants for 37.99/ 100. 000 inhabitants. Were referred to Management Bacteriology / FMT-HVD, 1228 samples of various biological materials for diagnosis of tuberculosis, the methodology used was conventional advocated by the Ministério da Saúde as sputum microscopy (smear test colored by Ziehl Neelsen method and culture for Mycobacterium by the method Ogawa Kudoh) and identification of *Mycobacterium tuberculosis* biochemical's methods, from August 2011 to December 2011. Of the 1228 samples, 91% (1129/1228) were sputum, 3.99% (49/1228) secretions in general, 1.95% (24) biopsies; 1.63% (20/1228) faeces, 0.40 % (6/1228) urine. In 1228 patients we found that 25.24% (310/1228) were HIV negative and 74.76% (915/1228) HIV positive. The samples grown 78.4% (963/1228) there was no growth of Mycobacterium, 8.1% (100/1228) there was growth of other bacterias, 10.6%, (131/1228) were identified as *M. tuberculosis*, 1.62% (20/1228) unrealized cultures, 1.14% (14/1228) identified as Not Causing Mycobacterium Tuberculosis (MNT). Regarding co-infection HIV / TB, 64.8% (85/131) strains were identified as *M. tuberculosis.* The results underscore the importance of performing culture by the method Ogawa Kudoh for diagnosis, especially in paucibacillary specimens of seropositive patients. The methodology Ogawa Kudoh showed good sensitivity/specificity for detection of *M. tuberculosis* in sputum samples.**Supported by:** FAPEAM/PPSUS. **E-mail:** rossi@fmt.am.gov.br

Tb037- Identification of latent tuberculosis cases, by detection of IFN-gamma in families of agricultural workers in Puebla Mexico migrating to Canada

Pezzat Said E*. , Lobato Huerta S*, Fernández Martínez R*, Sánchez Anna **, Duarte A**, García Carrasco M*, Valdez García A*, Macías Díaz S*
* Medical School, Benemérita Universidad Autónoma de Puebla México. ** Brock University Canada

Introduction: Tuberculosis remains a global health challenge. The low uptake of suspects in migrant groups, sputum collection for Ziehl Neelsen smear as well a culture that takes long time to show results are part of the problem that favor the stigmas of the vector. The detection of latent tuberculosis by the method: IFN-gamma-TB, has advantages in specificity, sensitivity, as compared to classical tests and smear IDR. Correlating the clinical and immunological laboratory results, could demonstrate the dichotomy between humoral and cellular immunity in subjects with similar evolution of tuberculosis infection. **Material and Methods**: We surveyed and selected 46 relatives of migrant people to Canada, with suspected TB, Ziehl Neelsen staining were performed in all patients, additionally phlebotomy were done for measurement of interferon gamma, technique for QuantiFERON-TB-Gold. **Results**: Finally, only 18 of the 46 subjects selected gave sputum samples for study, eliminating 5, because of poor quality. The 13 processed samples (28%) were negative for Ziehl Neelsen staining. Were obtained in all subjects blood samples for the detection and quantification of IFN-gamma, of which 6 (13%), resulted in levels of IFN-gamma, suggesting latent TB. **Conclusions**: Although the sample is small, it confirms the difficulty to collect representative samples of sputum for smear in subjects suspected of tuberculosis, especially in women. The presence of IFN-gamma would represent a practical alternative for the diagnosis of latent tuberculosis among vulnerable developing countries. **Keywords:** *Mycobacterium tuberculosis infection, latent tuberculosis, IFN-gamma.***E-mail:** ebpezz13@yahoo.es

Tb038- Identification *M. tuberculosis* strain RD[RIO] resistance in the state of Rondonia

Mendes de Lima, C.A[1,3]., Gomes, H.M[2].; Silva, M.A.P[2].; Oliveira, M. S. C[3].; Suffys, P.N[2].; Moura, M.M.F[3].
1- Laboratório Central de Saúde Pública de Rondônia/LACEN/RO; 2 - Laboratório de Biologia Molecular Aplicada em Micobactérias/LABMAN/FIOCRUZ/RJ/Brasil; 3 - Universidade Federal de Rondônia/UNIR/RO-Porto Velho/Rondônia/Brasil

Despite of improvements in treatment and control of tuberculosis (TB), TB remains a major global public health problem. One of the high tuberculosis (TB) incidence countries in the world, Brazil is characterized by considerable differences in TB incidence on regional and state level. In 2010 in the Rondônia state and in Brazil the incidence tax was 30.3 and 37.7/100,000 habitants, respectively. The aim of this study was to assess the presence of the spoligotypes lineages in the Rondônia state, Brazil. **Methods**: Ninety isolates of *M. tuberculosis* were genotyped by Spoligotyping and the protocol from Gibson *et al.* (2008) was performed to differentiate isolates belonging to the RD[RIO] lineage. **Results**: LAM family (68.9%) was the predominant genotype followed by clade T (13.3%) and Haarlem (5.5%). The RD[RIO] lineage represented 58% from the LAM family. From the 62 isolates that belong to the LAM family, 48.4% (30 isolates) were tested by drug resistance, and 16.7% were resistant to one or more drugs. Eighteen RD[RIO] isolates were tested by the first line drugs and 4 isolates presented drug resistance at least one drug, and 2 isolates showed a single drug resistance (isoniazid) 1 isolate was resistant to isoniazid and rifampicin 1 was resistant to isoniazid, rifampicin and streptomycin. **Conclusions:** The predominant Spoligtyping family in Rondônia was LAM as in other Brazilian states, although more representative (68.9%) comparing the frequency of the same family in other Brazilian states**.** Literature data also confirms that the strains RD[Rio] are associated with resistance. Early detection, effective treatment, and infection control measures for resistance tuberculosis are needed to reduce the transmission and the impact in the public health strategies for TB control, such as the prioritization of certain strains for investigation**. E-mail:** cleoniml@yahoo.com.br

Tb039- Highly sensitive saliva immunoassay for active tuberculosis diagnostics based on epitope biomarkers

Léa D.S. Morais, Fabiana A.A. Santos, Sebastião M. Tafuri, Carlos U. Vieira, Marcelo S. Ferreira, Aercio S. Borges, Luiz R. Goulart
Universidade Federal de Uberlândia, Instituto de Genética e Bioquímica, Laboratório de Nanobiotecnologia, Campus Umuarama 2E-248, Uberlândia, MG, 38400-902, Brazil.

Tuberculosis (TB) is a serious public health problem caused by *Mycobacterium tuberculosis*, which is transmitted through the respiratory tract, with a high mortality rate. It is estimated that one third of the world population is infected with *M. tuberculosis* in the form of latent infection, which may stay for the entire life until a drop of the immunity, resulting in active infection. Brazil, despite the mass immunization of newborns, is among the 22 countries that represent 80% of infected cases. To control dissemination and disease progression, it is necessary to monitor the population for a fast and early diagnosis, ensuring the appropriate treatment and cure. However, the current diagnostic methods do not meet the diagnostic criteria, lacking speed and sensitivity, and are not able to differentiate infection from active disease. Many studies have demonstrated the importance of secreted proteins in virulent strains as diagnostic markers, but none of them has achieved a useful assay. Recently, many authors have brought to public and scientific attention the promising features of saliva as a biological sample, which might be an ideal specimen for testing various diseases. Therefore, in order to overcome the obstacles of TB diagnosis, we have designed a strategy based on phage display to select and characterize high affinity peptide ligands to immunoglobulins A present in saliva of patients with active TB. We used a 12-mer random peptide library (Ph.D 12) to identify mimetic peptides of *M. tuberculosis* antigens that strongly bind to the saliva IgA of infected patients. Twenty clones were selected, amplified, sequenced, translated and analyzed for similarities with the current *M. tuberculosis* protein databank. Five clones showed great similarity with antigens related to *M. tuberculosis* virulence factors, such as CFP-10/ESAT-6, rpf and PE-family of proteins encoded in the Region of Differentiation (RD1). The clones were subjected to ELISA tests to evaluate their immunoreactivity against saliva IgA of healthy individuals (with negative PPD), individuals with positive PPD, TB patients without and under treatment from 0 to 6 months. Statistical analyzes showed that clones have significantly differed healthy and positive PPD individuals from those with active TB ($p<0.05$), with 100% sensitivity and an average of 73% specificity. A regression analysis between ELISA values and treatment period tended to decline, although resistance may be a confounding factor that was not considered. Our clones can be readily used as diagnostic reagents for saliva immunoassays, and they are based on mimetic epitopes of *M. tuberculosis* antigens that are able to differentiate latent infection from active disease, which represent the best and unique biomarkers for TB diagnosis to date with a probable application for monitoring treatment efficacy. **Keywords:** *Mycobacterium tuberculosis*, CFP10-ESAT6, phage display, saliva and peptides.**E-mail:** leaduarte8@yahoo.com.br

Tb040- High performance of Western blotting IgG as complementary test for pulmonary TB diagnosis

Kanunfre K.A[1]; Beck S.T[2]; Arruda R[3]; Leite O.H.M[4]; Lopes M.I[4]; Litvoc M.N[4]; Ferreira A.W[1,5].
Laboratory of Seroepidemiology and Immunobiology, Tropical Medicine Institute, University of São Paulo, São Paulo, Brazil[1];Department of Clinical Chemistry, Federal University of Santa Maria, Rio Grande do Sul, Brazil[2]; Laboratory of Microbiology, Hospital das Clinicas, School of Medicine, University of São Paulo, São Paulo, Brazil[3]; Clinic for Infectious Diseases of the Hospital das Clinicas, School of Medicine, University of São Paulo, São Paulo, Brazil[4];Department of Infectious and Parasitic Diseases, School of Medicine, University of São Paulo, São Paulo, Brazil[1,5].

Background: Tuberculosis is a chronic infection disease caused by *Mycobacterium tuberculosis*. Despite of all efforts to control TB it still remains a major public health problem worldwide and a challenge for the next decades. Rapid diagnosis and prompt treatment is the cornerstone to reduce morbidity, mortality and incidence of tuberculosis. Alternative methods have been developed to overcome the limitations presented by conventional microbiological methods and to improve the diagnosis and prognosis of tuberculosis. Here in we verified the diagnostic performance of Western blotting for IgG anti-*M.*

tuberculosis detection. **Material and Methods:** Seventy - two patients were followed up in the tuberculosis outpatient department of Hospital das Clinicas de São Paulo; active pulmonary tuberculosis was diagnosed based on clinical and laboratorial criteria (sputum or bronchoalveolar lavage or biopsy). As control group were included serum samples from blood donors (N=200) and healthy individuals (N=30). Western Blotting was performed as described by Kanunfre KA, 2007. **Results:** Considering as positivity criteria IgG reactivity against two antigens fractions by Western blotting, we obtained a high performance with sensitivity of 93% (67/72) and specificity of 95% (190/200), attending WHO requirements for serological tests. Negative and positive predictive values were 97.4% and 87%, respectively; the positive likelihood ratio was 18.6 and negative likelihood ratio was 0.073. **Conclusions:** Taken together, these findings suggest that Western blotting could be a very useful supplementary tool for pulmonary tuberculosis diagnosis, especially in patients with acid fast bacilli smear negative. **Financial support:** FAPESP: 03/08308-2**. E-mail:** kanunfre@usp.br

Tb041- **Micronucleus rate in oral mucosa in patients with pulmonary tuberculosis after the first phase of scheme I (2RHZ)**

Ramos, L.J[1]; Meneguetti, D.U.O[2]; Zan, R.A[3], Farias, G.J[3]; Uesugui[1]; H.M; Ishak, R[4]
1Department of Health, Faculdade de Educação e Meio Ambiente, Ariquemes, Rondônia, Brazil. 2Department of Biology, Faculdade de Educação e Meio Ambiente, Ariquemes, Rondônia, Brazil. 3Department of Chemistry, Faculdade de Educação e Meio Ambiente, Ariquemes, Rondônia, Brazil. 4Virus Laboratory, Institute of Biological Sciences, Universidade Federal do Para, Brazil

Introduction: Tuberculosis (TB) remains a great health problem to be solved globally, especially in some regions, as the Brazilian states of Rio de Janeiro and Amazonas. The use of anti-TB drugs involving biosynthetic processes in cell growth, including RNA transcription, translation of protein and biogenesis of the cell wall showed no evidence of benefits on oral cells, which they are commonly administered. **Objective:** To determine micronuclei (MN) frequency in the oral mucosa in patients with pulmonary tuberculosis during the first two months of treatment of anti-TB drugs. **Methods:** Nine patients with pulmonary tuberculosis from a Basic Health Unit in Ariquemes/RO, selected in a random fashion, and nine students from the Faculdade de Educação e Meio Ambiente (Faema) without pulmonary TB and no use of drugs administered orally, as negative controls. Participants signed an informed consent and performed an oral rinse with distilled water in three replicates. Vestibule side walls were sampled with a disposable brush, and cells were examined with the aid of a binocular microscope (1000x magnification). **Results:** Cells counted a total of 74 MN/volunteers in nine patients with pulmonary tuberculosis before drug treatment, with an average of 8.2 MN/1000 cells, and a total of 60 MN/volunteers after the first two months of treatment with an average of 6.6 MN/1000 cells. The control group had 26 MN/volunteers with an average of 2.8 MN/1000 cells. Comparing this three groups, there were significant differences between the two treatment groups when compared to the control group (p <0.01). **Conclusion:** Comparison of MN among the groups showed statistical significance compared to the control group, but there was a decrease in the number of MN at the end of the first phase of the scheme I of anti-TB treatment. The increase in micronuclei may be also caused by external factors including smoking and use of alcoholic beverages, which was denied by the individuals of this study. Since the treatment will continue for four months, more broad observations will be added about the complete period. **Keywords:** Tuberculosis, Micronuclei, Mutagenicity and Oral cells. **E-mail:** dionatas@icbusp.org

Tb042- **Tuberculin skin test operational research in Mato Grosso do Sul**

1Oliveira, SMVL. 2Souza, FQ. , 3Ruffino-Neto, A , 3Oliveira, O.A , 4Marques, M. , 5Cunha, R.V 6Paniago, AMM
1Serviço Hospitalar de Epidemiologia /UFMS- Campo Grande/MS, 2 NHU/UFMS Campo Grande/MS, 3Faculdade de Medicina Preventiva – USP/Ribeirão Preto, 4Secretaria Estadual de Saúde – Campo Grande/MS, 5FAMED –UFMS/Campo Grande/MS, 6HDIA Prof. Esterina Corsini /UFMS- Campo Grande/MS

In 2008, the World Health Organization reported approximately 9.2 million cases of active tuberculosis with 1.7 million deaths worldwide per Persons recently infected with Mycobacterium tuberculosis have a 3

to 5% chance to develop the disease in the first two years and 5 to 15% during their lifetime. Most infected people remain healthy with a latent infection, demanding several immune mechanisms to prevent the disease progression. **Objective:** This work focused the operation of tuberculin skin tests in Tuberculosis Control Programs and Specialized Care Services of the National Program of STD/AIDS and Viral Hepatitis in priority municipalities for tuberculosis in Mato Grosso do Sul. **Material and Methods:** Descriptive epidemiological, cross-sectional, survey-type study. Through interviews and technical visitations to the people responsible for applying and reading the tuberculin test, several items were analyzed: the trainings, the available input, the weekdays reserved for application procedures, the behavior in case of loss of reading, and storage. The number of surveys in vulnerable populations and the number of tests and chemoprophylaxis performed in 2008 and 2009 were also studied. **Results:** In six municipalities 12 managers were interviewed. Nursing teams were responsible for conducting the tuberculin skin test. Not all programs for STD/AIDS performed testing. This technique learning is a result of the personnel´s own professional experience. There were no standard readers. All the places investigated counted on bottles of 5mL PPD Rt 23 under proper cooling, with temperature control shared with the cooler of the Immunization Program. Insulin syringes were commonly used. The testing took place during business hours, three times a week. In case of loss of reading, telephone calls or home visitation was carried out. The sum of tuberculin skin tests was 2305;46% (1053) were performed in the indigenous population, 36% (831) for survey purposes during training and only 18% involving contacts and vulnerable populations. There were four records of chemoprophylaxis of tuberculosis in the vulnerable population and 126 in the indigenous population. **Conclusions:** The priority municipalities showed operational difficulties in the main axes: human resources, input, and information records**. E-mail:** sandrinhaleone@gmail.com

Tb043- **Reported cases of multidrug-resistant tuberculosis and extensively drug-resistant tuberculosis in Salvador, Brazil**

Cardoso, CW[1,2] ; Fialho; RMRS [1] ; Santos, RS [1]
[1]Gonçalo Moniz Research Center, Oswaldo Cruz Foundation, Brazilian Ministry of Health, Salvador, Brazil, [2] Municipal Secretary of Health of Salvador, Brazil

The bacteria that cause tuberculosis (TB) can develop resistance to the antimicrobial drugs used to cure the disease. Multidrug-resistant tuberculosis (MDR-TB) is TB that does not respond to at least the two most powerful antituberculosis drugs. There were about 650, 000 cases of MDR-TB present in the world in 2010. It is estimated that about 9% of these cases were XDR-TB. Reporting of suspected cases of Tuberculosis is mandatory in Brazil. In 2011 Salvador ranked third among the Brazilian cities in number of new cases of tuberculosis (2,500 cases/year) and MDR-TB (30 cases/year) with an estimated incidence of 70.1/100,000 inhab. We study the distribution of MDR-TB and XDR-TB in period of years (2004-2011). **Material and Methods:** Confirmed cases are reported by public health facilities to municipal and state health departments using standardized case report forms for entry of data into the national Notifiable Diseases Information System [*Sistema de Informação de Agravos de Notificação* (SINAN)] and also into the TBMR system. Case report forms include patient identification, age, gender, clinical signs and symptoms, samples collected, diagnostic tests performed and antibiotic susceptibility evaluation. Prevalence and incidences were calculated using population estimates for Salvador from the 2010 census obtained from the Brazilian Institute of Geography and Statistics (IBGE), the Brazilian census bureau. **Results:** the first reported cases (03) of MDR-TB and XDR-TB (10) in Salvador were in 1998 and 2011, respectively. Most of the XDR-TB cases are men (70%) and the mortality rate is 30%. From 2004 to 2011, of 244 MDR-TB cases were reported, 213 were confirmed: 18.8% stayed in failure treatment, 34.3 % cure, 14.3% abandoned 7.5% death (TB and death for other causes) and 2.8% have no information of treatment. 66% were men and 34% women. 15% were unemployed and 10.7 % were housewives. Most of them (60.5%) had other occupation. The prevalence by age group was 28.3% (45-54 yrs), 23.8% (25-34 yrs), 17.6% (15-24 and 35-44 yrs), 7.8% (55-64 yrs) and 4.9% (65 + yrs). According to schooling years: 41.8% had 4 to 7 years, 23.4% had 8-11 yrs, 7.8% either had none or 12+ years, and 3.3% were unknown. The cases were spread out in the city and no clusters were identified. **Conclusions:** Despite the numbers of cures, abandonment of treatment still is a problem. The most severe forms of TB (M/XDR-TB) are the result of consecutive treatment abandonment. This gives resistance to *M. tuberculosis* to

conventional drugs and all second and third line medications to control the disease. M/XDR-TB is a major challenge to be addressed as part of the Stop TB strategy and the response to MDR-TB must be built across health systems, especially by investment in primary care. **E-mail:** criswcardoso@yahoo.com.br

Tb044- **Multi-resistant tuberculosis in Brazil from 2001 to 2011: dialogue between public policy and epidemiology**

Manoel Guedes de Almeida , Tayná Maria Gonçalves Varão Silva, Antonio Allan Sales , André Fonseca Nunes , Dhony Ferraz da Silva Almeida , Tony Ferraz da Silva Almeida , José Ivo dos Santos Pedrosa

Introduction: Indiscriminate use of antibiotics, discontinuous treatment and associated comorbidities such as HIV, converged to multidrug resistance (MDR) Mycobacterium tuberculosis to multiple drugs. Resistant strains have excelled in induced selection as a reflection of the disintegration of health systems in developing countries, *POLÍTICA MEDICAMENTALIZADORA NEO-LIBERALISTA* and public health policies (PHP) assistance, MDRTB is a global concern, inert to rifampin and isoniazid, drugs and greater potential bactericidal regard TB as well as the potential for its spread. The objective of this study is to discuss the epidemiology of MDRTB in Brazil and throughout its dialogue with the socio-cultural and public health policies in the country. **Materials and Methods:** Qualitative and quantitative research retrospective. It is based on direct collection of quantitative data in Brazil between 2001 and 2011 in tabulations of the Information System for Notifiable Diseases. Then, it follows an active search for theoretical bases Scielo, Bireme and BVS using descriptors: multidrug-resistant tuberculosis, epidemiology, and public policy. **Results:** It was observed during the study period, prevalence of MDR-TB in 2166 (X = 166.91), representing 2.21% of total TB cases. In the same decade, an increase of 3.28% in MDR-TB cases registered, with a peak between 2006 and 2007, 9.28% and 10.57% of the total, respectively. Since then, the prevalence of MDR-TB decreased from 34.6% until the year 2011. It was found co-infection with HIV / MDR-TB in 91 patients (4.20%). It was noticed in 10.04% increase in the number of annual deaths by MDR-TB, with a peak in 2007 (18.64%) and 2010 (18.58%). From 2001 to 2005, however, the number of deaths due to MDR-TB did not exceed 3.10%; in the following years, there *WAS NO TIME TO DROP DOWN TO 10.80% IN 2006* and in 2011 this rate was of 10.90%. **Conclusion:** Models and forms PHP reorient activities and knowledge, as well as the territorial space and symbolic of a particular collective. The model incorporates Flexnerian pathologies habits and to them the drugs as solution of all wrongs of life. In this context, Brazil is inserted as an acceptor and subservient to the technical-scientific production, not talking to the socio-cultural aspects of the population that harbors. About the MRTB, the unrestricted use of antibiotics, combined with others aspects reproduced in medical education are crucial. The focus of PHP in restricting TB to risk factors limits them to the preventive actions not dynamic, incapable of following the epidemiological and social changes of recent years. The TB / AIDS proved to be important, but also other are compared as, TB-Poverty, changing operations to manage and quality of life. It is, therefore, imperative to understand TB as a disease eminently social. Therefore, actions that aim to interfere with their fees are, in addition to welfare, interfere in the promotion of the collective health. **E-mail:** manoel.medufpi@gmail.com

Tb045- **Factors associated by the noncompliance with TB treatment in Recife, Brazil**

Silva, CCAV.; Santos, CDA.; Moraes, ACO; Andrade, MS; Cardoso, MD.
University of Pernambuco, Recife, PE, Brazil

Introduction: Although potentially preventable and curable TB still is a major public health problem worldwide being the noncompliance with the treatment one of the main difficulties for its control. Many factors can be associated with the noncompliance and abandonment of the treatment being the main ones related to the medication, to the patient itself and to the health service and the professional team. In Brazil, the abandonment treatment rates of TB, is above the one considered accepted by the World Health Organization. Pernambuco detains one of the worst indicators of TB in Brazil, being so the first State of the Northeast in number of cases and the second in the country in mortality rate due to the

disease, Recife being the Brazilian capital with the highest incidence (48,2%) of the country. **Methods:** A comparison study was made whose population was composed by the TB cases notified to the Information System for Notifiable Diseases of two polyclinics from the Sanitary District I from the city of Recife, PE, in the period of January 2005 to December 2010. It was considered a case a notified individual whose close was the abandonment of treatment. To the comparison group is it considered the notified individuals in the same period as the case whose close was the cure. Binary logistic regression models were adjusted to indentify the independent factors associated with the abandonment considering the significance level to hypothesis rejection of 0,05. **Results:** In the time and place studied 711 cases of TB from which 61% were from males, had an average age of 40 years old (± 16,9 DP), 59% were brown or yellow colored people, 30% had completed high school and 6% were in psychiatric hospitals. The main way of entrance of new case (89%) and pulmonary was the most frequent way to present the disease (85%) where 67% showed positive smear. As for the treatment 71% were under DOTS and on the closing, 71% were closed by cure, 15% by treatment abandonment. No education (OR: 4, 9; IC 95% 1,4 – 16,7) and reentry after pretreatment abandonment (OR: 7,4; IC 95% 2,3 – 26,7) were the only independent factors associated with abandonment of TB treatment. **Conclusions:** This study showed that although the socio demographic and clinical epidemiological profile of TB cases notified by the two services is not different from what is observed in the national casuistry, lack of education and history of previous noncompliance were the associated factors with the TB abandonment treatment. **E-mail:** miriandomingos@yahoo.com.br

Tb046- **Factors affecting treatment outcomes of tuberculosis in a tertiary health center in Southwestern Nigeria**

*Babatunde OA, **Fadare JO, *Elegbede OE, *Isinkaye AO, *Ibirongbe DO, ***Akinyandenu J
Department of Community Medicine, Federal Medical Center, Ido-Ekiti, Nigeria, **Department of Internal Medicine, Federal Medical Center, Ido-Ekiti, Nigeria, ***Department of Family Medicine, Federal Medical Center, Ido-Ekiti, Nigeria

Background: This study investigated treatment outcomes of TB among TB cases and the factors affecting them. **Methodology:** A descriptive cross-sectional study was carried out using records of patients seen at the Directly Observed Treatment Short-course (DOTS) Clinic of the Federal Medical Center Ido-Ekiti, Nigeria in year 2010. **Results:** Successful treatment outcomes were seen in 36 (46.1%) cases. Proportion of TB cases that were smear positive was 40 (51.3%) of which HIV status was recorded for 33 (82.5%) cases while those with HIV-TB co-infection were 8 (20%). All cases under 10 years had bacteriological confirmed TB. Of those with poor treatment outcome, 66.7%, 25.0%, and 8.3% were defaulters, died and treatment failure respectively. Non HIV associated TB was found in 52 (66.7%) cases. Factors that affected the TB outcome negatively were smear positive status at diagnosis, failure to give consent for HIV test, HIV co-infection, and Extra-pulmonary TB with statistically significant p-values. **Conclusion:** Just about half of the cases had successful treatment outcomes. HIV co-infection and lack of consent for HIV testing a major factor determining negative treatment outcome. There is need to pay more attention to management of HIV-TB co-infection in order to reduce poor treatment outcome from Tuberculosis. **Keywords:** Defaulter, HIV Co-infection, Treatment failure, Tuberculosis**. E-mail:** wolleking@yahoo.com

Tb047- **DNA damage in cell of patients during anti-tuberculosis treatment**

Oliveira, L.R.C.[1]; Peresi, E.[1]; Tavares, F.C.[1]; Corrêa, C.R.[2]; Pierine, D.M.[2]; Calvi, S.A.[1]
1. Department of Tropical Diseases, Botucatu School of Medicine – UNESP, São Paulo State University, Brazil, 2. Department of Internal Medicine, Botucatu School of Medicine – UNESP, São Paulo State University, Brazil

Introduction: Tuberculosis (TB) is a chronic infectious disease and one of the biggest causes of morbidity and mortality worldwide. The expression of iNOS with the consequent production of NO during the inflammatory process is an essential part of bacteria destruction. There are no studies on peripheral DNA damage in TB patients under anti-tuberculosis treatment and its association with oxidative stress. Thus the objective of this study was to investigate whether pulmonary TB patients undergoing anti-

tuberculosis treatment present DNA damage and if this damage is related to oxidative stress, by evaluating total hydrophilic antioxidant capacity and iNOS expression. **Material and Methods:** Peripheral blood mononuclear cells from 19 pulmonary TB patients under anti-TB treatment and 20 healthy PPD[+] controls were used to evaluate DNA damage by single-cell gel electrophoresis (Comet Assay), and quantify iNOS expression by qPCR. We also evaluated total hydrophilic antioxidant capacity in plasma from patients and controls. **Results:** Pulmonary TB patients under treatment presented increased DNA damage compared to controls, which diminished during treatment. Similarly, the antioxidant capacity of these individuals was increased at the start of treatment in relation to controls, and reduced during treatment. As for iNOS expression, TB patients presented inhibited expression of this enzyme in relation to controls, although this expression tended to increase during treatment. **Conclusion:** In conclusion, our results indicate that pulmonary TB patients under anti-TB treatment present DNA damage in peripheral blood mononuclear cells. However this damage was not related to nitric oxide but probably due to other free radicals responsible for the elevated total hydrophilic antioxidant capacity. **Keywords**: DNA damage, tuberculosis, antioxidants, iNOS. **E-mail:** francilene_capel@hotmail.com

Tb048- **Genetic diversity and first line anti-tubercular drug resistance patterns in Assam, India**

Mahanta, J.*[,1], Devi, K. R.[1,2], Das, B.[1], Bhutia, R.[1] and Narain, K.[1]
[1]Regional Medical Research Centre, N.E. Region (Indian Council of Medical Research), Post Box #105, Dibrugarh 786 001, Assam, India, [2]Department of Environmental Health Sciences, Kochi Medical School, Oko, Nankoku City, Kochi 783-8505, Japan

Introduction: There has been an alarmingly rapid development of multidrug resistance and extensively drug resistance strains of *Mycobacterium tuberculosis* worldwide. Multidrug resistant tuberculosis (MDR-TB) has been a cause of concern in both developed and developing countries. Surveillance data on primary drug resistance in *Mycobacterium tuberculosis* (MTB) are important to design tuberculosis control programs. There is a paucity of information about primary drug resistance in MTB in Assam, India. Community and hospital-based study was carried out in Assam to assess the prevalence of primary anti-tubercular drug resistant pattern in MTB. **Material and methods**: A total of 93 *M. tuberculosis* isolates from tea- garden community and 120 samples from tertiary care hospital of Assam were collected during period of May 2004 to February 2012. The sample collected was fresh sputum from patients with pulmonary tuberculosis cases, who did not have prior history of anti-tuberculosis treatment. The isolates were identified based on their colony characteristics and conventional biochemical test like nitrate test, 68^0C catalase test and Para-nito-benzoic acid test, AccuProbe MTB culture identification, amplification of hsp 65 gene region and restriction digestion (with enzymes Bst EII and Hae III). Drug susceptibility test was done using proportion method as per the standard guidelines. Spoligotyping was also done to 18 *M. tuberculosis* isolates from Assam **Results**: Of the 120 isolate tested from tertiary care hospital,15 (12.5%) of cases were found to be multi-drug-resistant TB, out of which 12 were confirmed as MDR-TB by BacT/ALERT 3D. Resistance torifampicin was 25%, isoniazid 25.83%, ethambutol 19.6%, Streptomycin 25% and Pyrazinamide 5%. Out of 93 samples tested from tea-garden community of Assam, 7 (7.4%) were found to be MDR-TB. Resistance to rifampicin was 12.9%, isoniazid 15.1%, ethambutol 16.1%, Streptomycin 33.3% and Pyrazinamide 9.7%. Spoligotyping results revealed that 11 (61.1%) spoligotypes belonged to previously identified shared spoligotypes. Seven (38.9%) isolates were orphan i.e. were unique to Assam. Predominant spoligotypes were ST1 (Beijing) 22% and ST 26 (CAS family) 16%. **Main conclusions:** Our study showed high prevalence of MDR-TB among TB patients who were never treated earlier and the resistance increased significantly in the tertiary care hospital of Assam indicating the need for strengthening TB control programme. **E-mail:** jmahanta@gmail.com

MycobacRG001- **Outbreaks caused by rapidly growing mycobacteria in the State of Sao Paulo**

Marques, D.

Introduction: Infections due to rapidly growing mycobacteria (RGM) have being considered health emergencies in several countries, among other factors, related to the increase in low and medium complexity surgical procedures, particularly aesthetic and videoscopy procedures. Since 2004, MCR infection outbreaks due to surgical, aesthetic procedures and injections have been reported in the state of São Paulo. **Objective:** To describe the cases and characterize the outbreaks caused by MCR in the State of Sao Paulo, according to time, place and characteristics of the individuals. **Methods:** Descriptive study based on secondary data, which included reports of RGM cases to the Divisão de Infecção Hospitalar do Centro de Vigilância Epidemiológica, SES-SP, from 2004 to 2009. MCR strain laboratory analysis were performed using the PRA-hsp65 and molecular typing using different techniques for *M. fortuitum* and PFGE for *M. abscessus* 1 or *M. abscessus* 2. **Results:** A total of 132 cases were identified. Procedures were carried out in the following cities: Campinas (46.2%), Andradina (45.5%) and Assis (8.3%). Cases were mainly female, 107 (81.1%) and the most frequent age groups were 20-29 (42/132, 31.8%) and 30-39 (39/132, 29.5) years old. Among the cases reported, 68 (51.5%) were classified as "confirmed", 47 (35.6%) "Suspicious" and 17 (12.9%) "Probable". Intramuscular or subcutaneous injection accounted for the largest outbreak (58/132, 43.9%), followed by breast implants (25/132, 18.9%), aesthetic body treatments (17/132, 12.9%), laparoscopic cholecystectomy (12/132, 9.1%), breast implant combined with other procedures (10/132, 7.6%), breast reconstruction (4/132, 3.0%), arthroscopy (2/132, 1.5%) and others (4/132, 3.0%). The incubation period ranged from 0 to 547 days with a mean of 54.6 days and a median of 28 days. Among the sixty-eight isolates analyzed, the following species were identified: *M. abscessus* (26/68, 38.2%); *M. fortuitum* (23/68, 33.8%); Complex *M. massiliensis/abscessus/bolletii* (12/68, 17.6%); MCR without identification of the species (6/68, 8.8%) and one case of *M. porcinum* (1.6%). **Discussion:** MCR infections have been reported in the state of São Paulo for almost a decade. The source of infection was not identified in any of the outbreaks described. **Conclusion:** We have described three MCR infection outbreaks in São Paulo state, related to videoscopy surgery, breast implants, intramuscular and subcutaneous injections and cosmetic procedures. The analysis and dissemination of these data contribute to a better understanding of epidemiological aspects of these events and can also contribute to inform preventive measures in future. **Keywords:** *Mycobacterium* infections. Epidemiology. Molecular biology, *Mycobacterium*/growth & development. Disease outbreaks **E-mail:** ufudaniel@yahoo.com.br

MycobacRG002- **Evaluation of Rapidly Growing Mycobacteria Outbreaks in Rio Grande do Sul State, southern Brazil**

Nunes, L.S.[1]; Cardoso, C.M.[2]; de Paris, F.[1,3]; Baethgen, L.F.[7]; Ribeiro, M.O.[4]; De David, S.M.[4]; Farias, V.C[4,5]. Silva, M.G.[6]; Duarte, R.S.[6]; Barth, A.L.[1,2,3].
[1]Programa de Pós Graduação em Ciências Médicas - Universidade Federal do Rio Grande do Sul – UFRGS; [2]Programa de Pós Graduação em Ciências Farmacêuticas - UFRGS; [3]Serviço de Patologia Clínica - Hospital de Clínicas de Porto Alegre – HCPA; [4]Laboratório Central de Saúde Pública/RS – IPB-LACEN/RS; [5]Centro Universitário Metodista IPA/RS; [6]Instituto de Microbiologia - Universidade Federal do Rio de Janeiro - UFRJ; [7]Programa de Pós Graduação em Patologia – Universidade Federal de Ciências da Saúde de Porto Alegre – UFCSPA.

Outbreaks infections associated to rapidly growing mycobacteria (RGM) have been increasingly reported, including Brazilian states. From the RGM group, members of the *M. abscessus* complex are the most pathogenic and antimicrobial resistant. Even with multiple drug combinations, multiresistant *M. abscessus* infections may be difficult to cure. The aim of this study was to evaluate the antimicrobial susceptibility and genetic diversity of RGM isolates involved in outbreaks from Rio Grande do Sul state. One hundred

and thirteen suspected cases of postsurgical infections were reported in Rio Grande do Sul State, southern Brazil between 2007 and 2010. In 2007 Santo Ângelo city reported 44 cases. In 2008 Tramandaí city reported 39 cases and Santa Maria city 4 cases. In 2010 Carazinho city reported about 26 cases. The study was designed to access RGM molecular identification, typing and *in vitro* antimicrobial susceptibility. Forty-two cases (37%) were confirmed by mycobacterial culture, and identified by the method of PCR-restriction enzyme analysis of the *hsp*65 gene (PRA-*hsp*65). The restriction pattern from PRA-*hsp*65 identifies the isolates as *Mycobacterium abscessus subsp. boletti*. The molecular analysis of thirty-one isolates from Carazinho, Santa Maria, Tramandaí and one isolate representative of the outbreak in Rio de Janeiro (CRM-019) were further identified by *rpoB* partial sequencing, confirming the PRA-*hsp*65 identification as *M. abscessus subsp. boletti*. This subspecies belonged to a single clone already described with BRA100, as indicated by pulsed-field gel electrophoresis (PFGE) analysis. Sixteen isolates were evaluated for their susceptibility to amikacin, ciprofloxacin, cefoxitin, clarithromycin, doxycycline, sulfamethoxazole, moxifloxacin and tobramycin. All isolates were susceptible to amikacin, and fifteen isolates presented intermediate resistance to cefoxitin. Three isolates were clarithromycin resistant and all isolates were resistant to ciprofloxacin, doxycycline, sulfamethoxazole, moxifloxacin and tobramycin. This study reports the high frequency of a single clone of *M. abscessus subsp. boletti* associated with an epidemic of postsurgical infections caused by RGM in Brazil. RGM has been a constant concern for Public Health authorities. Further studies are being performed as MIC and characterization of resistance genes in order to identify the factors involved with mycobacteria persistence to sanitizing, equipment and products or inputs used. For better epidemiological surveillance, molecular typing methods may be used to monitor geographic spread and prevalence shifts of epidemic and endemic clones.**Support:** CNPq, FIPE, ICOHRTA 5 U2R TW006883-02 e ENSP-011-LIV-10-2-3. **E-mail:** lucianadesnunes@hotmail.com

MycobacRG003- **First case of infection after prosthesis implantation of silicon by mycobacteria rapid growing complexes in a teaching hospital**

García-Zapata MTA, Peleja EB, García-Zapata MRC & Batista LJA
Re-Emerging Agents Research Center / DMTD / IPTSP / UFG, Hospital Infection Control Committee & Central Laboratory / HC-UFG, FM / School of Medicine/PUC-GO, Goiania-GO, Brazil

Introduction: Nontuberculous mycobacteria (NTM) are dispersed in nature and unlike the species of the *Mycobacterium tuberculosis* complex exhibit variable pathogenicity. The ability of NTM to produce disease is clearly documented in the literature and its importance has been increasing steadily with isolates of different species. Most of these Mycobacteria Rapid Growing (MRG) are potentially pathogenic. The diagnosis of disease by MRG requires caution, because their isolation from clinical specimens may signify transient colonization or contamination. Therefore, the clinical-laboratory is essential for the diagnosis and to determine the therapeutic strategy. Due to the similarity of some species of MRG were created some complex mycobacteria. **Case Report:** Female patient, 26 years old, born and raised in Goiania - GO, Brazil. Public official who said that 15 days after silicone breast prosthesis observed inflammatory signs (mild / moderate, left> right) and then exudate, and increased volume of both breasts. She was taken to the surgeon who drained approx 20 ml of a greenish-brown secretion, without characteristic odor. She denied fever at all times the prostheses were removed and collected samples for acid-fast bacilli (AFB) and empirical treatment initiated within 48 hours with ciprofloxacin and clindamycin. After was implemented, the scheme recommended by the Goiania Health Department, with Amikacin 1 g / d - IM for 15 days and Clarithromycin 750 mg (12/12 h) by mouth must take up to 6 months. After 72 hours it was observed a clear improvement and disappearance of local inflammatory signs. She is currently asymptomatic. By biochemical tests and sequencing (PCR) identified the following species *Mycobacterium wolinskyi* (*M. smegmatis* Complex) and *M. senegalense* (*M. fortuitum* complex). **Conclusion:** Here we report the 1st case in a teaching hospital in the central west of Brazil in a patient who had infection after breast surgery for two complexes MRG simultaneously. Although in this particular case, we do not know exactly the cause of this infection, it is known that the stiffness in compliance with precautionary measures and established protocols is the cornerstone for reducing the impact of these infections in plastic surgical procedures. However, knowing how to identify, diagnose and properly treat mycobacterial disease is of paramount importance to minimize the morbidity

of the patients. Thus it is essential antibiogram, which in this case is a warning to schemes established by the case of a mixed infection of two species of mycobacteria. **E-mail:** mctulianglobal@gmail.com

Epidemiological and Control of Leptospirosis

Leptos001- **Epidemiological situation of human leptospirosis in the state of Rio de Janeiro the period 2007 to 2011**

Silva, D.E.; Junior, J.C.B; Assis, C.H.C; Junior, G.T.S; Almeida, P.M.P, Teixeira, A.C.V.; Carnevale,L.M. & Moza, P.G.
Vigilância Epidemiológica das doenças transmitidas por Vetores e Zoonoses – Secretaria de Estado de Saúde do Rio de Janeiro - RJ - Brasil

Introduction: Leptospirosis is a public health problem of global importance, and in Brazil, is a notification disease. It is a potentially serious acute infection caused by bacteria of the genus Leptospira, which can be acquired through contact with environments contaminated by the rats urine. **Method:** In order to identify the epidemiology of leptospirosis in the state of Rio de Janeiro, 2007-2011, were analyzed the following variables from the database of the Information System for Notifiable Diseases (SINAN): number of cases reported and confirmed, and the number of cases by sex, age group, the clinical manifestations of the disease over the years and deaths by injury. **Results:** According to the results, it was observed that there was an increased reporting of suspected cases and acknowledgments over the years. These cases focused mainly on the Metropolitan Region. However, in 2011, the Serrana Region led this ranking as a result of heavy rains that hit some of its municipalities. The males and aged between 20 and 49 years were the most affected by the disease. Regarding clinical manifestations, fever, myalgia and headache became more frequent, while jaundice, kidney failure and respiratory changes were increased from 2008 to 2010 and a decline from 2010 to 2011. Just like the notifications, deaths have shown predominant in males and also in people aged between 20 and 49 years. However, in 2010, this number was higher in the age group 50-64 years. There was a significant reduction in mortality in 2011. **Conclusion:** These data suggest that each year the surveillance have been more vigilant and effective. Immediate notification of suspected cases, and later research by the epidemiological surveillance is a way to signal the areas where cases are concentrated for the adoption of measures necessary to control the disease in these locations. It is essential to suspected / early diagnosis of Leptospirosis in order to avoid serious and reduce the number of deaths caused by this disease. **E-mail:** adtvz@saude.rj.gov.br

Leptos002- **Leptospirosis: population awareness and attitudes, Prosamim Project, Manaus, Amazonas**

Lins RT[1,2], Santos MC[2], Mota CB[2,3,4], Moura MAS[2], Nogueira GC[2,5], Saraiva MGG[2,6].
1 Instituto Ensino Superior Materdei. 2 Fundação de Medicina Tropical "Doutor Heitor Vieira Dourado". 3 Fundação de Vigilância em Saúde. 4 Universidade Anhanguera Uniderp. 5 Universidade Estadual Amazonas. 6 Universidade NiltonLins. Manaus, Amazonas, Brasil.

Introduction: The municipality of Manaus presents environmental and climatic characteristics that contribute to registration of work and water-caused diseases. The urban areas of Manaus, mainly those lying on stream banks and, at times even beds, have been being encroached on along the years by housing projects derived from population growth, causing modifications in the local landscape, which up to then used to be pristine, thus causing environmental impact brought about mostly by the lack of basic infrastructure. **Objective:** To analyze the awareness and attitudes of the people residing within the river of Manaus project PROSAMIM. **Material and methods:** Analysis from information in the questionnaire applied to people aged ≥ 18 years living in the PROSAMIN project, whose variables were gender, family income, schooling and what they knew and did about the disease, partial findings according to PAICE/FAPEAM/FMT-HVD. **Results:** 44 interviews took place, of these 25 (59%) were female and 19

(41%) male, with average age being 34 years old. As local and household basic sanitation, 100% reported having household plumbing and drinking water and daily garbage collection, 38 (89%) reported to prefer throwing their trash out on the street and 21 (48%) into the river itself. Regarding their knowledge about the disease, 30 (68%) said they knew about it the disease, 31 (70%) to know the mode of transmission, saying that: the disease was transmitted by drinking untreated water (77%) 24; mosquito bite (29%) nine; garbage (90%) 28; sick neighbors (32%) 11; sewer cleaning (94%) 29; through animals (68%) 21. As to reservoir, 32 (73%) indicated mice; that they came from the sewers (82%) 36; trash (45%) 20; the homes of neighbors (45%) 20 and 19 (43%) the river. As for the reservoir, 32 (73%) indicated the mouse. As to where they came from 36 (82%) responded to be the sewers; 36 (45%) trash, 20; the homes of neighbors (20; 45%) and 19 (43%) the river. Of the total, four (9%) said they knew the signs and symptoms of the disease, but the answers were inadequate. All denied having been seized by leptospirosis. **Conclusions:** The PROSAMIM changed the local scenario due to infrastructure, but did not influence the change of practices regarding the destination of the waste. Most people are unfamiliar with the aspects of the disease. Therefore, it is important to implement proper and permanent health education culture on populations for the prevention of this disease, thus avoiding getting sick and dying from leptospirosis. **E-mail:** raphaeltorreslins@yahoo.com.br

Leptos003- **Serological investigation of canine leptospirosis in the urban area of Teresina, Piauí state, Brazil**

[1]Silva, E.R.D.F.S.; [1]Drumond, K. O.; [1]Gonçalves, L.M.F.; [2]Castro, V.; [1]Costa, F.A.L..
[1]Universidade Federal do Piauí. Teresina, Brasil. [2]Laboratório de doenças bacterianas da reprodução, Instituto Biológico de São Paulo, Brasil.

Introduction: Leptospirosis is a zoonosis that affects domestic animals, wildlife and humans. The dog has an important role in the disease transmission because of their close relationship with humans. In Teresina, Piauí, Brazil, there are no records on the occurrence of leptospirosis in both dogs and humans. This study aims to detect anti-*Leptospira* spp. antibodies and identify the most frequent serovars in dogs in the city of Teresina, Piaui state. **Materials and Methods:** We collected 220 blood samples from mongrel dogs, adult, males and females during the period of July 2010 to May 2011, coming from neighborhoods Pedra Mole, Matadouro and Angelim in Teresina. Serum samples were analyzed by microscopic agglutination test at the Laboratory of Bacterial Diseases of the Reproduction of the Biological Institute of Sao Paulo. The criterion to be considered serorrreagent was 50% agglutinated *Leptospira* by microscopic field at 100 fold increase. Serovar recorded was the one who had a higher title. **Results:** a total of 220 (100%) serum samples 34 (15.4%) were seropositive and 186 (84.6%) were seronegative. Among the reagents, Butembo serovar was the most frequent (4.09%), followed by Australis (2.27%), Autumnalis (1.82%), Canicola (1.82%), castellonis (1.82 %), Copenhageni (1.36%), Grippotyphosa (0.90%), Icterohaemorrhagiae (0.45%), Shermani (0.45%) and Pomona (0.45%). The neighborhoods Pedra Mole (6,36%) and Matadouro (8,18%) had the highest number of positive dogs for *Leptospira* spp. The district Angelim had only two (0.9%) seropositive dogs. The dogs were never vaccinated to leptospirosis. **Conclusions:** The evidence of *Leptospira* infection in dogs in the city of Teresina should alert the health authorities of the state of Piaui to adopt measures to prevent and control the disease, aimed at combating floods and more appropriate allocation of urban waste. **E-mail:** fassisle@gmail.com

Leptos004- **Epidemic rising of leptospirosis in Ceara state, Brazil**

Sousa, L.L.F [1]; Moura, F.B.P.[1] [1]Pinheiro,K. M. A.
[1] Health Secretary of Ceará State – SESA

Introduction: Leptospirosis is an infection disease distributed in the world caused by bacterias of the gender Leptospira characterized by being a zoonosis which attacks domestic and wild animals and human being causing great damages to economy as well as public health. In Brazil it is endemic with most of cases happening in times of larger raining precipitation. Agent's maintenance in the environment is favored by vast population of rodents and for humid tropical climate. **Objectives**: Knowing the epidemic

behavior of Leptospirosis in Ceará State in the period from 2006 to 2010.**Material and Methods**: In order to analyze the database it was used information of Health Secretary grouped by year and distributed by geographical area of the State, characterizing areas of larger incidence. **Results**: They were confirmed 649 cases and 42 deaths (death rate 6,4%) of leptospirosis in the period from 2006 to 2010 in 75 municipal districts of the State. In 2009 happened the largest number of cases (306, 49%) and in 2010 the smallest (38, 5,8%). Fortaleza pondered most of the cases (228, 35,1%) followed by the municipal district of Várzea Alegre with 82 cases (12,6%). In the State the incidence rate was larger in 2009 (3,91 / 100 thousand inhabitants) and the smallest in 2010 (0,46/100 thousand inhabitants). In Fortaleza the largest incidence was in 2006 (3,01 / 100 thousand inhabitants) and the smallest in 2010 (0,73 / 100 thousand inhabitants) .The larger number of deaths happened in the capital (24, 57%) .**Conclusion**: In 2009 there were outbreaks of the disease in some municipal districts of the state and a high number of cases in the capital, coinciding with the high raining index in the State in that period. Death rate gets attention for the most serious cases of the disease. It is linked the cases to the inundations associated to population gathering of low incoming to conditions of sanitation and high quantity of infected rodents. **E-mail:** larissaferrer2@gmail.com

Leptos005- **Cluster of Leptospirosis cases among military at Rio de Janeiro- Brazil**

Lupi O, Netto MA, Avelar K, XXX, Brasil P
IPEC/Fiocruz, IOC/Fiocruz, SMS/Resende

Leptospirosis is a spirochaetal zoonotic disease, nowadays recognized as emerging public health problem because of its increasing incidence in the last 10 years. Some recent clusters resulted from occupational exposure, recreational activities and natural calamities such as earthquakes, hurricanes and floods. In the present article we report a cluster of febrile acute cases with neurological manifestations of leptospirosis within military recruits after jungle training in the state of Rio de Janeiro, Brazil. During November 2009, health officials in Resende, a municipality of the southern region of the State of Rio de Janeiro, in collaboration with Federal researchers from IPEC/FIOCRUZ, investigated reports of febrile encephalitic and respiratory illnesses among militaries who had exposure participated in jungle training. Four cases were reported with two militaries hospitalized twelve days after return from field training exercises, with acute febrile illness and meningitis, headache, myalgia, mild conjunctival hyperemia and cutaneous rash. Other two sick recruits were notified among the almost two hundred men that performed the exercises. The jungle training was performed in an old mountain farming region where a variety of agriculture and animal products are produced around the limit of the Itatiaia National Park and the Funil Dam. Although military are considered at high risk and this academy has been using the area for a long time in survival exercises, there were no other confirmed cases of leptospirosis before. This may reflect the diagnostic challenge of nonspecific febrile syndromes that remain more frequently misdiagnosis. Case one was confirmed by reactive microscopic agglutination test (MAT) *Leptospira interrogans* serovar Icterohaemorrhagiae 400, 100 *H*ebdomadis e 400 Patoc and on day 28. Follow up was finished after 3 months with complete recovered. Case two was confirmed by reactive MAT on day 28 for *Leptospira interrogans* serovar Cynopteri 6400 and 600 Patoc. The Polymerase chain reaction (PCR) was positive for *Leptospira* spp. on blood and CSF in the day 16. Hydrocephalus was maintained for 4 weeks and punctures for relief were required. The case was followed for 6 months with complete resolution of hydrocephalus on MRI. An extensive etiological research was followed in both cases. The serologic or molecular investigation for Dengue Fever, Yellow Fever, Hantavirus, Babesiosis, Ehrlichiosis, Brazilian Spotted Fever, Typhoid fever, Cytomegalovirus and Hepatitis A, B and C viruses were negative. All thick blood smears for Malaria were negative. For the other two cases, Dengue fever was discarded by PCR and serology, but it was not possible to investigate laboratory leptospirosis because they returned to their states immediately after the training. **Discussion:** This study describes the first outbreak of leptospirosis among Military troops during training in southeast region of Brazil. Documented cases also help in further diagnosis, especially for army exercise camps which will be used for this purpose several times. Comprehensive understanding of the eco-epidemiological community that faces the problem of leptospirosis is an essential prerequisite for evolving an effective and acceptable control measure. The investigation of this cluster showed significantly elevated neurological manifestations, such as aseptic meningitis, representing 50% of the cases with acute febrile illness. The serovar identified in one of the

cases was Cynopteri, (genomospecies associated *L. santarosai* and *L. kirschneri*) and is an uncommon variant encountered in Rio de Janeiro state urban areas, with 0,8% of positivity in humans, this serovar was identified in squirrels at the Amazon region. There is a lack of epidemiological investigations in rural areas where our investigation took place. Our hypothesis is that within the vicinity of Military Academy of Agulhas Negras, Funil Dam and Itatiaia National Park, characterized by anthropic environment, with fields and remains of Atlantic rain forest, there are potential reservoir species, such as wild rodents, cattle, horses and domestic dogs. **E-mail:** otilia.lupi@ipec.fiocruz.br

Leptos006- **Incidence of leptospirosis, Urabá, Colombia, 2010**

Arboleda M, Agudelo-Florez P, Parra G, Meza M, Tangarife C, Ochoa J
Instituto Colombiano de Medicina Tropical – Universidad CES, Apartadó y Medellín, Colombia; Grupo de Epidemiología FNSP, Universidad de Antioquia, Medellín, Colombia

Introduction: Leptospirosis is a public health problem and is a significant cause of morbidity and mortality in the Urabá region, Colombia, however its notification through SIVIGILA reveals significant underreporting. This study aimed to establish the incidence of leptospirosis in the banana-region municipalities of Urabá (Chigorodó, Carepa, Apartadó, and Turbo), document the underreporting, and propose guidelines for the laboratory diagnosis by the public health network. **Materials and methods**: 200 patients acute febrile, from the banana-region municipalities were evaluated in 2010. The diagnosis of leptospirosis was made by detection of IgM and IgG in paired samples, and/or isolation of leptospira in blood. Risk maps were constructed and compared the incidence determined by the study with that registered through SIVIGILA. **Results**: The active search in acute febrile cases, allowed to place that 61% (122/200) had leptospirosis (incidence rate: 29.3/100,000 inhabitants). We determined an underreporting of more than half of the cases for municipalities in the banana region during 2010 (official rate of leptospirosis: 11.3 cases per 100,000 inhabitants), with SIVIGILA data notice. Mortality from this cause also had underreporting in the municipality of Turbo. In 31.9% (39/122) of patients leptospirosis was diagnosed by isolation of leptospires in blood without antibodies conversion. **Conclusions**: The diagnosis of leptospirosis in endemic areas requires a combination of several techniques. The active search and the blood culture in acute febrile patients with presumptive diagnosis of leptospirosis, improve the quality of reporting and treatment of patients who did not develop antibodies. The diagnosis of this disease in Colombia through the network of public health laboratories should be improved to allow the actual spatial location of the incidence of this serious public health problem. **E-mail:** marboleda@ces.edu.co

Leptos007- **Leptospirosis in two Angolan's provinces: contribution for a differential diagnosis of patients with febrile illnesses**

Fortes-Gabriel, EV [1], Vieira, ML [1,2]
[1]**Unidade de Ensino e Investigação de Microbiologia Médica, Grupo de Leptospirose e Borreliose de Lyme, Instituto de Higiene e Medicina Tropical (IHMT), Universidade Nova de Lisboa (UNL), Lisboa, Portugal;** [2]**Centro de Recursos Microbiológicos (CREM), Faculdade de Ciências e Tecnologia, UNL, Lisboa, Portugal.**

Introduction: In Angola, the leptospirosis diagnosis is done only by the patient history and medical suspicion. The nonspecific clinical presentation of the infection can lead to a misdiagnosis in these regions, where similar febrile diseases are common and can be confused with other disorders such as Malaria. The aim of this work was to know the leptospirosis seroprevalence in patients with febrile illness, living in urban and rural areas from two Angolan's provinces that presents febrile symptoms and a first diagnosis of malaria (after not confirmed), and to evaluate the *Leptospira* infection rate from rodents living close to human communities and their role as major spirochete reservoirs. **Material and Methods:** Serum samples were obtained from 500 patients attended at urban or rural health facilities in Luanda and Huambo provinces. A clinical and epidemiological questionnaire was applied to all patients, according to Ethics Committee of Angola Health authorization. Simultaneously, a total of 40 rodents (rats and mice) were live-trapped and necropsied to extract the kidney. Patient's serological evaluation was performed by Microscopic Agglutination Test, and the infection rate of the rodents was studied by two PCR protocols, one specific for *Leptospira* genus, and another specific for pathogenic leptospires (*hap1*) gene. This last

PCR protocol was performed on patient serum samples. The laboratorial work was developed at the Leptospirosis Lab., (IHMT, UNL), Lisbon, Portugal. **Results:** Epidemiological data of the first 250 patients studied, suggest that the population has high exposure to risk factors such as contact with rodents, river water and poor sanitation conditions. Of the 250 sera, 11 (4,4%) showed agglutinins anti-*L interrogans* s.l. with titers (≥1:100) and 20% (50/250) showed a borderline reactivity. *Leptospira* DNA was not detected in these samples. However, leptospiral DNA was found in 3/40 (7.5%) of the kidney samples and the cultures are still ongoing. Our preliminary results showed that 25% of febrile studied patients had contact with the etiologic agent of leptospirosis, and *ii)* a significant number of borderline sera, which may be due to the indiscriminate use of antibiotics and other drugs by the population (self-medication), early in the febrile syndrome. **Main Conclusions:** This study, the first carried out in Angola, shows the unequivocal presence of leptospires circulating among the population and emphasizes the importance of the differential diagnosis for febrile diseases. **E-mail:** elsaviveiros@gmail.com

Leptos008- *Leptospira* carrier status in urban horses determined by PCR

Hamond, C[a]; Martins, G[a]; Reis, J.T[b]; Medeiros, M.A[c]; Lilenbaum, W[a,*]
[a]**Laboratory of VeterinaryBacteriology, Universidade Federal Fluminense, Rio de Janeiro, Brazil,** [b]**Jockey Club Brasileiro, Rio de Janeiro, Brazil,** [c]**Bio-Manguinhos, Oswaldo Cruz Foundation, Rio de Janeiro, Brazil**

Introduction: Leptospirosis is a widespread zoonotic disease caused by spirochetes of the genus *Leptospira*.Animals living in urban areas where sanitary conditions are poor are considered at risk for leptospirosis. Although the role of horses as reservoirs for the transmission of leptospirosis to other animals and even to humans has been neglected, those animals may harbor the bacterium in their kidneys. The aim of this study was investigate the carrier status of leptospires in urban horses from Paquetá Island, Rio de Janeiro, Brazil. **Materials and Methods:** During June and July 2011 blood samples for serology and urine for PCR were collectedfrom100% of the horses (n=51) on theIsland.The horses were adults, being 47 colts and four mares, none of themvaccinated against leptospirosis. For detection of anti-*Leptospira* antibodies, Microscopic Agglutination Test was used. For PCR, extraction of DNA was conducted by commercial kit (Promega Wizard) and the primers lipL32_45F (5 'AAG CAT TAC TTG CGC TGG TG 3') and lipL32_286R (5 'TTT CAG CCA GAA CTC CGA TT 3') were employed. **Results:** From the 51 serum samples tested, 24 (47.2%) were seroreactive (titers ≥100). Serovar Copenhageni was by far the most frequent, being observed in 19/24 (79.2%) reactive samples.Ten (41.6%) presented titers of 200, 12 (50%) titers400 and two (8.4%) presented high titers (>800).Furthermore, 27/51 (53%) urine samples were positive by PCR. **Conclusions:** We conclude that, since it has been demonstrated by PCR that those animals were spreading leptospires by the urine, those animals can act as carriers of *Leptospira* in urban areas, reprersentingan important source of transmission to animals and humans. **E-mail:** mipwalt@vm.uff.br

Leptos009- Alternative adjuvants in leptospirosis vaccines: using green propolis to boost protection

Colonetti, K[1]; Fagundes, MQ[1]; Seixas Neto, ACP[1]; Fischer, G[2]; Dellagostin, OA[1]; Silva, ÉF[2]
[1]**Centro de Desenvolvimento Tecnológico;** [2]**Faculdade de Veterinária. Universidade Federal de Pelotas, RS, Brazil**

Introduction: Leptospirosis is a zoonotic disease of global importance caused by bacteria of the *Leptospira* genus. Vaccination would be the preferred control measure. However, current vaccines are whole-cell bacterins that generate serovar specific protection and several side effects. Modern molecular assays have revealed surface antigens that may replace traditional bacterins. Foremost among these are LipL32 and LigB, present in all pathogenic and absent in saprophytic species, with considerable immune involvement during natural infection. Some unsuccessful attempts at using these antigens as vaccines have occurred, and we believe immune modulation through alternative adjuvants and co-adjuvants may overcome previous setbacks. In this light, our study assessed the protective immune response in hamsters vaccinated with the aforementioned antigens using oil as adjuvant, with or without propolis as a co-adjuvant, against a homologous lethal challenge. **Material and methods:** *Leptospira interrogans*

serogroup Copenhageni strain Fiocruz L1-130 was used in this study. Bacteria were cultured in EMJH media at 29 °C and counted in a Petroff-Housser chamber. Recombinant proteins used in this study were rLipL32 and rLigBNI. The proteins were expressed in *E. coli*, and purified through affinity chromatography. Doses were prepared with 40 µg of recombinant proteins in 250 µL oil adjuvant, Marcol/Montanide (90%/10%), with or without 5 mg of green propolis. All doses were adjusted in PBS for a final volume of 500 µL, applied in two points of inoculation (250 µL/point) in hamster model. The groups were: (1) PBS, (2) Bacterin (10^8 heat inactivated cells), (3) LigBNI + Oil, (4) LigBNI + Oil + Propolis, (5) LipL32 + Oil, (6) LipL32 + Oil + Propolis, (7) LipL32 + Oil + LigBNI, and (8) LipL32 + LigBNI + Oil + Propolis. Groups of five female hamsters were inoculated with the different preparations on day 0 (zero) and 14. All hamsters suffered lethal challenge with 10^3 live leptospires on day 28. Statistical survival analysis was carried out in *Prisma 4 for Windows* version 4.03. The *Fisher's Test* was performed to analyze mortality. **Results:** The lethal challenge assay revealed that groups 3 and 4 were capable of generating statistically significant ($p<0.05$) protection. Both of them protected 4 out of 5 (80%) hamsters from lethal challenge, when compared to the PBS control (no survivors in the lethal challenge). Groups with rLipL32 were not able to significantly protection against lethal challenge. Other authors have shown propolis to aid the immune response in several ways and further assays must be undertake to verify its effect in leptospirosis vaccines. **Main Conclusions:** Our results show that rLigB may protect hamsters against homologous lethal challenge. Green propolis, though unable to produce statistically different results, seems to have a positive effect on protection. Further assays with a greater number of animals per group and optimal propolis doses may reveal these subtle differences. **E-mail:** kcolonetti@gmail.com

Leptos010- **Assessment of immunoprotective capacity of six leptospiral proteins in the Golden Syrian hamster model of leptospirosis**

Atzingen MV [1], Vieira ML [1,2], Oliveira R [1,2], Domingos RF [1,2], Mendes RS [1,2], Barros AL [1], Gonçales AP [3], Morais ZM [3], Vasconcellos AS [3] and Nascimento ALTO [1,2].
1Centro de Biotecnologia, Instituto Butantan, São Paulo, Brazil; 2Interunidades em Biotecnologia, Instituto de Ciências Biomédicas, USP, São Paulo, Brazil; 3Laboratório de Zoonoses Bacterianas do VPS, Faculdade de Medicina Veterinária e Zootecnia, USP, São Paulo, Brazil.

Introduction: Leptospirosis, an emerging infectious disease caused by pathogenic *Leptospira*, is a worldwide zoonosis of human and veterinary concern. Leptospiral lipopolysaccharide can elicit protective immunity but is serovar dependent. Due to the extensive serological diversity of leptospires (~250 serovars) a search for conserved membrane proteins that may stimulate heterologous immunity is being pursued. The whole-genome sequence of *L. interrogans* serovar Copenhageni together with bioinformatics tools represent a great opportunity to search for novel antigens that could be used as subunit vaccine against leptospirosis. We focused on six genes encoding for conserved hypothetical proteins predicted to be exported to the outer membrane. Four of them were previously characterized, LIC10368, LIC11030, LIC10258 and LIC12253, but their immune protective activity has not been tested by our research group. LIC10821 and LIC10672 are hypothetical coding sequences identified by bioinformatics tools in the genome sequences of the *L. interrogans* serovar Copenhageni. LIC10672 has also been identified by proteomics studies with virulent leptospiral strain. **Material and Methods:** The genes were amplified by PCR from *Leptospira interrogans* genomic DNA and were cloned into pAE, an *Escherichia coli* vector. The recombinant proteins were expressed tagged with N-terminal hexahistidine, thus allowing protein purification by metal-affinity chromatography. Protective immunity was evaluated in hamsters that were immunized subcutaneously twice at 2-week interval and challenge with lethal dose of virulent strain of *Leptospira interrogans* serogroup Pomona. **Results:** Our results with the immunization/challenge assays showed that the recombinant proteins Lsa21, Lsa66 and rLIC11030 elicited statistically significant protection against lethal leptospiral inoculation. The protection conferred to these animals is probable via Th2 response as revealed by the increase in antibody titers during subsequent boosters. Moreover, the recombinant proteins were able to promote sterilizing immunity in most of survived animals. **Main Conclusions:** Although more studies are needed, our data suggest that these proteins are a promising candidate for prevention of leptospirosis and could be used combined or in a mixture with novel adjuvants in order to improve their effectiveness. **Supported by:** FAPESP, CNPq and Fundação Butantan. **E-mail:** m.atzingen@butantan.gov.br

Leptos011- **Production and characterization of IgY antibodies against rLipL32 to be used in the diagnosis and prophylaxis of leptospirosis**

Diniz, JA[1]; Anciutti, AN[2]; Félix, SR[2]; Deliberalli, I[1]; Fagundes, MQ[1]; Seixas Neto, ACP[1]; Vasconcellos, FA[3]; Dellagostin, AO[1]; Silva, ÉF[2]
[1]Centro de Desenvolvimento Tecnológico; [2]Faculdade de Veterinária. [3]Centro de Ciências Químicas, Farmacêuticas e de Alimentos. Universidade Federal de Pelotas, RS, Brazil.

Introduction: Leptospirosis is a zoonosis caused by bacteria of the *Leptospira* genus. In recent years, efforts to identify immunogenic components of leptospires with the potential to be used in vaccine formulations and diagnostic assays have found several lipoproteins that are expressed in the bacterial outer membrane during infection. Foremost among these is LipL32, the most abundant protein in the proteome of pathogenic leptospires. Our group has previously produced polyclonal IgY antibodies against full cell *L. interrogans* strain Fiocruz L1-130 which were used in different capture ELISAs. In the present study we use a similar strategy to produce such antibodies against recombinant LipL32 to be used in diagnostic assays and prophylaxis of leptospirosis. **Material and methods**: Two 29-weeks-old chickens were immunized by intramuscular injection with 100 ug of purified rLipL32 emulsified in oil adjuvant and three booster immunizations at 15 day intervals. The eggs started to be collected three days after the last immunization. The antibodies were purified with polyethylene glycol and assessed through SDS-PAGE. The IgY concentration was measured using commercial BCA kit. Purified antibodies specificity to leptospires was assessed through indirect ELISA and Western blot, both used the recombinant protein and full cell leptospires as antigens. **Results**: SDS-PAGE used to investigate purity of preparations revealed one band with 67 kDa and another with 25 kDa under reducing conditions, respectively. After purification, the mean yield of IgY was 14.8 µL/µg. Both the ELISA and the Western blot had strong specific reactions against the native and recombinant proteins. **Main conclusions**: In this study we successfully produced IgYs against the recombinant LipL32 protein, the main protein of pathogenic leptospires outer membrane. Furthermore, the functionality of the antibodies was confirmed through ELISA and Western blot. These IgYs are now being assessed for their applicability in early stage diagnostic tests and passive immunization of hamsters. **E-mail:** juju_adiniz@yahoo.com.br

Leptos012- *Leptospira* **immunoglobulin-like protein A (LigA) produced in** *Pichia pastoris* **in a mannosylated form protects hamsters from lethal infection by** *Leptospira interrogans*

Pereira, MB[1]; Bacelo, KL[1]; Oliveira, PD[1]; Oliveira, TL[1]; Forster, KM[1]; Seixas, FK[1]; Amaral, M[1]; Dellagostin, AO[1] and Hartwig, DD[1]
[1]Unidade de Biotecnologia, Centro de Desenvolvimento Tecnológico, Universidade Federal de Pelotas, Pelotas, RS, Brazil.

Introduction: Leptospirosis, caused by infection with pathogenic *Leptospira* species, is a worldwide distributed disease that affects both animals and humans. This zoonosis is common in tropical regions, with ~ 500,000 reported cases each year. Several antigens have been evaluated for use as vaccine for leptospirosis control. As recombinant subunit, these antigens are usually expressed in *Escherichia coli*, however, present a low yield and variable efficacy as vaccine. An alternative is to produce these antigens in the yeast *Pichia pastoris*. This system is efficient, easy to use, of low cost and allows the expansion of production for industrial scales. *Leptospira* immunoglobulin-like A protein (LigA) present a polypeptide fragment corresponding to the six carboxyl-terminal Ig-like repeat domain, named LigANI, which is a promising vaccine candidate. In the present study we propose the production of LigANI in the methylotrophic yeast *P. pastoris* using bioreactor, and evaluate the immunoprotective potential of its mannosylated (mLigANI) and non-mannosylated (nmLigANI) forms. **Material and methods:** The LigANI was expressed as a secreted protein by *P. pastoris* strain KM71H using bioreactor. To remove the mannose residues the protein was treated with the enzyme N-Glycosidase F and their mannosilated and non-mannosilated forms used to immunize female hamsters. The vaccines contained 80 µg of protein together with 15% of aluminum hydroxide used as adjuvant. Hamsters were immunized twice with 14

days of interval. Twenty-eight days after the first dose all hamsters were challenged intraperitoneally with 10^3 leptospires, equivalent to 5× LD_{50} of the *L. interrogans* serovar Copenhageni strain FIOCRUZ L1-130. The efficacy of the vaccines was evaluated in terms of humoral and cellular immunity (ELISA and qRT-PCR), survival and sterilizing immunity. **Results:** mLigANI induced a robust IgG antibody response ($P <$ 0.001) and improved the survival rate to over 80% ($P <$ 0.001) of the challenged hamsters. Additionally, a significant enhancement in IL-2 (Th1) and IL-10 (Th2) cytokines was observed ($P <$ 0.05). Immunization with nmLigANI protein elicited an immune response in hamsters but insufficient for protection, indicating that the protective epitopes ware affected by the demannolisation. The mLigANI did not provide sterilizing immunity in the survival hamsters. **Main conclusions:** The mannosylation of LigANI produced by *P. pastoris* does not affect its potential as vaccine candidate, thus this platform can be used in industrial production of this leptospiral antigen. **E-mail:** mbrutschin@gmail.com

Clinical and Pathogenesis of Leptospirosis

Leptos013- **The kidney-lung crosstalk and mortality in a cohort of patients with severe leptospirosis (WEIL SYNDROME) in Brazil**

Daher EF[1], Costa PLR[1], Pereira ENS[1], Santos RDP[2], Falcão FS[1], Cavalcante ND[1], Lima JB[1], Abreu KLS[1], Silva Junior GB[1,2], Pereira EDB[1]
[1]**Department of Internal Medicine, School of Medicine, Federal University of Ceará, Fortaleza, Ceará, Brazil;**
[2]**School of Medicine, Health Sciences Center, University of Fortaleza, Fortaleza, Ceará, Brazil.**

Introduction and Aims: Leptospirosis is the most important zoonosis in the world. The sever form (Weil syndrome) is characterized by acute kidney injury (AKI), jaundice and pulmonary hemorrhage, with high rates of mortality. The aim of this study is to investigate the kidney-lung interactions and its impact in mortality among patients with leptospirosis. **Methods:** This is a retrospective study conducted at a tertiary infectious diseases-specialized hospital in Fortaleza city, Northeast Brazil, including 45 patients with confirmed diagnosis of severe leptospirosis admitted to the intensive care unit. AKI was defined according to the RIFLE criteria, and it was compared the results between patients in "Failure" (RIFLE-F) and "Risk"/"Injury" (RIFLE-R/I). Severity was assessed through APACHE II and SOFA criteria. A comparison between survivors and non-survivors was also done. Statistical analysis was done with SPSS program, version 16.0, considering as significant p<0.05. **Results:** Patient`s average age was 42±15 years, and 82% were male. Patients in RIFLE-F were older than in RIFLE-R/I (43±15 vs. 32±13 years, p=0.02). Mean APACHE II score at admission was 20.1±8, and SOFA was 14.8±4.8. According to the RIFLE criteria patients were at "Risk" (12%), "Injury" (20%) and "Failure" (68%), and dialysis was required for 33 patients (73.3%). APACHE II scores were higher in patients in RIFLE-F (22±6.2 vs. 14±8.6 in RIFLE-R/I, p=0.001), as well was SOFA (RIFLE-F: 16±4.2 vs. RIFLE-R/I: 11±3.9, p=0.0005). Invasive mechanical ventilation was required for 30 patients (66%), and it was more frequent in patients with RIFLE-F (77.4% vs. 42.8%, p=0.03). The arterial oxygen tension (PaO2)/fractional inspired oxygen (FiO2) ratio at admission was also lower in the RIFLE-F group (160±100mmHg vs. 183±87), but the difference was not statistically significant (p=0.46). The comparison between patients who required dialysis with those who did not evidenced a higher frequency of mechanical ventilation (81% vs. 25%, p=0.0008) and lower PaO2/FiO2 ratio (156±97mmHg), but with no significant difference comparing with those who did not required dialysis (196±88mmHg), p=0.21. Death occurred in 20 cases (44.4%), and it was higher in patients with RIFLE-F (58% vs. 14.2%, p=0.0001) and in those who required dialysis (57% vs. 8.3%, p=0.005). **Conclusions:** AKI in Weil syndrome is associated with severe lung involvement, as evidenced by a higher requirement for mechanical ventilation and higher mortality. Requirement of dialysis is also associated with poor respiratory function and outcome. RIFLE criteria is a good predictor of severity in this group of patients, as demonstrated by the higher APACHE II and SOFA scores in patients with RIFLE-F. Efforts should be make to provide early and adequate lung support for patients with severe leptospirosis. **Financial Support:** CNPq (Brazilian Research Council). **E-mail:** ef.daher@uol.com.br

Leptos014- **Possible co-infection with dengue and leptospirosis in two cases from Ceará state, Brazil**

Fontes, R.M.[1]; Bezerra, L.F.M.[1]; Gomes, A.M.M.[1]; Silva, D.A.[1]; Lavor, E.A.[3]; Pompeu, M.M.L.[1]; Colares, J.K.B.[2]; Lima, D.M.[1,2]
[1] **Federal University of Ceará-UFC, CE, Brazil.** [2] **University of Fortaleza, School of Medicine - UNIFOR, Brazil.** [3] **Hospital São José de Doenças Infecciosas Fortaleza, CE, Brazil.**

Introduction: Dengue (DEN) and leptospirosis are diseases that cause a nonspecific febrile illness, which can be often confused with each other. In addition to diagnostic confusion between them, co-infection with these pathologies, although rare, can happen. Thus, the objective of this study was to investigate possible co-infections by dengue and leptospirosis patients with clinically suspected DEN.
Material and Methods: Sixty-eight patients were recruited from the Hospital São José de Doenças Infecciosas and Hospital Distrital Nossa Senhora da Conceição with clinically suspected DEN, according to the Ministry of Health/Brazil, during 2010. The serum of these patients was collected two times. The first one for research of dengue virus (DENV) by RT-PCR and the second one, after the 5th day of illness, for research of antibodies by ELISA IgM DEN (Bioeasy ®) and ELISA IgM *Leptospira* (PanBio ®). Nonspecific tests, like hemogram and biochemical, were analyzed in the same two periods, as well as clinical data. **Results:** Among 68 patients, 2 patients were positive for both infections. The patient VMA was positive by RT-PCR for DEN and by ELISA IgM *Leptospira*. The patient JBS was positive for these infections by ELISA IgM dengue and ELISA IgM *Leptospira*. Both patients were female, and the patient VMA was 34 years old and JBS was 31. The symptoms from both patients were based mainly in fever, myalgia, prostration and anorexia, with no further aggravation. The patient VMA also presented arthralgia, while JBS presented other symptoms, like: headache, nausea, cough, expectoration, dyspnea, and sore throat. Nonspecific tests didn't show alterations in the patient VMA and in JBS there was only a small decrease in hematocrit (29.4%, reference value: 36.0 to 38.0%) and hemoglobin (9.6 g / dL; reference value: 11.6 to 15.6 g / dL). **Main Conclusions:** Despite the possibility of one of the infections to be old due to the fact that the anti-dengue IgM antibodies may persist for up to 60 days in circulation and the anti-Leptospira IgM for up to 90 days in the serum of patients, these findings demonstrate once again the similarity in symptoms between these two diseases. The clinical and nonspecific tests from both patients showed no aggravation when compared to what has been described for these diseases alone. Future researches should be carried out in the serum of these patients in order to test other methods, like PCR for leptospirosis, in order to identify if it was actual at that moment, confirming the possible co-infections.
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Leptos015- **Meningitis by *Leptospira* confused with viral meningitis.**

Francisco Lúzio de Paula Ramos
Instituto Evandro Chagas (IEC) - SVS - MS.

Introduction: Leptospirosis is an acute infectious disease of wide clinical spectrum, that can vary from feverish subclinical manifestations, resembling to influenza, as it is most of the time, to even serious presentations with high lethality, as for example, the Weil's syndrome. In this spectrum, the meningitis constitutes an unusual form of leptospirosis presentation, that when occurs like this, it is indistinguishable from the viral meningitis, and can be confused with that, with respect to the preliminary analyses of LCR including the physical and biochemical aspects and even the basic microbiological exams. We aimed to present a clinical case of meningitis by leptospira confused with viral meningitis. **Material and Method:** F.J.S.D. 16 years of age, student born in Belém-Pará, was assisted at IEC in February, 2012, presenting high fever during seven days together with headache and myalgia. The fever ceased in the third day but headache persisted and intensified progressively, accompanied of uncontrollable vomits and exhaustion. To the physical exam: Neck stiffness. LCR was limpid with 218 cells/mm^3, being 73% of mononuclear cells and 27% of polymorph nuclear leukocytes; biochemical: Proteins 64 mg/dl; glucose 58 mg/dl; VDRL: Non-reagent; the microscopy exam using Gram and Ziehl-Neelsen stains and the research for

Cryptococcus by the China ink stain were all negative; the latex assay for bacteria and for *Cryptococcus* were also negative, which caused to attribute the diagnosis of aseptic meningitis. However, the hemogram showed 11.100 leukocytes, with 81% of segmented leukocytes and 8% lymphocytes, motivating us to investigate leptospirosis, whose serology by the microagglutination test revealed title of 1/200 in the sample collected in the day of the first service. It was then prescribed amoxicillin 500mg every 8 hours for seven days. The improvement was progressive and the cure was complete. In his return, at the end of the treatment, it was collected a new sample of the serum and the serology was repeated showing title of 1/1.600. Serological tests for rubella, dengue virus, HHV6 and HHV7, parvovirus B19, cytomegalovirus, Epstein-Barr virus and measles, were all negatives too. **Discussion and conclusion:** Meningitis is one of the complications of the leptospirosis, whose importance is not very known maybe because of the confusion with the viral meningitis. However, it is necessary to consider this possibility in these circumstances once the clinical management for leptospirosis is very different from the one adopted to viral meningitis, allowing the patient to be benefited with the antibiotic therapy, as it happened in the case here described, that had complete resolution. The outcome of non-treated leptospirosis can be uncertain and unfavorable and the benefit to the patient can be lost by the incorrect diagnosis. **E-mail:** franciscoluzio@iec.pa.gov.br

Leptos016- **Histopathological changes in kidney and lung of Leptospira spp. infected sheep**

Carvalho, S.M.1, Mineiro, A.L.B.B.2, Carneiro, M.S.2, Nascimento, I.V.3, Castro, V.4, Batista, J.F.2, Prianti, M.G.2, Costa, F.A.L.2*
1Agência Estadual de Defesa Agropecuária do Maranhão, 2Departamento de Clínica e Cirurgia Veterinária da Universidade Federal do Piauí, 3Fundação Municipal de Saúde, 4Instituto Biológico de São Paulo.

Introduction: leptospirosis is a disease widely distributed throughout the world. Among the sheep, although the incidence of leptospirosis is low, it is spreading rapidly. The kidney, liver and lungs are the organs primarily affected by leptospiras, but know little about the patterns and mechanisms of injury in these organs, especially in sheep. **Objective:** The objective of this study was to investigate the pathologic features and mechanism of injury in the kidney and lung of sheep naturally infected with Leptospiras. **Material and Methods:** We used 42 sheep with unknown health status, randomly chosen during slaughter in a slaughterhouse of São Domingos do Maranhão, Maranhão, Brazil. Fragments of kidney and lung were processed by routine histological techniques and stained with hematoxylin-eosin (HE), Warthin Starry and immunoperoxidase with polyclonal rabbit anti-Leptospira antibody (produced in the Laboratory of Animal Pathology, Federal University of Piauí). **Results:** Of the 42 samples analyzed by the microscopic agglutination test (MAT), eight were reactive to serovar Hardjo (19.10% - 95% CI = 7.2% - 30.9%). Histopathology of the lung revealed predominantly mononuclear inflammatory infiltrate of lymphocytes and macrophages (p <0.05) and thickening of alveolar septa (p <0.05) higher in the infected compared to uninfected sheep. In the kidney interstitial nephritis was observed in intensity varied from minimal to average, with a trend of greater intensity in the infected compared to uninfected sheep. The immunohistochemical detected Leptospira spp antigen in lung tissue in inflammatory cells of the alveolar septa, bronchial epithelial cells and bronchioles and vascular endothelium. In the kidney was observed Leptospira in the renal tubule and antigen in inflammatory cells, epithelial cells, tubular cells and glomerular endothelium. **Conclusion:** The results indicate that sheep in São Domingos do Maranhão, are infected with Leptospira spp. The presence of antigen and of leptospires in the kidney show that sheep has the potential to infect humans and other animals. **E-mail:** fassisle@gmail.com

Leptos017- **Mechanism of renal injury in pigs infected by leptospires**

Gonçalves, L.M.F., Campos, A.P., Melo Evangelista, L.S., Carneiro, M.S., Miranda, D.F.H., Silva, E.R.D.F.S., Souza, F.A.L., Drumond, K.O., Costa, F.A.L.
Universidade Federal do Piauí, Programa de Pós-Graduação em Ciência Animal, Teresina, Piauí, Brasil.

The leptospirosis are cosmopolitan zoonosis that constitute an important public health problem. Leptospires colonizing the kidney causing severe alterations, but the pathogenesis of renal injury is still

not clearly understood. This study aimed to investigate the immunopathogenesis of kidney damage in pigs naturally infected with *Leptospira* sp. We used 143 pigs slaughtered for consumption in the cities of Teresina in Piauí state, and Timon in Maranhão state. Blood samples were collected to perform the microscopic agglutination test (MAT). After killing the animal kidney fragments were collected to perform immunohistochemistry and polymerase chain reaction (PCR). The detection of leptospires antigen was performed with rabbit, polyclonal, anti-Leptospira (produced in rabbit, Department of Animal Pathology, Federal University of Piauí). The detection of CD4+ and MCH II was performed with mouse, monoclonal, anti-pig CD4+ (VMRD, Inc., pullman, Lot 0700-0110, WA 99163, USA) and mouse, monoclonal anti-pig MHC-II (Thermo Fisher Scientific Inc., UK, clone K274.3G8), respectively. We used the system Envision+, peroxidase (Dako Corporation, code K4002, Carpinteria, USA) for reaction amplification. IgM was detected with polyclonal, anti-pig IgM (Novus Biologicals, NB715, Lot A11, USA) amplified by Streptavidin-peroxidase method. For isolation and purification of DNA from tissue samples renal we used the Wizard ® Genomic DNA Purification Kit (Promega) and DNA amplification Leptospira spp. was performed using primers Lep-1 (5 'GGCGGCGCGTCTTAAACATG 3') and Lep-2-(5 'TTCCCCCCATTGAGCAAGATT 3') (Invitrogen ®) designed for Mérien et al. (1992). Of the total of 143 serum samples analyzed for evidence of SAM, eight samples were positive for *Leptospira* spp., but in immunohistochemical analysis 62 samples of renal tissue showed positive staining for antigen of *Leptospira* spp. The antigen was detected in tubular epithelial cells, interstitial cells of the cortical region, mesangial cells, tubular epithelial cells, Bowman's capsule parietal cells and in the mononuclear inflammatory infiltrate. Antigenic response to CD4+ and MHC II was observed in glomerulus and tubules. IgM was observed in capillary endothelium intertubular, glomerular capillary endothelium. The PCR amplified DNA of leptospira in two animals positive by IHC and SAM. Initial results show the presence of *Leptospira* antigen associated to the expression of molecules of the cellular and humoral immune response, suggesting a possible role in the pathogenesis of renal injury in leptospirosis in pigs. **E-mail:** fassisle@gmail.com

Leptos018- **Clinical Profile and Outcomes of PCR proven Leptospirosis**

Kariappa A[1], Ismail M H[2], Mohandas K[3]
Kasturba Medical College, Mangalore, India

Background: Leptospirosis is a zoonosis caused by leptospira icerohemorrhagicae; a spirochete.The spectrum of human disease caused by leptospires is wide, ranging from subclinical infection to severe syndrome of multiorgan dysfunction with high mortality. Early diagnosis is particularly important for clinical management of patients because treatment is most effective if initiated early. In this study patients were presumptively diagnosed using modified Faine's criteria and the diagnosis was confirmed by blood PCR.The relevance of the study lies in the fact that leptospirosis can run a fulminant course and patients may die before the development of characteristic clinical manifestations of leptospirosis or the appearance of antibodies or both and the disease may go unrecognized.The objective was to view cases with high index of suspicion and reach a prompt diagnosis. **Materials and Methods:** This study was conducted over a period of 2 years with 50 patients with PCR proven leptospirosis who was admitted in Government Wenlock Hospital, Mangalore. Patients with a score of more than 20 based on Faines criteria were selected for blood PCR for leptospirosis and those positive PCR results were included in the study. **Results:** Most common age group affected was 21 to 49 years with 39 out of 50 being men.A seasonal trend with maximum clustering in monsoon months (july to September) was observed. Commonest clinical presentations were fever (96%), myalgia (94%) and jaundice (76%) Hemorrhagic manifestations seen in 52% of the patients. Leukocytosis was present in 50% of the patients,72% had thrombocytopenia.,44% had albuminuria and 64% had elevated serum creatinine levels. Cardiovascular manifestations in the form of arrhythmias, conduction blocks were present in 18% of the patients. ARDS was seen in 8% of the patients. Most common gastrointestinal manifestation was abdominal pain (40%).48% of the patients had acute renal failure out of which 14% required hemodialysis fatal intracerebral hemorrhage (2%) and acalculous cholecystitis (4%) was found to be rare presentation in leptospirosis. All 50 patients in the study received crystalline penicillin 10-15 lakhs units 6th hourly Outcome: 56% of the patients became afebrile within 3 days of initiation of therapy. In 5 of the 50 patients there was more than 1 week's delay between the onset of symptoms and initiation of treatment and did

not respond to treatment bringing the mortality to 10%. **Prognostic markers:** Acute Respiratory Distress Syndrome was associated with worst prognosis with 75% mortality followed by Multi Organ Dysfunction Syndrome (57%).6% of the patients needed mechanical ventilation with a mortality of 66%.Thrombocytopenia and bleeding was associated with a mortality of 36%, acute renal failure with mortality of 26%. **E-mail:** ahalya.kariappa@gmail.com

Leptos019- **The role of type II alveolar cells in infected swine with leptospires**

[1]Campos, A.P., [1]Gonçalves, L.M., [1]Silva, E.R.D.F.S., [1]Miranda, D.F.H, [1]Costa, F.A.L*.
[1]**Universidade Federal do Piauí, Programa de Pós-Graduação em Ciência Animal, Teresina, Piauí, Brasil.**

Introduction: In this study we evaluated the involvement of alveolar epithelial type II cells (ATII) in the leptospirosis in naturally infected pigs. **Material and Methods**: Serum and kidney of 75 mixed breed swine (no definite breed) reared in an extensive system and slaughtered in Timon (state of Maranhão) and Teresina (state of Piauí), Brazil, were used in this study. At the time of animal slaughter, blood and tissue samples were collected. The diagnostic of leptospirosis was performed by microscopic agglutination test (MAT) aided by immunohistochemistry (IMH). This technique was also used for immunostraining of ATII. We used a primary rabbit polyclonal anti-*Leptospira* spp antibody (produced in the Laboratory of Animal Pathology of UFPI) and a monoclonal anti-TTF-1 (Thyroid Transcription Factor-1) antibody (Novocastra, NCL-L-code TTF-1). Histopathologic analysis was performed to assess the pulmonary changes. **Results**: The results showed that the MAT of the 73 pigs slaughtered in the cities of Teresina, PI, and Timon, MA, eight reacted to *Leptospira* spp. with an occurrence of 10.96% of infection. The sera reacted to Canicola, Grippotyphosa, Hardjo WHO, Icterohaemorrhagiae and Pyrogenes. The IMH enabled visualization of *Leptospira* antigen in lung tissue from 64 of the 73 pigs with positivity of 87.67%. The quantification of foci of inflammatory infiltration in lung tissue was higher in animals infected compared to uninfected (Mann Whitney, p = 0.0312). In the measurement of ATII cells labeled by the antibody TTF-1 had a greater number of cells in uninfected animals, compared to those infected. The correlation between ATII cells and the inflammatory infiltrate was negative. **Conclusion**: These results show that infection with *Leptospira* spp. is present in pigs in Teresina, Piauí, and Timon, Maranhão, Brazil, and the analysis of pulmonary changes points to the importance of studying the ATII cells as a potential marker of modulation of the innate immune response of the lungs of pigs infected by leptospires. **E-mail:** fassisle@gmail.com

Leptos020- **Sequencing and annotation of leptospira borgpetersenii 4E strain genome: improving the understand of the pathogen**

Pereira, MB[1]; Kremer, FS[1]; Plaça, JR[1;] Eslabão, MR[1]; Dellagostin, OA[1].
[1]**Laboratório de Bioinformática, Unidade de Biotecnologia, Centro de Desenvolvimento Tecnológico, Universidade Federal de Pelotas, Pelotas, RS, Brazil.**

Introduction: Leptospirosis is a neglected zoonosis with global distribution. The disease is caused by pathogenic bacteria of the genus *Leptospira*, which affect humans and other animals, causing severe problems to human health and livestock production. The vaccination is the best way to prevent this disease, but the vaccines available for commercial use are still inefficient against a great number of serovars. Genomics and proteomics may provide new data for the development of a vaccine, so information about genomic sequences of different strains are needed to find the best molecular targets, such as conserved proteins, which could also be useful for the development of new drugs and diagnostic methods. The objective of this study was to determine the genome sequence of *Leptospira borgpetersenii* serogroup Ballum strain 4E, isolated from domestic mice (*Mus musculus*), one of the main reservoirs of this genus. **Material and Methods:** Bacterial cells was cultivated in EMJH medium and incubated for 7 days at 28 °C. The DNA was extracted using an adapted protocol based on Invitrogen Bacterial DNA Purification kit and quantified using fluorometry. The DNA sequencing was performed using the Applied Biosystems SOLiD[TM] 4 method. A filter, Phred 20, was used to remove the low quality data obtained from the sequencing (about 37% of the initial sequences was discarded). For the assembly process two approaches were used, Overlap-layout-consensus and de Bruijn graph with softwares Edena and Velvet

respectively, and software G4All were used for contigs orientation. The identification of the ORFs was performed using GLIMMER and data downloaded from the National Center of Biotechnology Information. The result of the last step was manually revised by a curation process. **Results:** With completion of the assembly process, the large chromosome presented 3,071,053 bp, GC content of 40.58%, 36 tRNA, 4 rRNA and 2,908 open reading frames (ORF). The small chromosome has 305,940 bp, GC content of 40.25%, 277 ORFs, no tRNA or rRNA. **Main Conclusions**: The sequencing with SOLiD system and two approaches for assembly allowed determination of strain 4E genome with accuracy and coverage of about 800x. In comparison to other sequenced genome of the same species, it was observed a significant reduction in the large chromosome, about 14%. This reduction, probably mediated by transposases, reflects directly in the ability to live outside the host. The same reduction was observed in other *L. borgpetersenii* strains compared to *L. interrogans*. Currently, a detailed analysis is being performed to produce information relevant to the development of recombinant vaccines and diagnostic tests. **E-mail:** mbrutschin@gmail.com

Leptos021- **Isolation and virulence characterization in hamster model of leptospires from cattle in Brazil**

Colonetti, K[1]; Seixas Neto, ACP[1]; Schiavi, NB[1]; Félix, SR[2]; Vasconcellos, FA[3]; Cezarini, CC[4]; Medeiros, MA[5], Dellagostin, OA[1]; Silva, ÉF[2]
[1]Centro de Desenvolvimento Tecnológico, [2]Faculdade de Veterinária, [3]Centro de Ciências Químicas, Farmacêuticas e de Alimentos, Universidade Federal de Pelotas, RS, Brazil. [4]Coordenadoria de Inspeção de Produtos de Origem Animal (CISPOA,RS). [5]Fundação Oswaldo Cruz, BioManguinhos.

Introduction: Leptospirosis is caused by a variety of leptospiral serovars which are distributed worldwide. Bovine leptospirosis has economic importance to countries involved on dairy and beef rising, due the losses in milk yield of affected cows and in weight among beef cattle. In addition, inapparent infection in herds presents a serious problem in the recognition and spread of infection. The most prevalent *Leptospira* serovars commonly associated with cattle in Brazil is Hardjo, Pomona, Wolffi and Serjoe. Bovine leptospirosis is not only a financial hazard in endemic herds, but also an occupational risk factor for veterinarians, rural workers, and slaughterhouse employees. Furthermore, available vaccines for bovine leptospirosis are killed whole-cell preparations that protect against the serovars present, making imported vaccines unsatisfactory for the control of the disease in Brazilian herds. In this light, the present study´s objective was to obtain new isolates of leptospires from cattle slaughtered in abattoirs of the city of Pelotas, Brazil. **Material and methods:** Bovine kidneys were obtained from apparently healthy animals at three abattoirs of the city of Pelotas, Brazil. Kidneys were collected from 250 animals in groups of 10. Each kidney was transported to the laboratory in individual tubes and processed for isolation within two hours after slaughter. A suspension was obtained from the fragment of inner exposed surface by sterile syringe into EMJH medium tube. Cultures were incubated at 30°C and examined weekly for ten weeks by dark field microscopy to detect the presence of leptospires. When leptospires were detected, successive transfers were made in fresh EMJH semisolid and liquid media. In order to determine if the isolates would produce infection in laboratory animals, groups of two 28-day-old hamsters were inoculated intraperitoneally with 10^8 leptospires of each isolate. To definitely characterize the new isolates, bacterial culture and DNA were sent to Fundação Oswaldo Cruz for serogrouping and DNA sequencing. **Results**: A total of three (1.2%) strains were isolated from the kidney tissue of adult male bovines from the Capão do Leão (n=1) and Pedro Osório (n=2) municipalities. The new strains were named BOV3, BOV14, and BOV15. The virulence test using young hamsters showed that the two strains (BOV3 and BOV15) were capable of reproducing the main clinical and pathological findings of experimental leptospirosis in hamsters. None of the animals demonstrated clinical signs of infection when infected with BOV14. **Main conclusions:** This study reports the isolation of three strains of *Leptospira* from cattle and their preliminary virulence characterization. These results are demonstrating the risk of leptospirosis in farms and slaughterhouses in Southern Brazil, transmission to other livestock species, and exposure to humans. However, additional tests are being employed for the classification of new isolates. **E-mail:** kcolonetti@gmail.com

Leptos022- **Interaction of three novel leptospiral proteins with extracellular matrix and serum components**

Siqueira GH [1,2], Atzingen MV [1], Morais ZM [3], Vasconcellos AS [3], Nascimento ALTO [1,2]
[1]Centro de Biotecnologia, Instituto Butantan, São Paulo, Brazil; [2]Interunidades em Biotecnologia, Instituto de Ciências Biomédicas, USP, São Paulo, Brazil; [3]Faculdade de Medicina Veterinária da USP, Brasil.

Introduction: Leptospirosis is an emerging infectious disease caused by pathogenic species of the genus *Leptospira*. After invading, the bacteria need to survive from the host's innate immune defense in order to colonize target organs. The adherence of leptospires to components of the extracellular matrix may be the principal mechanism for the colonization of host tissues, and the surface proteins may play a role in these interactions. This work aims to clone, express, purify and evaluate the capacity of three recombinant proteins (rLIC11009, rLIC11360, rLIC11975) to attach to extracellular matrix (ECM) and serum components. **Material and Methods:** The genes were cloned and expressed in *Escherichia coli* strain BL21(SI) using the expression vector pAE. The recombinant proteins were expressed tagged with N-terminal hexahistidine, thus facilitating their purification by metal-affinity chromatography. The attachment of purified recombinant proteins to ECM and serum components was evaluated by binding assays. A screening with immobilized components on 96-well microdilution plates was assessed using ELISA. Dose-response curves were performed by keeping the component and varying the protein concentrations. **Results:** The leptospiral protein encoded by LIC11009 binds to laminin and plasminogen, while rLIC11360 attaches to laminin, plasma fibronectin, and collagen I, plasminogen, fibrinogen, factor H and C4BP. The protein encoded by LIC11975 binds to laminin, plasma fibronectin, plasminogen and fibrinogen. These interactions were specific, dose-dependent and saturable. **Main Conclusions:** These proteins were previously genome annotated as putative outer membrane proteins of *L. interrogans* of unknown function. Our results show that these proteins are novel leptospiral adhesins that may play a multifunctional role in pathogenesis of leptospirosis, helping the bacteria to adhere and to spread through the hosts.**Supported by** FAPESP, CNPq and Fundação Butantan. **E-mail:** gabihase@usp.br

Leptos023- **Characterization of the protein Lsa33 (LIC11834) of *Leptospira interrogans***

Domingos, R.F.[1,2], Vieira, M.L.[1,2], Morais, Z.M.[3], Vasconcellos, S.A.[3], Nascimento, A.L.T.O.[1,2]
[1]Instituto Butantan, São Paulo, Brasil, [2]Pós-Graduação Interunidades em Biotecnologia, USP, São Paulo, Brasil, [3]Faculdade de Medicina Veterinaria, São Paulo, USP, Brasil.

Introduction: Leptospirosis is a zoonosis of global importance that is being considered an emerging infectious disease. Studies have been conducted to characterize novel antigens. **Objectives:** Our goal is to express and characterize the surface protein of a *L. interrogans* serovar Copenhageni encoded by the gene LIC11834. **Methods:** Bioinformatics analysis of the gene sequence; design of primers; genomic DNA extraction and RNA extraction and amplification by PCR (study of conservation); cloning of PCR product in expression vector; expression and purification of recombinant protein; protein analysis by circular dichroism spectroscopy; production of polyclonal antibodies by mice immunization; evaluation of the capacity of this protein to mediate attachment to ECM and components human serum by binding assays; analysis of the cellular localization of the protein. **Results:** *In silico* analysis together with immunofluorescence data and proteinase K accessibility assay suggest that leptospiral protein encoded by the gene LIC11834 is probably surface exposed. Moreover, the recombinant protein partially inhibited leptospiral adherence to immobilized laminin and PLG. We also show that this protein interact with laminin. Thus the recombinant protein was named Lsa33 (Leptospiral surface adhesin of 33KDa). The protein is also PLG - binding receptor, capable of generating plasmin in the presence of an activator. Although in a weak manner, the Lsa33 interact with C4bp suggesting a possible role in leptospiral immune evasion. **Main Conclusions**: We believe that this multifunctional protein has the potential to participate in the interaction of leptospires to hosts by mediating adhesion, may help the bacteria to escape the immune system and to disseminate through the host tissues.**Supported by:** FAPESP, CNPq and Fundação Butantan. **E-mail:** redos@butantan.gov.br

Leptos024- **Characterization of plasminogen and fibrinogen binding receptors of the *Leptospira interrogans***

Oliveira, R.[1,2]; Vieira, M.L.[1,2]; Morais, Z.M.[3]; Vasconcellos, S.A.[3]; Nascimento, A.L.T.O.[1,2]
[1]Centro de Biotecnologia, Instituto Butantan, São Paulo, Brazil; [2]Interunidades em Biotecnologia, ICB, USP, São Paulo, Brazil; [3]Laboratório de Zoonoses Bacterianas do VPS, Faculdade de Medicina Veterinária e Zootecnia, USP, São Paulo, Brazil

Introduction: *Leptospira interrogans* is the etiological agent of leptospirosis, a zoonotic disease of human and veterinary concern. The identification of novel proteins that mediate host-pathogen interactions is important for understanding on the molecular mechanisms of leptospiral pathogenesis and could also facilitate the identification of novel vaccine candidates. Thus, the aim of this project is to study three genes selected from genome sequences of *Leptospira interrogans* serovar Copenhageni and to evaluate the binding ability of the recombinant proteins to human sera components. **Methods:** The genes sequences of LIC10258, LIC12880 and LIC12238 were amplified by PCR methodology from genomic DNA of *L. interrogans* serovar Copenhageni. The DNA inserts were cloned into the *E. coli* expression vector pAE and inserted in BL21 SI *E. coli* strain for protein expression. The recombinant proteins were purified by using affinity chromatography. The secondary structure content of the purified proteins was evaluated by circular dichroism (CD). The cellular localization was performed by liquid-phase immunofluorescence assay (L-IFA) and the capacity of the recombinant proteins to bind to factor H, plasminogen and fibrinogen was evaluated by ELISA, using BSA as negative control. **Results:** Recombinant proteins were expressed and purified as a major band, as assessed by PAGE-SDS. Structural integrity of the proteins was evaluated by CD spectroscopy that showed a mixture of secondary structure contents. The results obtained with L-IFA suggest that rLIC10258, rLIC12880 and rLIC12238 are located at the leptospiral membrane. Evaluation of the binding capacity of the recombinant proteins with human serum components revealed that all recombinant proteins were capable to bind plasminogen, while rLIC12238 is also able to bind fibrinogen. No interaction to factor H was detected with recombinant proteins. **Conclusions:** rLIC10258, rLIC12880 and rLIC12238 are plasminogen-binding receptors. In addition, rLIC12238 is also fibrinogen-binding protein. Furthermore the results suggest that rLIC10258, rLIC12880 and rLIC12238 are exposed proteins. Thus, it is possible that these proteins may play a role in leptospiral pathogenesis. **E-mail:** rosaneoliveir@usp.br

Leptos025- **Characterization of the recombinant protein OmpL1 of *Leptospira interrogans***

Fernandes, L.G.[1,2]; Vieira, M.L.[1,2]; Alves, I.J.[1]; Romero E.C.[3]; Morais, Z.M.[4]; Vasconcellos, S.A.[4]; Nascimento, A.L..[1,2]
[1]Instituto Butantan, São Paulo, Brazil, [2]Pós-Graduação Interunidades em Biotecnologia, USP, São Paulo, Brazil; [3]Centro de Bacteriologia, Instituto Adolfo Lutz, São Paulo, Brazil [4]Faculdade de Medicina Veterinária, USP, São Paulo, Brazil

Introduction: Leptospirosis is a zoonosis caused by pathogenic spirochete of genus *Leptospira*. The identification of conserved outer membrane proteins among different pathogenic strains is the main target of vaccine research. **Objectives:** To evaluate the conservation of OmpL1 in different strains of pathogenic Leptospira, access the immunological response induced by OmpL1 protein in mice model, its capacity to adhere to serum proteins and extracellular matrix components, and its ability to recognize antibodies presented in confirmed leptospirosis human sera, in both acute and convalescent phase. **Material and Methods:** BALB/c mice were immunized, bled and the antibody response evaluated by ELISA and Western blotting. Splenocytes were isolated for evaluation of lymphocyte proliferation and cytokine profile. Conservation of OmpL1 protein was evaluated by Western blotting using anti-rOmpL1 antiserum raised in mice. Binding assays and reactivity with antibodies present in serum of confirmed leptospirosis samples were performed by ELISA. **Results:** The protein OmpL1 is conserved among different strains of *Leptospira*. After mice immunization, high antibody levels were detected and lymphocyte proliferation was observed after recombinant protein stimulation, suggesting humoral and cellular immune response. The recombinant protein showed high reactivity with confirmed leptospirosis

human sera. OmpL1 was capable to adhere to plasminogen, laminin and plasma fibronectin with different affinities, and apparently by distinct binding sites within the full-length protein. **Conclusion:** The adhesion of the recombinant protein with ECM components and plasminogen suggests its involvement in the infection process. The high reactivity of rOmpL1 with serum samples of confirmed leptospirosis specimens indicates its expression during infection and highlights its importance as a candidate for diagnostic test development. **Keywords:** Leptospira, leptospirosis, immunogenicity.**Supported by:** FAPESP, CNPq and Fundação Butantan. **E-mail:** luisgui530@butantan.gov.br

Leptos026- Discovery of a cluster of pneumonic leptospirosis on the occasion of a plague outbreak in a miners' camp, Democratic Republic of the Congo

Bertherat E[1], Mueller M[2], Shako J.C[3], Picardeau M[4]
1. Pandemic and Epidemic Diseases, World Health Organization, Geneva, Switzerland, 2. School of Public Health, University of Minnesota. Minneapolis, USA. 3. Plague Reference Laboratory, Bunia, Democratic Republic of the Congo, 4. Biology of Spirochetes Unit, Pasteur Institute, Paris, France

Introduction: In January 2005, a confirmed outbreak of highly lethal pneumonia occurred in a diamond mining camp in a remote area near the village of Zobia, Bas-Uele, Democratic Republic of Congo, affecting 130 persons and killing 57 of them. Clinical signs, fast spread of the disease, and initial laboratory investigations lead to the suspicion of pneumonic plague, an etiology which was finally confirmed. However, potential differential diagnoses were investigated, including leptospirosis, a disease which had not recently described in the region for decades but which can cause severe pulmonary manifestations in humans. **Material and methods:** Due to security constraints, the response team arrived two months after onset of the epidemic, which limited the number of case-patients who were available for clinical examination and appropriate sampling. Convalescents were tracked and interviewed. Each new patient was admitted to an isolation center. One serum sample was drawn as early as possible after onset of symptoms and a second serum sample was drawn 10 days later. Sera were transported at 4°C and filter-sterilized upon arrival at the Institut Pasteur in Paris, France. Anti-Leptospira antibodies were detected by microscopic agglutination test using a panel of 15 serovars. Sera were screened at a dilution of 1:50 and positive sera were titrated to endpoint using standard methods. High rates of agglutination of the serum with one particular antigen were used to identify the presumptive serogroup of the infecting bacterium. A suspect case of leptospirosis was defined as having symptoms consistent with leptospirosis and MAT titer =1:50 in single acute-phase serum. A probable case was defined as having a MAT titer between 1:400 and 1:50 in single acute-phase serum sample. A confirmed case was defined as having symptoms consistent with leptospirosis and any one of the following: seroconversion or four-fold increase in MAT titer for paired serum samples, or a MAT titer ≥ 1:400 for acute-phase serum samples. **Results:** Twenty-nine of the 54 patients or convalescents tested for leptospirosis were seropositive (53.7%). Nine of these cases can be considered confirmed, 11 probable and 9 suspects. Two cases showed a confirmed infection for both plague and leptospirosis. A high microscopic agglutination test (MAT)-titer (≥400) was observed for serogroups Sejroe (7 subjects) and Canicola (1 subject). **Main conclusions:** Solid epidemiological, ecological, and biological arguments remain in favor of the plague nature of this outbreak; however, these results suggest that some of the plague suspected cases were more likely due to leptospirosis. Other differential diagnoses cannot be discarded but in any case, leptospirosis will have to be evoked in the future if a similar outbreak of severe pneumonia occurs in central Africa. **E-mail:** bertherate@who.int

ENTEROBACTERIOSIS

Enbact001- Characterization of Enteroaggregative Escherichia coli (EAEC) virulence-related genes from children in Northeastern Brazil

Lima, IFN[1]; Quetz, JS[1]; Havt, A.[1]; Boisen, N.[2,3]; Nataro, JP[3]; Guerrant, RL[4]; Lima, AAM[1,4]
[1]Institute of Biomedicine for Brazilian Semi-Arid & Clinical Research Unit/Center for Global Health, Federal University of Ceara, Fortaleza, Brazil; [2]Department of Microbiological Surveillance and Research, Statens Serum Institut, Copenhagen, Denmark; [3]Department of Pediatrics, University of Virginia School of Medicine, Charlottesville, USA; [4]Center for Global Health, University of Virginia School of Medicine, Charlottesville, USA
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Enteroaggregative *Escherichia coli* (EAEC) is an important agent of diarrheal diseases worldwide, although the pathogenesis of its infection is not completely defined. Several virulence-related genes have been associated with EAEC disease but the presence of these factors is variable among EAEC strains. We characterized 67 stool samples collected between March 2007 and July 2008 as part of a poor community-based case-control study among young children (2-36 months of age) in Fortaleza, Ceara, Brazil. These samples were previously positive for EAEC by detection of *aaiC* and/or *aatA* genes using polymerase chain reaction (PCR). We performed multiplex PCR to identify 18 virulence genes and their potential associations with diarrhea. Plasmid-borne gene encoding a hexosyltransferase homolog (*capU*) was the most frequently detected (94.6%), followed by transcriptional regulator gene (*aggR*, 62.5%), dispersin protein gene (*aap*, 60.7%), hypothetical plasmid-encoded hemolysin gene (ORF61, 58.9%), *Salmonella HilA* homolog gene (*eilA*, 58.9%), and EAEC heat-stable enterotoxin 1 gene (*astA*, 50.0%). AAF/III fimbrial subunit (*agg3A*) was the gene detected in the lower frequency (1.8%). The genes plasmid-encoded toxin (*pet*) and AAF/II fimbrial subunit (*aafA*) showed a tendency of association with diarrhea, although their P values are very close to the threshold of statistical significance (P=0.054 and P=0.053, respectively). In addition, we identified two potential protective genes: AAF/IV fimbrial subunit (*agg4A*) and ORF61. The first was detected in 6.1% of cases versus 26.5% of controls (P=0.045, OR=0.179, and 95% confidence interval=0.035-0.906). ORF61 was identified in 21.2% of cases and 52.9% of controls (P=0.011, OR=0.239, and 95% confidence interval=0.082- 0.699). In the logistic regression analysis using all genes that presented statistical significance in the 25% level, ORF61 kept its protective role (P=0.009). Our data confirm the heterogeneity of EAEC group, since all the 18 researched genes were detected. We did not find one specific virulence gene clearly associated with diarrhea. On the other hand, we evidenced a protective role of ORF61. **Financial support:** CNPq (Brazil) and FIC/NIH (USA). **E-mail:** ilafarm@yahoo.com.br

Enbact002- Characterization of Enteroaggregative *Escherichaia coli* from HIV/AIDS patients in Tehran, Iran

Bouzari saeid[1]*, Shafahi Mohammad[1], Aghasadeghi Mohammad R[2], Siadat seyed Davar[2], Oloomi Mana[1]
1-Molecular Biology Unit, 2- Hepatitis and AIDS Department, Pasteur Institute of Iran- Tehran

Introduction: The enteroaggregative E. coli (EAEC) pathotype has been implicated in travelers' diarrhea, in endemic diarrhea among children in both industrialized and resource-poor countries, and in persistent diarrhea among individuals infected with human immunodeficiency virus. Most EAEC strains colonize the intestinal mucosa via the aggregative adherence fimbriae (AAFs), which include at least 4 major antigenic variants. The exact mechanisms by which EAEC causes diarrhoea have not been completely defined. They are heterogeneous regarding the presence of putative determinants. The role and prevalence of these factors have been found to vary by location, making the precise diagnosis of EAEC infection problematic. **Materials and Methods:** We characterized 54 *E.coli* isolates from HIV patients with diarrheal illnesses. The isolates were checked for the presence of 14 putative virulence genes reported in EAEC strains by PCR. The resistance pattern of the isolates to different antibiotics was determined. The EAEC isolates were also subjected to PFGE to determine their clonal nature. **Results:** Overall 9 (16.6%) isolates were detected as EAEC, 5 were identified as typical EAEC and 4 were considered as atypical

isolates. The prevalence of virulence genes among the isolates was as follows: i*rp2* (88.8%), *aap* and *shf* (77.7% each), *AA* and *agg*R (66.6% each), *ast*A and *fli*C (55.5% each) followed by *set*1A (44.4%), *pet* (22.2%) and *Pic* (11.1%). In none of the isolates genes encoding any of the four adhesions so far reported was detected. Resistance to more than two antibiotics was common phenomenon among the isolates. The PFGE analysis also revealed different patterns among the isolates. **Main Conclusion:** The overall results obtained in this study revealed the heterogeneous nature of the EAEC isolates; also it is the first report of EAEC isolation from HIV patients with diarrheal illness from Iran. Moreover to determine their role as etiological agent more detailed case-control studies is required. **E-mail:** saeidbouzari@yahoo.com

Enbact003- **The effects of alanyl-glutamine in the intestinal cell migration after in vitro escherichia coli enteroaggregative strain 239-1 infection**

Silva, A.V.A.[1]; Araujo, P.C.[1]; Prata, M.M.G.[1]; Havt, A.[1].;Lima, I.F.N.[1]; Quetz, J.S.[1]; Lima, A.M.[1,2]
[1]Institute of Biomedicine for Brazilian Semi-Arid & Clinical Research Unit/Center for Global Health, Federal University of Ceara, Fortaleza, Brazil [2]Center for Global Health, University of Virginia School of Medicine, Charlottesville, Virginia - USA.

Background: Pathogenic strains of *Escherichia coli* may cause damage to the intestinal barrier impairing cell migration. The dipeptide alanyl-glutamine (Ala-Gln) is an important micronutrient that could protect the intestinal cells against E. coli lesion. **Aim:** Evaluate the effects of Ala-Gln on the intestinal cell migration after in vitro enteroaggregative *Escherichia coli* (EAEC) strain 239-1 infection. **Materials and Methods:** IEC-6 cells (30-32 passages) were seeded in 12-well plate (2.5 x105 cells/well). After cell confluence they were treated with mitomycin C for 15 min. The monolayer was cut with sterile razor blade and then the cells were infected with EAEC 239-1 (10^6 UFC/well). After 3 hours, the cells were washed 3 times with PBS before receiving medium supplemented or not with 3, 10 and 30mM of alanyl-glutamine. After 6 hours the cells were collected, RNA was extracted for analysis of mRNA expression of ornithine decarboxylase (ODC), RhoA, Rac-1 and Cdc42 by Real Time PCR. After 24 h the wells were photographed and the images were analyzed by Image Pro Plus® software. Results were expressed as mean ± standard deviation. **Results:** Infection with EAEC caused significant reduction in the mRNA expression of ODC, RhoA, Rac-1 and Cdc42. However, 10mM of Ala-Gln showed no significant efficacy in the expression level of these genes 6 hours after the 3 hours infection period. 24 hours after the infection, EAEC caused a significant reduction in number of cells that migrated (Control – 86.0 ± 10.1 cells; EAEC treated - 20.2 ± 4.2 cells). The group treated with 3 mM has not proved to be significant when compared with the group treated without Ala-Gln, although had an apparent improvement. Both concentrations of 10 mM and 30mM showed significant ability to reverse the damage caused by EAEC to IEC-6 migration, but no statistic difference was seen between both concentrations (EAEC plus 3 mM of Ala-Gln – 82.2 ± 10.4 cells and EAEC plus 10 mM of Ala-Gln 78.0±16.9 cells). **Conclusion:** The EAEC strain has the capacity to cause a severe reduction of intestinal cell migration. The Ala-Gln supplementation proved to be a viable alternative to help cell migrate, which is an important repair mechanism against the damage caused by this *E. coli* strain, but it is necessary to optimize the kinetics of molecular analysis to elucidate possible mechanisms for the observed effects. **E-mail:** ahavt@ufc.br

Enbact004- **Identification of enterotoxin genes from Escherichia coli isolated from healthy swines on Distrito Federal, Brazil**

Drummond, V. O.; Martins, G. P.; Andrade, H. H.; Marques, A. D. S. S.; Lacerda, R. M. L. G.; de Souza Mello, M. R.; Castelo Branco, R. L.; Tokatjian, M. L.; Faria, A. P. P.; Perecmanis, S.
Laboratório de Microbiologia Médica Veterinária, FAV / Universidade de Brasília (UnB), Brasília – DF, Brasil.

Introduction: *Escherichia coli* are the most common microorganism found in enteric tract of swine, as nonpathogenic. Among these, some strains may carry genes that induce the production of toxins. Heat-stable (ST) and Heat-labile (LT) toxins are the principal toxins causing diarrhea in piglets. Besides, verotoxins (shiga-like toxins – Stx) have been also associated with diarrhea in animals and human. In Brazil, there are many studies about virulence factors in *E. coli* isolated from swine, but a few that search

for these genes in healthy animals. These data are important to identify and solve sanitary problems in piggeries and to deal with zoonotic risks. The goal of this study was to identify enterotoxin genes for heat-labile (LT-I and LT-II), heat-stable (STa) and verotoxins (Stx_1 and Stx_2) from *E. coli* isolated in healthy swine on Distrito Federal, Brazil. **Material and methods:** Fecal samples were collected from 109 swine randomly chosen (different breed, age and gender) and processed on Laboratório de Microbiologia Médica Veterinária (Veterinary Medical Microbiology Laboratory), Universidade de Brasília. These sample results in 127 strains (two different colonies were observed in 18 samples), and the DNA was extracted and used for PCR. The primers for each gene were that described in Salvadori et al., 2003. **Results:** Eight strains (6.3%) had genes for enterotoxins, which four (3.2%) were positive only for LT-I, three (2.4%) positive only for STa and one (0.8%) positive for STa and LT-I. There were no positives for LT-II, Stx_1 or Stx_2. **Main conclusions:** Shiga-like toxin *E. coli* (STEC) is less common in swine and we observed no genes for Stx in our study. On other hand, enterotoxigenic *E. coli* (ETEC) – that produces LT and ST – are commonly isolated, principally from animals with post-weaning diarrhea. However, identification of toxin genes in healthy swine is unusual. In this study, were detected *E. coli* strains carrying genes for STa and LT-I – including one strain that was carrying both genes – from fecal samples of healthy swine on Distrito Federal, Brazil. These data are similar to others studies that look for enterotoxin genes in animal without diarrhea. These findings may suggest the carrying of ETEC on healthy animals and the risk of diarrhea development and human transmission. **E-mail:** vodrummond@yahoo.com.br

Enbact005- **Extended spectrum β-lactamases in urinary isolates of *Escherichia coli* in five Iranian hospitals**

Jafar Mobaleghi[1], Heiman Salimizand[2], Soheila Baeiranvand[3], Shaho Membari[2], and Enayat Kalantar[4]
1Department of Surgery, Beasat hospital, Kurdistan University of Medical Sciences, Sanandaj, Iran 2Microbiology Laboratory, Beasat hospital, Kurdistan University of Medical Sciences, Sanandaj, Iran 3Department of Microbiology, School of Paramedical Sciences, Kurdistan University of Medical Sciences, Sanandaj, Iran, 4Environmental Health Research Center, Kurdistan Univesity of Medical Sciences, Sanandaj, Iran.

Background: Urinary tract infections caused by *Escherichia coli* have become a significant global public health problem with Kurdistan being no exception**.** Furthermore, the situation is worsening due to advent of increased antibiotic resistance. **Aims:** The wide spread presence of antibiotic resistant *E. coli* in our environment necessitates regular monitoring of antibiotics susceptibility trends in the clinical isolates obtained from different regions to provide the basis for developing Local, National and International prescription programs that can be used for delineating guidelines to maintain the desired effectiveness of antibiotics. **Materials and Methods:** Urine samples from five hospital microbiology laboratories were analyzed for isolation and identification of *E. coli*. *E. coli* PTCC 1533 was send to them as a positive control for antimicrobial susceptibility testing. Antibiotic susceptibility of *E. coli* isolates were validated following the Kirby-Bauer disc diffusion technique using Muller Hinton agar. Screening test for ESBL was done according to the criteria recommended by CLSI. **Results:** A total of 1257 *E. coli* strains were isolated from patients who suffer from UTI referred to five hospitals in Kurdistan province. The most resistant antibiotics tested against *E. coli* were penicillin, ampicillin, and amoxicillin. All the *E. coli* isolates were tested for ESBL production and 239 (19.02%) were found to be ESBL producers**. Conclusions:** In conclusion, our study reinforces the necessity for appropriate use of antibacterial compounds, and with the technical ability we now have to see resistance at a genetic level, to monitor more detailed patterns of emergence. **Key words:** Antimicrobial resistance, E. coli, Urinary tract infection, Kurdistan. **E-mail:** kalantar_enayat@yahoo.com

Enbact006- **Evaluation of the effect of enteropathogenic *Escherichia coli* (EPEC) in a model of migration of intestinal cells**

Cavalcante, Paloma Araújo[1]; Silva, Antonio Vinicios Alves[1]; Prata, Mara de Moura Gondim[1], Havt, Alexandre[1], Lima, Ila Fernanda Nunes[1], Quezt, Josiane da Silva[1], Lima, Aldo Ângelo Moreira[1,2]

[1]Institute of Biomedicine for Brazilian Semi-Arid & Clinical Research Unit/Center for Global Health, Federal University of Ceara, Fortaleza, Brazil [2]Center for Global Health, University of Virginia School of Medicine, Charlottesville, USA.

Enteropathogenic *Escherichia coli* (EPEC) is an important pathogen associated with diarrheal diseases. Pathogenesis is based on the ability to adhere to the intestinal epithelium and cause lesion called attaching and effacing (A / E) leading to destruction of microvilli, thus causing intestinal damage. Bacterial adhesion to intestinal cell occurs through an adhesin called intimin. However, to form intimate adhesion and lesion A / E, protein effector Tir (translocatedintimin receptor) is inserted in the cell membrane of the host. The interaction intimin-Tir trigger changes in the actin cytoskeleton, forming a structure as a pedestal under the connection area with the bacteria. In case of infections by pathogens, there is an impairment of the intestinal barrier and an early response to the damage is the migration of cells to cover the denuded area of the lesion site. **Objective:** To evaluate the effect of EPEC strain 2348/69 and a non-pathogenic *E. coli* HS on migration of rat intestinal cells *in vitro*. **Methods:** In 12 well-plates, was added 2.5×10^5 cells/well. Upon reaching confluence (48 h) was added 5µg/mL mitomycin C for 15 minutes in each well to ensure that only migration process takes place. Wells were then scraped along their diameter and extending 30 mm in length to the right center corner using a sterile razor blade. Then cells were infected for 3 hours with three different doses (10^7, 10^6 and 10^5 CFU / ml) of EPEC and HS. Six hours after infection cells were photographed, cell count was done using Image-Pro Plus to determine the distribution of cells that migrated. The experiments were performed in triplicate each with n = 3 for each group. Analysis was performed using GraphPad Prism by ANOVA and Bonferroni test. **Results:** We observed a reduction in cell migration when cells were infected with EPEC in a dose dependent way. *E. coli* HS in dose of only 10^7 CFU / mL caused significantly reduction on intestinal cells migration, comparing to the corresponding dose of the pathogenic EPEC strain. **Conclusion:** These data showed that EPEC reduces intestinal cells migration significantly compared to the non-pathogenic *E. coli* control strain. Further studies are under way to investigate the possible mechanisms by which EPEC causes this intestinal barrier function injury. **Financial support:** CNPq (Brazil) and FIC/NIH (USA). **E-mail:** pelomy@gmail.com

Enbact007- **Genotypic characteristics of *Salmonella* serovar Enteritidis submitted to different ^{60}Co radiation doses and its public health hazard.**

Rodrigues, E.C.P[1]; Souza, R.M. [3]; Martins, T.G. [2]; Santos, A.F.M. [2]; Velloso, A.J.[1]; Festivo, M.L.[2]; Reis ,E.M.F.[2]; Lazaro,N.S.[2]; Rodrigues,D.P. [2]
1 Biomanguinhos/FIOCRUZ/RJ/Brasil, 2 Laboratory of Enterobacterias/IOC/FIOCRUZ/RJ/Brasil, 3 State Agricultural Research Corporation – PESAGRO RIO/RJ/Brasil

Salmonella ser. Enteritidis as an emerging pathogen and eggs and egg products have been associated as a major vehicle for human cases. Most serotypes of *Salmonella* contaminate shell eggs on the exterior shell surface, gaining entry to the interior contents by cracks in the shell or by other circumstances that can lead to eggshell penetration or its ability to be present in internal egg contents due to trans ovarian deposition of the organisms in egg contents as a result of the infected reproductive tissues of laying hens.Considering its nutritional value and to extend the shelf life of food irradiation has been identified as alternative approach and promising technology that enables eliminate pathogens without affecting egg quality. But the knowledge is limited about the effect of this methodology on genotypic characteristics of *Salmonella* spp. The goal of this study was to determine the effects of ^{60}Co gamma irradiation at doses ranging from 1.0 to 10.0 kGy, on the genotypic characteristics of three from twenty *Salmonella* ser. Enteritidis inoculated into SPF eggs. Those strains presented resistance to fluoroquinolone and / or 3th generation cephalosporin and resistance to gamma irradiation up to 3.0 kGy (strain 3305), 5 kGy (strain 3597) and 10.0 kGy (strain 92). For the detection of resistant genes and virulence genes were analyzed the original strains (n.3) and their subcultures (n.12). The resistant genes analyzed were *bla* CTX, *gyr*A, *gyr*B. The virulence genes located on plasmids and chromosome (*sly*A, *pho*P/Q, *stn*, *spv*C) and in pathogenicity islands, SPI1 (*inv*E/A, *org*A, *sip*A, *hil*A), SPI3 (*mgt*C) and SPI4 (*sii*E). All genes were searched for by PCR. To examine the genetic diversity of the strains and it´s subcultures we used Pulsed Field Gel Electrophoresis (PFGE) performed according the PulseNet protocol. Macrorestriction patterns were compared using the BioNumerics Fingerprinting software (Version 5.0). The unweighted-pair group

method using average linkages (UPGMA) was used to construct a dendrogram of all isolates.Regarding resistance genes, except the strain 92 and a subculture resistant to 1 kGy, the other subcultures were negative for *bla*CTX. The genes *gyr*A and / or *gyr*B were detected in all 92 original and subcultures until doses 10 kGy and the strain 3597 showed *gyr*B gene just until 1kGy. From the total *S*. Enteritidis strains analyzed, except the strain 3597 the strains 92 and 3305 and its subcultures were positive for genes from SPI1. Irradiation induced changes in the profiles of genes located on plasmids and chromosome and in SPI3 and SPI4. The results show deletion of genes in the strains after irradiation being more visible in strain 3597 as the gene *mgt*C from SPI3 necessary for survival inside macrophages and growth in a low-Mg^{2+} medium. Strain 3305 showed the highest stability, however it was found that the subculture of strain 92, surviving at different irradiation doses and was detected many genes when compared to the original culture. Assessment of these strains by PFGE, indicating that the changes detected at the DNA level magnitude are not can be detected by PFGE. Given the results, it is important to develop more accurate study to evaluate the rate at which Salmonella can repair damaged DNA and produce Salmonella strains phenotypically unrecognizable, as survival strategies which can represent an important public health threat. **E-mail:** elizabeth@bio.fiocruz.br, bethcprodrigues@yahoo.com.br

Enbact008- **Occurrence of virulence genes of SPI-1 in *Salmonella* serovar Enteritidis isolated from animal sources, food and human cases in Brazil**

Souza[1] R.M., Liberal M.H.T. [1], Reis[2] E.F., Rodrigues[2] D.P., Andrade[3] J.R.C.
Rio de Janeiro StateAgricultural Research Corporation - PESAGRIO-RIO, Niterói, Rio de Janeiro, Brazil; 2-Oswaldo Cruz Foundation - FIOCRUZ, Rio de Janeiro, Brazil; 3- Rio de Janeiro State University – UERJ, Rio de Janeiro, Brazil.

Salmonella is a major cause of infection transmitted by food in both developed countries and the emerging and has the food chain as the main route of transmission and circulating between animals and humans.*Salmonella* has multiple virulence factors, especially those contained in Pathogenicity Islands, denominate SPI (*Salmonella* Pathogenicity Island). SPI1 contains a group of genes called *inv*, which are related to bacterial invasion. The *org*A gene is associated with *inv* genes. The *sip*A coding for a protein SipA directly involved in the process of ruffling. The *hill*A gene is involved in regulation of virulence.Considering the importance of *S*.Enteritidis in Public Health and its spread among animals and humans,at present investigation, strains isolated from humans, animals and food borne outbreaks from several states of Brazil were analyzed. A total of 86 strains of *S*.Enteritidis evaluated, from 2006, 2007 and 2008 were divided into three distinct groups: 17 samples of animal origin(AN), 38 samples of food borne (FD) and 31 of human (HU).The strains coming from the collection of the National Reference Laboratory-LRNEB / IOC and outbreaks originating from all over Brazil.The strains were analyzed by PCR(Polymerase Chain Reaction) for a random sequence chromosome characteristic of *Salmonella*, the gene *sef*A (encodes the SEF14 fimbriae) and also for SPI1 virulence genes: *inv*E/A, *org*A, *sip*A and *hil*A. We found significant differences ($P < 0.05$,Kruskal-Wallis test) in the number of virulence genes carried in SPI1 between HU and AN strains isolated in 2006 and 2007. *S*. Enteritidis strains recovered from human infections showed a lower number of SPI1 genes than animal strains. For the *S*. Enteritidis strains recovered during 2008, the differences were not statistically significant, but the AN also showed a majority of strains carrying the four SPI1 genes investigated ($P < 0.05$, Fisher's exact test). With regard to the presence of the four SPI1 virulence genes in HU, FD and AN strains over time we did not detect differences in human strains, but FD and AN strains isolated in 2007 and 2008 showed significant differences. These preliminary data suggests that some genes of SPI1, a virulence island involved in epithelial cell invasion in the early steps of *Salmonell* infection, may have distinct relevance for animal and human infections by *S*. Enteritidis. Further work will study the occurrence of other SPI1 genes as well their functional activity in cell culture and in animal models of infection. **E-mail:** rossianesouza@yahoo.com.br

Enbact009- **Phenotypic and genotypic characteristics of *Salmonella* ser Typhi isolated from a human outbreak**

Santos, A.F.M.; Festivo, M.L.; Reis, E.M.F.; Berto, L.H., Barbosa, K.D.S., Martins, M.P.B., Mareco, M.L., Rodrigues, D.P.
National Reference Laboratory for Enteric Diseases – NRLED/IOC/Oswaldo Cruz Foundation/ FIOCRUZ – Rio de Janeiro, Brazil

Introduction: *Salmonella enterica* serovar Typhi continue to cause enteric fever, a systemic infection with significant cause of morbidity and mortality in many parts of the developing countries. The World Health Organization estimates that 16 million illnesses and 600,000 deaths worldwide are due to *S.* Typhi infections annually. The disease is primarily water or foodborne contaminated by feces of patients or carriers, but person-to-person spread is well recognized. Subtyping the Salmonella serotypes is important for epidemiological characterization of Salmonella causing human outbreaks is essential for many reasons including surveillance purposes. Among conventional methods, biotyping, and phage typing has for decades been useful as a phenotypical, definitive method for epidemiological characterization of *S.*Typhi, but they are less discriminative than molecular approaches such as pulsed-field gel electrophoresis (PFGE) which offer higher discrimination, typeability and reproducibility. PFGE has been widely regarded as the "gold standard" for Salmonella subtyping because of its high discriminatory ability. **Results**: 63 strains of *Salmonella* ser. Typhi were isolated from human source of an outbreak in Amapa state, Brazil in 2011. All strains were biotype I, and 64% presented W form and showed antimicrobial resistance to Streptomycin (65%) and/or to Nitrofurantoin (22%). All strains were subtyped by PFGE using endonucleases *Xba*I according PulseNet protocol and *S.*Braenderup H9812 as a standard strain. PFGE patterns were compared on dendrograms generated in BioNumerics IV using the Dice coefficient and a 1% band matching criterion.DNA fingerprinting of 63 *Salmonella* characterized by pulsed-field gel electrophoresis (PFGE) showed that isolates were closely related and 10 distinct XbaI-profile restriction patterns referred to as pulsotypes. In 80% similarity, 2 clusters were obtained, named A and B. Within the A cluster, the 62 isolates were differentiated into 10 different pulsotypes (A1 – A9), with the majority belonging to pulsotype A2 (n .38) and the pulsotypes A1 (n.3), A3 (n.1), A4 (n.1), A5 (n.6), A6 (n.1), A7 (n.4), A8 (n.4) and A9 (n.1). These results confirming the epidemiological relationship among the human cases, with the exception of a single isolate from the cluster B different from the total strains isolated along the outbreak. **Conclusions**: Some strains of *S.enterica* serotype Typhi are capable of receiving and maintaining conjugative resistance plasmids. The lack of diversity among strains suggests that the antimicrobial drug resistant phenotypes provided a selective advantage that allowed these strains to spread. Continued monitoring of PFGE patterns to evaluate the divergence of existing patterns and continuous evaluation of the emergence of new patterns represent a useful tool for investigating local epidemics and for surveillance of sporadic cases. **E-mail:** nanet@ioc.fiocruz.br

Enbact010- **Typhoid fever, epidemiological aspects in a capital of the Brazilian Amazon, 2000-2010**

Seabra DMRS[1,2]; Lins RT[1]; Soiér PA[1,3]; Moura MAS[1]; Nogueira GC[1]; Saraiva MGG[1,2,3]
[1]**Fundação de Medicina Tropical Dr. Heitor Vieira Dourado;** [2]**Universidade do Estado do Amazonas;** [3]**Centro Universitário Niltons Lins**

Introduction: In Amazonas state, among the water-borne diseases, typhoid fever (FT), an acute bacterial disease caused by Salmonella Typhi infectious agent, is an important public health problem that is endemic in the city of Manaus. This study aims to analyze the epidemiological profile of cases of FT native of Manaus, in the period from January 2000 to December 2010. **Materials and Methods:** For analysis we used secondary data from the Information System for Notifiable Diseases (SINAN) acquired by the Foundation for Health Surveillance (FVS). The variables analyzed were number cases and deaths, gender, age and month / year of occurrence of typhoid fever. **Results:** Between 2000 and 2010 were reported 189 cases of typhoid fever, with four deaths (case fatality rate of 2.3%), half (two cases) occurring in 2000. Men were more affected, with 128 (67.7%) patients. The age group 20-34 years had the highest record (98 - 51.8%), both in males, with 70 (54.6%) cases, and females with 28 (45.9%).

During the 11 years, the annual average was 18,4 cases, with higher prevalence (29 cases - 15.3%) in 2000 and lowest (10 - 5.2%) in 2006. The disease occurred in all months, with higher averages in January (2.6), July (1.9) and August (1.6), concentrating 39.5% of notifications. **Mains Conclusions:** Manaus often accomplishes great events, and prepares for the World Cup in 2014, during which the region will receive many visitors, from other states in Brazil and other countries. Thus, the record of this disease calls attention to the need for health education on prevention practices of typhoid fever to population, especially food vendors from the port area and fairs, in times of greatest concentration of people. **E-mail:** diego_dmrs@hotmail.com

Enbact011- **The Typhoid Fever Surveillance in Africa Program**

Marks F[1], Konings F[1], Panzner U[1], Cruz Espinoza LM[1], Warren MA[1], Ali M[1], Pak GD[1], Im J[1], v. Kalckreuth V[1], May J, Meyer CG[2], Schütt-Gerowitt H[1], Wierzba TF[1]
1. International Vaccine Institute, Seoul, South Korea, 2. Bernhard Nocht Institute for Tropical Medicine, Hamburg, Germany

Introduction: Comparable and contemporary population-based data on *Salmonella* spp. infections in sub-Saharan Africa (sSA) are lacking. Current burden of disease estimates for *S.* Typhi (ST) are based primarily on incidence rates in placebo arms of vaccine trials conducted in the 1970s/80s, a study from the Gambia as well as on more recent studies from Kenya and Ghana. The studies from Kenya (urban site) and Ghana (rural site) indicate an incidence rate of >520/100,000 and >200/100,000, respectively, among children 2-8 years of age. The clinical relevance of non-typhoidal *Salmonella* (NTS) infections appears so far to exceed that of ST. More data collected systematically from various sites throughout sSA are urgently required in order to make evidence-based decisions for the sustained introduction of extant and upcoming vaccines for typhoid/paratyphoid, and non-typhoidal *Salmonella* (NTS) vaccines, which are currently evaluated. **Material and Methods:** Consequently, the International Vaccine Institute (IVI) has initiated the Typhoid Fever Surveillance in Africa Program (TSAP), which aims at establishing standardized surveillance for invasive bloodstream infections at 10 sSA sentinel sites (Guinea Bissau, Senegal, Burkina Faso, Ghana, Sudan, Ethiopia, Kenya, Tanzania, Madagascar, South Africa). While at some of the sites selected in these countries microbiological capacities to conduct febrile illness surveillance were well functioning, other sites required support to fully establish the surveillance infrastructure. In order to compare incidence rates among the sites, health-care utilization surveys are conducted for adjusting the numerator of incidence calculations. In addition to the primary goal of assessing the incidences *Salmonella* spp. across participating study sites, secondary outcomes of the project include estimations on the incidences of other invasive pathogens and evaluations of healthcare accessibility. **Results:** Incidence data will be presented. **Conclusions:** TSAP builds surveillance capacity and leadership at each participating site and creates links between collaborators, political stake-holders, and partners. Through these partnerships, TSAP directs sustained and standardized reporting of invasive bloodstream infections and generates credible and essential data. These data will, in turn, increase disease awareness and drive policy development on the prevention and control of communicable diseases with invasive potential in sSA. The project infrastructure established will provide a platform for the evaluation of new and underutilized vaccines against invasive bacterial bloodstream infections. **E-mail:** fmarks@ivi.int

Enbact012- **Prevalence of extended-spectrum beta-lactamase in enterobacteriaceae isolated from rectal swabs of patients admitted and hospitalized, Pernambuco, Brazil**

Magalhães, MGPA[1]; Lima KM[2]; Coelho VF[3]; Gomes TCA[1]; Magalhães PAF4.
[1]**Universidade de Pernambuco; [2] Faculdade Estácio/FIR; [3] Universidade Salgado de Oliveira; 4Universidade Federal do Rio Grande do Norte, Brazil.**

Introduction: The Bacterial resistance is considered the biggest challenge to be faced by medicine nowadays. The production of enzymes extended-spectrum beta-lactamase (ESBL), mainly by Gram negative bacteria, is going to become a problem of public health of worldwide proportions. It's also

considered the most important resistance mechanism, which, according to clinical decline of infected patient, can be able to take away death. In this work, we present the prevalence of ESBL in Enterobacteriaceae isolated from rectal swabs of patients admitted and internal to private hospital in the state of Pernambuco, Brazil. **Material and Methods:** Was realized a cross-sectional retrospective, with a quantitative approach, through the analysis of all cultures from monitoring rectal swabs with positive results for ESBL, of patients admitted and internal between the months of June to November 2011, in a private hospital, the medium sized, located in the important medical center of Recife, Pernambuco, Brazil. For the collection of swabs monitoring, in this service, were established the following criteria: 1. All patients hospitalized in intensive care unit; 2. Previous hospitalization (up to 60 days before admission); 3. Previous antibiotic use (up to 60 days before admission); 4. Presence of pressure ulcers; 5. Patients who make a hemodialysis; 6. Residents of long permanence units (home-care). **Results:** Were analyzed 76 positive cultures for ESBL, which Escherichia coli and Klebsiella pneumoniae bacteria responsible for the colonization in 40,8% and 59,2% respectively. Of the positive cultures, 36,8% were collected at admission. 80,3% of the positive samples were from the ICU, what can be attributed to the criteria for collect monitoring culture for ESBL. **Conclusions:** Through realization of this study it can be concluded, by quantitative rectal swabs positive for ESBL, since the patient's admission that the indiscriminate use of antimicrobials favors the development of multiresistant bacteria to antibiotics of extended spectrum in the population, can evolve to cases of strains Carbapenem-hydrolysing beta-lactamase resistant. The ESBL enterobacteria are easy to dissemination hospital and for that, before these cases, should be instituted precautionary measures additional by contact, avoiding cross-contamination. **E-mail:** gabi.magalhaes@hotmail.com

Enbact013- **Prevalence of rotavirus, norovirus, enterobacteria and intestinal protozoa in children under five years old during episodes of acute gastroenteritis in Rio Branco City, Amazon region**

Silva, M.C.M.[1]; Gabbay, Y.B.[1]; Loureiro, E.C.B.[1]; Rodrigues, I.R.C.[1]; Uchoa, R.S.[2]; Almeida, G.N.M.[2]; Fogaça-Junior, A.[2]; Machado, E.G.[1]; Santos, J.G.[1]; Silva, J.C.L.[1]; Menezes, E.F.C.[1]; Pullici, G.[3]; Fernandes, F.[3]; Mascarenhas, J.D.P.[1]
1- Unidade Descentralizada do Instituto Evandro Chagas/SVS/MS, Rio Branco, AC. 2- Universidade Federal do Acre, Rio Branco, AC. 3- Hospital da Criança, Rio Branco, AC.

Introduction: Acute gastroenteritis (AGE) is a common illness in children under five years old and the rotavirus is considering the most important etiological agent related with severe disease and dehydrating. Others virus such as norovirus and astrovirus, bacterial and protozoan agents are implicated in cases of diarrhea, with different mechanisms of pathogenesis and therapeutic intervention. In 2005, an outbreak of AGE was reported in Acre State, mainly among young children that living in the capital city of Rio Branco. Since December 2011, several cases of AGE have been reported among children from Rio Branco and also in some Indian tribes located nearby this city. There was an increase in those episodes in January 2012. The aim of this study was identify rotavirus, norovirus, enterobacteria and protozoan (*Cryptosporiium* sp, *Giardia lamblia*, *Entamoeba histolytica*) agents in stools of infants with AGE attended in a reference Healthcare Unit from Rio Branco. **Methods:** During January 2012, a case-control study was conducted with 55 children under five years old with AGE who were attended in the 2nd reference Healthcare Unit. In the same period, a control group (CG) composed by 48 children without AGE was also evaluated. Stool samples were analyzed by immunological methods to diagnosis Rotavirus (R-Bio QUICK ROTA - BIOPHARM), Norovirus (Ridascreen® Norovirus), *E. histolytica* (*E. histolytica* Test II TechLab), *Cryptosporidium* sp and *G. lamblia* (RIDA®QUICK *Crypto/Giardia*) and enterobacteria (routine culture). **Results:** Rotavirus was the most common pathogen detected in AGE cases (45.5%-25/55). It also was detected in three (6.2%-3/48) asymptomatic controls. Of these, 28.6% positive children had received one dose of rotavirus vaccine and 53.6% had received two doses. *G. lamblia* was detected in 16.4% (9/55) AGE and 18.8% (9/48) control children. Others agents were identified in low frequency such us: norovirus (7.3% in AGE group and 6.2% in CG), *E. histolytica* (6.7% in AGE and 2.1% in CG), *Cryptosporidium* sp (3.6% in AGE and 2.1% in CG) and *Salmonella* spp (1.8% in AGE and 2.1% in CG). *Shigella sonnei* and *S. flexneri* were isolated only in AGE group in 7.3% and 1.8% of the cases, respectively. **Conclusions:** Despite the rotavirus vaccine has been included in the National Program of

Immunization since 2006, only few post-marketing studies have been conducted to monitor rotavirus variability and the efficacy against possible new genotypes in Brazil. In Rio Branco city, the rotavirus remains the most important agent, even in vaccinated children and co-infection with others potential agents of AGE. Additional analysis are required to investigate possible introduction of the others current genotypes and identification of possible risk factors for different agents related with AGE in Rio Branco city. **E-mail:** joanamascarenhas@iec.pa.gov.br; monicamoraes@iec.pa.gov.br

Helicobacter pylori

Hpylori001- **Risk factors observed in infections caused by the *Helicobacter pylori* bacterium in a riverine community of the Amazonas state**

Silva, A.C., Fernandes, A.B., Brito, C.R.N., Guimarães, J.H., Reis-Junior, J. D. D., Guimarães, J., Pereira, J.O., Pardo,M.C.S., Pucci,B.R.F.
Molecular Biology Laboratory for Infectious and Parasitic Agents/Institute for Health and Biotechnology/University Federal of Amazonas – Coari/Amazonas/Brazil

The first epidemiological studies about *Helicobacter pylori* infection bacterium first appeared in literature in 1986 and were accomplished in adults. It is known now the bacterial acquisition occurs primarily during childhood and, in general, there is no spontaneous eradication of the organism, leading infected people to host it throughout their lives. The exact cause of the infection has not been determined. Populations who live in precarious conditions are more susceptible to its acquisition. Population studies in Brazil indicate high levels of this microorganism in urban areas. However, little is known about its prevalence in rural areas, particularly in riverine communities which present all social and environmental conditions considered as risk factors. Thus the objective of this study was to determine the prevalence and risk factors associated with *H. pylori* infection in a population living in a riverine community of the Amazonas state. **Methodology**: The study was performed in connection with proposals submitted to SUS, a Government Research Program / Shared Management in Health and the subjects were 100 community-dwelling from Itapéua riverine community / Coari / Middle Solimões River / Amazonas/ Brazil. Bacterial infection was determined using the RIDASCREEN *Helicobacter pylori* IgG kit (R-Biopharm AG, Germany). The epidemiological survey was performed by means of a socio-economic questionnaire with questions about identification and socio-economic, hygienic and sanitary data. **Results:** The results showed a 88% seroprevalence (88/100) among the participants, and 100% (88/88) interfamilial clustering who presented less favorable hygiene conditions. Among the risk variables, statistically significant differences were observed when related to the infection frequency with the treatment of the water used GL: 1, X2 (Yates): 5.114, (p): 0.0237, and the infection reached 100% of the individuals that drank water without treatment. There were no statistically significant differences in the associations between the number of people per family, number of rooms and sanitation conditions. **Conclusion**: High prevalence of the infection by *H. pylori* was verified in the studied sample, being this infection associated with the consumption of no-treated water. It was observed that the less favorable socioeconomic conditions in this riverine community are clearly linked with the largest prevalence of the *H. pylori* infection although that association has not been shown statistically significant. **E-mail:** adriansilva1@hotmail.com

Hpylori002- **Immunodiagnosis of the *Helicobacter pylori* infection and association with ABO and Lewis blood groups in an Amazonian population**

Reis-Junior, J.D.D., Silva, A.C., Pardo, M.C.P., Fernandes, A.B., Guimaraes, J.H., Pereira, J.O., Loiola, R.P., Rocha, D.A.P,. Guimarães, J.
Molecular Biology Laboratory for Infectious and Parasitic Agents/Institute for Health and Biotechnology/University Federal of Amazon – Coari/Amazon/Brazil

Introduction: The *Helicobacter pylori* is a microorganism of cosmopolitan distribution that reaches more of half population world being associated in the genesis of the development of serious gastric pathologies. The epithelium gastric represents the first activate line of defense against the bacterium, because the epithelial cells secrete inflammatory mediators that begin the immune answer against this pathogen, liberating antibodies that are used as markers of diagnose, used in epidemiologic studies. The probable receptors for this bacterium in the gastric epithelium are carbohydrates of the gastric mucins, being associated as antigenics determinants for microorganisms, especially for bacterium *Helicobacter pylori*, where the phenotypes of blood groups ABH and Lewis has been implicated as probable and prevalent sites for adhesion of this microorganism. In Brazil, especially in the Amazonian region, there is scarce knowledge about prevalence of *H. pylori* infection. Considering that this infection affects thousands of people in the world and that the phenotypes of blood groups H and Le[b] are related as probable sites of bacterial adhesion, the objective of this study was to detect the distribution of the phenotypes of the blood groups ABO and Lewis in individuals infected by the bacterium *Helicobacter pylori*. **Methodology**: This study investigated a population of 200 individuals living in rural areas of Coari, a little city in Amazonas, Brazil. The plasma samples were tested for systemic antibodies of the type IgG specific anti-*H. pylori*, through a immunoassay, using the Kit RIDASCREEN *Helicobacter* IgG (R-Biopharm AG, Germany). The phenotypes ABO and Lewis were identified for the Hemagglutination and Dot-Blot-ELISA tests. **Results**: The obtained results showed a seroprevalence of 82.5% (165/200). The phenotypic analyses of the blood groups demonstrated a high frequency of the phenotypes of the blood groups A and O, among the positive individuals for the bacterium, with taxes of 36.5% and 21.0% respectively. Among the phenotypes Lewis, the group Le (a-b+) was the more prevalent with 36.5%, however significant differences in the association of these phenotypes and the infection for the bacterium were not detected. **Conclusion**: The high prevalence of the infection for the *H. pylori*, as well as the high expression of the phenotypes Leb, reinforces the hypothesis that the connection of the bacterium is mediated by these antigens of these blood groups. **E-mail**: dobles.jack@hotmail.com

Hpylori003- **Study of detection molecular of Helicobacter pylori in rivers waters**

Santana Jr, CAS, Wosnjuk, LAC.; Anunciação, CE.; Garcia-Zapata, MTA and Research Group and Integrated Action in Cancer Control (PAICC).
Institute of Biological Sciences and Institute of Tropical Pathology and Public Health of Federal University of Goias & Faculty of Medicine of Catholic University, Goiania-GO, Brazil

Introduction: The coliform rate test is only able to show an estimation of the number of microorganisms present in the water, but is doesn't enable the identification of all microorganisms present in it. In previous studies the incidence of H pylori in gastric biopsies indicated the presence of 36.6% (n = 123) of the parasite in Goias, mainly in the frames of gastritis and ulcer, and 100 in other cases, including tumors. From the analysis of the CAG histopatogenicity island showed that 23% had genotype S1m1 + S1m2. Due for eating habits, the high number of cases of gastritis and ulcers, and the influence of water distribution of the largest river in the state (semi-arid), used in agriculture and the supply of treated water to the population, was suspected of involvement active water from rivers and lakes as a source of contamination / spread of *H. pylori* in the capital and the state. The purpose of this study was to develop a molecular methodology trough the PCR, able to detect and do the environmental observance of the presence of the *H.pylori* in rivers waters for urban and rural use, as well as evaluate the presence of this pathogen in the Meia Ponte River, João Leite River and lakes of Goiânia, Goiás, Brazil. The bacteria *H. pilory* is associated to gastritis, peptic ulcer and the proliferation of these bacteria in the gastric epithelium like the cancer and the gastric lymphoma. Its prevalence is of about 50% in developed countries, in underdeveloped countries there aren't precise statistic developed yet. **Material and Methods:** To accomplish this study, monthly samples were collect from Meia Ponte River, João Leite River and Vaca Brava, Bosque dos Buritis and Areião Lakes. These samples were sent to the Laboratory of Genetic and Molecular Diagnosis of Federal University of Goiás where steps were carried out by vacuum filtration water positively charged nylon membrane and subsequent elution. The material eluted DNA was extracted by phenol-chloroform extraction technique and then processed by PCR. The presence of *H. pilory* was determined by the detention of the amplification product of the gene UreA. Results were visualized by agarose gel (1%) stained with ethidium bromide. **Results:** It was obtained positive results in

Meia Ponte River, João Leite River which supply the city of Goiânia and too in the Vaca Brava and Bosque dos Buritis Lakes. In João Leite River was obtaining 87.5% of positivity and was the place which more positivity. The Meia Ponte River was obtaining 12.5% of positivity. Vaca Brava e Bosque dos Buritis Lakes was obtaining 50% of positivity each. **Main conclusions:** The presence of *H. pilory* in rivers and lakes studied suggests that the water is serving as a channel for this pathogen reaches people through irrigation in rural areas, and it is also studying whether, through the waters that are distributed to the population, since study rivers are the main suppliers of water that is treated and then distributed to the population. **E-mail:** carlosgynbr@yahoo.com.br

Hpylori004- **Prevalence of the infection for *Helicobacter pylori* in the mother-child relationship in an Amazonian population**

Pardo, M.C.S.; Fernandes, A.B.; Silva, A.C.; Reis-Júnior, J.D.; Guimarães, L.H.; Guimarães, J.
Laboratório de Biologia Molecular de Agentes Infecciosos e Parasitários/Universidade Federal do Amazonas.

Introduction: The *Helicobacter pylori* bacterium was isolated for the first time in 1982. Since then, it has been studied due its high prevalence in the world population and its association with the development of gastric pathologies. It is admitted that this infection is acquired in the childhood and, unless treated, it can remain during a lifetime of the individual. The infection for that agent in that age group has been generating a lot of controversy mainly what concerns the understanding to the transmission methods, being accepted universally that the bacterium only gets to reach the gastric mucous by the mouth. The detection of identical strain in different members of a same family indicates that can happen in interfamilial transmission, facilitated mainly by the environment shared by them. In that way the presence of the infection in the parents, especially in the mothers, it is had as an important risk factor for their children. Considering the importance of the interfamilial transmission and the shortage of studies related to the prevalence of this bacterial infection in the state of Amazon, the objective of this study was to investigate the prevalence in the mother-child relationship. **Methods:** The methodology included a mother-child sample in 40 families, totaling 134 individuals, residents in four rural communities of the city of Coari-Amazon. For the detection of the bacterial infection was used the Kit RIDASCREEN *H. pylori* IgG (R-Biopharm AG, Germany) to the serological ELISA in the maternal samples, the Kit MKBIO *H. pylori* (GMBH, DIMA, Germany) to the fecal ELISA in the infantile samples. **Results:** The 134 analyzed samples, 94 were children in the age group from 0 to 16 years, and 40 of mothers. The infection rate in the adult and children were respectively 97.5% (39/40) and 47.87% (45/94). The prevalence of the infection in the age group in the first ten years evidenced statistically significant differences (Tests G Willians/p=0.0140). Although significant differences had not been found among the infection to the risk factors such as the interfamilial clustering, the number of children and people sharing the same room, the infection rate were higher for these factors (72,3%). **Conclusion:** The obtained results indicate that the positive children are directly related the seropositives mothers, mainly the children in the first ten years, evidencing that the transmission profile happens for contact person-person, where only the improvement in the socioeconomic conditions and prevention methods can reduce the rates of prevalence of the infection for *H. pylori* in these populations. **E-mail:** mayana.pardo@gmail.com

Hpylori005- **Detection of *Helicobacter pylori* in faeces by immunoassay and PCR in riverine communities in the city of Coari, on the Middle Solimões River/Amazonas/Brazil**

Guimarães, J., Fernandes, A.B., Reis-Junior, J.D.D., Silva, A.C., Pardo, M.C.P., Guimaraes, J.H., Pereira, J.O., Sampaio, F. S., Corvelo, T.C., Loiola, R.P., Brito, C.R.N.,Rocha, D.A.P.
Molecular Biology Laboratory for Infectious and Parasitic Agents/Institute for Health and Biotechnology/University Federal of Amazon-Coari/Amazon/Brazil

The *Helicobacter pylori bacterium has been widely recognized as a pathogen in the etiology of chronic antral gastritis, duodenal ulcer,* gastric cancer and mucosa associated lymphoid malignancies. Its ecological niche is the human stomach, where colonization occurs essentially in the antrum, however, there is evidence that the microorganism is excreted in the feces of infected individuals. The presence of

pathogen in feces is compatible with a fecal oral route of transmission, because of ease of availability; feces can be a convenient sample for the detection of *H. pylori*. The diagnosis of *H. pylori* infection can be carried out by resorting to invasive methods that obtain a gastric biopsy through upper digestive endoscopy and non invasive methods. Considering that currently the big challenge in this infection diagnosis is the development of less invasive diagnostic methods and the polymerase chain reaction (PCR) constitutes a crucial tool in the development, the purpose of this study was to detect the infection for the *H. pylori* using methods non invasive of detection by enzyme immunoassay and PCR in fecal samples. This study investigated a population of 70 individuals living in rural areas of Coari/Amazonas/Brazil. The feces samples were collected by own individual and tested for ELISA fecal using the Kit MKBIO *H. pylori* (GMBH, DIMA, GERMANY). The Bacterial DNA was extracted using QIAamp DNA mini Kit (QIAGEN, GERMANY), the technique of it was adjusted for extraction of DNA of fecal samples, and amplified for PCR using specific primers P1 and P2, that amplifies a 26 kDa antigen gene present in all strains of *H. pylori*. The obtained results showed a high infection prevalence for the two test, with percentile of 72,85% for PCR (51/70) and 90,4% for Fecal ELISA (64/70), however significant differences were not detected. Disagreement occurred in 18,5%, thirteen patients. The age of the patients ranged from de 6 months to 54 years, of whom 40% (28/70) were under 12 years old. A family history for symptoms of gastric alteration was present in 91% of patients studied. In summary, the results indicated that non-invasive tests have high sensibility, they can be used in children and in association with PCR constitute a crucial tool for detection of the infection for the bacterium *H. pylori*. **E-mail:** jocinha@yahoo.com.br

Hpylori006- **Comparative study of histological analysis with the urease test in the detection of *Helicobacter pylori***

Vianna JS[1]; Ramis IB[2]; Halicki P[1]; Lara C[1]; Tadiotto T[1]; Maciel J[1]; Nader M[1]; Santos DM[1]; Chaves AL[1]; Salomão J[1]; Juliano CRV[1]; Von Groll A[1], Silva PEA[1]
[1]Laboratório de Biologia Molecular - Universidade Federal do Rio Grande (FURG), Rio Grande, Rio Grande do Sul, Brazil, [2]Centro de DesenvolvimentoTecnológico - Universidade Federal de Pelotas (UFPEL), Pelotas, Rio Grande do Sul, Brazil

Introduction: *Helicobacter pylori* is a microorganism that infects about 50% of the world human population and that is associated with the development of various gastrointestinal disorders, such as gastritis, peptic ulcer and gastric cancer. Accurate diagnosis of the presence of *H. pylori* is essential for the treatment and prognosis of infection. Histological analysis allows the identification of the presence of microorganisms with characteristics morpho-staining of *H. pylori*, furthermore it allow the evaluation of the type and intensity of inflammation in the gastric mucosa. While the urease test, with the advantage of to be a test point-of-care, easy, rapid and low cost, does not provide information about the intensity of inflammation and enable the occurrence of diagnostics false-negative. **Objective:** The objective of this study was to analyze the influence of bacterial density on the result of urease test for detection of *H. pylori*. **Material and Methods:** The May 2011 to February 2012 were collected gastric biopsy samples from dyspeptic patients underwent endoscopy at the University Hospital Dr. Miguel Riet Corrêa Jr., in Rio Grande (RS). After collection, these samples were submitted to urease test and sent for histological analysis. **Results:** Two hundred forty-three patients presented positivity in the histology, being of these, 30.9% (75/243) positive in the urease test, while 69.1% (168/243) had negative results. Comparing, the urease test with the bacterial density described in the histological report, it was found that when the urease test was positive, 30.7% (23/75) of reports presented rare groups of *H. pylori*, 53.3% (40/75) some groups and 16% (12/75) many groups. And, when the urease test was negative, the reports from histological analysis showed rare groups of *H. pylori* in 65.5% (110/168), some groups in 31.5% (53/168) and many groups in only 3% (5/168). **Conclusions:** These results allow infer that the urease test was negative mainly in patients who had as histological report rare groups of *H. pylori*; and positive in most of those who presented report of some or many groups of *H pylori*. This indicates that the bacterial density, possibly, interferes in the urease test, leading to false-negative results. As some endoscopic centers use only the urease test in the diagnosis of *H. pylori* infection, when the patient has no severe lesions in the gastric mucosa, we suggest a better evaluation of the utilization of this test as a diagnostic tool in order to avoid false-negative results. **E-mail:** pedrefurg@gmail.com

Hpylori007- **Association between the *babA2* and *cagA* genes as biomarkers of pathogenicity in *Helicobacter pylori***

Ramis I. B.[1]; Vianna J. S.[2]; Von Groll A.[2]; Silva P. E. A.[1,2]
[1] Centro de Desenvolvimento Tecnológico – Universidade Federal de Pelotas, Pelotas, Rio Grande do Sul, Brazil, [2] Laboratório de Biologia Molecular - Universidade Federal do Rio Grande, Rio Grande, Rio Grande do Sul, Brazil

Introduction: *Helicobacter pylori* infects approximately 50% of the human population worldwide. The infection caused by this bacterium can induces gastritis, which may progress to peptic ulcer or gastric cancer. The reasons for the above clinical differences remain uncertain but may be related to factors of the bacterium, of the environment and of the host. With relation to bacterium, is important to highlight the presence of *babA2* and *cagA* genes, which has been associated with the pathogenicity of *H. pylori* and with the evolution of infection. The aim of this study was to investigate the association between *babA2* and *cagA* genes and between these and endoscopic diagnosis. **Material and Methods:** The genes were analyzed by PCR in gastric biopsy samples obtained from 63 dyspeptic and *H. pylori*-positive patients of the Rio Grande city, Rio Grande do Sul, Brazil. **Results:** The *babA2* gene was identified in 60.3% (38/63) and the *cagA* in 49.2% (31/63) of the biopsy samples. The *babA2* and *cagA* genes were detected in 42.1% (16/38) and 48.4% (15/31) of patients with enanthematous gastritis and in 57.9% (22/38) and 51.6% (16/31) with erosive gastritis, respectively. The analysis of pathogenicity genes showed a statistically significant association between *babA2* and *cagA* (*p* = 0.001). The *babA2* gene is an adherence factor, helping in the establishment of the persistent colonization in the gastric epithelium and contributing to its pathogenicity, to allow intimate contact between the bacteria and the epithelium and facilitate the release of the *cagA* gene in the gastric cells. **Conclusions:** Although the *cagA* and *babA2* genes have been related to erosive gastritis, in this study we didn't find statistically significant association. However, the relationship between the genes and the endoscopic diagnosis showed a biological association. **Acknowledgments:** CAPES, CNPq, Centro Integrado Regional de Gastroenterologia do Hospital Universitário Dr. Miguel Riet Corrêa Jr. e Centro Integrado de Patologia. **E-mail:** ivynha_@hotmail.com

Hpylori008- **Association of carboxy terminal variants caga gene with the development of gastrointestinal disorders in Belém-PA**

[1]Silva, AV; [1]Silva Júnior, MR; [1]Vinagre, RMDF; [1]Oliveira, CSF; [1]Santos, KN; [1]Costa, RAA; [2]Quaresma, JAS; [1]Fecury, AA; [1]Martins, LC.
[1] Clinical Pathology Laboratory, Center for Tropical Medicine, [2] Immunopathology Laboratory, Center or Tropical Medicine, Federal University of Pará, Belém, Brazil.

Introduction: *Helicobacter pylori* CagA cytotoxin, encoded by the *cagA* gene, has been associated with increased inflammatory response in gastric tissue and the change in control of cell growth and proliferation. Activation of this cytotoxin occurs by phosphorylation in specific tyrosine residues within an amino acid sequence termed *motif* EPIYA, four types of *motifs* are described in the literature (EPIYA-A,-B-C and D). However, the site EPIYA-C is the most common site of phosphorylation of CagA protein of the bacterial strains isolated in Western countries, may still be found in repetitions. This study aimed to determine the types of *motifs* EPIYA of CagA present in patients with gastritis and gastric cancer and its association with these diseases. **Material and Methods**: Were collected samples from gastric biopsies of 384 patients infected with *H. pylori*, of this 194 presented chronic gastritis and 190 had gastric cancer. The gastric biopsy was used for bacterial DNA extraction and analysis of the *cagA* gene by PCR. **Results**: The prevalence of gastric cancer occurs in males, mean age 58 years. The *cagA* gene was more prevalent in patients with gastric cancer, showing association with a higher degree of inflammation, neutrophil activity and development of intestinal metaplasia (OR = 4,31, IC 95% = 2,71-6,87, p <10^{-3}; OR = 3,57, IC 95% = 2,18 – 5,84, p <10^{-3}; OR = 11,11, IC 95% = 5,48 – 22,30, p <10^{-3}; OR = 3,65, IC 95% = 1,50-8,88, p=0,004, respectively). The number of repetitions EPIYA-C site was significantly associated with increased risk of gastric cancer (OR = 2,99, IC 95% = 1,53-5,82, p <10^{-3}). The higher number of *motifs* EPIYA-C was also associated with intestinal metaplasia (p = 0,02). **Conclusion**: In this study the infection by strains of *H. pylori* carriers' *cagA* gene with more than one *motif* EPIYA-C shown to be

associated with the development of intestinal metaplasia and gastric cancer, but without an association to neutrophil activity and degree of inflammation. **Keywords**: *H. pylori*, chronic gastritis, gastric cancer, *motif cagA* EPIYA-C. **E-mail:** caricio@ufpa.br

MENINGOCOCCAL DISEASE AND OTHER BACTERIAL MENINGITIS

Mening001- **Epidemiology of Meningococcal Disease before and after the introduction of meningococcal C vaccine (conjugate) in Bahia, from 2001 to 2011**

Marques OS[1]; Deus AF[1]; Lino MP[1], Souza BD[1]; Oliveira MEP[1]; Vilasboas RC[1]; Sá MU[1]
[1]Secretaria Health of the State of Bahia

Introduction: Meningococcal Disease (MD) is one of the few diseases that have the power to cause panic among the population, due to its rapid evolution, seriousness and high potential for dissemination of its etiologic agent, *Neisserie meningitidis,* becoming a serious public health problem. **Materials and Methods:** We conducted a descriptive study, using a source data bank of meningitis Sinan and MD was also used parallel bank of Epidemiological Surveillance of Bahia, for the period 2001 to 2011, to Bahia and Salvador (capital). The analysis was performed by inspection of the trend curves of incidence (CI) case fatality rate (CFR) and comparison of the magnitude of these indicators. For the years 2002 to 2011 was evaluated for CI serogroups of Bahia and Salvador. There was vaccination of meningococcal C vaccine (conjugate) after its introduction. **Results:** In Bahia and Salvador observed a decrease in the incidence of MD 2001 to 2005 and in 2006, there was a slight increase in 2007 returning to previous levels and from 2008 to 2010 showed rising trend, observed behavior especially in Salvador. Of the 15,163 confirmed cases of meningitis of all causes in Bahia in the period 2001 to 2011, 1880 (22.2%) were MD. Of all cases of MD, 818 (43.5%) were identified serogroups, with a predominance of serogroup B 170 (60.1%) between 2001 and 2006 and from 2007 to 2011 the predominant serogroup C 487 ((90.2 %). The average annual fatality rate of MD during the study period was 22.2%, pointing to the year 2007, when the state recorded 34.6% higher mortality in the period. **Conclusion:** Despite the MD have shown a tendency of growth in Bahia in the period 2007 to 2010, levels of incidence can be considered endemic, with levels similar to those in the country and developed countries, unlike Savior, who from 2007 to 2010 reached worrying levels. The incident rate reduced in Bahia in 2011, but strikes did in Salvador, which can be attributed to vaccination with the meningococcal C vaccine (conjugate), conducted in 2010 and 2011 and the implementation of this vaccine in the routine in 2010. Mortality of MD recorded throughout the period extrapolates registered in developed countries, especially the year 2007, when it was strengthened with the intersectoral Lacen-Bahia and assistance to improve the quality of laboratory diagnosis of meningitis, consequently improving quality of care and reduce mortality. **E-mail:** orgalimarques@yahoo.com.br

Mening002- **Epidemics of meningococcal disease serogroup C in Salvador, Brazil**

Cardoso, CW[1,2], Flannery, B[3], Reis, JN[1,4]
[1]Gonçalo Moniz Research Center, Oswaldo Cruz Foundation, Brazilian Ministry of Health, Salvador, Brazil, [2]Municipal Secretary of Health of Salvador, Brazil, [3] Pan American Health Organization, Brasilia, Brazil, [4]School of Pharmacy, Federal University of Bahia, Salvador, Brazil

Epidemics of bacterial meningitis caused by *Neisseria meningitidis* were first reported in Brazil in 1920.Following the predominance of meningococcal serogroup B during the 1990s, serogroup C outbreaks emerged throughout Brazil after 2000, gradually replacing B as the most prevalent serogroup. During the first semester of 2010, unusually high numbers of meningococcal disease cases and deaths among persons older than 10 years occurred in the city of Salvador, leading the state immunization program to conduct mass vaccination of city residents 10 to 24 years of age from May to August 2010. We analyzed data from meningitis surveillance in Salvador in 2010**. Methods:** Reporting of suspected cases of meningitis is mandatory in Brazil. Suspected cases of meningitis are reported by public and

private health facilities to municipal and state health departments using standardized case report forms for entry of data into the national Notifiable Diseases Information System [*Sistema de Informação de Agravos de Notificação* (SINAN)]. Case report forms include patient identification, age, gender, clinical signs and symptoms, samples collected, diagnostic tests performed, antibiotic susceptibility cerebrospinal fluid (CSF) evaluation. Laboratory confirmation of meningococcal disease classically required the isolation of the organism from one or more normally sterile body sites, primarily cerebrospinal fluid (CSF) or blood. **Results:** From 2000 to 2010, meningococcal serogroup C disease increased substantially in Salvador, from 0.82 to 3.67 cases per 100,000 populations. In the epidemics period (2010), of 149 cases of meningococcal disease (63% male and 37% female), 110 were serogroup C with 20 deaths (22% case-fatality) registered. The most prevalent laboratory surveillance methods were latex (46%) and culture (35%). According to age group, the highest incidence (cases per 100,000 population) of serogroup C were 5-9 years (6.64) following by 20-24 years (6.02). Others age groups also have significant incidences: <5 yrs (3.12), 10-14 yrs (5.40), 15-19 (4.36), >25 yrs (2.62).**Conclusion:** The increased incidence of laboratory-confirmed meningococcal disease in Salvador was mostly attributable to an increase in serogroup C cases. High-quality laboratory surveillance is essential for monitoring the epidemiology of meningococcal disease, especially for control epidemics with immunization program. Continuous surveillance in Brazil for meningococcal disease and strain characterization is needed to establish a baseline for vaccine impact assessments. **E-mail:** criswcardoso@yahoo.com.br

Mening003- **Characterization of the trend of notifications of meningitis in the city of Maceió-AL/Brazil of the 2001 to 2010**

Xavier Jr, A.F.S.; Anjos, A.L.; Pinto, M.S.C; Rocha, R.C.M.A.; Cavalcante, J.C.; Costa, E.C.; Neves, S.J.
Secretaria Municipal de Saúde de Maceió-AL/Brasil (SMS), Universidade Federal de Alagoas.

The epidemiological profile of meningitis depends on several factors, such as the infectious agent, the existence of settlements, socioeconomic characteristics of populations and the environment. Therefore, epidemiological studies are needed for surveillance activities. This study aimed to describe the trend of meningitis in city of Maceió-AL/Brazil - from the 2001 to 2010. This is a cross-sectional epidemiological study. Data were collected from SINANW -2001/2006, SINANNET - 2007/2010 through 32 TabWin software; the database of the local health department of Maceio-AL. We used the following filters: county of residence (Maceió) and Notification (Maceió), year of notification (2001-2010) and final grade (confirmed). The variables in this study were: 1 - dependent (number of notifications of meningitis caused by health district, evolution, age and gender), 2 - Independent (year of notification). For data analysis we used the software Microsoft ® Excel by Pearson correlation. The trends were assumed when their R^2 values were greater than 0.399. Maceió city demonstrated a significant trend toward reduction of 31.57% in the total number of reports of confirmed cases of meningitis among residents in the last 10 years (β = -3.96, R^2 = 0.532). However, the proportional distribution suggests an increase in people (β = 2.682, R^2 = 0.497) and decreased in female people (β = 2.682, R^2 = 0.497). In 2010, males (CI = 9.39 p/100.0000 inhabitants) represents approximately 4.24 times more likely to be reported as a confirmed case of meningitis when compared to females (CI = 2.22 p/100.0000 inhabitants). The most prevalent age group ($\leq$ 19 years) has been reducing its expression over the years (β = -1.512, R^2 = 0.422) at the expense of increase among adults aged 20 to 49 years (β = 1.500, R^2 = 0.4485). However, the age group with the lowest prevalence among subjects aged 50 years or more, remains constant (β = 0.012, R^2 = 0.001). Health Districts with the highest percentages of reported cases over the years were the 7th (β = -0.679, R^2 = 0.254) and 2th (β = 0.067, R^2 = 0.002). The smallest value in the proportional distribution of reported cases occurred in the 3rd Health District (β = 0.458, R^2 = 0.144). It is noticed that in the period analyzed, the disease progressed to "cure" in 82.8% of reports of confirmed cases among residents. It is suggested that health actions should be intensified for male people, people of working age and residents of the 7th and 2nd Health Districts in Maceio. **E-mail:** antoniofernando_jr@yahoo.com.br

Mening004- Outbreak of Meningococcal disease in high hotel and resort complex in Bahia, Brazil, 2011

Milagres, B.S[1]; Silva, D.C.C[1]; Portela, C.O[2]; Lobo, F.C.B[2]; Rosa, F.M[2]; Oliveira, M.E. P[3]; Dias, J.P[3]; Rosário, A.J.P[3]; Bacelar, E.B[3]; Silva, M.F.G[3]; Deus, A.A.F[3]; Santos, C. C.M[3]; Silva, A.F[3]; Araújo, W.N[1]
1- Field Epidemiology Training Program (EPISUS), Secretariat of Surveillance in Health (SVS), Ministry of Health (MoH), Brasilia-DF, Brazil, 2- Technical Surveillance Unit of Respiratory Disease Transmission and Vaccine Preventable, SVS, MoH, Brasilia-DF, Brazil, 3- Department of Epidemiological Surveillance, Secretariat of Health of Bahia State, Salvador-BA, Brazil

Introduction: Meningococcal disease (MD) is a major public health problem because of its magnitude, severity and potential widespread dissemination. MD is caused by Neisseria meningitidis have an incubation period of two to ten days with average of four days. Most common transmission mode is the direct contact with respiratory secretions that are favored in situations of crowding and poorly ventilated. Objective of this investigation were to study the main epidemiological characteristics, to identify the chain of transmission among the cases in an outbreak of serogroup C meningococcal disease that occurred in the Costa do Sauipe hotel and resort complex, Bahia state, Brazil. **Material and Methods:** The complex hotel is composed for 10 different hotels and inns with 1,576 beds and almost 1,800 employees. It's located on the Northern coast of Bahia State in the city of Mata de São Joao. The investigation involved technical visits and interviews using a standardized questionnaire to the relatives of patients and co-workers for information about the course of the disease, contacts, and the routine work of MD cases and deaths. **Results:** Seven MD cases occurred in September, 2011 in the hotel complex, six were male with median age of 23 (19-52) years. The occupations were three stewards, one butcher, one dishwasher and two ushers. Main clinical signs and symptoms were: fever (71%), neck stiffness (57%), abdominal pain (57%) and diarrhea (57%). In the affected patients, four died (case-fatality rate of 57%), three were healing, and one showed sequelae after the disease. Were conducted by local public health departments the chemoprophylaxis of contacts with MD confirmed cases in the workplace, as well as at home in a timely manner to 48 hours. Also was realized a blocking vaccination of hotel complex staff and relatives. **Conclusions:** We concluded that these cases were a cluster of serogroup C meningococcal disease. The investigation showed that all the MD cases were restricted to a group of employees of the complex that had contact with others in the workplace. Recommend including suspect and confirmed MD cases definition in the National MD Surveillance Guidelines. **E-mail:** bruno.milagres@saude.gov.br

Mening005- Pattern of diffusion of the meningococcal disease in the State of Bahia

Dias JP[1], Orrico A[1], Marques O[1] and Paula ME[1]
(1) Secretaria da Saúde do Estado da Bahia

Introduction: Meningococcal disease is a sharp bacterial infection that it can come under the forms meningeal syndrome, septic or mixed. The etiologic agent is the *Neisseria meningitidis*, gram-negative diplococcic. It presents serious clinical picture that can develop for death, attacking children and young adults mainly, as isolated case or outbreak. Fever, severe headache, vomiting, signs of irritating meninges, petechiae and necrotics areas are the most frequent symptoms. **Objectives:** To identify the pattern of dispersion of the meningococcal disease, in Bahia. **Methodology:** Study longitudinal, retrospective, of the confirmed cases of the meningococcal disease happened in that State from January/2001 to December/2011, and tend SINAN as source of data. Coefficient of incidence/100.000 inhabitants of the disease, for residence municipal district and year of occurrence was the used indicator. The pattern of space dispersion was evaluated by the estimate of density of this coefficient through the method of Kernel, defining adult's areas and smaller risk concentration, for middle region of the state. **Results:** It is observed that in the year of 2001, the largest risks of the disease concentrated on the middle region of the south from Bahia, especially in the municipal districts of Almadina (53.3/100,000 inhabitants) and Coaraci (21.39/100,000 inhabitants). in the two following years, the north center presented larger concentration, and the municipal district of America Dourado the higher incidence coefficients, respectively, 18.8 and 15.53/100,000 inhabitants In 2004, the largest concentrations of risks

happened in the bass south, notably in Itamari (24.53/100,000 inhabitants) and Cairu (20.73/100,000 inhabitants). In 2005, the disease concentrated on this same middle region, Uruçuca (29.03/100,000 inhabitants) and in the south center, Ibicuí, (27.01/100,000 inhabitants). The following year, the municipal district of Itacaré (22.36/100,000 inhabitants) in the south, Mulungu do Morro in the north center (18.59/100,000 inhabitants) and Licínio de Almeida, in the south center, (18.08/100,000 inhabitants) they presented the largest incidences. The areas of the northeast, standing out, Cardeal da Silva (31.85/100,000 inhabitants) and of the south, Jussari (29.51/100,000 inhabitants) they presented the largest risks. In 2007 and 2008, the largest concentration stayed in the south middle region, with Itanhém (18.8/100,000 inhabitants) and Ibirapuã (12.78/100,000 inhabitants) if highlighting. In the middle region south center, Iguai (13.58/100,000 inhabitants) and again to south, Porto Seguro (8.95/100,000 inhabitants) they presented the largest risks, in 2009. In 2010, its stood out the metropolitan middle region of Salvador, as of larger risk concentration, notably in São Sebastião do Passé (18.98/100,000hab.) that stays in the subsequent year, tends Mata de São João if outstanding (12.44/100,000 inhabitants). **Discussion:** The meningococcal disease persists with one of the most important problems of public health, in the state of Bahia, happening in the same middle regions in almost every analyzed year, and tending the endemic. With the vaccination unchained in the year of 2010, for smaller of 5 years, in whole the State, reduction of these risks is expected. **E-mail:** juarez.dias@saude.ba.gov.br

Mening006- Research cases of meningococcal disease in the same family in Lauro de Freitas – BA, 2011

Deus, Aline Ferreira[1]; Vilas Boas, Rita[2]; Sá, Márcia Falcão[3]; Meira, Lucas Carvalho[4]; Pacheco, Selma Turrione[5]
1.Secretaria da Saúde do Estado da Bahia, 2,3.LACEN-BA, 4,5.Secretaria Municipal de Saúde de Lauro de Freitas

Introduction: Meningococcal Disease (meningococcemia and meningococcal meningitis with or without meningococcemia) is caused by Neisseria meningitidis. In 2011, the city of Lauro de Freitas / Ba, 02 children from the same family were affected by Meningococcal Disease. The children were cousins, attended one another's house and kept in touch with the same family. The 1st case (age = 3 months) fell ill in January and 2 (age = 10 years) in April, and died the same day. The 2nd case received chemoprophylaxis with Rifampicin in January, during the illness of his cousin. Given the finding of illness and death by the same bacteria in the 2nd case was a study of oropharyngeal colonization of eleven family contacts before and after chemoprophylaxis. **Materials and methods:** We performed a collection of 11 contacts oropharynx of the 2nd case of meningococcal disease before chemoprophylaxis and twenty days after it was made a new collection of contacts that were positive for colonization with Neisseria meningitidis in orofaringe.As samples were collected by use of swab and transported to the BA-Lacen in culture medium Amies, which were plated on culture medium containing Thayer-Martin. Thereafter slides were stained by Gram's method, the catalase (+), oxidase (+) and number of sugars for the identification of Serogroup. **Results and Discussion:** With an incubation period of 24-48 hours was found the growth of colonies suspected in six of the eleven (6/11) samples collected before chemoprophylaxis and laboratory tests confirmed the presence of Neisseria meningitidis Serogroup C in same. The result of the second test, performed 20 days after the chemoprophylaxis of five positive cases in the 1st collection has not confirmed the presence of Neisseria meningitidis in any of them. It was observed that 60% of the families presented as asymptomatic carriers before chemoprophylaxis and 20 days after this procedure, these families are no longer present as asymptomatic carriers. No sample was collected from one of the cases that tested positive in the first sample and reported that it did not make use of rifampicin, justifying the frequent consumption of alcohol. **Conclusion:** Chemoprophylaxis constitutes the main control measure for cases of Meningococcal Disease in the study and was found 100% efficacy of rifampicin. It was confirmed in this study the sensitivity of bacteria to the drug and warned of the need for monitoring of chemoprophylaxis. **E-mail:** dralineanne@yahoo.com.br

Mening007- Case Report of first *Meningococcal meningitis* serogroup Z' in Slovenia

Trop Skaza A[1], Selic Kurinic T[2], Beskovnik L[1], Paragi M[3], Bozanic V[1]
[1] Institute of Public Health Celje, Slovenia, [2] General Hospital Celje, Slovenia, [3] Institute of Public Health of the Republic of Slovenia, Ljubljana, Slovenia

Introduction: This is a report about the first case of meningococcal meningitis identification in Slovenia, caused by *Neisseria meningitidis* serogroup Z'. The patient, a 19-year-old student did not leave the country during the incubation period. **Case report:** A previously healthy student was sent to the hospital emergency infection clinic due to his febrile state and headache. He got ill approximately 6 hours before hospitalization, with a fever of 39.9°C and no chills. The fever was accompanied by a headache, but no vomiting. He mentioned mild throat pain and muscular pain. When hospitalized, the patient was well oriented, with meningeal signs and a mildly reddened throat, but with no skin alterations. His clinical status was otherwise unremarkable. Laboratory findings revealed the presence of mild leukocytosis with prevailing neutrophils; there were no other particularities in the differential blood count. Blood samples were taken for hemoculture. Approximately 6 hours after hospitalization, a small number of discrete petechiae developed on his hands. Lumbar puncture was immediately carried out due to suspicion of meningococcal meningitis. Cerebrospinal fluid (CSF) was macroscopically clear, with the presence of pleocytosis, while protein and glucose levels were within normal limits. After 24 hours of antibiotic therapy, the patient's fever and headache disappeared, but he had a higher number of petechiae and ecchymoses. With RT-PCR we detected a genome of the bacteria *Neisseria meningitidis.* The genome did not belong to serogroup B or serogroup C. After two days, meningococi were successfully isolated from blood, while isolation from CSF was unsuccessful. The isolate was phenotypically typed with the slide agglutination method. Serogroup Z' was confirmed. **Epidemiological Investigation:** After microbiological confirmation of meningococcal meningitis, we began to identify close contacts for post-exposure chemoprophylaxis (PEP). Six family members were protected using one dose of ciprofloxacin, and the eight-month old niece using rifampicin. We also identified 10 of the patient's study mates as close contacts, because they were in contact with him seven days before the disease. All the close contacts from different Slovenian towns received PEP (one dose of 500 mg ciprofloxacin) in various Slovenian Regional Institutes of Public Health. **Conclusion:** *Neisseria meningitidis* serogroup Z' rarely causes invasive infection. Slovenia had never before registered the disease caused by this serogroup. Although serogroup Z' does not have a severe course in clinical cases, our patient suffered from fever, a headache and petechial bleedings, but his clinical condition was stabilized after antibiotic therapy for meningococcal meningitis. **E mail:** alenka.skaza@zzv-ce.si

Mening008- Profile clinical, laboratory and epidemiological of the cases of acute bacterial meningitis treated in a reference Amazon hospital

Ferreira, PRC; Farias, ACA; Oliveira, SCS; Matos, VC; Jesus, MCS; Acioly, JFL; Amorim, PRA
Universidade Feceral do Pará, Belém, PA, Brasil

Meningitis consists in compromised infectious of the central nervous system and of the meninges by pathogenic microorganisms. The diagnosis of acute bacterial meningitis (ABM) subsidizes in clinical, laboratory and differential aspects. The examination of cerebrospinal fluid (CSF) and the signs/symptoms are the main modes of characterization of the disease. Cross-sectional, descriptive and individual study held at University Hospital João de Barros Barreto (UHJBB), Belém/PA, Brazil. The medical records of patients with a diagnosis of ABM admitted in the hospital from January 2006 to December 2008 were analyzed. The study was conducted after evaluation and approval by the Ethics Committee in Humans Research of UHJBB. In the analyzed period 338 patients were admitted with diagnosis of ABM, were analyzed 260 admissions, and 7 the number of relapse cases. The men were more affected (54%) as well as children under 5 years old (36.8%). In just 16 admissions (6.15%) were identified the etiological agents, being the vectors found: *Streptococcus pneumoniae* (4), *Haemophilus influenzae* B (3), Pneumococcal meningitis (3), Meningococcal meningitis (2), *Neisseria meningitidis* (2), *Staphylococcus aureus* (1) and *Enterococcus faecalis* (1). In most cases they were not specified (54%) the etiological

agent or there was kit for carrying out the identification (36.5%). Regarding the signs/symptoms were the most occurring: fever (95%); vomit (85%); headache (79.6%) and nuchal rigidity (70.7%). As far laboratory tests the quantification of parameters analyzed to diagnose of ABM were the following: 32.5% with protein of 51-100 mg/dL; 34% with glucose less than 10 mg/dL; 32.5% with protein of 51-100 mg/dL; 34% with glucose less than 10 mg/dL; 35.8% with leucocytes between 100-500 mg/dL and; polymorph nuclear more than 75% to 39.4% of hospitalized. The treatment was based on the use of Ampicillin (53.7%) and Ceftriaxone (44.4%) for most patients, being the use of the two medications in less than 0.2% of cases. Other combinations are possible. Regarding the result of treatment 44.3% of patients had healed his situation and 45.3% improved. The death was 6%. In most cases the etiologic agent of disease was not identified due to lack of kit for analysis, based on the choice of initial treatment in clinical signs/symptoms and examination of CSF, due to disease progression is rapid and can cause injuries or death. Children under five years were the most affected possibly because they have a weakened immune system, making them susceptible to pathogens "opportunistic". The treatment is based mainly in the use of Ampicillin and Ceftriaxone. **E-mail:** pedroruan@gmail.com

Mening009- Microbiological Evaluation of Bacterial Meningits at Fundação de Medicinal Tropical Doutor Heitor Vieira Dourado – FMT/HVD, the period January - December 2011

Rossicleia L. Monte[1]; Geraldo M. Soares[1]; Ana Stone[2.]
Gerência de Bacteriologia¹/ FMT-HVD; Lacen/AM ².

In case of bacterial meningitis (MB), the identification of the agent is imperial, is related to the severity of the condition, behavior and prophylaxis epidemiological to be applied. The mains pathologic agents are *Neisseria meningitidis* and *Streptococcus pneumoniae*. This study retrospectively evaluates the occurrence of *N. meningitidis* and *Streptococcus pneumoniae* in samples of cerebrospinal fluid (CSF) cloudy, referenced to FMT-HVD, in 2011. We analyzed at the Bacteriology Laboratory – FMT/HVD, 44 samples of Cerebrospinal Fluid (CSF), obtained from patients with suspected meningitis from the Emergency Department and other hospitals, from January to August 2011 in Manaus-AM. For laboratorial diagnosis was used the conventional methodology advocated by the Ministério da Saúde and Centro de Referência Nacional para Meningite (ITB) and the manufacturer of the test latex serogroups. Of the 44 samples analyzed 38% (14/44) were culture positive for *Streptococcus pneumoniae* belonging to serotypes 19F, 17F, 18A, 23F, 6C and 19A. *N. meningitidis* was present in 11.4% (5/44), whose classification is well defined: serogroup "C" in 80% (4/5); serogroup "B" in 20% (1/5). Serogroup strain "B", 4,7 serotype and subtype P1.19, 15 is prevalent in the region, currently, there is a predominance of serogroup strain "C", serotype 22 and 23, and subtype P1.14-6. Techniques carried out in 57% (25/44), was isolated from not etiological agent due to the use of antimicrobial agents previously. We recommend the utmost care in the emergency room to be prompted for the necessary examinations (CSF / blood) for diagnosis of suspected cases of meningitis, as well as proper collection, transportation and storage of biological specimens until the arrival in the laboratory, these measures will contribute to a rapid and efficient diagnosis. **E-mail:** rossi@fmt.am.gov.br

STREPTOCOCCUS AND *STAPHILOCOCCUS* INFECTION

Strep001- *In silico* experimentation in *Streptococcus pyogenes* infection: investigating the pathophysiology of post-infectious glomerulonephritis

Oliveira A.P.; Bastos, C.A.; Possi, M.; Gomes AP, Miyadahira, R.; Sousa, F.O, Cerqueira, F.R., Mendes, T.A.; Siqueira-Batista, R.
Universidade Federal de Viçosa, Viçosa (MG), Brasil

Introduction: Poststreptococcal glomerulonephritis (PSGN) is a nonsuppurative complication of infection by bacterial agents of the genus *Streptococcus*, especially *Streptococcus pyogenes*. It presents, clinically,

as nephritic syndrome, that emerges after a sore throat or pyoderma caused by *S. pyogenes*. Despite widely recognized in medical practice for decades, many questions remain regarding its pathogenesis, which can be addressed through in-silico experimentation. **Objective**: To present a system for computational modeling of the immune system (IS) to conduct *in silico* experiments to investigate the pathophysiological PSGN. **Methods**: We started with the literature review, with an objective to identify strategies for simulation of the IS previously reported. The publications point to the use of the following methods: cellular automata, differential equations and multi-agent systems (MAS). We opted for the latter approach, MAS, since it allows to ascertain the emergence of complex functions and deterministic on a macroscopic level, from microscopic stochastic interactions, opening perspectives for testing hypotheses about the functioning of the IS. **Results**: The MAS based computational model was built using the framework Repast Symphony. Were modeled zones: tissue, lymph, circulation, bone marrow and thymus; diffusion of substances: cytokines and agents: antigen, antibody, virus and cells. Initial tests performed to investigate the events of autoimmunity and allergic conditions showed that the model shows a behavior consistent with the current biomedical literature, in particular with regard to specificity. At this time, the working is centered on the mapping of the main aspects of the immune response in PSGN. Our focus is, specially, the production of antibodies to antigens NAPlr (Streptococcal nephritis plasmin-associated receptor) and SpeB (Streptococcal pyrogenic exotoxin B), both suspected of involvement in kidney disease. After this, we'll test *in silico* main hypotheses about this pathology. **Conclusion**: After extensive search for an antigen determinant of PSGN, the deep interaction *S. pyogenes* / *Homo sapiens sapiens* seems to be the key to understanding the disease. Research using *in silico* experiments can bring good answers to clarifying the pathophysiological processes of PSGN. **E-mail:** rsiqueirabatista@yahoo.com.br

Strep002- **Acute febrile syndrome outbreak with deaths by streptococcal toxic shock syndrome**

Rigueti, M1, Oliveira MEB1, Marques D2, Lima GDF1, Pellini ACG2, Carvalhanas TRMP[3], Zoia EN4, Souto BGA5
1Field Epidemiology Training Program (EPISUS-SP), Sao Paulo, Brazil, 2Strategic Information and Health Surveillance Response Center (CIEVS), Sao Paulo, Brazil, 3Sao Paulo State Epidemiological Surveillance Center – Respiratory Disease Transmission Division (CVE), Sao Paulo, Brazil, 4Epidemiological Surveillance Division of Sao Carlos Municipal Health Secretariat, Sao Paulo, Brazil.5Department of Medicine, Sao Carlos Federal University, Sao Paulo, Brazil

Introduction: Toxic Shock Syndrome (TSS) is a severe disease mediated by toxins produced by *Staphylococcus aureus* or *Streptococcus pyogenes* infection. TSS cases with fatal outcomes occur rarely and are not often describe epidemics of the disease, however, it requires early and adequate medical diagnosis and correct treatment to avoid complications. In September 2011, two cases were reported through SINAN (Brazilian National Information System of Reportable Diseases) of an acute febrile syndrome, evolving to death with unknown cause, in Sao Carlos city, SP. Field Epidemiology Training Program team of Sao Paulo conducted an investigation in order to confirm the existence of the outbreak and describe it epidemiologically, clinically and biochemically. **Material and Methods:** Sao Carlos is a Brazilian municipality located in Sao Paulo state, 231 kilometers from Sao Paulo, with a population of 221,936 inhabitants. Epidemiological aspects were addressed through a survey with cases, cases relatives (in case of death), symptomatic contacts and physicians who treated the cases. A semi-structured questionnaire was used and standardized in order to discard dengue, yellow fever, leptospirosis, hanta virus, spotted fever and influenza A (H1N1) diagnoses. Cases clinical aspects were determined by analysis of their records medical examination and laboratory results. **Results:** During the study, six more related cases were found, concluding that there was an outbreak of acute febrile illness, involving eight cases, with two deaths due to streptococcal toxic shock syndrome; one case confirmation criteria was laboratorial (RT-PCR) and clinical and the other was confirmed by epidemiologic link and clinical aspects. Death cases occurred in two brothers, with different sexes, 31 and 39 years, previously healthy and residing in the same house; both evolved to death September 8th, 2011. From a clinical standpoint, a sudden onset of symptoms started with fever, myalgia, rash, malaise and sore throat. Sore throat was common among all cases, followed by fever, cough, myalgia and inappetence in 75% of them. **Main Conclusions:** The outbreak occurred in Sao Carlos was clinically, epidemiologically and laboratory enlightened as streptococcal toxic shock syndrome caused by *Streptococcus pyogenes.* Data analysis

indicates that transmission was direct interpersonal, dependent on close or prolonged contact (hours or days), with high individual household attack rate and the main factor favoring complications occurrence and death was innate, combined with etiologic agent immunovirulence. **E-mail:** marcelorigueti@yahoo.com.br

Strep003- **Technical Analysis of Discrepancies in Identification of *Enterococcus spp***

Donato, ST[1]; Sidrim, JJC[2]; Marinho, AMN[3]; Paz, MCF[4]
[1]:**Professor Master Medical Microbiology - Federal University of Campina Grande, Campina Grande, Brazil.** [2]:**Professor Dr. Pharmacology - Federal University of Ceará, Fortaleza, Brazil;** [3]:**Professor Dr. Molecular Biology – Federal University of Campina Grande, Campina Grande, Brazil; 4:Professor Dr. Microbiology – University Federal of Campina Grande, Campina Grande, Brazil**

Introduction: Enterococci are Gram-positive cocci inhabitants of the normal bacterial flora of the gastrointestinal tract of human and other animals may also be found in the urethra or vagina. Their identification in some situations can lead to unreliable results due to its complex biochemical characteristics. Standard protocol identification has been proposed by Facklam and Collins. Currently the techniques of molecular biology emerged as a promising alternative because they are fast and accurate in identification, with high levels of confidence and low false-positive results. This study aimed to evaluate different methodologies for the identification of enterococci isolated from clinical specimens. **Material and Methods:** Sixty two strains were used from bacteriology CEMM sector, of the Federal University of Ceará, Fortaleza, Brazil. Strains were isolated in the selective environment, in BHI with 20% glycerol at -70 °C, stored on blood agar (24-35 °C), were conducted to morphophysiological and biochemical tests. The control strain was *E. faecalis* ATCC 29212 (CLSI). The identification of the samples was applied by conventional methods: Scheme Facklam, the method UNIFESP (Modified 1) and the algorithm generated in this study (Modified 2) and the API 20 Strep. **Results:** The scheme of Facklam identified 16% (10) as strains of *Enterococcus sp*. and 84% (52) as *E. faecalis*; the Modified 1: 82.2% (51) *E. faecalis*, 9.7% (6) *E. mundtii*, and 8.1% (5) *E. gallinarum*; the Modified 2: 98.4% (61) *E. faecalis* and 1.6% (1) *E. gallinarum*; the API 20 Strep, 51.6% (32) *E. faecalis*, 19.4% (12) *A. viridans*, 13.0% (8) *E. avium*, 4.8% (3) *S. agalactiae*, 3.2% (2) *E. faecium*, 1.6% (1) *S. acidominimus*, 1.6% (1) *Leuconostocc sp.*, 1.6% (1) *S. uberis*, 1.6% (1) *A. adiacens* and 1.6% (1) unaccepted identification. Ten samples were selected and showed discordant results between systems 1 Modified, Modified API 20 Strep and 2 to be identified by BBL Crystal and by PCR (DNA extraction was performed according to the scheme and Donabedian et al). Six samples were identified by BBL 6 kit as *E. faecium*, including the strain-control, but four samples were not identified. By PCR, a sample was not amplified and 9 were identified as Streptococcus spp. A sample was positive for the genre *Enterococcus*, but not for the species *E. faecalis* and another sample was amplified as species *S. agalactiae*. No sample showed positive for the species *E. gallinarum*. The control strain amplified correctly. **Main Conclusions:** There were agreement of identification of the 62 strains in 84% of samples by manual systems (Facklam, Modified 1 and Modified 2) and 52% of the samples by the manual and semi-automated systems (API 20 Strep). In 10 samples with discrepant results, there was no agreement between the systems of identification manuals. The PCR agreed with BBL and manual systems and was inconsistent with the API 20 Strep, and genre in one sample. Analyzing PCR and API 20 Strep, there was agreement in genre in one sample but discordant from other systems. The amount of disagreements justifies the use of molecular biology techniques for identification of microorganisms as a tool for reliability. **E-mail:** silviatdonato@gmail.com

Strep004- **Real-time PCR for detection of group B streptococcus colonization in pregnant women**

Andrade, P.D[.]; Batista, A.M[.]; Gouveia, J.B[.]; Costa, C.R.C.; Levy, C.E.; Nascimento, M.L.C. do; Nomura, M.L.; Passini Jr, R.; Costa, S.C.B.
Faculty of Medical Sciences, University of Campinas – UNICAMP - 13083-970, Campinas, SP, Brazil

Introduction: *Streptococcus agalactiae* (Group B streptococcus, GBS) is an important aetiological agent of serious neonatal infections, remaining as the leading cause of neonatal sepsis. The guidelines from

Centers for Disease Control and Prevention (CDC) suggest that the diagnosis of GBS colonization in pregnant women is best made via culture of a combined rectal and vaginal swab using a selective enrichment broth (Todd-Hewitt) at 35 to 37 week's gestation. The sensitivity of cultures in detecting GBS colonization, however, varies and the results take up 36 hours. The rapid and highly sensitive real-time polymerase chain reaction assay (qPCR) for the specific detection of GBS DNA from vaginorectal samples obtained from pregnant women was approved by the US Food and Drug Administration (FDA). **Objective:** The goal of this research was the standardization and the evaluation of a qPCR method targeting the *cfb* gene for group B streptococcus in pregnant women at 35 to 37 weeks of gestation, and in pregnancies complicated by preterm labor and preterm premature rupture of membranes, comparing the performance of the qPCR with the standard culture test. **Materials and Methods:** Initially, the qPCR reaction was standardized using a GBS strain ATCC 27591 and the specificity of the reaction was evaluated using *Escherichia coli, Klebsiella pneumoniae, Staphylococcus aureus, Staphylococcus epidermides* and *Listeria monocytogenes* strains. After standardization, 216 vaginal and rectal swabs were collected from 55 women hospitalized at the Woman's Hospital "Professor Doutor José Aristodemo Pinotti" – CAISM/UNICAMP/BRAZIL. Swabs were cultured on selective broth (Todd-Hewitt) and on selective blood agar plates. The qPCR was performed for another swab. To prevent the inhibition effect during the qPCR reaction the samples were spiked with *Bacillus globigii* spores (internal control) and the DNA was isolated using the QIAamp Kit (Qiagen Inc, Chatsworth, CA). **Results:** Analyzing vaginal and rectal specimens separately, we observed an outstanding concordance of vaginal specimens with the standard culture (83.7%). Greater discordant results were observed between the rectal samples and the standard culture (28.8% versus 16.3% from vaginal samples). **Conclusion:** The standardization of qPCR enabled the diagnosis of GBS in vaginal and rectal samples of pregnant women. Preliminary results show good agreement of the qPCR with the standard culture. **Financial Support:** FAPESP. **E-mail:** paula@fcm.unicamp.br

Strep005- *Staphylococcus* spp. isolated from wild birds apprehended in the local illegal trade in Rio de Janeiro, Brazil

Pereira,I.A.[I]; Silva, G.V.[II]; Matias, C.A.R.[III]; Lázaro, N.S.[I]; Rodrigues, D.P.[I]; Siciliano, S.[III]
I. Laboratório de Referencia Nacional de Enteroinfecções Bacterianas/ Instituto Oswaldo Cruz/FIOCRUZ; II. Curso de pós-graduação em Ciência e Tecnologia de Alimentos da UFRRJ; III. Escola Nacional de Saúde Pública/ENSP/FIOCRUZ

Introduction: The illegal wildlife trade is a lucrative activity, being considered the third higher illegal activity in the world. Brazilian constitution considers capture of wild animals and their maintenance in captivity a crime against fauna. Risk of disease transmission has to be considered, as captivity allows greater contact between wild birds and humans, favoring transmission by manipulation of animals and its disposal. *Staphylococcus* spp. take part in animal gastrointestinal tract microbiota and this genus is recognized as animal and human pathogens by expression of numerous virulence factors, toxins and multidrug resistance profile. The SCCmec (*Staphylococcus Chromosome Cassette*) is a mobile genetic element that can be transferred by plasmids and tansposons witch includes genes to resistance to β-lactamics (*mecA* gene) and other antimicrobials genetic markers that have been identified mainly in *Staphylococcus aureus*. In this context, the present study investigate prevalence of *Staphylococcus* and the antimicrobial resistance profile from cloacal swab samples of wild birds captured in illegal trade in the state of Rio de Janeiro. **Material and Methods:** Ninety-five birds representing 31 different species were sampled, with the highest frequency from the families Emberezidae and Thraupidae. All fecal specimens were primarily enriched in Muller Hinton Broth and then cultured in selective Manitol Salt agar and *Staphylococcus* species were distinguished by pheno-genotypic tests. Antimicrobial resistance was evaluated by CLSI standard protocols and oxacillin-resistance isolates were identified by amplification of *mecA* gene. **Results:** *Staphylococcus* growth was detected in 47.4% (45/95) of the total swab samples investigated, represented by the species *S. aureus, S. intermedius, S. sciuri, S. gallinarum, S. schleiferi* spp. *coagulans*, *S. hyicus*, *S. carnosus*, *S. xylosus*, *S. chromogenes*, *S. lugdonensis* and *S. haemolyticus*. Antimicrobial resistance percentual was high to ampicillin (62.2%), oxacillin (37.8%), clindamycin (26.7%), cefoxitin (24.4%) and tetracyclin (22.2%), and low rate of resistance was detected to gentamycin (11.1%), eritromycin (6.7%), and ciprofloxacin (2.2%) with absence to vancomycin. Oxacillin-resistant *Staphylococcus* were detected in 4.5% (10/45) that were *mecA*-positive represented by species:

S. aureus (2/10), *S. intemedius* (1/10), *S. schleiferi* spp. *coagulans* (1/10), *S. sciuri* (2/10), *S. gallinarum* (1/10), *S. carnosus* (1/10), *S. xylosus* (1/10) and *S. chromogenes* (1/10). **Main conclusions:** It is noteworthy, that prevalence of *Staphylococcus* species showing degrees of resistance to β–lactamics, lincosamides and tetracycline, and also presence of *mecA* gene, that is incriminated in multidrug phenotype, in wild birds feces represents an unexpected route to transmition of this pathogen and its antimicrobial resistance´s mechanisms throughout continental frontiers by commercialization of exotic animals and strict contact to humans. **E-mail:** andrefelipems@oi.com.br

Antimicrobial Resistance and Susceptibility in Bacteria

BacResist001- **Antimicrobial resistance in bacteria of public health concern circulating in Brazil**

Fonseca EL, Freitas FS, Scheidegger EM, Vicente AC
Laboratório de Genética Molecular de Microrganismos, Instituto Oswaldo Cruz-FIOCRUZ, Rio de Janeiro, Brasil

Introduction: The so-called SKAPE microorganisms (*Staphylococcus aureus*, *Klebsiella pneumoniae*, *Acinetobacter baumannii*, *Pseudomonas aeruginosa* and *Enterococcus faecalis*) are considered the most significant bacterial pathogens in clinics, concerning the severity of infections and the limitations they impose in treatment. These superbugs lead to a high degree of morbidity and mortality worldwide every year, including Brazil. Spite of their success as nosocomial pathogens, the emergence of antibiotic resistance in these organisms is frequent and is consequence of an arsenal of intrinsic and acquired genetic mechanisms. Here, it is showed the current global scenario of the genetic mechanisms responsible for the multidrug resistance emergence in three of the five SKAPE superbugs (*K. pneumoniae*, *A. baumannii* and *P. aeruginosa*) circulating in different Brazilian geographic regions. **Methods:** Multiresistant *K. pneumoniae*, *A. baumannii* and *P. aeruginosa* were evaluated, by PCR and sequencing, to the presence of several intrinsic and acquired genes, conferring resistance to most antibiotics available for clinical use. This search included intrinsic genes coding for efflux pumps, *gyr*A/*par*C and porins; and several acquired genes coding for enzymes with different modes of action against different classes of antibiotics. The transcription of genes coding for some porins and for efflux pumps was evaluated by Real Time RT-PCR. The strains clonality was accessed by PFGE and/or MLST. **Results and discussion:** *K. pneumoniae* and *P. aeruginosa* harbored a great diversity of acquired resistance genes. Among them, *arr*, *bla*GES-5, *bla*SPM-1, *bla*KPC-2, conferring resistance to rifampin, β-lactams, and carbapenems, respectively, were found in clones or not circulating in different Brazilian regions. This finding is of clinical importance since they code for enzymes that confer resistance to antibiotics that are currently used to treat infections in Brazil. Rifampin, which is target of Arr enzymes, is the front line antibiotic for treating tuberculosis, while imipenem, substrate of SPM-1 and KPC-2, is the remaining therapeutic choice to treat most of infections caused by Gram-negative bacteria. The multidrug resistant (MDR) *A. baumannii* isolates did not carry any acquired resistance gene and, therefore, the MDR phenotype observed was due to intrinsic mechanisms. In fact, quantification of gene expression showed that *A. baumannii* strains overexpressed the efflux pump, which represents the one-step acquisition of resistance to aminoglycosides, chloramphenicol, fluorquinolones, novobiocin, tetracycline, trimethoprim, β-lactams and tigecyclin. Three of four efflux pumps analyzed in *P. aeruginosa* were also over expressed justifying the MDR phenotype. The OprD and CarO porins, related to imipenem resistance in *P. aeruginosa* and *A. baumannii*, respectively, presented low levels of transcription indicating loss of membrane permeability to this drug. Mutations in *gyr*A and *par*C involved in fluorquinolone resistance were detected in *A. baumannii*, *K. pneumoniae* and *P. aeruginosa*. It was possible to characterize the presence of MDR clones circulating within and between different Brazilian geographic regions. **E-mail:** ericafon@ioc.fiocruz.br

BacResist002- A surveillance study of antimicrobial susceptibility at 11 hospitals in Kurdistan Province

Kalantar Enayat[1], Ahsan Baehzad[2], Beiranvand Soheila[3]
1Environmental Health Research Center, Kurdistan University of Medical Sciences, Sanandaj, Iran, 2Treatment Deputy, Kurdistan University of Medical Sciences, Sanandaj, Iran, 3Food and Drug Deputy, Kurdistan University of Medical Sciences, Sanandaj, Iran, 4Environmental Health Research Center, Kurdistan University of Medical Sciences, Sanandaj, Iran.

Objective: Antimicrobial resistance has become a serious public health concern all over the world. The objective of this study was to determine susceptibility patterns of microorganisms to antibiotics at 11 hospital laboratories in Kurdistan province. **Material and Methods:** During one month period, Feb, 2010, all the clinical specimens which were received to the laboratories were processed for isolation and identification of bacteria to the species level by standard methods. **Antibiotic susceptibility of bacterial isolates:** Testing procedures were validated following the Kirby-Bauer disc diffusion technique using Muller Hinton agar. Susceptibility testing was performed on Mueller–Hinton agar. **Results:** A total of 4395 clinical specimens were obtained from 4301 patients among them, 1062 (24.7%) were male and 3239 (75.3%) were female, giving on overall male to female ratio of 0.32. Their mean age was 31.3 years (range: 4 –74 years). Based on data 310 pathogens were isolated and *E. coli* 183 (59.3%), followed *Klebsiella pneumoniae* 40 (01.29%) and *S. aureus* 39 (1.25%) were the predominant isolated bacteria. The most resistant antibiotics tested against isolated bacteria were penicillin, ampicillin, and amoxicillin. Lastly, these resistance rates leave imipenem and ciprofloxacin as the reliable agent for the empirical treatment in this province. **Conclusions:** The present study has shown that the UTI patients have a higher rate of infection. The risk of antibiotic resistance in isolated bacteria, particularly *E. coli*, emphasizes the importance of hospital control measures and rational prescribing policies. Lastly, these resistance rates leave ciprofloxacin and imipenem as the reliable agent for the empirical treatment in this province. **Keywords:** Antimicrobial resistance, *E. coli*, ciprofloxacin and imipenem. **E-mail:** kalantar_enayat@yahoo.com

BacResist003- Infective endocarditis in the age of multidrug resistant gram-positive bacterial infections

Damasco PV[1,2], da Silva CMF[4], Potsch MV[2], Cavalcante FS[3], Rioja S[4], Pereira MP[2], Marques VD[2], Braga E[4], Castier M[1], Mattos-Guaraldi AL[1], dos Santos KRN[3], Marques EA[1].
Faculdade de Ciências Médicas[1], Universidade do Estado do Rio de Janeiro, Rio de Janeiro, Brasil, Escola de Medicina Cirurgia[2], Universidade Federal do Estado do Rio de Janeiro, Rio de Janeiro, Brasil, Instituto de Microbiologia Paulo de Góes[3], Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brasil, Hospital Universitário Pedro Ernesto[4], Rio de Janeiro, Brasil

Introduction: Infective endocarditis (IE) is invariably lethal if not aggressively treated with antibiotics associated or not to surgery. The disease classified on the etiologic agents responsible, is preferable in the age of multidrug-resistance (MDR). The aim of this observational study was to report IE due MDR microorganism is concern in the Rio de Janeiro. **Materials and Methods:** Medical records of patients with positive blood cultures between June/2009 and February/2012 at Pedro Ernesto University Hospital (Rio de Janeiro, Brazil) were retrospectively reviewed. The modified Duke criteria were incorporated with the echocardiography information, history, and physical examination for the diagnosis of IE, in this observational study. To VRE isolates, vancomycin MIC was assessed by VITEK®.To CA-MRSA isolate we performed SCC*mec* typing, PCR to PVL genes and vancomycin MIC measure using Etest® and broth microdilution. At time, synergism tests between vancomycin/rifampin and vancomycin/gentamycin to this isolate are being performed. **Results:** From June 2009 and February 2012, 16 patients were diagnosed with IE, but two cases were excluded: one case with isolation of *Candida parapsilosis* in a child of 4 years and another case in which *Serratia marcescens* was isolated from a man of 42 years. The study enrolled 14 patients with IE bacteremia by Gram-positive coccus. The patients were aged 18 - 80 years and the median age was 50 years, with 10 (71,4%) male and 4 (28,6%) female. The median duration of symptoms prior to hospital admission was 32,7 days. The main microorganism identified in this case series of endocarditis were: four strains *Streptococcus* (*S.viridans*,*S.mitis*,*S.bovi*,*S.*alfa haemolyticus),

four strains *Enterococcus faecium* (two with the vancomycin MIC > 32 and one $\geq$ 64), three coagulase negative *Staphylococcus* (two methicillin resistant), three *Staphylococcus aureus* (one CAMRSA with the vancomycin MIC$\geq$4, were performed using Etest and MIC $\geq$ 2 broth microdilution according to CLSI). In the case of IE by CAMRSA we had the opportunity to evaluate the serum levels of vancomycin and found a serum level of 7.8 μg/ml below the desirable serum concentration of vancomycin (15-20 μg/ml). All our 6 patients with EI due MDR bacteremia have the same clinical syndrome when compared to non-MDR coccus Gram-positive. During this observational study recorded six deaths in this series of 14 cases; the largest number of deaths occurred among patients with bacteremia caused by oxacillin or vancomycin - resistant Gram-positive. In the group of four patients with IE caused by *Streptococcus* the only death occurred in the case endocarditis *S.bovis*. But this patient had a terminal cancer of the digestive tract. **Conclusion:** IE nosocomial caused by Gram-positive microorganism is an emerging problem in Rio de Janeiro. **E-mail:** damascopv@ig.com.br

BacResist004- **Phenotypic and molecular characterization of resistance in *Pseudomonas aeruginosa* clinical isolates from Recife, Brazil**

Jácome PRLA[1]; Alves LR[1]; Cabral AB[1]; Rabelo MA[1]; Lopes ACS[1]; Maciel MAV[1].
[1]Departamento de Medicina Tropical, Universidade Federal de Pernambuco, Recife, Brazil.

Introduction: The emergence of carbapenem resistance mechanisms in *Pseudomonas aeruginosa,* has been outstanding due to the wide spectrum of antibiotics degradation, leading to reduction of therapeutic options. **Methods:** Sixty-one *P. aeruginosa* isolates from patients from five public hospitals in Recife-PE were examined between 2006 and 2010, with the purpose of evaluating the profiles of resistance to antimicrobials, presence of metallo-β-lacatamase (MBL) genes, and clonal relationship among isolates. **Results:** A high percentage of resistance (4.92% pan-resistant and 54.09% multi-drug resistant isolates) was observed. Among the 29 isolates resistant to imipenem and/or ceftazidime, 44.83% (13/29) were MBL positive in the phenotypic evaluation, and of these, 46.15% (6/13) were positive for the bla_{SPM-1} gene by PCR. The bla_{IMP} and bla_{VIM} genes were not detected. The molecular typing revealed 21 molecular profiles of which seven were detected in distinct hospitals and periods. Among the six positive bla_{SPM-1} isolates, three presented the same clonal profile and were from the same hospital, whereas the other three presented different clonal profiles. **Conclusions:** The results of this study revealed that *P. aeruginosa* is a pathogen able to accumulate different resistance factors, making the treatment of infections difficult. The identification of bla_{SPM-1} genes and the dissemination of clones in different hospitals, indicate the need for stricter application of infection control measures in hospitals in Recife, Brazil, aiming at reducing costs and damages caused by *P. aeruginosa* infections. **E-mail:** marcelleaquino@yahoo.com.br

BacResist005- **Profile of bacterial sensitivity**

Silva, A.D.V.[1]; Silva, M.C.M.[1]; Santos, C.C.[1]; Lopes, A.N.S.[1]; Gomes, R.S.[1]; Costa, W.L.O.[1]; Lopes, K.S.[1]; Costa, M. M.[2].
(1) Discente do Curso de Graduação em Farmácia da Faculdade de Farmácia, Instituto de Ciências da Saúde, Universidade Federal do Pará, Belém, Brasil. (2) Docente da Faculdade de Farmácia, Instituto de Ciências da Saúde, Universidade Federal do Pará, Belém, Brasil.

Introduction: Due to the pathogenicity of many microorganisms bacterial antimicrobial resistance has been a topic widely studied in all bacterial genera, hence the increase in resistance to numerous antimicrobials reported in recent years. Within the family of Enterobacteriaceae, a large number of species has great variability in susceptibility patterns acquired naturally or through resistance genes or by self-medication, which can lead to ineffective antimicrobial agents commonly used. This study aimed to evaluate the sensitivity of bacteria isolated at the Laboratory of Microbiology, Faculdade de Farmácia, Universidade Federal do Pará. **Materials and Methods:** We studied 20 bacteriological samples (*Citrobacter sp.*, *Escherichia coli*, *Klebisiella sp., Salmonella enteritidis, Salmonella typhi, Proteus mirabis, Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Bacillus subtilis*, *Streptococcus pneumoniae*, *Enterococcus faecalis*), ATCC and clinical isolates. We used the method of Kirby-Bauer where a spike of

bacteria by the method of grooves in petri dishes containing Mueller-Hinton culture medium specific. The plates were incubated at a temperature of 36^0C for a period of 24 hours. Reading was performed by measuring the diameter of inhibition zone around the disk and was tested for eight antibiotic erythromycin, ampicillin, chloramphenicol, ciprofloxacin, orfloxacin, cefoxitin, cefuroxime, and amikacin. **Results:** In the group of Enterobacteriaceae prevalence was *E. coli* (43%) followed by *Klebisiella sp.* (29%). The antimicrobial showed more resistance was 75% erythromycin resistance. It was found that *E. coli* showed 83% to 33.3% erythromycin-resistant and ampicillin. *Klebsiella* showed 100% of erythromycin resistance to ampicillin and 75%. *S. Aureus* and *S. pneumoniae* were sensitive to all antibiotics tested and all antibiotics resistance experienced at least one sample. The highest resistance was shown to erythromycin (75%) and ampicillin (23.3%). The bacteria were more sensitive *S. aureus* and *B. subtilis* showed sensitivity to all antibiotics tested, followed by *S. enteritidis*, *S. Typhi* and *S. pneumoniae* that were sensitive to seven antibiotics. Bacteria were the highest resistance to *E. coli*, *Klebsiella sp.* and *P.aeruginosa*, which are resistant to four antibiotics. **Main conclusions:** A probable explanation to susceptibility to erythromycin may be facing due to the large amount of enterobacteria, in other studies has proved resistant to this antibiotic. The study confirmed previous reports, indicating that antibiotics should be used only against the results of susceptibility testing. **E-mail:** giza_deni15@hotmail.com

BacResist006- Neonatal bacteremia isolates and their antibiotic resistance pattern in neonatal insensitive care unit (NICU) at Beasat hospital, Sanandaj, Iran

Mohamadzadeh Parvein[1], Bahmani Nasrin[2], Naseri Nima[3], Ghotbi Nahid[4], Fatemi Adel[5], Kalantar Enayat[6]
1Department of Midwifery and Nursing, Sanandaj Branch Azad University, Sanandaj, Iran, 2Department of Microbiology, School of Medicine, Kurdistan University of Medical Sciences, Iran, 3Microbiology laboratory, Beassat hospital, Kurdistan University of Medical Sciences, Iran, 4Department of Pediatric, Beassat Hospital, Kurdistan University of Medical Sciences, Iran, 5Department of Statistic, Sanandaj Branch Azad University, Sanandaj, Iran, 6Environmental Health Research Center, Kurdistan University of Medical Sciences, Iran.

Background: Bacteremia continues to result in significant morbidity and mortality, particularly among neonates. There is scarce data on neonatal bacteremia in NICU at Beasat hospital. In this study we determined neonatal bacteremia isolates and their antibiotic resistance pattern in neonatal insensitive care unit at Beasat hospital, Sanandaj, Iran. **Materials and Methods:** During one year 355 neonates admitted to the NICU were enrolled. Blood samples were collected aseptically from the patients admitted in NICU, Beasat hospital. The specimens were inoculated into brain heart infusion broth. The isolates were identified by standard biochemical tests. Antibiotic sensitivity pattern of isolates was studied according to CLSI. Staphylococcal isolates were subjected to determine the prevalence of MRS and *mec*A gene. **Results:** A total of 355 blood cultures from suspected cases of sepsis were processed, of which 27 (7.6%) were positive for bacterial growth. Of the 27 isolates, 20 (74%) were *Staphylococcus spp* as the leading cause of bacteremia. The incidence of Gram negative bacteria was 04 (14.8%). The isolated bacteria were resistant to commonly used antibiotics. Maximum resistance among *Staphylococcus spp* was against Penicillin, and Ampicillin. In our study the isolated bacteria were 7.5 % Vancomycin and Ciprofloxacin sensitive. Oxacillin disk diffusion and PCR screened 35% and 30% *mec A* positive *Staphylococcus spp*. **Conclusion:** The spectrum of neonatal bacteremia as seen in NICU at Beassat hospital, confirmed the importance of pathogens such as *Staphylococcus spp*. Penicillin, Ampicillin and Cotrimoxazol resistance was high in theses isolates with high *mecA* gene carriage, probably due to antibiotic selection. **Keywords:** Bacteremia, Neonates, MRS, *mec*A. **E mail:** ekalantar@hotmail.com

BacResist007- Risk factors for pan-resistant *Pseudomonas aeruginosa* bacteremia and the adequacy of antibiotic therapy

Authors: Tuon FF[1,2], Gortz LW[1], Rocha JL[1], Merlini AB[2]
1Hospital Universitário Evangélico de Curitiba, Division of Infectious and Parasitic Diseases. Curitiba, Paraná, Brazil, 2Universidade Estadual de Ponta Grossa, Departament of Medicine. Ponta Grossa, Paraná, Brazil.

Introduction: *Pseudomonas aeruginosa* is involved in various nosocomial infections, such as urinary tract infection (UTI), pneumonia and bacteremia. The major problem in the current panorama is the pan-resistant strains of Pseudomas due to few options of treatment. Considering this fact, the mortality of infections associated with pan-resistant Pseudomonas is supposed to be higher due to delay to start specific antibiotics, as polymyxin. The purpose of this study was to establish risk factors for acquiring CR-PA bacteremia and factors associated to in-hospital mortality. **Material and Methods:** A case-control study evaluated 77 patients, older than 18 years, presenting bacteremia due to *Pseudomonas aerugiona* in a tertiary-care hospital with high incidence of CR-PA, in Curitiba, Brazil. Clinical and laboratorial features, as well the previous use of antibiotics were considered. In first analysis carbapenem-susceptible *P. aeruginosa* (CS-PA) and CR-PA bacteremia were compared. A second analysis compared patients who died with survivors. **Results:** Twenty-nine CR-PA bacteremia were detected (37,66%). Admission at the intensive care unit, a higher number of total leukocytes and the previous use of carbapenem were significantly related to CR-PA. In the multivariate analysis, only previous use of carbapenem (including Ertapenem) was determined as risk factor for CR-PA (p = 0,014). The 30-day mortality of patients with *P. aeruginosa* bloodstream infection was 44.8% for CS-PA and 54.2% for CR-PA. The risk factors for mortality included chronic renal failure, at the intensive care unit, mechanical ventilation and central venous catheter. Inadequate treatment was verified in 46 patients (59.74%). It increased the mortality rate of patients who suffered CS-PA bacteremia (39% x 68%, p = 0.043) but not for them with CR-PA. The odds ratio of mortality involving inadequate therapy in patients with CS-PA bacteremia was 3.30 (95% confidence interval = 1.01 – 10.82, p = 0.043). In the other hand, the mortality of patients with CR-PA bacteremia was unexpectedly similar with adequate or inadequate antimicrobial management (43% x 50%, p = 0.526). **Main conclusions:** The previous administration of carbapenem was a risk factor for acquiring CR-PA. The appropriate therapy for CS-PA bacteremia initiated within the first 24 hours was related to lower mortality, but this cannot be applied for CR-PA. **E-mail:** alexandre_merlini@hotmail.com

BacResist008- **Evaluation of markers of virulence and antimicrobial susceptibility of *Aeromonas* spp. isolated from human source in Brazil**

Roges, E. M.; Souza, R. L.; Motta, R. S. & Rodrigues, D. P.
National Reference Laboratory for Enteric Diseases – NRLED/IOC/Oswaldo Cruz Foundation/ FIOCRUZ – Rio de Janeiro, Brazil

Introduction: *Aeromonas* spp. are ubiquitous (everywhere) and autochthonous (naturally occurring) in the aquatic environment. The genus comprises about 24 fenospecies being *A. hydrophila*, *A. caviae* and *A. veronii* biovar sobria are the most common species known to cause the majority of human infections. The human disease is ranging from a self-limiting diarrhea to a more severe form. *Aeromonas* spp. may colonize, or infect, wounds contaminated with water or related to contact with soil and water, and cause extra intestinal infections and, septicemia in immunocompromised individuals. The pathogenesis of *Aeromonas* infections is multifactorial, as aeromonas produce a wide variety of virulence factors. **Methods**: In the present study, we compared strains of *A.caviae* and *A.hydrophila* isolated from human source between 2009 and 2012. All isolates were examined for the presence of a set of virulence factors assessed the phenotypic activity and the presence of virulence genes *hly*A/*aer*A, *lip/gcat* and DNAse by PCR and the antimicrobial susceptibility by disk diffusion method, according CLSI 2011/12. **Results**: A total of 31 strains evaluated included 15 *A.caviae* and 16 *A.hydrophila*. The haemolysis was observed among 26/31, the genes DNAse in all isolates, *lip* (7) and *gcat* (3) and the virulence factors collagenase and elastase in 7 and 13 strains, respectively. The overwhelming majority of the strains displayed the hemolysin genes *aer*A and *hly*A. The isolate from skin source showed positive collagenase, consistent with the role assigned to this enzyme in wound infections. From 13 *A.caviae* isolated from feces and two from wound secretions the most prevalent virulence factors were DNAse and aerolysin (*aerA).* The overall susceptibility profile showed resistance to AMK(2), NAL(7), GEN(2), SXT(8), TCY(6), CHL(1), CAZ(2), CIP(3), IPM(3), and CTX(13). Among strains from fecal source 5 *A.caviae* were susceptible to all antimicrobial drugs and two *A.hydrophila* multi-resistant. **Conclusions**: Virulence of aeromonas is multifactorial and the present results may predict the virulence among all analyzed strains. There are relationships between the presence of aerolysin/hemolysin and serine protease supports the role of protease in activation of aerolysin. The antimicrobial resistance profile showed no difference between strains from gastrointestinal and extra intestinal infections which are usually serious and potentially life-

threatening. The results obtained suggest, getting more information about the virulence factors among the two species strains and the genes which make up the resistance-determining regions to quinolones and 3rd generation cephalosporin recommended for children, elderly, and immunocompromised patients. **E-mail:** Emily@ioc.fiocruz.br

BacResist009- **Evaluation of virulence and antimicrobial resistance of *Aeromonas hydrophila* and *A.caviae* isolated from gastrointestinal and extra-intestinal source in Brazil**

Roges, E. M.; Souza, R. L.; Motta, R. S.; Rodrigues, D. P.
National Reference Laboratory for Enteric Diseases – NRLED/IOC/FIOCRUZ

Introduction: *Aeromonas* species are environmental organisms that are responsible for numerous infections in humans and animals. They are widely distributed in aquatic environments and are isolated from a wide range of food, animal and, plant origin. The genus comprises about 24 fenospecies being *A.hydrophila*, *A.caviae* and *A.veronii* cause of most human infections, and are responsible for majority of clinical isolates. The most commonly associated with human disease is gastroenteritis ranging from a self-limiting diarrhea to a more severe form but *Aeromonas* spp. also cause extra intestinal infections. The pathogenesis of *Aeromonas* infections is multifactorial, with a wide variety of virulence factors. We selected strains of *A.caviae* and *A.hydrophila* from human source, isolated between 2009 and 2012. Through phenotypic virulence was assessed the activity of enzymes collagenase, chondroitinase, elastase, hemolysin, and DNAse. The antimicrobial susceptibility test was performed by disk diffusion method, according to the CLSI 2011/12. The Polymerase Chain Reaction, PCR was performed for detection of hemolysin (*hly*A/*aer*A), lipase (*lip/gcat*) and DNAse. **Results**: A total of 31 strains evaluated include 15 *A.caviae* and 16 *A.hydrophila*. The *A.caviae* has been isolated from feces (13) and secretions (2). Among the total strains 5 from fecal source were susceptible to all antimicrobial drugs. The most prevalent virulence factors in strains from this group were DNAse and aerolysin (*aerA*). Among the *A.hydrophila* were from fecal source (11), and 5 from secretion, skin, blood, synovial fluid and lung. In strains of this species have been observed the prevalence of the hemolysin genes *aer*A and *hly*A, present in almost all isolates. The strain isolated from skin source the second most common anatomic site from which aeromonads are recovered is showed positive collagenase, consistent with the role assigned to this enzyme in wound infections. DNAse was observed in all isolates and haemolysis among 26/31, the genes *lip*(7) and *gcat*(3) and collagenase and elastase in 7 and 13 strains, respectively. Those products are elaborate by *Aeromonas* which are capable of degrading complex biologic proteins present in serum and connective tissue, including albumin, fibrinogen, elastin, and collagen. The overall susceptibility profile showed resistance to AK(2), NAL(7), GEN(2), SXT(8), TCY(6), CHL(1), CAZ(2), CIP(3), IPM(3), and CTX(13), including 2 strains of *A.hydrophila* of fecal origin that were multi-resistant to: AK-NAL-GEN-TCY-CTX and AK-NAL-GEN-SXT-TCY-CIP-CTX. **Conclusions**: Aeromonas spp. are naturally occurring inhabitants of aquatic environments and a significant human pathogens that cause both extra-intestinal and gastrointestinal infections. Virulence of aeromonads is multifactorial in isolates from human, food and environment. Among all analyzed strains the presence de various extracellular enzymes and, the hemolysin genes aerA and hlyA may predict the virulence. The antimicrobial resistance profile showed no difference between strains from gastrointestinal or extra-intestinal source and suggesting, so we can get more information about the pathogenicity and the genes which make up the resistance-determining regions to quinolones and third-generation cephalosporins recommended for children, elderly, and immunocompromised patients. **E-mail:** emily@ioc.fiocruz.br

BacResist010- **Antimicrobial susceptibility profile of bacteria isolates from otitis on University of Brasília Veterinary Hospital**

Costa B.S.; Vieira Y.C.; Filho R.C.A.; Vital F.M.; Andrade H.H.; Mello, M.R.S.; Drummond, V.O.; Faria, A.P.P.; Martins, G.P.; Castelo Branco, R.L.; Perecmanis S.
Clinical Veterinary Microbiology Laboratory, University of Brasília, Distrito Federal -Brazil

Introduction: Otitis is a multifactorial disease and several factors may be related to infection in pets. The literature reports that about 15% of the cases seen in veterinary clinics in Brazil are diagnosed as otitis, in the majority of chronic cases. Among the various etiologies of canine otitis, bacteria of the ear canal play an important role by being part of the normal flora of the animal and behave as opportunistic pathogens, ie, are not the root cause of infection while preventing the resolution of the disease. For this article, we used the reports of the bacteriological laboratory of veterinary medical microbiology. The records were compiled according to the tests of samples from animals referred by veterinary hospital of the University of Brasilia in 2011. **Materials and methods:** Samples were collected from the ear swabs in animals with clinical signs indicative of a possible bacterial infection of the auditory tract. The samples were sent to the Veterinary Laboratory of Medical Microbiology under refrigeration, were plated on blood agar and incubated at 37 ° C for 48 hours. After this period, biochemical tests were carried out with isolated colonies and smears were made of the same to the Gram stain. Complete characterization, sensitivity of the samples was performed by disk diffusion method. **Results:** By analysis of the results of bacteriological, 71 animals (14.2%) of a total of 500 have been diagnosed with bacterial otitis. It was observed that the incidence was higher in adult animals (57.29%) and elderly (25.93%), with higher prevalence in male dogs (26.76%). One case was observed in horse (1.4%). From the tests analyzed, the *Staphylococcus* sp. (70.15%) and *Proteus* sp. (8.95%) were found most frequently. The results observed were set in a table with the profile of antimicrobial susceptibility of bacterial isolates. Of all 20 antibiotics used, the commonly used were: ciprofloxacin (10.25%), Ticarcillin + clavulanic acid (9.89%), gentamicin (9.62%), norfloxacin (9.17%) and tobramycin (8.99%), and these showed the highest sensitivity were Ticarcillin + clavulanic acid (11.74%) and Ciprofloxacin (11.14%). Antibiotics were the highest resistance Streptomycin (11.87%) and Sulfazotrim (11.41%). **Conclusion:** Based on the data obtained, it is possible to determine the most effective treatment of bacterial otitis and reduce the chronicity of infection. The results were similar to those found in the literature. Aminoglycosides and Chinolones were the most sensitive pharmacological groups. **E-mail:** babi.barbarella@hotmail.com

BacResist011- **Cloning, expression and purification of *mecA* from methicilin-resistant *Staphylococcus aureus* as vaccine candidate**

Seyed Davar Siadat[1] , Setareh Haghighat [2], Arfa Moshiri[3,4], Azadeh Tabatabaie [2],Bahareh Rajaei[2], Mohammad Reza Aghasadeghi [4], Seyed Mehdi Sadat [4],Safiyeh Amini[4] , Soheila Hekmat [4], Pooneh Rahimi[4], Abolfazl Dashtbani-Roozbehani[4] , Mohammah Hassan Pouriayevali [4], Golnaz Bahramali[4], Mohammad Mokhtarpour[5] , Mehdi Mahdavi[6] and Seyed Fazlollah Mosavi

[1] **Department of Microbiology, Pasteur Institute of Iran, Tehran, Iran;** [2]**Department of Biology, Sciences and Research Branch, Islamic Azad university, Tehran, Iran;** [3] **Department of Biotechnology, School of Allied Medical Sciences, Tehran University of Medical Sciences, Tehran, Iran;** [4] **Department of Hepatitis and AIDS, Pasteur Institute of Iran, Tehran, Iran.** [5] **Tabriz University of Medical Sciences, Tabriz, Iran**

Introduction: Methicillin-resistant *Staphylococcus aureus* (MRSA) is the major pathogen involved in nosocomial infections, leading to high rates of morbidity and mortality in hospitals worldwide. The methicillin resistance occurs due to the presence of an additional penicillin-binding protein, PBP2a, which has low affinity for *β-lactam* antibiotics. PBP2a is encoded by the *mecA* gene, a foreign gene integrated into the chromosome of methicillin susceptible *S.aureus* (MSSA). In the past few years, vancomycin has been the only antibiotic option for treatment of infections caused by multiresistant MRSA; however, reports of vancomycin-resistant strains have generated great concerns regarding the treatment to overcome these infections. The aim of this study was to clone, express and purification of *mecA* as vaccine candidate. **Material and methods:** The 637bp fragment of *mecA* gene was amplified by PCR which were extracted from *S.aureus* COL strain (methicillin-resistant *S.aureus*). This fragment was cloned into prokaryotic expression vector pET24a. The pET24a-*mecA* plasmid was transformed into competent *E.coli* BL21 (DE3). Recombinant protein was overexpressed with isopropythio-β-D-galctoside (IPTG) and affinity purification was done by Ni-NTA agarose. SDS-PAGE and western blotting were performed for protein determination and verification. **Results:** The *mecA* clone was confirmed by colony-PCR and enzymatic digestion as well as sequencing. SDS-PAGE analysis indicated that the constructed prokaryotic expression system pET24a -*mecA*-Origami efficiently produced target recombinant protein with molecular weight of 13.5 kDa. The recombinant *mecA* was over expressed as inclusion bodies by the use of 1.0 mmol/L IPTG. **Conclusion:** This prokaryotic expression system provides a simple method for

producing recombinant *mecA* in high concentration and good conformational structure quality and may also be useful for the production of other bacterial outer membrane proteins for vaccine studies.
Keywords: *S.aureus* COL strain, mecA, pET24a.**E-mail:** d.siadat@gmail.com

BacResist012- **Occurrence and spread of methicillin resistant *Staphylococcus spp.* among nurse technician from risks sectors at a University Hospital from Recife-Pernambuco-Brazil**

Rabelo MA[1], Neto AMB[1], Loibman SO[1], Lima JLC[1], Ferreira EL[2], Leal NC[2], Maciel MAV[1].
[1]Departamento de Medicina Tropical, Universidade Federal de Pernambuco, Recife, Brazil, [2]Centro de Pesquisas Aggeu Magalhães, Fiocruz, Recife, Brazil

Introduction: Since the first case report of methicillin resistant *Staphylococcus* that this microorganism is considered as one of the agents of the greatest impact to health care-associated infections. The spread of the multidrug-resistant isolates in hospital services is often attributed to health professionals and some studies have reported the presence of clones among patient´s and professional´s samples suggesting its importance in outbreaks. Nurse technicians are reported as the main carriers of methicillin resistant *Staphylococcus* (MRS), emphasizing its role on spread of resistant strains. The aim of this study were to identify methicillin resistant isolates in nasal samples from nurse technicians that working in ICU, nephrology and surgical clinics of University Hospital of Pernambuco, in the period April to August of 2011, and describe the clonal existence among these isolates. **Material and methods:** Nasal swabs were collected from 45 nurse technicians who worked in the risks sectors of the hospital, to achieve isolation and identification of *Staphylococcus spp.* These isolates were subjected to oxacillin and cefoxitin disk diffusion testing, oxacillin agar screen, *mec*A gene detection and evaluated for the clonal presence by PCR-ribotyping. **Results:** Thus, we selected 28 oxacillin and/or cefoxitin resistant isolates, which were subjected to oxacillin agar screen and PCR to *mec*A gene detection. The oxacillin agar screen test shown that 75% (21/28) of the isolates were resistant and 46,43% (13/28) were positives for the *mec*A gene presence, all of which were identified as coagulase negative staphylococci. Among the *mec*A positive isolates 53,85% (7/13) came from nephrology. These positives isolates were subjected to PCR-ribotyping and PCR-based amplifications patterns, we described 10 ribotypes, of which eight have been described only once and the ribotype 2 was found in a sample of ICU origin and another from nephrology, and the ribotype 4 was described in three isolates from surgical clinics. **Conclusions:** It was found that the MRS prevalence in our study is within literature limits described and there is a large genetic diversity despite the ribotypes measures. The early detection of MRS carriers may help in epidemiological research, for the control and prevention of these isolates spread. **E-mail:** marcelleaquino@yahoo.com.br

BacResist013- **Molecular Detection of methicillin resistant *Staphylococcus aureus* (MRSA) and methicillin resistant coagulase-negative *Staphylococcus* (CoNS) in Iran**

Arfa Moshiri[1,3], Neda razavi davoodi[2], Jalil Vand Yousefi[2], Naser Harzandi[2], Bahareh Rajaei[3], Mohammad Reza Aghasadeghi [3], Seyed Mehdi Sadat [3],Safiyeh Amini[3] , Soheila Hekmat [3], Mohammad Mokhtarpour[4] ,Seyed Davar Siadat[3,5]
[1] **Department of Biotechnology, Tehran University of Medical Sciences, Tehran, Iran, [2]Department of Microbiology, Karaj Branch, Islamic Azad university, Karaj, Iran, [3] Department of Hepatitis and AIDS, Pasteur Institute of Iran, Tehran, Iran, [4] Tabriz University of Medical Sciences, Tabriz, Iran, [5] Department of Microbiology, Pasteur Institute of Iran, Tehran, Iran.**

Introduction: The incidence of methicillin resistance has risen among nosocomial isolates of *Staphylococcus aureus* and coagulase negative staphylococci. The present study was carried out to investigate the prevalence of methicillin-resistant *Staphylococcus aureus* (MRSA) and methicillin-resistant coagulase negative staphylococci (MRCoNS) and to determine their antibiotic susceptibility pattern. **Material and Methods:** A total of one hundred thirty clinical staphylococcal isolates recovered from blood, tracheal aspirate, urine and wound specimens were evaluated for susceptibility to penicillin, amikacin, ciprofloxacin, vancomycin, erythromycin, ceftriaxone, methicillin, rifampin and gentamicin by

Disk diffusion method and molecular detection of *mec*A gene. PCR was performed with primers 5'-ACGAGTAGATGCTCAATATAA-3' as forward and 5'- CTTAGTTCTTTAGCGATTGC -3' as reverse. The 293bp PCR product attributed to the *mec*A gene was sequenced using the ABI Capillary System (SEQLAB, Berlin, Germany). Sequence was analyzed using online BLAST software (http://www.ncbi.nlm.nih.gov/BLAST/) and submitted to the EMBL/GenBank database (www.ncbi.nlm.nih.gov). **Results:** The results showed that MRCoNS were more resistant to these antibiotics as compared to MRSA and the most effective antibiotic to use for Staphylocoocal isolates is vancomycin showing (100% of *S. aureus* and 90% of CoNS) efficacy. The *mec*A gene was detected in 56 isolates (56%) of 100   *S.aureus* isolates and 21 isolates (70%) of 30 CONS isolates. The prevalence of methicillin resistant staphylococci in our country was very high and 45.4% of MRSA and MRCoNS isolates were at least resistance to 3 or more classes   of antibiotics.The 293bp PCR product related to *mec*A gene was sequenced. The comparison between sequence result and sequences in the Gene Bank database revealed high identity to the sequence of *mec*A with the GenBank accession no. JN258594. **Conclusion:** In conclusion this study indicated that the prevalence of MRSA and methicillin-resistant CoNS isolates is rising and pattern of antibiotic susceptibility to first line antibiotics is changing. The development of antibiotic resistance seems to be very much related to the irrational antibiotic usage. Vancomycin and rifampin are effective antibiotics against methicillin-resistant staphylococci. These drugs should not be used as empirical therapy. The massive and continuous use of these antibiotics has led to the appearance of resistance. **Key words:** *Staphylococcus aureus*(*S.aureus*)*,* Coagulase-negative staphylococci(CoNS) , *mecA* gene*,* Methicillin-resistance. **E-mail:** arfa.moshiri@gmail.com

BacResist014- **Evaluation of the action of essential oil of *Plectranthus amboinicus* against multidrug-resistant clinical strains of *Enterococcus faecalis*.**

Braga, Milena Aguiar; Gonçalves, Thially Braga; Carvalho, Cibele Mano Barreto; Santiago, Gilvandete Pinheiro; Nagao-Dias, Aparecida Tiemi.
Dept. Pathology and Dept. Clinical Analysis and Toxicology, Universidade Federal do Ceara, Fortaleza, Brazil.

Enterococcus faecalis often cause infections in hospitalized patients, especially urinary tract infections, pelvic and intra-abdominal pathologies. The main reservoir of the bacteria is the human gastrointestinal tract, but it can be found in oral cavity, bladder, vagina and urethra. The importance of *Enterococcus* in hospitals is due to its intrinsic resistance to antibiotics and to its ability to acquire antibiotic resistance by mutation or exchange of genetic material via plasmids and transposons. Because of this, it is necessary that new alternatives of drug therapy be available in clinical routine, as for instance, research on medicinal plants. The present study aimed to determine the antimicrobial activity and some mechanisms of essential oil from leaves of *Plectranthusamboinicus* (OE) against multidrug-resistant strains of *Enterococcus faecalis*. Fresh leaves of *Plectranthusamboinicus*(Lour.) Spreng, collected from the Medicinal Herb Garden "Prof Francisco José de Abreu Matos" (Fortaleza, Ceara, Brazil), were subjected to hydrodistillationprocedure using the Clevenger apparatus. To determine the minimal inhibitory concentration (MIC) and minimal bactericidal (MBC),0.01 to 0.3% OE and vancomycin (1 to 16 mg/mL) were tested against 5 clinical isolates and a standard strain of *E. faecalis*by broth microdilution technique. The rate of kill was determined by measuring the reduction of viable bacteria exposed to concentrations of two times the MIC after 0, 2, 4, 6, 8, 10 and 24 h. The action on the bacterial membrane was determined by crystal violet uptake and changes on the bacterial morphology were visualized by atomic force microscopy. OE presented a MIC of 0.04% against strains of *Enterococcus faecalis*.The kinetics of bacterial growth showed bactericidal and bacteriostatic effects of essential oil after 2 h of incubation. The OE was able to increase the violet crystal uptake when tested at twice the MIC against *E. faecalis*(*p*<0.01). The analysis of the action of OE by atomic force microscopy demonstrated cellular membrane disruption of the bacteria, when compared with untreated cells. The present work demonstrates an excellent antibacterial activity of *P.amboinicus*against *Enterococcus faecalis.* **Keywords:** multidrug resistance, mechanism of action, *Enterococcus faecalis*, essential oil, *Plectranthusamboinicus.* **Financial support:** CAPES, CNPq, Funcap**. E-mail:** milenaaguiarbraga@yahoo.com.br

RICKETTIOSIS

Rick001- **Seroprevalence of *Rickettsia* spp in horses from Rio de Janeiro: The heterogeneous risk of human infection among the State**

Rosadas, C.[1]*; Barros, S. M. C.[1], Moreira, L. M. C.[2]; Sá-Freire, L.[2], Gazêta, G.S.[2]
1. Universidade Estácio de Sá, Rio de Janeiro, Brasil; 2. Laboratório de Referência Nacional em Vetores das Riquetsioses - IOC / Fundação Oswaldo Cruz, Rio de Janeiro, Brasil

Introduction: Rickettsial diseases are caused by bacteria of the family Rickettsiaceae. They are associated with arthropod vectors (ticks, fleas, lice and mites) with worldwide distribution and endemic foci. *Rickettsia* spp present various mammalian hosts, among which, we highlight horses that can serve as sentinel animals for a diverse variety of zoonotic rickettsia, including *R. rickettsii*, the agent of Brazilian Spotted Fever (BSF). The growing importance of ricketisiosis in Public Health is related with their incidence and distribution that are larger than previously thought. **Material and Methods:** The present study investigated the prevalence of *Rickettsia* spp in horses (n = 120) of different municipalities (Angra dos Reis, Paracambi, Paty do Alferes, Queimados, Rio de Janeiro, Três Rios, Valencia and Vassouras) of the State of Rio de Janeiro. An epizootiological questionnaire and indirect immunofluorescence test for detection of serum antibody anti-*R. rickettsii* in those animals was accomplished. **Results:** Twenty-one horses (17.5%) were considered positive (titers greater than or equal to 1:64). All municipalities evaluated had at least one positive animal. The frequency of positive horses varied between locations and Queimados were the site with the highest number of positive animals (38.5%, n = 5), followed by Paracambi (28,6%, n=4) and Três Rios (26,7%, n=4). In those municipalities the frequency of positive animals matched to data presented by others authors in different states of Brazil, where were occurring human cases. Thus there is a possibility that human infection may occur in these locations. Although, these three municipalities have only few reported human cases of BSF (one in 2005 in Paracambi and one in 2007 in Três Rios; and no reported cases in Queimados). To worsen the situation in the town of Queimados the horses have direct contact with large numbers of humans in an urban area. These animals are used in public transportation (buggy). To aggravate the situation, the horses are concentrated, during the day, beside the railway line where there was a large number of individuals who travel daily through the entire State of Rio de Janeiro. In the others towns the frequency of positive animals were: Valença: 20% (n=3); Angra dos Reis: 12,5% (n=2); Vassouras: 8,3% (n=1); Paty do Alferes 6,7% (n=1); and Rio de Janeiro 5% (n=1). There was no influence of gender, age and presence of ectoparasites on the presence of antibody to *R. rickettsii*. **Main conclusions:** *Rickettsia* spp is present in different districts of Rio de Janeiro State, including areas where it has not been reported human ricketisiosis (Queimados). It is noteworthy that the distribution of bacteria in equine population in the State of Rio de Janeiro is heterogeneous. This may lead to a heterogeneous risk of human infection among the State. The results of this study indicate that may be occurring human cases that are not diagnosed correctly and, thus, are not reported. **E-mail:** carolrosadas@gmail.com

Rick002- **Epidemiological Survey of Spotted Fever in Ceara**

Gerlene Castelo Branco Coelho, Pedro Covas Coelho, Katariny Michelle de Araújo Pinheiro

Introduction: A spotted fever is a zoonosis caused by the bacterium (***Rickettsia ricketsii***) and its main reservoirs ***Amblyoma*** of the genus (***A. cajanense, A.aureolatum, A.dubitatum***). The first recognized in the late nineteenth century, the state of Idaho, USA. In Brazil, was first identified in 1929 in Sao Paulo. In Ceara state, the first record occurred in February 2010, the city of Aratuba. **Material and Methods:** We conducted an epidemiological survey of human cases of spotted fever in the State of Ceará, through the Information System for Notifiable Diseases (SINAN). **RESULTS:** There have been three (3) human cases of spotted fever, 1 (a) the site Jacaranda in 2010 and two (2) at Dois Irmãos in 2011, located in the municipality of Aratuba. The municipality distance of approximately 122km2 from Fortaleza, the state capital, belongs to the Baturité Mountain area has about165km2 (0.11% of the territory of Ceará). One case was confirmed (33%) of the patient from the site

Jacaranda. **Conclusion:** Reported three cases, only one was laboratory confirmed at the Instituto Adolfo Lutz (IgG ≥ 256). After notification SINAN (Information System for Notifiable Diseases), ticks were collected for subsequent virus isolation. However, we still encounter difficulties in sending appropriate samples for analysis. The first record of the disease in the region of Baturité the emergence of new suspected cases in neighboring areas (about 20km away); emphasize the need to adopt measures to prevent and control disease. **E-mail:** gerlenecbc@gmail.com

Rick003- Brazilian Spotted Fever in the region of Campinas in 2011: analysis of data quality and timely closure of the investigation of SinanNet´s database

Fred, J1 , Duarte, RMR1, Pacóla, MR1
1-Grupo de Vigilância Epidemiológica de Campinas (GVE XVII), do Centro de Vigilância Epidemiológica "Prof. Alexandre Vranjac", São Paulo, Brasil.

Introduction: The Brazilian Spotted Fever (BSF) is an acute febrile disease caused by *Rickettsia rickettsii,* gram-negative, obligate intracellular bacteria, and transmitted by *Amblyomma spp* ticks. May be associated with both mild and atypical clinical forms such as, for serious, with high lethality. The region of Campinas has recorded cases of the disease since 1985 and accounts for approximately 50% of the total of confirmed cases reported in state of São Paulo between 1998 and 2011. The disease is considered of compulsory notification in the region of Campinas since 1996 and was included in the national list of reportable diseases in 2001. In 2011, 36 cases were confirmed in the region of Campinas, with 20 deaths (case fatality 55.6%). The objective of this study was to analyze the data quality and timely closure of the investigation of cases registered in the Brazilian National Information System of Reportable Diseases (SinanNet) in the region of Campinas in 2011. **Material and Methods:** The analysis was conducted using the guide for use the SinanNet: analysis of data quality and calculation of epidemiological and operational indicators and the data dictionary of BSF of SinanNet, both publications of the Brazilian Secretary of Health. **Results**: There were 924 reported cases of BSF in SinanNet, with date of onset of symptoms in 2011, among which 0.9% (8/924) were duplicated records. The average completeness of fields of the form epidemiological research (FER) was 76.8%. It was found that 82.8% (758/916) of the records contained final classification (confirmed or discarded) and closing dates filled. Of this total, 70.4% (534/758) were closed timely, within 60 days past the date of notification. **Main conclusions**: The evaluation pointed to a regular completeness of the fields of FER, which was bad, however, for the fields of laboratory results and conclusion. The closure of the cases in the information system was considered adequate. To obtain better data quality and increase the percentage of registers with proper shutdown of the investigation is necessary to invest in training and raising awareness of municipal technicians responsible for the classification of cases and data entry in SinanNet. Both the completeness of the fields of FER, as the percentage of FER rightly closed, should also be benefited in 2012 by releasing the return flow routine of the SinanNet. Data with better quality will generate more precise information on the epidemiological situation of the disease and guide the prevention and control measures to be triggered. **E-mail:** jfredvet@gmail.com

Rick004- Brazilian Spotted Fever Outbreak in an International Union Protective Society of Animals in Rio de Janeiro, Brazil.

Gomes R[1], Rozental T[1], Costa CM[2], Pessoa Jr. AA[1], Almeida EB[1], Napoleão F[3], Bezerra IO[2], Barbosa PRA[2], Cruz DMO[2], Garcia MHO[2], Suzuky SL[4], Lemos ERS[1].
[1]Laboratório de Hantaviroses e Rickettsioses, Instituto Oswaldo Cruz, FIOCRUZ, Rio de Janeiro/Brasil. [2]Coordenação de Informação Estratégica em Vigilância em Saúde (CIEVS RIO). [3]Laboratório Central Noel Nutels Rio de Janeiro/ Brasil. [4] Coordenação Geral de Laboratórios de Saúde Pública (CGLAB), Ministério da Saúde.

Introduction: Rickettsiosis is emerging zoonosis caused by different *Rickettsia* species carried by arthropods. In Brazil, Brazilian spotted fever (BSF), caused by *Rickettsia rickettsii* and transmitted by ticks, especially *Amblyomma cajennense*, is the most important public health problem that can cause systemic illness in humans and dogs. Although dogs cannot transmit the infection directly to human, they

can carry ticks that can transfer the pathogen to human in a single bite. Between January to April, 2011, illnesses characterized by fever, headache, rash, thrombocytopenia and sepsis were observed among International Union Protective Society of Animals (SUIPA) workers, a non-governmental organization that saves animals and finds adoptable pet homes, in the Rio de Janeiro city. **Material and Methods:** Blood and serum samples obtained from two of the four SUIPA's workers who died were submitted to serological and molecular analysis at the Laboratory of Hantaviruses and Rickettsiosis, Oswaldo Cruz Institute, FIOCRUZ. The serological diagnosis was performed by indirect immunofluorescence assay (IFA) using commercial slides SCIMEDX[TM] for *R. rickettsii*, (cut off 64) and the first blood sample from both fatal cases was tested by polymerase chain reaction (PCR) using two set of primers: Rr190.70p/Rr190.602n (OmpA - 532bp) and RpCS.877p/RpCS.1258n (gltA - 381bp). Additionally, in July, 2011, blood samples were collected from 117 dogs admitted to SUIPA and submitted to IFA, cut off 64**. Results:** The serum sample from the second fatal case was reactive for *R. rickettsii* (IgM) with endpoint titers equal to 128. Segments of rickettsial genes, *omp*A (532 bp) and *glt*A (381 bp) were amplified from both cases and the analysis of nucleotide sequence confirmed *R. rickettsii*. Among the 117 sera analyzed, 114 (97%) were reactive for *R. rickettsii*. **Conclusions:** Although BSF is characterized by being a rural disease, isolated cases or clusters can occur in urban and suburban region in cities. The presence of 114 dogs IFA positives and the identification of *R. rickettsii* in blood samples from 02 of the 04 fatal cases in this outbreak emphasize the necessity for high index of suspicion for BSF since the lack of specific treatment determined to the fatal outcome. Additionally, our data also support the importance of dogs as sentinels and reinforce the need to take precautions against tick bites and contact with animals. **E-mail:** raphaelgomes@ioc.fiocruz.br

Rick005- **Investigation of Brazilian Spotted Fever deaths in animal shelter workers in the city of Rio de Janeiro, Brazil, 2011**

Costa, C.M.[1]; Torrens, A. W.[1]; Barbosa, P.R.A.[1]; Barrado, J. C. S.[1]; Pinheiro, M. V. B.[1]; Oliveira e Cruz, D. M.[1]; Máspero, R. C.[1]; Ferreira, F. C.[2]; Vieira, T. R.[2]; Garcia, M. H. O.[1]; Rozental, T.[3]; Lemos, E. R. S.[3]
[1]Superintendence of Health Surveillance, Municipal Health Secretariat of Rio de Janeiro, Brazil, [2] Superintendence of Sanitary Surveillance and Zoonoses Management, Municipal Health Secretariat of Rio de Janeiro, Brazil, [3] Laboratory of Hantaviroses and Rickettsioses, Oswaldo Cruz Institute, FIOCRUZ, Rio de Janeiro, Brazil

Introduction: In April 2011 the Municipal Health Secretariat of Rio de Janeiro was notified about the occurrence of four deaths suspected of leptospirosis among employees of a shelter for relinquished animals located in the north of the city of Rio de Janeiro. An epidemiologic and environmental investigation was initiated in order to confirm the outbreak, to identify the etiological agent, to describe the cases detected and to identify animal reservoirs and vectors. **Material and methods:** Information about deaths patients were obtained through chart review and interviews with family. We conducted a search for clinical samples of these patients for differential diagnosis. A serological survey for antibodies to Leptospira spp and Rickettsia spp was performed in order to investigate a possible exposure among dogs and the shelter staff. Ticks found attached to dogs and in the environment were collected for taxonomic identification and survey of Rickettsia species. **Results:** We identified four deaths among shelter workers, from January to April 2011. It was possible to rescue clinical specimens from two patients, both positive for *Rickettsia rickettsii* by polymerase chain reaction (PCR). Serum samples were collected from 82% of employees (115/140), 3% were seropositive for Brazilian Spotted Fever (BSF) and 5% had positive leptospirosis titres by microagglutination reaction. Serum samples obtained from approximately 5% of the dogs housed in the shelter (117/2500) were tested by indirect immunofluorescence for detectable antibodies to BSF. Seropositivity was revealed in 114 (97%) of 117 dogs. 31 (26%) of 117 canine samples collected were also tested for leptospirosis, and 61% were positive. All ticks collected were identified as *Rhipicephalus sanguineus* and all of them were negative for rickettsial infection. **Main Conclusions:** There was an outbreak of Brazilian Spotted Fever among employees of an animal shelter in the city of Rio de Janeiro, resulting in four deaths. The presence of seropositive dogs and staff suggests a strong circulation of rickettsiae in the shelter. The serological survey also highlighted a possible exposure of employees and dogs to other zoonoses such as leptospirosis. **Key words:** *Rickettsia rickettsii,* Leptospirosis, Dogs, Ticks, Zoonoses, Brazil. **E-mail:** carolmdacosta@gmail.com

Rick006- Aggregate of deaths by Brazilian spotted fever in a urban area of São Paulo state, Brazil

Souza, PB1; Gatti, E1; Lima, GDF1; Spinola, R2; Veras, MASM3; Ribeiro, MCSA3; Fred, J4 1Field Epidemiology Training Program (EPISUS-SP), Sao Paulo, Brazil.
2Sao Paulo State Epidemiological Surveillance Center – Zoonoses Division (CVE), Sao Paulo, Brazil. 3Sao Paulo Santa Casa Medical Sciences Faculty (FCMSCSP), Sao Paulo, Brazil. 4Strategic Information and Health Surveillance Response Center (CIEVS), Campinas, Brazil

Introduction: Brazilian Spotted Fever (BSF) is an acute febrile disease, caused by *Rickettsia rickettsii* bacteria and transmitted by ticks from Ixodidae family, *Amblyomma* genus, in São Paulo State especially *A. cajennense* and *A. aureolatum* species. The disease was recognized in 2003 in Valinhos city and since then its occurrence was confirmed in every year until the present. In 2011 nine cases were reported through the SINAN (Brazilian National Information System of Reportable Diseases) and confirmed with five deaths. The Brazilian Field Epidemiology Training was required and conducted an investigation. The investigation aim was to describe epidemiologically the cases occurred in Valinhos city between January and August 16th of 2011. **Material and Methods:** Valinhos city is located in the Metropolitan Region of Campinas, with a population of 109,533 inhabitants and urbanization level of 95.2%. Cases confirmed by laboratory testing and clinical-epidemiological criteria, according to the Epidemiological Surveillance Guide from Ministry of Health (2009), in the period from January to August 16, 2011, were described in person, time and place. Epidemiological investigation forms from SINAN, medical records of the Municipal Emergency Center and medical records of the Hospital Care were used as data sources. **Results:** Eight cases were confirmed by laboratory and one case was classified as compatible with BSF during the study period in Valinhos city. The compatible case was later dismissed for having a diagnosis of acute hepatitis B virus. Among the confirmed cases 5 (56%) died. The first confirmed BSF case occurred in February, with no diagnosis of new cases until May. The others eight confirmed cases occurred from June to August 16th. Males represented 89% (8) of cases. The cases that progressed to death when compared with those with healing evolution had a higher median age, 54 (Confidence Interval 33-70), higher median number of medical attends, 4 (CI 4-5); greater time interval (in days) between onset of symptoms and administration of appropriate antibiotic therapy, 4 (CI 2-5); lower frequency of reported tick parasitism, 3 (60%), high frequency of medical assistance in public sector, 4 (80%) and higher frequency of disease related to work 4 (80%). **Main Conclusions:** BSF cases occurred in Valinhos city did not exceed the expected quantitative, since the occurrence of disease is endemic in this city since 2003. However, the increase in deaths number in 2011 may signal the need for enhanced environmental and educational activities focusing the population, as well as continuing education directed primarily to healthcare professionals, seeking early diagnosis and proper treatment in time. **E-mail:** priscilabochi@gmail.com

SYPHILIS

Syphilis001- Prevalence of syphilis in the female prison population in the state of Pará

[1]Ferreira, P; [1]Costa FFY; [1]Silva, AM; [1]Costa, RAA; [1]Almeida, MKC; [1]Santos, KN; [1]Silva, AV; [1]Freitas, AS; [2]Lima, TB; [2]Macedo, AR; [2]Oliveira, HO; [2]Mota, VT; [2]Barros, SC; [2]Aguiar, SRV, [1]Fecury, AA; [1]Martins, LC.
[1] Clinical Pathology Laboratory of the Center for Tropical Medicine, [2] School of Nursing , Universidade Federal do Pará, Belém, Pará, Brasil.

Introduction: According to World Health Organization (WHO), the overall incidence of STDs (Sexually Transmitted Disease) curable is approximately 333 million/year. Two-thirds of all cases occur in people younger than 25 years. In some populations, most adults are infected by one or more pathogens. In the period 1996 to 1999, there was a variation of 3 to 22% in the prevalence of syphilis among women entering the prison system. The need to know the prevalence of syphilis infection among women in the Centro de Recuperação Feminino (CRF) do Coqueiro justified both because this is a population exposed

to risk as to stimulate a response from health services and prevention provided to this population, especially for being in the adoption of system of conjugal visits. This study aimed to determine the seroprevalence of syphilis and risk variables for the acquisition of HIV infection that were exposed to the inmates of the Centro de Recuperação Feminino (CRF) do Coqueiro. **Materials and Methods**: A total of 313 community women's prison in Centro de Recuperação Feminino (CRF) do Coqueiro who agreed to participate in a free and enlightened research and answered an epidemiological questionnaire. We collected blood samples (10 mL) for testing of VDRL (Venereal Disease Research Laboratory). Reagent samples by this method were confirmed by FTA-abs. The study was approved by the Ethics Committee in Research (Comitê de Ética em Pesquisa do Núcleo de Medicina Tropical). **Results**: The mean age of 313 participants was approximately 31 years (18-65 years). The predominant marital status was married or in stable relationships (43.4% or 136/313). 16.6% (52/313) reported receiving conjugal visits and 58/313 (18.5%) reported having homosexual partners in the prison. The use of condom during sexual intercourse was reported by 11.2% (35/313) of respondents. Regarding the result of the detection of syphilis (VDRL and FTA-abs), it was observed that 49 of 313 (15.7%) were positives. **Conclusions**: The results indicate a relatively low prevalence of syphilis infection in the prison community, when compared to other communities, but the inmates are exposed to risk factors for acquiring this infection and other STDs and condom use should be a practice encouraged. **Keywords**: syphilis, females, prison population, risk factors. **E-mail:** rmfaguiar@hotmail.com

Syphilis002- **Report on congenital syphilis in the state of Amazonas**

Saraiva MGG [1,2], Santos ECS [3], Moura MAS [1], Nogueira GC [6], Lucena NO [1], Mota CB [1,4,5]
1 Fundação de Medicina Tropical "Doutor Heitor Vieira Dourado". 2 Universidade Nilton Lins. 3 Universidade Federal do Amazonas. 4 Fundação de Vigilância em Saúde. 5 Universidade Anhanguera Uniderp. 6 Universidade do Estado do Amazonas. Manaus, Amazonas, Brasil.

Introduction: Congenital syphilis has been reported over the years on all municipalities of this state. **Objective:** To examine epidemiological aspects of cases of congenital syphilis, registered in the health care services of Amazonas, from January 2007 to December 2011. **Material and methods:** The analysis was based on secondary database information from SINAN NET/Foundation for Health Surveillance/ Coordination STD/AIDS/HV, with stratification of frequency of cases by year of diagnosis, classification, evolution and age of schooling and age of mothers and zones and residing municipality. ArcGIS ® software was used to determine the spatial distribution of the cases. **Results:** Six-hundred-seventy-eight congenital syphilis cases were diagnosed and reported, of these 627 (92.4%) of recent congenital syphilis 14 (2.1%) of late congenital syphilis; 14 (2.1%) abortion and 23 (3.4%) still deaths. Among the types of evolution, 606 (89.4%) are living, 16 (2.4%) both by disease reported and other causes deaths respectively. The highest record 183 (27.0%) occurred in 2008 and the lowest 90 (13.3%) in 2010. As to gender males showed 327 (48.2%), females 305 (45.0%), and 46 (6.8%) ignored. Regarding age groups the highest occurrence was in under year olds with 661 (97.5%), 1-4 year olds eight (1.2%), between 5-9 year olds four (0.6%) and five (0.7%) cases in 10 year old children. The mother's schooling ranged from illiterate 14 (2.1%), incomplete higher education eight (1.2%), incomplete elementary fifth to eighth sixth grades199 (29.4%). Age of mothers varied between 10-14 years old with seven (1.0%) and 35-49 year olds with 480 (70.8%) being the largest number. On the frequency by residing neighborhood, 640 (94.4%) lived in urban zone, one (0.1%) peri-urban, 35 (5.2%) in the rural and two cases (0.3%) were ignored/blank. The record involved 36 municipalities of Amazonas, the highest record was in Manaus 567 (83.8%), followed by Parintins 20 (3.0%). **Conclusions:** In the Amazon, the report of congenital syphilis probably reflects the fragility in women's Health Program, particularly during the pre-natal, moreover, the achievement of specific examination to identify the disease and the timely treatment, certainly will prevent concepts to be attacked by this type of disease. It is worth to highlight that ongoing explanations according to the different cultural and educational level are needed, so as to prevent syphilis in childbearing- aged women, since this disease also configures itself as a major public health burden in the region. **E-mail:** gracasaraiva@fmt.am.gov.br

Syphilis003- **Congenital syphilis, a sexually transmitted disease difficult to elimination in northeast Brazil**

Cavalcante[1,2,] M.S.; Amaral, H.E.G.[1]; Pinheiro, A.C.[1]; Rouquayrol, M.Z[1]; Vale, R.L.S[1]; Serejo, G.M.M[2]; Martins, J.M.M.L[2].
1. Secretaria Municipal de Saude de Fortaleza, 2. Hospital Geral Dr. César Cals/ NHE

Introduction: According to the sentinel studies in pregnant women in 2004, the prevalence of syphilis in pregnant women in Brazil was estimated at 1.6% range in each region, perhaps it is still underestimated by underreporting. The estimated prevalence of syphilis in the Northeast and Fortaleza was 1.9% ranging up to 2.2% in more recent studies. This study aimed to describe the cases of congenital syphilis in the period 2007 to 2011, recorded in Fortaleza, Ceará. **Material and Methods:** A descriptive study using the database of the Information System for Notification of Diseases - SINANNET of the Cell Epidemiological from the Municipal Health Secretary of Fortaleza. Analyses of simple frequencies and proportions were performed using the Stata software v.11.0, TX - USA. **Results:** 2868 cases were reported, of which 2459 (85.7%) occurred among residents of Fortaleza. The mean age was 24 years old and the coverage of prenatal care, ranged from 63.2 to 68.4% in this period. Syphilis was detected most of the time during labor (42-50%), although it has been identified in the same proportion during the consultation of prenatal care. As for the notification in pregnant women only 598 cases were reported in the city of Fortaleza in the same period. The proportion of their partners treated at the same time during the prenatal care ranged from 12.7 to 24.8%. We identified a growing trend in the incidence of congenital syphilis in the city of Fortaleza in 2007 from 8.9 to 16.4 per thousand live births in 2011 and the reverse in the detection of cases of syphilis in pregnancy. **Conclusion:** We concluded that prenatal care is essential for the initiation of prevention and timely treatment for the elimination of congenital syphilis in the country. The results of Venereal Disease Research Laboratory - VDRL should be expedited to not miss the opportunity to properly and timely treat the mother and partner during the prenatal care, and syphilis during pregnancy should be notify to the Secretary of Health. **E-mail:** socorro.cavalcante@gmail.com

Syphilis004- **Congenital neurosyphilis detection in the maternity ward of the Azevedo Lima State Hospital, in Niterói, Rio de Janeiro – a case report**

Boechat, M.E.H.; Martins, C.S.; Penha, E.E.D.; Macedo, T.S.C.; Boechat, S.H.; Braga, A. L.S.
Hospital Estadual Azevedo Lima

Introduction: Syphilis is an infectious and systemic disease transmitted by the *Treponema pallidum* bacteria. With and clinical evolution divided in early and late stages it is acquired throughout sexual contact, as well as congenital transmission, blood transfusion and accidentally, though the two late means of transmission are less common than the others listed. Millions of people are infected every year, including childbearing age women that if infected during pregnancy can transmit the disease the fetus. The congenital infection can lead to abortion, prematurity, natimortality and congenital neurosyphilis. This paper is an account regarding this late condition. **Objective:** To assert the relevance of the investigation and treatment of syphilis during pregnancy, in order to prevent the clinical manifestations and the disease congenital form. **Materials and Methods:** Documental research with data gathering in SINAN – Sistema de Informações de Agravos e Notificações and the records of puerperal women and neonatal babies available from the Medical Records Departament of the Azevedo Lima Hospital. **Results**: Medical case history - Newborn, daughter of T.S.T, born through vaginal birth in november the thirteenth of 2011. The pregnancy has lasted 39 weeks, APGAR score were 08/09. The prenatal care started as the pregnancy was four months along with four visits to the OB/GYN. VDRL (1/8), HIV test negative at the delivery moment. In 09/19 the VDRL result was (1/256). The newborn presented enlargement of the liver, slight skin scaling and vesicles in the scalp due to impetigo. In 11/13 a complete blood count showed no sign of leucocytosis or left shift, with acute lymphocytosis and VDRL result using peripheral blood was (1/8). In 11/16 a spinal tap was performed and the results have shown 15 nuclear cells per mm^3, however specific counting could not be performed due to the limited number of cells, glucose count was 39 mg/dL and the VDRL result (1/2). X-ray of the long bones showed no signs of alterations. Crystalline Penicillin G was intravenously administered every twelve hours, during ten days, in association with topic treatment and

antibiotics aiming the impetigo. Hospital discharge took place in 11/24 and RN was referred to a health care facility in São Gonçalo, Rio de Janeiro where her mother lives, for follow up. **Discussion:** The prenatal care started late during the pregnancy and the visits to the OB/GYN were not as frequent as they should have been, resulting in an unsound health care, that may have contributed to the congenital infection and the possible damages to the newborn nervous system. **Conclusion:** The relevance of the prenatal care can never be overemphasized, as well as the health education of pregnant women in order to prevent the gestational syphilis. **E-mail:** beth_boechat@ibest.com.br

Syphilis005- **Reactivity of vdrl test in the population residing by the banks of the Tucuruí-PA hydroelectric power plant reservoir**

Aarão, T.L.S[1]*; Pinto,D.S[2]; Araújo, M.V.A[2]; Dias, G.A.S[1]; Soares, L.P.M.A[3];   Martins, L.C[1]; Fuzii,H.T[1]; Quaresma, J.A.S[1]
1UFPA-NMT (Federal University of Pará- Institute of Tropical Medicine), 2UFPA-ICS (Federal University of Pará-Institute of health sciences), 3UEPA (State University of Pará)

Syphilis is a chronic infectious disease caused by *Treponema pallidum* which acquires great importance in the setting of sexually transmitted diseases due to its high prevalence in the Amazonic region. In countries like Brazil, syphilis is considered as one of the major public health problems. Currently, the research of syphilis is performed by combining non-specific and specific tests. The Venereal Disease Research Laboratory (VDRL) presents easy standardization and low cost, being the most utilized at the primary attention. In the Amazon, some diseases acquire great importance, especially in region where is located the reservoir of the Tucuruí Hydroelectric Power Plant (HPP). Among those diseases the STDs, like syphilis stand out. The aim of this study was to verify the prevalence of reactive VDRL in the population residing by the banks of Tucurui HPP reservoir and the risk factors associated with the infection between 2008 and 2010.   It was performed a cross-sectional study with adult individuals residing inside the Sustainable Development Reservations of the Tucurui HPP reservoir. It was collected 637 sera samples from individuals of bough sexes, which were analyzed at the Immunopathology Laboratory of the Tropical Medicine Center-UFPA. It was identified 2.83% (n=18) positive VDRL results with titers higher than 1/2. Among the reactants, the average age was 38.7 ± 18.1 years, and 45.5% were men while 55.5% were women. The married status was more prevalent (66.3%), however the past medical story of blood transfusion was not a significant risk factor for syphilis acquisition since only 11.1% of the cases were submitted to such procedure. The rates of positive VDRL found in this study reflect the persistence of this infection in our region, indicating the need for testing in susceptible populations and implementation of public health programs aiming to prevent and control the disease. The choice of the VDRL test was due to its widespread use in most of the health units due to its ease standardization and low cost. This test has some limitations for the diagnosis of syphilis when compared to treponemal tests; however we must emphasize its importance in preventive diagnosis when combined with clinical evaluation and patient exposure to risk factors, being an important instrument for the serological screening and infection follow up. **E-mail:** tinaraleila@hotmail.com

Syphilis006- **Application of Western blotting as supplementary method to confirm the presence of IgG and IgM anti-*Treponema pallidum* antibodies in discordant results or with doubtful clinical value in syphilis serology**

Galiano, CM; Kanunfre, KA; Ferreira, AW.
Seroepidemiology and Immunobiology Laboratory - Tropical Medicine Institute, University of Sao Paulo, Sao Paulo, Brazil

Introduction: Despite the efficacy of penicillin for the treatment of syphilis has been well established through over 50 years of clinical experience, syphilis remains a public health problem worldwide. Congenital syphilis, a consequence of infection during pregnancy, results in serious adverse outcomes in up to 80% of cases and is estimated to affect over 1 million pregnancies annually.   An early diagnosis and prompt treatment of pregnant women, is a recommendation of STD control programs adopted in many countries and approved WHO. Non-treponemal and treponemal tests are currently used for

screening, diagnosis and management of syphilitic patients. Limits of sensitivity and specificity of different tests are responsible for the discrepant results, which associated with failures in the correct interpretation of the results lead to problems in the follow up of patient, in pregnant women and in blood donors with positive sera. In this study we analyzed the diagnostic performance of the Western blotting IgG anti-Treponema pallidum (WBTp IgG) as a supplemental test to confirm the presence of antibody reagents in the conventional serology of syphilis in serum samples from blood banks and evaluate the clinical value of results WBTp of IgG and IgM in neonatology services. **Material and methods:** We tested 400 serum samples from blood donors (G1) previously screened at the blood bank by treponemal test (ELISA 1) and latter analyzed by non-treponemal test (VDRL), by enzyme immunoassay (ELISA 2) and by indirect hemagglutination (TPH), and 58 paired sera from mothers and newborns (G2) with suspicion of syphilis, for WBTp IgG and WBTp IgM. **Results:** Antibodies in the group G1 were detected in 364 (91%) serum samples by VDRL; 350 (87.5%) serum samples by enzyme immunoassay - ELISA 2 and 212 (53%) serum samples by hemagglutination - TPHA. To confirm the presence of the antibodies we applied IgG WBTp IgG that was positive in only 199 (49.75%) serum samples. In group G2, IgG antibodies was detected in 15 (51.72%) serum samples from 29 mothers, confirmed by WBTp IgG reactivity. IgM antibodies were detected in 3 (10.34%) serum samples of 29 newborns. **Conclusions:** When using only conventional serological tests for syphilis we observed discrepant results that were confirmed by WBTp IgG. To diagnosis congenital syphilis, our results showed the importance of the WBTp IgM as a good serological marker in the congenital disease. **E-mail:** claudiagaliano@usp.br

TRACHOMA

Trach001- **Epidemiological Study of Trachoma in The State Ceará-Brazil, 2010**

1.Silva, R. M.; 2.Filho, C.J.C.; 3.Lima, M.L.L.; 4.Pinheiro, K.M.P.; 5.Vilar,D.C.F.; 6.Evangelista, C.M.N.
Health Secretary of State Ceará-Fortaleza, Brazil

Introduction: Trachoma is a chronic ocular pathology, characterized by a high keratoconjunctivitis, of great importance on public health as a cause of discomfort, visual impairment and blindness. It has the bacterial etiology Gram negative Clamydia trachomatis, the serotypes A, B, Ba, C, are more related to the disease. It has universal distribution, afflicting the population with human development index (HDI) below. Goals: Carry out the epidemiological study of Trachoma in the cities considered at risk, to identify, deal with the cases, do educational actions and control risk factors related to morbidity in the locality, in order to eliminate trachoma as a cause of blindness. **Material and methods:** The methodology used was an epidemiological survey of students enrolled in public schools of elementary education from 1st to 5th year, from programmed municipalities and search for cases among school staff and family contacts. The diagnosis was exclusively clinical with examinations external ocular, by standardized examiners for identification of trachoma in all clinical forms. External ocular examination was carried out on the population to diagnosis of clinical forms defined by the World Health Organization (*Trachomatous inflammation-follicular* (TF) and *Trachomatous inflammation-intense* (TI), *Trachomatous conjunctival scarring* (TS), *Trachomatous trichiasis* (TT) and corneal opacity (CO)), eversion of eyelids and counting of the upper tarsal conjunctiva follicles using binocular loupe with pala and 2.5 times and use of natural lighting**. Results:** 80,908 examined people aged 1 to 70 years, in 34 municipalities (18.47%) of Ceará. Confirmed cases 2,443 all clinical stages: *Trachomatous inflammation-follicular* (TF), 2,415 (98.85%); *Trachomatous inflammation-intense* (TI),5 (0.02); *Trachomatous conjunctival-*scarring (TS),13 (0.53%); *Trachomatous trichiasis* (TT) ,11(0.45%); Corneal opacification (CO), 4 (0.16%). The prevalence was 3.02% in relation to population examined 80,908, and 10.70% among the family contacts**. Conclusion:** Results of school survey and active pursuit of family contacts with case detection rate of trachoma for all clinical forms ranging from 98.85% to 0.16%, indicates that trachoma is cause of visual impairment and blindness in the population sample of 34 municipalities investigated. The found rate of 10.70% in family contacts alerts that the school survey methodology is not appropriate and should be replaced by Household Survey, with mass treatment of families and control of risk factors related to trachoma, as basic sanitation actions, educational actions for prevention and control of vectors, especially *domestica*

and *hippelates sp* fly (lick eyes). **Email:** homaharuo@terra.com.br, romana.marques@saude.ce.gov.br; cjcfilho@hotmail.com;lourdes.lopes@saude.ce.gov.br;.katariny.pinheiro@uol.com.br,dina.cortez@saude.ce.gov.br;.clara.nantua@saude.ce.gov.br;

Trach002- **Prevalence of chlamydia trachomatis among women infected by HIV attending the Institute of Tropical Medicine in Amazonas, Brazil**

Silva, LCF, Miranda, AE, Batalha, RS, Sabino, Carolina, Dib, ECD, Costa, CM, Talhari, S. **Clinica de AIDS, Instituto de Medicina Tropical do Amazonas, Manaus, Brazil.**

Background: *Chlamydia trachomatis* (CT) is one of the world's most frequent sexually transmitted infections (STI), having great impact on sexual and reproductive health. **Objectives:** to describe clinical profile of and the prevalence of CT infection in HIV women attending the Institute of Tropical Medicine in Manaus, Amazonas, Brazil. **Methods:** A cross-sectional study performed among women attending the AIDS clinic from March to December 2010. They were invited to take pat in the study and answered an interview including demographic, behavioral and clinical data. They underwent in a gynecological examination where it was collect a cervical sample for diagnosing CT by hybrid capture.
Results: A total of 330 women were included in the study. Median age was 32 (Interquartile range (IQR): 27; 38) years and median of schooling 9 (IQR: 4; 11) years. Prevalence rate of CT was 4.5% (CI95% 2.3% - 6.7%). Median of first sexual intercourse was 16 (IQR: 14; 17) years and 53.9% were married or reported a stable partner. A total of 70.9% reported regular use of condoms in the last year. Risk factors reported were: injecting drug use (1.2%), no-injecting drugs (15.2%), previous STI (32.4%), commercial sex workers (16.4%), more than one partners in the last year (12.7%) and in life (94.5%). Regarding clinical symptoms, 51.1% reported chronic pelvic pain, 55.2% vaginal discharge, 23.0% dysuria and 10.0% genital bleeding. CD4 counts were more than 500 cells/mm3 in 21.8% and viral load were less than 1,00 copies/mm3 in 55.2%. In the final model of logistic regression the only variable remained was having more than one partner in life. **Conclusions:** Health programmes need to pay attention to the need to screen for easily curable sexually transmitted infections, such as *Chlamydia trachomatis,* in populations that are more vulnerable and at greater risk, as women living with HIV. **E-mail:** leilac@fmt.am.gov.br

Trach003- *Clamydia trachomatis* **prevalence and risk factors related to infection in women from Southern Rio Grande do Sul, Brazil**

Scaini, JLR; de Oliveira, MWB; Garcês, AX; Teixeira, LO; Barral, MFM; Germano, FN; de Oliveira, GR; Gonçalves, CV; Da Hora, V.P;Martinez, AMB.

Introduction: *Chlamydia trachomatis* is a gram-negative bacterium that causes one of the most prevalent Sexually Transmitted Infections (STIs) in the world. According to the World Health Organization, the annual incidence of the disease is more than 96 million cases, mostly in developing countries, affecting mainly young women. There are no studies documenting the actual situation of this infection in Brazil. About 70% or 80% of the women infected by *C. trachomatis* are asymptomatic, making it difficult to diagnose and facilitating the disease evolution and transmission. This study aimed to determine the prevalence of *C. trachomatis* and the socio-demographic factors associated with the infection in women treated at the University Hospital of Rio Grande, Rio Grande do Sul, Brazil. **Material and Methods:** Endocervical secretion samples were collected from 215 patients in the University Hospital's Clinic of Gynecology and Obstetrics from September 2008 to December 2011. The samples were stored in TE buffer (Tris-EDTA) at -20°C and DNA was extracted and used as a template for PCR. Fragment of 281bp from *C. trachomatis* genome were amplified by PCR and sequenced. **Results**: On the 215 studied patients, 42.67% were 35 years or more, 63.51% were white skinned, 59.86% lived with a partner, 73.57% had nine or more schooling years and 40.74% had family income less than three minimum wages. Four risk factors were significantly associated with infection by *C. trachomatis*, such as education, women who had eight or less schooling years had a higher prevalence of infection by *C. trachomatis* (p <0.001). The second factor was the family income, women living with up to a monthly minimum wage presented higher prevalence of *C. trachomatis* (p = 0.005). The third factor was the age of the first sexual experience, women who had first intercourse when 15 years old or less had a higher prevalence of this

STI (p = 0.04). Finally, prevalence of *C. trachomatis* was higher when combined with HIV (p < 0.001). It was demonstrated by PCR that 11,6% of the patients were infected with *C. trachomatis*. Sequencing was performed to confirm genetic identity. **Conclusions:** The prevalence for *C. trachomatis* found in the studied population, using PCR, demonstrates the importance of this STI's diagnosis, considering the fact that this test is not part of laboratory routine. Furthermore, we observed that none of the patients had symptoms, allowing us to infer that *C. trachomatis* prevalence is being underestimated. Genotyping of these samples will be determined.

Trach004- **Prevalence of *Chlamydia trachomatis* infection in young pregnant women attended at a public maternity hospital in Para, Brazil**

Vaz JO[1,2], Souza IRA[2], Sousa MS[2]
[1] Fundação Santa Casa de Misericórdia do Pará, Belém Pará, Brasil. [2] Universidade Federal do Pará, Belém, Pará, Brasil.

Introduction: *Chlamydia trachomatis* is responsible for approximately 90 million new annual cases of sexually transmitted infections worldwide and can cause ectopic pregnancy, infertility, cervicitis, endometritis, salpingitis or pelvic inflammatory disease in women. Infection by perinatal exposure occurs in approximately two thirds of infants born to infected mothers. The transmission occurs during delivery causing inclusion conjunctivitis that develops within two weeks after birth and can cause pneumonia if untreated. The absence of symptoms in about 70% to 80% of infected women is extremely difficult to confirm the diagnosis of infection and need to estimate the prevalence of this infection in young pregnant women in the State of Para. **Material and Methods**: A cross-section of low and high risk pregnant women, 18-24 years, was investigated in the period between December 2009 and March 2010 at the maternity of Fundação Santa Casa de Misericórdia do Pará. Urine samples were collected during hospitalization and immediate postpartum and analyzed by PCR for identification of the bacteria under study. This study is part of a national multicenter research occurred between July 2009 and March 2010. **Results**: The genome of *Chlamydia trachomatis* was identified in 22 (18.96%) of the 116 urine samples investigated. Factors such as the presence of early sexual activity, younger age, non-use of contraceptive methods, constant change of sexual partners had a positive association for infection. **Main Conclusions**: The prevalence of *Chlamydia trachomatis* was higher than other samples of pregnant women in multicenter study of Brazil with high prevalence and signaling the need for ongoing monitoring and treatment of infected pregnant women. **E-mail::** jorgevaz@ufpa.br

Trach005- **Prevalence of trachoma in patients of the outpatient clinic of the Instituto Evandro Chagas, Pará State, Brazil**

Favacho, J.F.R.[1]; Cordeiro, M.F.[2]; Cardoso, B.S.[2]; Costa, J.A.[2]; Ramos, F.L.P.[1]; Nogueira, J.F.C.[1]; Ferreira, D.S.[1]; Menezes, M.P.C.[1]
[1] Instituto Evandro Chagas-SVS/MS, Ananindeua, Pará, [2] Secretaria de Estado de Saúde Pública do Pará

Introduction: Trachoma is an infectious disease of intra-familial transmission in poor areas due to the possibility of eye-to-eye dissemination of the bacterium *Chlamydia trachomatis*. It is the main cause of preventable blindness worldwide. Although its eradication is expected to be achieved by 2020, the health care policies against the disease have been insufficient in Pará State, Brazil. In the past ten years the Instituto Evandro Chagas (IEC) has provided support for Brazil's Ministry of Health (MS) in surveys, routine laboratory diagnosis, research and specific training programs. The WHO epidemiological indicators for the certification of blinding trachoma eradication are: reduction in the prevalence of trachomatous trichiasis to less than 1 case per 1,000 inhabitants, and reduction in the prevalence of active trachoma to less than 5% in children aged 1-9 years in all communities and districts. **Objectives:** To report the prevalence rates of trachoma in Pará State among patients referred to IEC for survey of *Chlamydia*. **Material and methods:** The laboratory diagnosis of patients with trachoma from various locations in Pará was performed from 2003 to 2012. They were surveyed by the STD/Trachoma laboratory staff and their demographic and domestic data were inserted in an MS inquiry/active search worksheet. A more sensitive technique (IF) using fluorescein-conjugated antibodies to determine antigen-

antibody interaction was adopted. **Results:** This study revealed clinical disease and active infection with follicular trachomatous inflammation (TF) in 194/305 (66.3%) surveyed individuals, including the patients' contacts, all ranging from 5 to 80 years old and of both sexes. Laboratory tests resulted positive in 98/194 (50.5%) of the individuals. The most frequent symptoms were eye redness, itchiness and watery eyes, followed by a feeling of sand or a foreign object in the eye. However, there are factors that favor the development of allergies in the equatorial climate. **Conclusions:** The high prevalence reported confirms the high circulation of the agent in Pará State, and the need for supportive actions by state and municipal health managers in order to implement joint policies previously planned by state authorities in favor of its population. We recommend these health care actions, such as mass treatment and active search for cases, with the purpose of reducing the circulation of *Chlamydia* in our region. **E-mail:** joanafavacho@iec.pa.gov.br

DIVERSE BACTERIAL DISEASES

Bact001- **Human brucellosis associated to the presence of seropositive animals at slaughterhouses in Varzea Grande-MT**

Azevedo, J. B.[a1]; Possamai, A. J.[1]; Santos, L. C. G.[1]; Azevedo, J. B.[1]; Mello, C. A.[1]; Nociti, D. L. P.[1].
[1] Faculty of Agronomy and Veterinary Medicine - Federal University Of Mato Grosso – Cuiabá – Mato Grosso – Brazil.

Introduction: Human brucellosis is a systemic zoonotic disease caused primarily by the bacterium *Brucella abortus*, in the man is associated to presence of bovine cattle, sheep, swine, dogs and others animals that are considered disease reservoirs. The symptoms are fever of variable duration, weakness, malaise, weight loss and headache, in some cases there may be oozing of organs, osteo-articular complications, orchitis and bacterial endocarditic, have treatment, but it is protracted and costly. The contamination forms are by ingestion of raw milk and their derivatives without processing, contact with: tissues, blood, urine, vaginal secretions, placenta remains, aborted fetuses and among others. There is not horizontal transmission capacity in men. Brucellosis in Brazil is associated to people who work with animals, characterized as an occupational disease of workers of the slaughterhouses and veterinarians. It is compulsory the vaccination of bovine female between 3 and 8 months for brucellosis and all animal suspected or confirmed of being bearer of this illness should be slaughtered separately in slaughterhouses, and it must be notified in advance so they can be taken all preventive measures both to protect their employees and for food security This study has a goal evaluate the animals positive presence for brucellosis in slaughterhouses, thus assessing the risks of infection of workers. **Materials and Methods:** Between June and December 2011 were collected 300 samples of bovine blood in three slaughterhouses of the Várzea Grande, 116 males and 184 females. The Blood was collected in tubes without anticoagulants and identified. The amount of blood was approximately 5 to 10 mL. The material was sent to the Infectious Disease Laboratory of the Veterinary Hospital of Federal University of Mato Grosso, in isothermal box with ice recyclable accommodated in grids, keeping upright and then they were centrifuged to serum obtainment. Serum was transferred to micro test tubes of 1, 5 mL for the test. The Agglutination tests with buffered acidified antigen (TAA) were used as a screening method. **Results:** We diagnosed 18 seropositive animals, 16 females and 2 males and all females were vaccinated. **Conclusions:** Should be more oversight for authorities related to vaccination and that positive animals must be disposed of properly so they do not threatens the health of these professionals, What did not occur in the three here analyzed slaughterhouses, facilitating the employees to have some contact with the bacteria without some form of protection. **E-mail:** jaquelinebruning@hotmail

Bact002- Transmission of brucellosis in slaugtherhouse workers and milkers in the municipality of Monteria, Cordoba, Colombia

Quintero G.,[1] Calderón A.,[2] Rodriguez V.,[1] Barrios C.[1] Yasnot MF.[1]
[1] Grupo de Investigaciones Microbiológicas y Biomédicas de Córdoba, GIMBIC, Universidad de Córdoba. Montería, Córdoba, Colombia, [2] Instituto de Investigaciones Biológicas del Trópico, IIBT, Universidad de Córdoba, Montería, Córdoba, Colombia.

Introduction: Brucellosis is a bacterial zoonosis, considered occupational disease. In Colombia there are few studies of transmission to humans with temporally and geographically isolated data. The people risk group is composed by slaughterhouse workers, milkers, veterinarians and bacteriologists who process the samples in the laboratory. Traditionally, the diagnosis has been made by Rose of Bengal and confirmed by competitive ELISA or isolation of pathogen. The Rose of Bengal test is not sufficiently specific (54%), the competitive ELISA is very expensive and pathogen isolation is time-consuming and delayed. **Objective:** Establish the prevalence of brucellosis in slaughterhouse workers and milkers in the municipality of Monteria, Cordoba, Colombia. **Methodology:** Blood samples from 142 workers were analyzed by Rose of Bengal and competitive ELISA assay. A survey to determine the degree of knowledge and attitudes that have volunteers about the problem was applied. **Results:** It was found that 9 samples were positive by Rose of Bengal, these sample were confirmed by competitive ELISA. Only one positive sample was found by this method, corresponding to a prevalence of 0.7% of the studied population. **Conclusion:** The rate of brucellosis in the studied population is 704 per 100,000 inhabitants, despite the knowledge that about the brucellosis have both slaughterhouse workers and milkers. **E-mail:** gequinn2002@yahoo.es

Bact003- Lyme Disease - case reported in Santa Bárbara do Tugúrio Municipality, Minas Gerais State, Brazil, 2011

Soares, P. A.1; Duarte, H. H. P.1; Silva, M. H. S.1; Campos, R. V.2
1 - State Health Secretariat of Minas Gerais (SHS/MG), Brazil. 2 - Municipal Health Secretariat (SHS) of Santa Bárbara do Tugúrio, Minas Gerais, Brazil.

Introduction: Lyme Disease (LD) is caused by a spirochete, *Borrelia burgdorferi* (sensu latu), and transmitted by ticks of *Ixodes* complex. Clinical manifestations are varied and can occur as fever, malaise, and myalgia or even arthritis and neurological manifestations. Erythema migrans is considered a dermatological sign suggestive of LD. Outbreaks of LD are found in the United States, Europe, and Asia. In Brazil, a few isolated cases have been reported. On September 1, 2011, the SMS of Santa Bárbara do Tugúrio reported the occurrence of a suspected case of LD. The case was investigated and the probable site of infection was determined. **Material and methods:** analysis of medical records and interviews of patients and their families were performed. The event was recorded in the Information System of Notifiable Diseases - SINAN. An investigation report was prepared with the history, clinical findings, laboratory tests, and epidemiological data of the event. **Results:** female patient, 37 years, began with a sore throat, headache, myalgia and arthralgia on June 25, 2011. Medicine was used and symptoms receded. Four days later a rash started on the left lower limb, the center and edges were light red, and grew for days, reaching about 20 cm. On August 18, LD serodiagnosis by enzyme-linked immunosorbent assay (ELISA) was reactive: IgM = 24 u / ml (reference value> 17 u / ml) and IgG = 35 U / ml (reference value> 14 u / ml). The treatment, started on August 30, was performed with antibiotic therapy (amoxicillin) for 15 days with satisfactory evolution. Other relatives of the patient were not ill. Epidemiology: the patient and some family members traveled to the Netherlands (Balkbrug municipality, district Vinkenbuurt), from April to June, 2011. The family stayed in a residence, surrounded by a rural area, where three other people lived. Among them was a child, who was being treated for LD over the course of two years. The occurrence of LD was common in that region. **Conclusions:** In Brazil, LD is a difficult disease to be diagnosed, because its occurrence is sporadic, frequently imported, the clinical manifestations have great variability, and there's still a lack of standardized case definition. The presence of erythema migrans reinforces the suspicion. Furthermore, epidemiological data are important, as are the recent travels of the patient. This case presented compatible symptoms, erythema migrans, and the presence of IgM and IgG

antibodies against *Borrelia burgdorferi.* The case was classified as imported LD, and the municipality of Balkbrug, Netherlands, the probable site of infection. **E-mail:** patricia.asoares@gmail.com

Bact004- **Reemergence of Pertussis in the State of Bahia**

[1]Lino MCP, [1]Santos RM, Guirra MF[1], Jesus SL[2]
1Secretaria Health of the State of Bahia, [2] University of the State of Bahia

Introduction: Despite the high vaccination coverage achieved after pertussis vaccination strategies in developed countries, the disease caused by Bordetella pertussis, which has the human and natural reservoirs, remains a public health problem with increasing incidence every 2 to 5 years. **Materials and Methods:** A descriptive study from retrospective data collected in the Information System for Notifiable Diseases (SINANNET/TABWIN) from January 1st 2007 to December 31st, 2011 was conducted. Age, vaccination status, vaccination coverage and criteria for confirmation were analyzed on all confirmed cases of pertussis. Rates, means and frequencies were calculated. **Results:** There was an increase in the number of confirmed cases of Pertussis in 2011 compared to previous years. Of the 256 total cases in the study period, 162 (63.3%) occurred in 2011 representing an 84% increase to 2010. The age group under 1 year had the highest risk of disease (81 cases,I= 39/100.000 inhabitants), followed by age groups: 1 to 4 years (21 cases,I= 2.5/100.000 inhab.), 5 to 9 years (7 cases,I= 0.6/100.000 inhab.), 10 to 14 years and 15 to 19 years (11 cases,I= 0.8/100.000 inhab.), respectively; 20 to 29 years (14 cases,I= 0.5/100.000 inhab.), 30 to 39 years (6 cases,I= 0.3/100.000 inhab.), 40 to 49 years (6 cases,I= 0.4/100.000 inhab.), 50 to 59 years (6 cases,I= 0.3/100.000 inhab.) and 60 to 69 years (2 cases,I= 0.1/100.000 inhab.). Of the total 81 cases that occurred on children under 1 year, 46 (56.8%) were not vaccinated or lacking information and 30 (37%) were less than two months. Among children between 10 and 19 years in 59% of the cases the vaccination status was ignored, 9.1% had received 3 doses, 9.1% three doses and 1 booster and 22.7% three doses and 2 boosters. Among those over 20 years, 27 cases (79.4%) had vaccination status unknown. Vaccination coverage in children under 1 year was above 95% between 2007 and 2010 and in 2011 decreased to 94.2%. 52 cases (32.1%) were confirmed by laboratory means, 54 cases (33.3%) by clinical and epidemiological study, 54 cases (33.3%) by clinical assessment and 1 (0.6%) by unknown mean. **Conclusion:** There was an increase in the number of pertussis cases in 2011, a situation not observed in previous years. The resurgence of pertussis in the state of Bahia may be associated with raising occurrence of carrier state among adolescent and adult individuals, which could serve as potential transmitters for infants, or it may represent an improvement of epidemiological surveillance system to detect suspected cases by health professionals. It is recommended the introduction of the vaccine adsorbed diphtheria, tetanus and pertussis adult type (dTpa) in the routine vaccination schedule of adolescents and adults as a strategy to reduce transmission of B. pertussis among those less than 1 year of age. **E-mail:** melpessanha@ig.com.br

Bact005- **Plague: potential threat? Epidemiological surveillance in Minas Gerais state, 2007 to 2011**

Leal, E.A.[1]; Correia, M.A.[1]; Sousa, G. G. R.[1]; Oliveira, M. A. A.[1]; Temponi, A. O. D.[2]
[1]Laboratório Central de Saúde Pública de Minas Gerais (LACEN-MG), Belo Horizonte - MG, Brasil. [2]Secretária de Estado de Saúde de Minas Gerais, Belo Horizonte - MG, Brasil.

Introduction: The Plague, a neglected disease that offers occupational risks and is a potential agent of bioterrorism remains an unfamiliar disease to society, health professionals and governments. It is an infectious disease of wild rodents, usually transmitted by the bite of fleas infected with *Yersinia pestis.* The World Health Organization defines the plague as a reemerging disease that requires permanent surveillance in outbreaks. In Brazil there are natural outbreaks in the Northeast, in Minas Gerais and in Rio de Janeiro. In the laboratory context, the detection of antibody against *Yersinia pestis* is widely used in the diagnosis of human cases, as well as in monitoring the plague among rodents and serologic survey for delineation of outbreaks. In areas where there is no evidence of recent plague, the carnivores (cats and dogs) can be tested serologically as indicators-sentinels of the presence or absence of the plague between rodents. The intimate relationship between man, dogs and cats confirms the importance of

monitoring the plague in these species. The aim of this paper is to analyze the prevalence of specific antibodies against *Yersinia pestis* in domestic carnivores from pestigenas areas of Minas Gerais in order to emphasize the importance of monitoring these animals in the routine plague control program (PCP). **Material and Methods:** The serological samples from dogs, cats and rodents were collected by PCP teams in the municipalities belonging to Jequitinhonha and Rio Doce's Valleys. At Laboratório Central de Saúde Pública de Minas Gerais (LACEN-MG) the seras were analyzed by Indirect Haemagglutination technique for the detection of antibodies against the antigenic fraction (F1) of *Yersinia pestis*. The samples that presented titles >1/16 were tested to the Haemagglutination Inhibition test. Samples that showed titles >1/16 between Indirect Haemagglutination and Haemagglutination Inhibition were sent to the National Reference Laboratory for confirmation of positive result. **Results:** From 2007 to 2011, 8525 seras were received: 8365 from dogs, 122 from cats and 38 from rodents. In 2008 six positive serology results were found in dogs from the municipalities of Itinga - Gerência Regional de Saúde (GRS) of Pedra Azul; Rubelita, Fruta de Leite and Salinas - GRS of Montes Claros. In 2011, eight positive serology results were found in dogs from the municipalities of Novorizonte - GRS of Montes Claros; Francisco Badaró - GRS of Diamantina; Itanhomi and Capitão Andrade - GRS of Governador Valadares. **Main conclusions:** The occurrence of positive serology results in animals in LACEN-MG shows that the infection is maintained in the outbreaks that happen in the state and come back to reach man in its epidemic form. Therefore, it is necessary to maintain the surveillance activities in the state in order to avoid the spread of the disease among human populations. **E-mail:** elida.leal@funed.mg.gov.br

Bact006- **Survey of positive serology for plague in carnivores in the state of Bahia, 1990 to 2010**

Leite JL, Freitas PPG, Saavedra RC
State Health Secretariat of Bahia / Department of Epidemiological Surveillance

Introduction: The plague, infectious disease millennial caused by the bacterium *Yersinia pestis*, is in essence a zoonotic disease of rodents, considered reservoirs of infection. However, the man can be infected when invade that ecosystem. Nowadays the plague can be considered a rare disease due to lack of human cases in Brazil, then unknown of people. However, this is a dangerous disease with great power of expansion and a huge epidemic potential, making it necessary to be included among the diseases subject to International Health Regulations, which requires notification of occurrences of human plague, epizootic and infected areas, as well as implementation of measures to control rodents in ports and international airports. **Materials and Methods**: The analysis was based on secondary data by reporting the occurrence of positive serology in dogs, cats and rodents were identified by month and year, cities and localities that presented positive samples in the period 1990 to 2010, which was subdivided into two intervals, 1990-2000 and 2001-2010. The study areas were the focus of the Planalto Oriental, Chapada Diamantina, Serra do Formoso, Pielmonte da Diamantina and Planalto da Conquista. **Results**: The survey showed that from 1990 to 2010 there were 209 positive serology: 200 (95.6%) of dogs, 07 (3.3%) of cats and 02 (1.1%) of rodents. These tests occurred in 44 cities and 177 locations. It was observed that the years in which there was a higher number of positive serology were 1990, 1992 and 2002. The study also showed that 62% positivity occurred between the months July to October because there is greater movement of the bacterium during this period. The focus with greater frequency of positive serology was the Planalto Oriental, with 108 positive serology: 101 dogs, 06 cats and 01 rodent, occurred in 19 cities and 89 locations. In the Chapada Diamantina region there were 10 cities and 34 locations with 38 positive serology: 36 dogs, 01 cats and 01 rodent. Note also the region of Peilmonte Diamantina with 25 positive serology of dogs, occurred in 05 cities and 23 locations **Conclusions**: Despite evidence of the decline of seropositivity in carnivores every year, maintaining an active and ongoing remains the best option to avoid a new disease establishment in Bahia**. E-mail:** jadleal@yahoo.com.br

Bact007- **Clinical evaluation of melioidosis in Ceara, Brazil**

Campelo, C.P.B., Lopes, E.M.S., Mota, M.A.L, Menezes, R.A, Maciel, N.L, Vilar, D.C.F.L, Rolim, D.B.
Universidade de Fortaleza, Fortaleza, Ceará, Brazil.

Introduction: Melioidosis is a disease caused by *Burkholderia pseudomallei,* a Gram-negative rod found in water and soil. It is considered endemic in Thailand and in Northern Australia. Recent studies demonstrate that it may also be endemic in the Northeast of Brazil. In Ceará State, the first diagnosed case was reported in 2003. The clinical presentation is variable and the spectrum of the disease is wide. It can range from severe fulminant acute disease, with sepsis and pneumonia, to chronic infection and asymptomatic. The aim of this study was to evaluate the cases of Melioidosis reported in the Ceara State up to March 2012. **Methods:** This is a descriptive, longitudinal and prospective study conducted from 2003 through 2012 in the Ceara State of the 18 cases reported during that period. The data was obtained from the Epidemiology Service of SESA and hospitals. The data was collected by chart review and interview of patients and family members. **Results:** 18 cases were identified up to March 2012 in 12 different municipalities, with 11 deaths reported (61%). At least one risk factor or associated condition was identified in 8 cases (44.4%), mainly alcoholism and diabetes. Pulmonary manifestations were reported in all cases, with 10 cases of acute infection (45.5%) and 8 cases of chronic infection (44.4%). All the cases of acute infection were associated with sepsis and 9 of those developed septic shock. Other manifestations included: 1 case of splenic abscess, 2 cases of chronic skin manifestations, 1 case of septic arthritis. Aorta aneurysms, possibly infected, were identified in 2 cases. Specific treatment (meropenem or ceftazidine) was administered in 10 cases and 7 of those survived. Of those 7 cases, 6 had chronic disease and 1 had acute disease without septic shock. The remaining 3 patients treated had septic shock and died. The profile of Melioiosis in the Ceara State was similar other known endemic areas with variable clinical presentation. Its presentation ranged from acute severe disease to chronic disease, which can mimic tuberculosis, as well as compromising several organs. As also reported in Australia, we found that septic shock was a major determinant of death. Aorta aneurysm is a rare manifestation in endemic areas and since it was identified in 2 out of 18 that may suggest that the other more common manifestations are more prevalent than currently known. **Conclusion:** This study highlights the importance of epidemiology surveillance to allow early diagnosis and specific therapy in order to reduce mortality. It is necessary to include Melioidosis in the differential diagnosis of patients with environmental exposure and that present with community acquired infections severe or that do not respond to conventional treatment. Since the lung is the most affected organ, special attention should be given to pulmonary infection. However, attention towards the other clinical presentations of the disease should not me neglected. **E-mail:** camilapontesb@hotmail.com

Bact008- **Epidemiological aspects of melioidosis in Ceará**

Freitas, I.A[1]., Lima, M.C[1]., Studart, L.M[1]., Ribeiro, A.L.R[1]., Barbosa, P.R[1]., Guedes, A. N[1]., Vilar, D.C. F. L[2]., Rolim, D.B[1,2].
Universidade de Fortaleza e Secretaria da Saúde do Ceará, Fortaleza, Brazil.

Introduction: Melioidosis is an endemic infectious disease of Southeast Asia and North Australia caused by the bacterium *Burkholderia pseudomallei*. Since 2003, when the first outbreak happened in Northeast Brazil, 18 cases have already been confirmed. Melioidosis is acquired by inoculation or inhalation with contaminated soil and surface water. Other unusual modes described are: aspiration, ingestion, occupational exposure in laboratories and vertical transmission. The objective of this study is to approach the epidemiological aspects of melioidosis in Ceará, specially, those related to transmission and risk factors. **Methodology:** This study was written by doing a literature review of 18 cases described in Ceará and the main articles published in Pubmed and Medline, using as descriptors: Melioidosis, Epidemiology, and Transmission. **Results:** Fifteen male and three female patients were infected by the disease. Age varied between 7 and 68 years, with 6 patients ≤ 15 years. At least one risk factor or associated condition was identified in 10 cases (44,4%): alcohol abuse (7), diabetes (3), hemoglobinopathy (2), HIV infection (1) and common variable immunodeficiency (1). The association with risk factors or other conditions is evident in endemic areas. However, it is important to know, that melioidosis may occur without risk

factors, which is also observed in Ceará. In regard to exposure, 8 cases (44,4%) were related to recreative activities; 7 (39%) to occupational exposure, specially with farmers; 2 cases (11%) to car accidents, in which the infections probably occurred by aspiration of contaminated water, and in 1 case (5,6%) to a paraplegic patient who crawled on the ground. In endemic areas, inoculation through small skin wounds in contact with contaminated water or soil has been greatly described, especially among rice farmers. Nonetheless, other kinds of exposures, during ecotourism or recreation may also cause infection. An important aspect observed in Ceará was the occurrence of two cases of transmission by aspiration acquired by drowning, a situation rarely described in endemic areas. This may indicate that other common forms of transmission may be even more prevalent than it is currently known. Among 75 to 80 per cent of cases in endemic regions, it is observed a strong association between monsoonal rains with melioidosis, causing infection by inhalation of aerosols. In Ceará, two cases probably occurred by inhalation of aerosol particles from a waterfall during recreative activities. **Conclusion:** Diagnosis of melioidosis must be considered in people exposed to the environment, especially when risk factors are involved. Besides of occupational exposure, especial attention should be given to recreative and sportive activities, particularly in tropical regions, such as the Northeast Brazil and other regions of the country. **E-mail:** ingrid_afreitas@hotmail.com

Bact009- **Bartonella spp infection diagnosed in 2011 by the national rickettsial reference laboratory in Rio de Janeiro, Brazil**

Favacho, A.R.M1; Gomes R1; Pessoa JR., A.A1; Almeida E.B1, Napoleão, F2.; Bezerra, I.O3.; Suzuki, S.L4 E Lemos, E.R.S1.
1-Laboratório de Referência para Hantaviroses e Rickettsioses, Instituto Oswaldo Cruz, FIOCRUZ/RJ; 2-Laboratório Central Noel Nutels–LACEN/RJ; 3- Secretaria de Saúde do Estado do Rio de Janeiro/RJ; 4-Coordenação Geral de Laboratórios de Saúde Pública-CGLAB, Ministério da Saúde, Brasília-DF.

Introduction: Bartonellae are gram negative bacteria that parasitize erythrocytes and endothelium of several mammals, being widespread in nature. Currently, 23 species belong to Bartonella genus and 13 species are related to human infections, especially B. bacilliformis, B. quintana and B. henselae. Its main source of infection to humans is the domestic cat. Bartonella infection is not notifiable, and no national data is available regarding its pathogenesis in Brazil. The aim of this study is to describe the cases referred with a possible diagnosis of bartonellosis to the National Rickettsial Reference Lab (LNHR) in Rio de Janeiro in 2011. **Material and Methods:** From the database, suspected cases of bartonellosis sent to LRNR were evaluated for the laboratory diagnosis. For the serological test was used BION® commercial kit for the indirect immunofluorescence assay (IFA) for detection of anti-B. henselae IgG. The diagnosis of bartonella infection was considered definite when paired samples showed a 4-fold difference in titers. For molecular analysis was performed polymerase chain reaction (PCR), using the pair of oligonucleotides (CAT-1/CAT-2) which amplifies a fragment of 414 bp of the heat shock protein (htrA gene), for B. henselae and B. quintana. **Results:** In the period from January 1 until December 31, 2011, 159 biological samples related to 63 patients, with the mean age of 26.4 years, with the clinical suspicion of bartonellosis were analyzed and, 27 (43%) were reactive by IFA assay and 1 was PCR positive (IFA negative patient). All patients, from Rio de Janeiro and Espirito Santo states, referred contact with pets, mostly cats. Fourteen were male and the most prevalent signs and symptoms were fever and chills (38/60%), adenopathy (24/38%), prostration (17/27%), headache (18/28%) and conjunctival injection (9/14%). Five patients presented decreasing of visual acuity. **Conclusion:** An increase of bartonellosis in immunocompetent patients has been reported in the last decade in Brazil. This demonstrates the greater medical awareness in the suspicion of the possibility of Bartonella as infectious agent in our territory. The bartonellosis has been most often confirmed using serologic methods in Brazil; however molecular assay can and must be used to identify Bartonella species associated with human disease and to help physicians to identify the infection at early stages. **E-mail:** afavacho@fiocruz.br

Bact010- **Bartonellosis caused by *Bartonella henselae* in an HIV-positive man, the first case confirmed by molecular analysis in the state of Rio de Janeiro, Brazil**

Favacho A.R.M[1]; Kitada A.A.B[2]; Roger I[3]; Varon A[3]; Gomes R[1]; Pessoa Jr., A.A[1]; Barreira JD[1]; Pereira SA[2]; Lemos ERS[1].
[1]Laboratório de Hantaviroses e Rickettsioses, Instituto Oswaldo Cruz, FIOCRUZ; [2]Laboratório de Pesquisa Clínica em Dermatozoonoses em Animais Domésticos (Lapclin-Dermzoo), Instituto de Pesquisa Clínica Evandro Chagas, FIOCRUZ; [3]Instituto de Pesquisa Clínica Evandro Chagas; Rio de Janeiro-RJ, Brazil.

Introduction: Several species or subspecies of *Bartonella* have been recognized as agents of human disease, including *Bartonella henselae and B. quintana* that can cause cat scratch disease, fever of unknown origin, culture-negative endocarditis, osteomyelitis or angioproliferative lesions. Immunocompromised hosts are more susceptible to *Bartonella* infection which results in a more severe clinical picture as compared with the normal host. *Bartonella* species are transmitted from the natural reservoir, cat (*Felis catus*), usually via cat scratch or bite and less commonly by a vector such as cat fleas (*Ctenocephalides felis*) or ticks. The authors report the first case of bartonellose in HIV patient confirmed by molecular test in Rio de Janeiro, Brazil. **Case report:** A 34-year-old Brazilian man from Rio de Janeiro, presented high fever, drenching sweats, severe pain and enlarged regional lymph nodes on the right elbow, shoulder and neck associated with a diffuse erythematous rash on the trunk, after flea bites. Additional history of bitten on the thumb and scratched on the abdomen by his 7 months old kitten, 2/3 days before becoming ill was also obtained, The patient's medical history was notable for human immunodeficiency virus (HIV) infection and was treatment naïve with a CD4 of 224 cell count and viral load of 215857 copies/mm^3 at admission. Serum antibody testing for toxoplasmosis was IgG positive and tests for viral hepatitis, rickettsial infections and cytomegalovirus were negative. The epitrochelar lymph node was biopsied and the polymerase chain reaction (PCR) was performed using specific primers of *B. henselae* and *B. quintana*. The nucleotide sequence of the amplicon generated showed 100% identity to the homologous sequence of the *htr*A gene *Bartonella henselae* deposited at Genebank. The specific treatment with azithromycin was initiated and the patient recovered completely. Additionally the patient informed that the kitten, apparently healthy at the time of the incident, spent most of the time outdoors in contact with roaming cat. Serum sample and arthropods collected from cat were analyzed. Antibody against *B. henselae* was detected. Five arthropods (01 tick, 04 fleas) were PCR negative. **Conclusions:** Bartonellosis are under-recognized zoonosis in Brazil that must always be considered in the diagnosis of febrile manifestations in HIV patients with scratched, bite or a history of contact with animal. **E-mail:** afavacho@ioc.fiocruz.br

Bact011- **Cyanobacteria in water for human consumption in Pernambuco state, northeast Brazil, clinical and environmental risks**

1. Melo, N.G.D.O; 2. Souza C.C.B.S; 3. Mendes, A.R.M; 4. Gomes, C.T.S 5. Azevedo, J.B; 6. Ferreira, D.M; 7. Dhalia, C.B.C
Secretaria de Saúde de Pernambuco

Introduction: The increased discharge of domestic and industrial sewage into the environment without prior treatment may cause increased proliferation of microalgae and cyanobacteria. Several genera and species of cyanobacteria produce toxins (neurotoxins and hepatotoxins). In several countries, intoxications of human populations have been reported, caused by the consumption of water contaminated by toxic strains of cyanobacteria. In 1996, 130 chronic kidney patients in Caruaru, Pernambuco State, Northeast Brazil, displayed symptoms of hepatoxicosis. 60 died and cyanotoxin was identified in the water used for hemodialysis. Since then, the Pernambuco State Health Authority has monitored the presence of cyanobacteria in reservoirs for public water supply. Clinical evidence has recently been incorporated into the state environmental surveillance plan to provide input for prevention and control measures. **Objective:** To describe the clinical, epidemiological, environmental and laboratorial characteristics of an outbreak with evidence of the human consumption of water containing cyanobacteria. **Material and Methods:** A descriptive study was carried out on the basis of the investigation of an outbreak of gastroenteritis notified to the State Health Authority, by carrying out a

household survey in one municipality of the semi-arid hinterland, or *Sertão,* of Pernambuco State in September 2011. **Results:** 1,625 inhabitants were interviewed in 509 households and 130 patients identified (8.0%), in the period 24-27/9/2011. Of the total number of cases identified, 55.5% were under 15 years old. The predominant clinical manifestations were colic (88.5%) and diarrhea (83.8%). 26.2% of the cases were hospitalized and in 13 cases (38.2%) the blood collected did not prove reagent to hepatitis markers and the presence of the active toxin (cyanotoxin) was not detected. 6 rectal swabs were collected, the results of which were negative for *Salmonella sp, Shigella,* classic and invasive *Escherichia coli, Aeromonas, Vibrio cholera* and others. The outbreak was detected in a school environment and, following the investigation, the hypothesis of transmission from a common source was raised, food being rejected as a vehicle. 63.0% of the cases involved the consumption of water from the local reservoir, of which a laboratory analysis revealed the presence of cyanobacteria with a high level of cyanotoxins (51 micrograms of microcystin/L), when the maximum acceptable level is 1 microgram/L. **Conclusion:** The investigation of the outbreak showed the importance of the integration of the epidemiological, sanitary and environmental surveillance units in the early detection of cases and the identification of evidence not always suspected in clinical practice. This study highlights the need for a framework for the surveillance of clinical and environmental risks related to the presence of cyanobacteria in water for human consumption in Pernambuco State. **E-mail:** agudos.pe@gmail.com

Bact012- **Comparison between the pathogenic potential of *Listeria monocytogenes* strains isolated from clinical cases and foods through research of virulence genes**

Nunes, M. L. [1]; Silva, N. R. S. [1,2]; Costa, A. P. R. [1,2]; Leal, N. C[1].
1. Centro de Pesquisas Aggeu Magalhães, Fiocruz, Recife, Pernambuco, Brasil, 2. Universidade Federal de Pernambuco, Recife, Pernambuco, Brasil

Introduction: *Listeria monocytogenes* is a gram-positive bacilli that is able to survive and multiply in wide range of temperature and pH. It is a food-borne bacteria and causes listeriosis, a disease that can culminate in severe complications, such as meningitis and abortion. The infection process involves adhesion and invasion of phagocytic and non-phagocytic cells, vacuole escape, intracellular multiplication and intracellular spread, each of these steps being regulated by the product of specific genes. The presence of virulence genes related to various stages of infection as well as its regulator were researched in *L. monocytogenes* in order to evaluate the potential pathogenic of strains isolated from food and clinical cases in Brazil. **Material and Methods:** This study comprised 50 strains of *L. monocytogenes* serotypes 1/2a, 1/2b, 1/2c and 4b previously isolated, from which 30 were isolated from food and 20 from clinical cases. The genes *inlC,* associated with the bacteria internalization by host cells; *inlJ*, involved with the bacterium passage through the intestinal barrier; *iap*, encoding a protein associated with invasion; *plcA*, encoding a phospholipase, which aids in the destruction of the primary vacuole and *prfA*, the regulator of the majority of virulence genes, were researched. **Results:** The frequencies observed to the genes were: *prfA* (33,3% and 30%), *plcA* (56,6% and 55%), *iap* (53,3% and 55%), *inlC* (36,6% and 75%) and *inlJ* (46,6% and 80%) concerning food and clinical cases respectively. **Main conclusions:** There was no significant difference in frequency of *prfA, plcA* and *iap* genes among food and clinical samples, although the genes inlC and inlJ were more frequently indentified in samples from clinical samples suggesting that the presence of these genes may play a role in the pathogenesis of this bacterium. **E-mail:** marianunes@cpqam.fiocruz.br

Bact013- **Seasonal humidity can influence *Pseudomonas* infection rates**

Ramos GP[1], Rocha JL[1], Merlini AB[2], Tuon FF[1,2]
[1]Hospital Universitário Evangélico de Curitiba, Division of Infectious and Parasitic Diseases. Curitiba, Paraná, Brazil, [2]Universidade Estadual de Ponta Grossa, Departament of Medicine. Ponta Grossa, Paraná, Brazil.

Introduction: *Pseudomonas aeruginosa*, a non-fermenting Gram-negative rod, is distributed profusely throughout the environment, mainly in soil, decaying matter, water and vegetation. *Pseudomonas*

features amazing structural factors, toxins and enzymes, which increase its virulence, becoming, in the last years, an important and frequent hospital pathogen. Based on its widespread distribution, and on the existence of few studies, the objective of this study is to determine the correlation between seasonal climatic conditions and the incidence of *Pseudomonas aeruginosa* infections in a tertiary hospital in Southern Brazil. **Material and Methods:** Retrospective study involving all infections caused by P. aeruginosa from January 2006 to December 2010, obtained in a 660-bed tertiary-care hospital in Curitiba. The infection rates (IR) were calculated from registers of the Infection Control and Hospital Epidemiology Service. Infections were defined according to ANVISA criteria: urinary tract infection (UTI), hospital associated pneumonia (HAP), surgical site infection (SSI), bacteremia and catheter related infection (BSI), among others. Rates were grouped as infection per 10.000 patient-days. The seasonal variables include average monthly temperatures, relative humidity and precipitation. The correlations between seasonal variations and IR were determined by Pearson correlation coefficient. Linear regression was used to establish trends and multivariable linear regression was performed through the Poisson distribution. **Results:** 844 cases of *P. aeruginosa* infection occurred in 1.058.501 patient-days, during 1826 days (overall IR = 7,97/10.000 patients-days). The mean temperature in Curitiba was 18,2±2,8 ºC, relative humidity 80,3±3,6% and precipitation 104,7±64,38mm. Pearson correlation was significant when UTI and temperature (r = 0,29; P = 0,021), and precipitation (r = 0,27; P = 0,036) were evaluated. The correlation between HAP and precipitation (r = 0,29; P = 0,022), and relative humidity (r = 0,31; P = 0,013) was also significant. Through the linear regression and Poisson model, the relative humidity was associated with higher IR or other infections involving *P. aeruginosa*. Other variables were not predictive. **Main conclusions:** In accordance with the found results, climatic conditions can interfere in the infection rates caused by *Pseudomonas aeruginosa*. **E-mail:** alexandre_merlini@hotmail.com

Bact014- **Predictive factors for bacterial translocation and sepsis in mice subjected to total splenectomy**

Lima KM[1]; Magalhães, MGPA[2]; Magalhães PAF[3].
[1] Faculdade Estácio/FIR; [2] Universidade de Pernambuco; [3]Universidade Federal do Rio Grande do Norte, Brazil.

Objective: To investigate the presence of bacterial translocation (BT) and sepsis in splenectomized mice, and the presence of predictive factors such as weight, sex, changes in the digestive microbiota and duodenal mucosa. **Materials and methods:** Swiss Webster mice (*Mus musculus*) (20 females / 20 males) were divided into two groups: splenectomized (10 females / 10 males) and controls (10 females / 10 males). The groups were composed of animals born with 125 days, the first group that underwent conventional total splenectomy. After seven days, the animals were euthanized for study of TB, microflora and intestinal morphology. Body weight was performed on the day of splenectomy until euthanasia. For microbes, feces were collected from the middle of the small intestine. Segments of this region were cut for morphometric analysis. Samples of portal blood and peripheral, mesenteric lymph nodes and liver were cultured for the study of TB and sepsis**. Results:** Mice splenectomized males and females showed reduced weight gain, the 125th day of the 132th day (p <0.0001), also a greater prevalence of positive stool cultures in relation to the bacterial density by species and number of colony forming units (CFU). Morphometric analysis revealed duodenal villous height reduction in the splenectomized group, males and females, when compared to respective controls (p <0.0001 and p = 0.0185). Similarly, we observed reduction in the area of the villi of the splenectomized groups, males and females, when compared to respective controls (p <0.0001, both). Compared to other groups, males had higher TB and sepsis. **Conclusions:** There is no evidence in the literature about the presence of bacterial translocation after splenectomy. We note that asplenia increases susceptibility to bacterial translocation, and consequently, the septic-borne diseases in mice. Sex and duodenal mucosal changes may influence the increase of the phenomenon.   **Email**: kedma.biom@gmail.com

VIRUS

DENGUE

Dengue001- **A descriptive analysis of confirmed cases of dengue fever treated at a specialized service in the city of Fortaleza, Brazil**

Araújo, ETS[a] Pinto, HC[a]*; Neto, AS[a]; Colares, JKB[a,b]; Lima, DM[a].
[a]**University of Fortaleza, School of Medicine - UNIFOR, Brazil.** [b]**São José Hospital for Infectious Diseases, Fortaleza, CE, Brazil**.

Introduction: Dengue is the most common cause of arboviral disease in the world. Dengue fever (DF), dengue hemorrhagic fever (DHF), and dengue shock syndrome (DSS) are considered the most important arthropod-borne viral diseases worldwide. The objective of this research is to investigate the classification of dengue fever and the criteria used to apply it. The authors also assess the relationship between the age and gender of individuals with DF and their symptoms. **Materials and Methods:** From January to July 2011, 179 medical records at São José Hospital for Infectious Diseases (HSJ) and SINAN were examined. Of these, 136 met the criteria for suspected cases of dengue fever and were used in the research. To investigate the association between underreporting and selected variables, the odds ratio was used with a confidence interval of 95% in the logistic regression model. In order to evaluate the classification of dengue, the SINAN classification was used for notified patients admitted to the hospital system. For the positive predictive value, the proportion of cases confirmed by laboratory and clinical and epidemiological criteria was used. **Results:** Of the 136 medical records reviewed, 41.2% were classified as dengue with complications (DCC), 35.3%, as DF, and 23.5% such as DHF. Among the main symptoms presented by patients with DF were: 95.8% had fever, 66.7% had headache, 58.3% had abdominal pain, 62.5% had hemorrhagic manifestations and 58.3% had myalgia. In the DCC cases symptoms such as fever (98.2%), headache (71.4%), abdominal pain (71.4%), persistent vomiting (62.5%), nausea (46.4%), hemorrhagic manifestations (60.7%) and thrombocytopenia (53.6%) were detected. For DHF, among the main symptoms were fever in 100% of cases, headache (75%), retroorbital pain (34.4%), persistent vomiting (56.3%), thrombocytopenia (50%), petechiae (59.4%), myalgia (62.5%), hemorrhagic manifestations (84.4%) and diarrhea (40.6%). Moreover, most of the 74 women, (40.5%) were classified as cases of DF. Of the 62 men, 48.4% were diagnosed as DCC. As to age, among patients aged 0-19 years (39 cases), most (41%) were classified as DF. Of the 75 cases in the 20-59 age range, 44% had DCC. In patients aged 60 or more, 50% of the 22 cases had DCC. Regarding the criteria for the classification of dengue, of the 136 patients studied, 30.9% were classified using clinical and epidemiological criteria, and 69.1%, by laboratory testing (IgM ELISA). Of those classified as having DF, 47.9% were evaluated by clinical and epidemiological criteria, and 52.1% using laboratory tests. Among those classified as DCC, 33.9% were due to clinical and epidemiological criteria, and 66.1%, through laboratory tests. All the patients with DHF were classified by laboratory testing. **Main conclusions:** A higher number of DCC cases were observed and of the main symptoms characteristic of dengue fever, headache was present in all the classifications. In addition, abdominal pains were a characteristic symptom of DCC and in the cases of DHF, hemorrhagic manifestations and myalgia were characteristic. Thus, the importance of combining clinical data with specific laboratory tests, the main criterion for classification, is evident, to ensure an accurate diagnosis. Among the different age groups, those aged 0-19 had the highest rate of DF diagnosed. In patients in aged 20-59 and 60 years or more, the predominant classification was DCC. Therefore, it was observed that the severest forms of dengue predominate in the adult population. **Support:** PET Medicina Unifor, CNPQ*. **E-mail:** danimalta@uol.com.br

Dengue002- Acceptability of dengue surveillance system for health professionals of the state of Goiás

Santos, KC[1]; Zara, ALSA[1]; Barbosa, JR[1]; Siqueira JR, JB[1-2]; Fernandes-Oliveira, ES[1]
[1]Federal University of Goiás (UFG), Goiânia, Brazil; [2] Ministry of Health, Brasília, Brazil

Background: Dengue and Severe Dengue are one of the most important public health challenges in Brazil. Reporting of suspected dengue cases is mandatory in the country and surveillance forms are entered into the Information System for Notifiable Diseases (Sinan). Surveillance system should be evaluated according to its qualitative and quantitative attributes. Acceptability is one of the qualitative attributes and reflects the willingness of individuals and organizations to participate in the surveillance system. The aim of this study is to describe the acceptability of the Dengue Surveillance System in the State of Goiás. **Methods:** We conducted a descriptive study with analysis of qualitative data collected using a semi-structured questionnaire applied to 183 professionals engaged in surveillance of 120 municipal representing 48.8% of all municipalities in the state of Goiás. Data were collected between August-December 2011, with the approval of a local ethics committee. Data analysis was performed using Microsoft Excel 2003 and Epi Info 3.5.3**. Results:** Of all the respondents, 76.5% reported no difficulties in entering data from the notification and investigation forms. However, 20.8% indicated infrastructure difficulties, such as unavailable computer (52.8%), instability of ac power supply (30%), delays in receiving the forms at the data entry sector (51.1%) and delays in forwarding the forms after the investigation is completed (36.4%). Most of the personnel interviewed considered the investigation form easy to complete (90.7%) and with an appropriate number of variables (83.1%). The shift from different versions of the information system (from Sinan-Windows to Sinan-NET) was considered useful by most professionals (76%), mostly due to improvements in the timeliness of data transfer (31%). The case definition of dengue adopted by the surveillance system was considered simple to understand by most staff (85.8%), but 39.1% reported difficulties with the final classification of the cases, especially Dengue with Complications (DCC) and Dengue Hemorrhagic Fever (DHF) (29.2%). The main factor for these difficulties was the delay in obtaining the laboratory tests results (40.7%). **Conclusions:** Overall, the Dengue Surveillance System in the State of Goiás was acceptable by health officials who deal with SINAN/Dengue, but improvements are necessary, especially in relation to data entry and final classification of dengue cases. **E-mail:** kellisantos.edu@gmail.com

Dengue003- Actions to prevent and control dengue fever in the healthy University Program of UFG

Fernandes-Oliveira, E. S.; Arruda, W.; Sousa, B. K. P; Tristão, T. C. R.; Filizzola, E. M
Federal University of Goiás (UFG), Goiânia, Brazil

Introduction: The development of programs to promote health inside the space of Universities has been acknowledged as a viable intersectoral alternative, which results in the improvement of quality of life of cities' population. International experiences have established that Universities, as social spaces, favor wide spectrum actions of health promotion, offering support to learning and research, by means of a joint effort directed to the resolution of problems that challenge the welfare in the University. From this perspective, programs created in all national territory, to prevent and control dengue fever, and also present in the campuses, provide an increase in knowledge about the disease and its vector. So, within the Healthy University Program created by UFG is located the Integrated Group of Actions against Dengue (IGAD). Despite many campaigns and actions in the combat against dengue fever, cases occurrences stay in high standards. Considering the situation of Dengue in Goiania, the participation of all society segments become essential to control it. A way to overcome this challenge is the development of a joint effort among knowledge centers, community and public agencies, elaborating proposals and implementing prevention programs. In this context, the academic community of UFG, represented by IGAD, has been conducting several activities in order to stimulate the social participation in the fight against *Aedes aegypti* and forming partnerships with other sectors to mobilization, such as other universities, health departments and the State Committee Against Dengue of Goias State. **Objectives:** To encourage the formation of new work groups and professional training to act in monitoring of internal

and external areas of UFG, maintaining healthy environments free of vector breeding sites. **Methods:** Actions were performed in Goiania, where is located UFG head office, with the participation of managers, professors, employees and academics. **Results:** Academics named "Young Agents of Dengue", and employees, named "Syndic Agents of Dengue" were established with assignments in Dengue control, according to a decree of 02/21/2011 from the Government of Goias State. These were trained and prepared with courses ministered by professionals from the health departments and UFG, in order to transfer to population practical knowledge about the vital cycle and behavior of the vector and to execute the monitoring of areas to fight breeding sites. Was performed the dissemination of scientific knowledge to target population with poster and lecture presentations about aspects of the structure, biology, epidemiology and transmission of Dengue virus, as well about measures of prevention and control, and about the clinical forms of the disease. Courseware was produced and used to the performance of lectures in public high schools, and during actions in schools was created the post "Young Agent" against dengue fever. **Conclusions:** Therefore, the insertion of the academic community in prevention and control activities of Dengue in Programs pre-established by the Institution is important to increase the spectrum range of awareness information, also being a stimulus to university extension active **Keywords:** Dengue fever, Prevention, Healthy University. Ties aimed at promoting social mobilization and achieve the highest number of individuals possible. **E-mail:** ellen.synthia@gmail.com

Dengue004- Analysis and characterization of confirmed cases of dengue (2011) on priority city in Southeast Brazil

Gabriel Soneghet Pitanga[1,2];Cerutti Crispin Junior [1], Josiane Ines de Souza [2], Josiane dos Santos [2]
1 - Graduate Program in Public Health / Federal University of Espirito Santo (UFES); 2 - Town of Anchieta / Health Department / Health Surveillance

Introduction: Dengue is now one of the most important viral diseases in the world. The State of the Espírito Santo presents cases of dengue since 1995, registering the three largest epidemics in the years 1998, 2003 and 2009, with notification of 39,329, 34,373 and 53,708 cases respectively. Anchieta is one of the priority municipalities in the fight against dengue in the State of the Espírito Santo according to the Secretary of Health, due to high rates of incidence of the disease, especially in 2009, with a high incidence of dengue fever occur epidemic. This study aims to analyze the cases of dengue confirmed through serological examination, the city of Anchieta in 2011 by gender, age, and more frequent epidemiological weeks. **Materials and methods:** Cross-sectional study. Report forms SINAN (Information System Diseases Reported) as well as the serological tests performed. The information contained in these documents were tabulated in Excel (Microsoft) and analyzed using SPSS 17.0. To compare the mean age for both sexes, t test was applied to the "Student". **Results:** Of 329 cases reported, only 46 were confirmed. The average age was 39.37 years and median of 38.50. Regarding sex, 65.2% were female (30) and 34.8% were male (16). There was no statistically significant difference between the mean age in each of the two genres. The period of greatest frequency was that between the eleventh (13 March) and epidemilógica twentieth week (May 15). **Conclusions:** Increased frequency of cases occurred in the adult population that meets the data from studies in the capital Vitória. The predominance of female cases corroborates studies of several authors who attribute al distribution due to the fact that women perform household chores and peridomestic mosquito own habit, so they are more at risk of contracting the disease. The time of year in which the epidemiological weeks occurred more frequently in cases were the high temperature and constant rainfall, conditions conducive to the proliferation of the vector as demonstrated by several studies conducted in various Brazilian states. The actions of vector control and health education, social mobilization, mainly involving the female audience, must be made in the periods prior to the week in which there is an expectation of greater increase in incidence to prevent its occurrence. **E-mail:** gabrielpitanga@gmail.com

Dengue005- Analysis of the situation of dengue fever in Itaboraí, Rio de Janeiro, from 2002 up to 2011

Ribeiro MS[1]; Codeço CT[2]; Honório NA[3].
1-technical advisor of the Secretariat of health surveillance – State Secretariat of health of Rio de Janeiro, Brazil; 2-Senior Researcher, Fundação Oswaldo Cruz 3-Senior Researcher, Fundação Oswaldo Cruz

Introduction: Dengue is currently considered the most important arbovirus infection transmitted by mosquitoes to humans, having *Aedes aegypti* as the main vector. In 2011, over 168 thousand cases of dengue fever were reported in Rio de Janeiro, in which 141 evolved into death, featuring the third largest epidemic in the state and the second largest in terms of number of deaths. As in most metropolitan cities, Itaboraí offers great conditions for *Ae. aegypti* proliferation and figures among those that has been showing high rates of incidence over the past ten years. Noting the results of the LIRAa held in the years 2008 to 2011, we have found high levels of vector infestation, making this city propitious to epidemics occurrence. Located in a service area of COMPERJ (Petrochemical complex in the State of Rio de Janeiro), Itaboraí has received investments in different sectors of the economy, but without great prospects in the area of public services such as health care and urban infrastructure, strengthening the hypothesis that vector-transmitted diseases, such as dengue, settle as a major public health problem in the region. Based on data analysis of notifications by dengue fever in the past ten years, this study aims to; characterize the factors that have influenced the movement of dengue virus in the municipality of Itaboraí, RJ. **Material and method:** SINAN data provided by SES-RJ were analyzed in order to observe the evolution and behavior pattern of the disease in the years analyzed. For calculating the rate of incidence, we used the population estimative for 2010 census, from IBGE. Data on vector infestation in Itaboraí were raised along the SES-RJ, querying the results of LIRAa from 2008 up to 2011. **Results and conclusions:** From 2002 to 2011 it 5 years were identified with high rates of incidence: 2002 (3.240,9); 2007 (608,9); 2008 (1.555,6); 2010 (1.024,8); and 2011 (2.377,6)/cases per 100 thousand inhabitants. The years 2003, 2006 and 2009 presented medium incidence rates: 258,4 ; 292,1 and 148,4, respectively. LIRAa was not performed in March 2008 and in October 2009. The indexes in the month of October were 1,5% (2008 and 2010) and 4,4% (2011). The indexes in March were 0,5% (2009), 2,4% (2010) and 2,8% (2011). Infestation of *Ae. aegypti* don't follow a regular pattern between years. **E-mail:** mario_sesrj@yahoo.com.br

Dengue006- Comparison between three different methodologies to identification of dengue virus in vectors captured in the city of Manaus, AM, Brazil

Cardoso, A. J. L.[1], Luz, S. L. B.[2], Costa, C. A.[1]
1Instituto Nacional de Pesquisas da Amazonia; INPA; Av. André Araújo, 2936, Aleixo, CEP 69060-001, Manaus – AM, Brazil. 2Instituto Leonidas e Maria Deane / Fundação Oswaldo Cruz ; FIOCRUZ; Rua Terezina, 476. Adrianópolis, CEP: 69.057-070, Manaus – AM, Brazil.

Dengue virus (DENV) is an RNA genome arbovirus, family *Flaviviridae*, genus *Flavivirus*, caused by four distinct serotypes (DENV 1-4). Dengue is the most important arboviruses in Brazil, in number of cases and lethality, it is an old zoonosis of the primates in the Southeast Asia that adapted to humans taking as vectors *Aedes spp.* mosquitoes and, thus, eliminating a sylvatic cycle. Differences in severity are associated with serotypes or particular genotypes. The city of Manaus, with 1.739.000 inhabitants has been infested by *Aedes aegypti* since 1996 and the first case of dengue fever (DF) episode appeared in 1998, caused by the DENV 1 and DENV 2 serotypes. The DENV 3 serotype was isolated for the first time in 2002 and, in 2008 was the first case of DENV 4. This work was realized in cooperation with the Entomology Laboratory of the Oswaldo Cruz Foundation, Leonidas and Maria Deane Institute (ILMD, FIOCRUZ Amazonia). The mosquitoes were collected in the year 2011. Their catch has been taken over the districts of the city of Manaus, and the captures were realized in the peridomestic area and inside the houses, during the daytime, with prior approval of the residents. The mosquitoes collected were anesthetized with chloroform, transferred to paraffined cups and placed in an ice chest with ice for transport to the laboratory. In the Tropical Virology Laboratory of the National Institute of Amazon Researches (INPA), the specimens were identified and grouped in numbers up to 10 specimens per

micro tube (pool), according to gender, collection date, district, and then stored at -70º C. A number of 164 *Aedes aegypti* were captured and pooled into 28 lots and five *Aedes albopictus* captured were pooled into four lots. Each pool of mosquitoes was macerated and diluted in a 1% solution of bovine albumin in phosphate buffered saline (PBS). Mosquito macerates had the RNA extracted using the Axy Prep Body Fluid Viral DNA/RNA Miniprep kit (Axygen) and these extracts were submitted to three different techniques, an RT-PCR (Reverse Transcriptase – Polymerase Chain Reaction) for detection of flavivirus genus followed by a Nested-PCR for identification of DENV species, both based on size of amplicons, a Multiplex-Nested-PCR and a Real Time PCR (qPCR) to detect the DENV direct in vectors. The three techniques confirmed the presence of the virus in different pools, being DENV 2, DENV 3 and DENV 4 serotypes. According to the molecular studies, which detected the presence from three of the four DENV serotypes, it demonstrates that the circulation and transmission of DENV is occurring at different locations in Manaus by *Aedes aegypti* mosquitoes during the last year as a part of a continuous transmission situation. **Financial support:** CNPq Pronex / Fapeam. **E-mail**: antoniocardoso01@yahoo.com.br

Dengue007- **Computational system for classification of dengue using neural networks**

Macedo, A. Gleicy[1], Nobre, F. Flavio[1], Brasil, Patrícia[2]
1. Biomedical Engineering Program (PEB-COPPE)-UFRJ 2. Evandro Chagas Clinical Research Institute-(IPEC-Fiocruz)

Introduction: Dengue is one of major public health problem in Brazil, according to the Pan American Health Organization (PAHO), Brazil has reported 80% of cases of the disease in the Americas, and most of these cases come from the notifications in the Rio de Janeiro State. Based on the changes in the epidemiology of the disease limitations have been noted regarding the complexity and applicability of the traditional World Health Organization (WHO) of 1997. Some studies have reported difficulties in the management of different clinical manifestations of the disease in some areas of the world, which resulted in a revision of the classification of dengue cases by WHO in 2009. In conjunction with the medical knowledge, the use of computational intelligence techniques has been applied to help clinicians to predict and investigate the risk in patients with dengue. Artificial neural networks are nonlinear computational techniques that use a mathematical model for the modeling of complex problems. The multilayer neural networks - multilayer perceptron (MLP) are the most widely used in the classification established standards. Self-organizing-maps (SOM) are also another type of neural networks that finds natural patterns of a particular group of data. Thus, this study aims to apply a new approach to analyze the clinical profile of dengue patients using self-organizing maps and K-means algorithm to recognize patterns that characterize patients groups, followed by construction of a multi-layer feed forward network (MLFF) for classification of cases. **Material and Methods:** Clinical profiles of 150 patients with dengue from Health Acute Febrile Disease Laboratory (DFA) of the Research Institute Evandro Chagas (IPEC / FIOCRUZ) were analyzed using self-organizing maps (SOM) and K-means clustering to define similar groups. In a second stage, a multilayer feed-forward neural network (MFNN) constructs the prediction model to classify dengue patients according to number of groups defined by SOM. After defining the number of classes, the data were divided in training and validation subsets to construct the MFNN. The remaining patients were used as test set to evaluate the final model. **Results:** The SOM, followed by K-means clustering of the neurons, classify the patients into three natural groups. The MFNN prediction model, with 10 hidden neurons and three output neurons, after proper training, had an accuracy of 98.5%. **Conclusions:** This computational system could be used to classify patients based only on the readily available clinical laboratory data, and they will need to be further evaluated using a larger dataset and from other dengue-endemic regions. **Keywords:** Dengue Fever, Artificial Neural Network, Self-organizing map, Risk criteria. **E-mail:** gleicyz@ioc.fiocruz.br

Dengue008- Delineation of the epidemiology of dengue in the district of Malvinas district of Campina Grande and its relationship with the environment of the locality

Costa, FHA, Romano GL, Guedes GKP, Barbosa DA, Santos KR.

Abstract: Dengue is a major public health problem worldwide. According to World Health Organization (WHO) about 100 million people are infected annually in over 100 countries on all continents except Europe of approximately 550 000 needs hospitalization and 20 thousand die victim of the disease. In Brazil due to socioeconomic, educational environments and the expansion of the mosquito *Aedes aegypti* allowed their dispersal and subsequent spread of the disease since its reintroduction in 1976. In our country, the social and environmental conditions favorable to the expansion of Aedes aegypti allowed the spread of vector since its reintroduction in 1976. This reintroduction could not be controlled with the methods and programs traditionally employed and focusing mainly on chemical control, with very little or no community participation, intersectoral and without integration with little use of epidemiological proved unable to contain an array with high capacity adaptation to the new environment created by rapid urbanization and new habits which in turn led to dissemination and disease progression. In the first six months of 2011, 84,535 people had dengue, while in 2003, reports reached 299,764. Given this national paradigm we find the neighborhood of the Malvinas which possess a population in the range of 80 000 inhabitants and is located in the city of Campina Grande in Paraiba state-owned and member of the Brazilian Northeast. Thus this study provides the epidemiological profile of that neighborhood on vector *Aedes aegypti* and dengue disease and its relationship with the local environment. **E-mail:** gleiros_@hotmail.com

Dengue009- Dengue and the introduction of serotype DEN4 in Salvador, Brazil

Cardoso, CW[1]; Sant'anna, SLA[1;]Santos, RS [1]
[1] Municipal Secretary of Health of Salvador, Brazil

Dengue is the most rapidly spreading mosquito-borne viral disease in the world. It causes flu-like illness, and occasionally develops into a potentially lethal complication called severe dengue. The global incidence of dengue has grown dramatically in recent decades and over 2.5 billion people in the world is now at risk. Dengue is found in tropical and sub-tropical climates worldwide, mostly in urban and semi-urban areas. There are four distinct, but closely related, serotypes of the virus that cause dengue (DEN-1, DEN-2, DEN-3 and DEN-4). Recovery from infection by one provides lifelong immunity against that particular serotype. Subsequent infections by other serotypes increase the risk of developing severe dengue. Dengue epidemics occurred in Brazil in 1981 (DEN1 and DEN4), 1986 (DEN1), 1998 (DEN2) and 2001 to 2003 (DEN3). Maintain and further develop laboratory capacities to identified the serotypes is of primary importance for clinical care. Since 1983, there is no circulation of serotype DEN4 in Brazil, but in February, 2011 Salvador was the second city in Brazil that isolated this serotype after the city of Roraima. **Material and Methods:** Descriptive study about the distribution of dengue in Salvador in 2011. Suspected cases are reported by public and private health facilities to municipal and state health departments using standardized case report forms for entry of data into the national Notifiable Diseases Information System [*Sistema de Informação de Agravos de Notificação* (SINAN)]. Case report forms include patient identification, age, gender, clinical signs and symptoms, samples collected and diagnostic tests performed (NS1 and serology). Prevalence and incidences were calculated using Population estimates for Salvador from the 2010 census were obtained from the Brazilian Institute of Geography and Statistics (IBGE), the Brazilian census bureau. **Results:** 6.271 cases of dengue were reported and 2,5% were severe dengue. In 1.086 samples, 12.5% were DENV4; 10.9% DENV1 and 5.7% DENV2. In February, 2012, the serotype DEN4 caused the first death of severe dengue in Salvador. In 2011, the incidence of the disease was 234.3 per 100 000 inhabitants. Of 62 individuals with DENV-4, 53.2% were between 20-49 years of age and 53.2% were male. The Sanitary District of Cabula Beiru focused most reports of cases (40.3%). **Conclusion:** The re-introduction of DEN4 in Brazil and Salvador is an important alert for the implementation of national and municipal capacities for epidemic preparedness, including

laboratory capacities and early warning alert and response systems**. E-mail:** criswcardoso@yahoo.com.br

Dengue010- **Dengue in Recife: an analysis of epidemiological situation of mortality**

Pereira, R. M.[1]; Aguiar, R. S.[1]; Silva, J.K.[1]; Oliveira, C. M.[1,2]; Bonfim, C.V.[3]
1 - Faculdade Maurício de Nassau, Recife, Brasil; 2 - Secretaria de Saúde de Recife, Brasil; 3 - Fundação Joaquim Nabuco, Recife, Brasil.

Introduction: Dengue is an Arboviruses neglected of global magnitude, being the second most important disease transmitted by the vector, focusing especially in tropical and subtropical areas of all of continents, except the Europe. Stands out as a reemerging public health problem, since its control is still abstruse, it lacks multi-sectorial interventions and not just the health sector. **Objective:** To describe mortality from dengue in the city of Recife in the period of 2001 to 2010. **Method:** This is a time-based epidemiological study. Data were collected from the Mortality Information System and from the Brazilian Institute of Geography and Statistics, tabulated by the Tabwin program and analyzed using descriptive statistics with frequency distribution (absolute and relative), mortality rate and variation. The variables analyzed were: form of the disease, sex, age, race / color demarcated into two groups: blacks (blacks and browns) and non-black (white, yellow and indigenous people), health facility and health district of residence. **Results**: During the period of study were identified 35 deaths from dengue fever, with an average of 3.5 deaths / year, of these 5 (14.3%) due to dengue fever and 30 (85.7%) due to dengue hemorrhagic fever. The highest mortality rate occurred in 2002, considered epidemic, presenting 1 death/100.000 inhabitants, but no deaths occurred in the years of 2003, 2005 and 2009, giving a 500% increase between 2001 and 2010. We found that most of the deaths were focused in: males (57.1%) among young adults (25.7%), blacks (54.3%), the Health District V (25.7%) and establishments in the Health System (65.7%). **Conclusion:** The identification of the characteristics of deaths from dengue favors a better reflection, planning and adoption of measures aimed to recoup of these. **Keywords:** Dengue, epidemiology, mortality. **E-mail:** cristine.bonfim@uol.com.br

Dengue011- *Dengue virus:* **A strategy for screening and typing in epidemiologic studies**

Alves, D.M; Andrade, R.P de; Ataide, A.C.Z; Oliveira, F.O; Caldas, S; Cecílio, A.B
Fundação Ezequiel Dias, Diretoria de Pesquisa e Desenvolvimento, Divisão de Ciência Biomédicas, Laboratório de Biotecnologia e Saúde. Belo Horizonte, Minas Gerais, Brazil.

Dengue is a major public health problem. The *Aedes aegypti* mosquito is the primary vector of *Dengue virus* (DENV), viruses belonging to the family *Flaviviridae.* There are four serotypes of DENV serologically related but antigenically distinct: DENV-1, DENV-2, DENV-3 and DENV-4. The identification of circulating serotypes of DENV are very important in epidemiological studies, mainly because it provides data for understanding the virulence and the impact of viruses circulating in the population, as well as to alert the need for new prevention strategies and/or more effective measures in the community. The objective of this study was to develop a strategy for screening and typing of DENV to be used in future epidemiologic studies by our service. The standardized methodology consisted of initial screening of samples positive for DENV by real time PCR, which provides quick results in just two hours after the processing of cDNA. In this initial screening, we used primers for the 5 'UTR common to all DENV. The positive samples were subjected to virus isolation in C6/36 cells and maintained in our bank of virus samples. Typing of the positive samples was performed using semi-nested PCR (according to Chien et al., 2006), which allows multiplex reactions and consequent cost reduction. 117 clinical samples of suspected DENV infection, stored in our bio bank in 2007, were used to verify the efficiency of the strategy described above. Of the total samples, 45% (53) were positive for DENV. Among these positive samples, 40% (21) were positive for DENV-3, but the other samples showed no determined results for typing. Brazilian Ministry of Health, recorded in Brazil in 2007 1.541 cases of Dengue Hemorrhagic Fever (DHF) with 159 deaths and mortality rate of 10.2%. In Minas Gerais, there were 80 cases of severe

dengue, 7 deaths and mortality rate of 8.8%. Statistics show that the number of cases may be related to increased circulation of DENV-3. The present results corroborate to the epidemiological data from 2007, where the DENV-3 serotype was prevalent. Our results demonstrate that serotyping showed lower sensitivity than the initial screening of samples positive for DENV. However, to solve this problem, we will perform successive passages of these samples in C6/36 cells to increase viral load and thus allow the typing of these samples by semi-nested PCR. In general, the strategy was effective in the initial screening for DENV positive samples, despite the need to develop a more sensitive strategy for typing samples with low viral load. **E-mail:** alzira@funed.mg.gov.br

Dengue012- **Dengue virus serotype 4: analysis of epidemiological profile in Northern, Brazil, 2010-2011**

Carvalho, V.L.[1]; Silva, E.V.P.[1]; Lima, C.S.[1]; Gonçalves, E.[1]; Vasconcelos, H. B.; Lima, M.F.; Moraes, J.R.S.[1]; Azevedo, R.S.S.[1]; Rodrigues, S. G.; Vasconcelos, P.F.C.[1]
1. Arbovirology and Hemorrhagic Fevers Department, Evandro Chagas Institute, Ananindeua-PA, Brazil.

Introduction: Dengue fever is a mosquito-borne virus infection that in recent decades has become a major international public health concern. Dengue is found in tropical and sub-tropical regions around the world, predominantly in urban and semi-urban areas. The incidence of dengue has grown dramatically around the world in the recent decades. Some 2.5 billion people are now at risk for dengue. World Health Organization currently estimates there may be 50 million dengue infections worldwide every year, mainly in the Americas and Southeast Asia. The spread of dengue is attributed to the expanding of geographic distribution of the four dengue viruses and their mosquito vectors. On the other hand, in last decades, only dengue virus serotypes 1, 2 and 3 circulated in Brazil. Finally, in July 2010, dengue virus serotype 4 (DENV-4) reemerged in Boa Vista, the capital of Roraima State, in Northern Brazil after an absence of 28 years in Brazil. The study aimed to perform the DENV-4 virologic surveillance in Northern, Brazil, between 2010 and 2011 from samples received by the Department of Arbovirology and Hemorrhagic Fevers - Evandro Chagas Institute. **Material and Methods:** A total of 4585 samples by case between 2010 (1896 samples) and 2011 (2689 samples) years were inoculated into C6/36 cells culture for attempts of virus isolation. The indirect fluorescence assay using monoclonal antibodies was performed to confirm viral infection. **Results:** A total of 22 were positive to DENV-4 in 2010, distributed as follows [north states (cases/%)]: Amazonas (1/4.5%), Pará (1/4.5%), Roraima (20/91%); in 2011, a total of 159 were positive to DENV-4, distributed as follows: Acre (1/0.7%), Amazonas (98/62%), Pará (50/31%), Roraima (8/5%), Tocantins (2/1.3%). **Main conclusions:** These results showed an increased incidence of the DENV-4 circulation in Northern, Brazil and its dispersal following the reintroduction in 2010 in the Northern region. **E-mail:** valeriacarvalho@iec.pa.gov.br

Dengue013- **Effects of metereological variables on the transmission risk of dengue fever: a lag-temporal analysis**

R. B. Oliveira[1,] M. A. P. Horta[1,] Ker, F.T.O[2,] A. P. Ferreira[1,] A. Navarro[3,] C. M. S. Catita[3]
1-National School of Public Health / Oswaldo Cruz Foundation, 2-Health Department / Coronel Fabriciano City, 3-Sciences Faculty / University of Lisbon

Introduction: Temperature, relative humidity and rainfall systems directly affect the breeding and abundance of mosquitoes by providing suitable conditions for its survival. Those factors together could influence the risk of DF outbreaks and the influence the transmission dynamics of this disease is relevant to a better understanding and control. This study focuses on the temporal relationship between environmental factors and the occurrence of DF cases. **Material and Methods:** The study was conducted in Coronel Fabriciano city (19º30'52,21''S; 42º37'31,32''W), Minas Gerais State, Brazil. Time series of the mean, minimum and maximum temperature, humidity and precipitation for the years of 2002 to 2009 were obtained from local weather station. We quantified the association between weekly cases of dengue and meteorological variables in the urban area by using two methods. We first tested the correlation between the lags of rainfall, which varied from 0 to 20, with the occurrence of DF cases. The concept of lag can then be used to describe the relationship either forward (from a fixed exposure to future outcomes) or

backward in time (from a fixed outcome to past exposures). Secondly, we used distributed lag non-linear models (DLN Models) which represent a modeling framework to flexibly describe associations showing potentially non-linear and delayed effects in time series data. These models assume a temporal dependency between exposure and outcome on the scale of lag, or it represents the time interval between the exposure event and the outcome when evaluating the delay of the effect. The environmental variables used to fit the model were humidity, temperature and rainfalls. **Results:** Highest correlation values were observed between lag 9 and 10 (rho = 0.5). The same results were observed by fitted distributed lag non-linear model, with a relative risk of 1.25 for infection of dengue fever. Through DLM, we also observed a risk increase when temperature reaches about 23.7° C. Humidity showed a linear relationship with the DF cases: as increases the humidity, increases the occurrence of cases of dengue. **Main Conclusions:** In this paper we concluded that the period of time when DF cases reach epidemic levels are directly influenced by time-lag of rainfalls since the beginning of the summer season. Temporal and meteorological relationship should be considered when targeting dengue fever control once changes in temperature and precipitation are supposed to be reflected on dengue activity. **Supported by**: FIOCRUZ-RJ, CAPES, FAPERJ**. E-mail:** robsonb@fiocruz.br

Dengue014- **Epidemiologic Situation of Hemorrhagic Fever of Dengue and Dengue with Complication at priority Municipals of Ceará State, at 2011**

Costa, J.R.A.[1] ; Cunha, J. C. L.[2][3]; Quirino, A.[2]; Mendonça, S. V.S.[3]; Oliveira-Lima, J. W.[3]
[1]Consultor técnico da Secretaria de Vigilância em Saúde, [2] Secretaria de Saúde do Estado do Ceará, 3 Universidade Estadual do Ceará.

Dengue is a problem of public heath with great economics and social repercussion so affect the work force, due absence of adult patients or relatives of infected children. The circulation of one or more serotypes of virus is associated to transmission and severity of disease. According the National Program of Control of Dengue, Ceará has 34 priority municipals to dengue, which ones in the last three years were responsible to 80% of cases. The present work aims to describe the epidemiologic situation of dengue in priority municipals conforms the incidence of cases of Hemorrhagic Fever Dengue(HFD), Dengue with Complication(DWC), serotype circulating and lethality at 2011 year. The data were collected, in period of October-2011 to January-2012 from SINAN; Report of viral isolation of LACEN, DIADENGUE; Weekly Report of Dengue of State Health Secretary. It did a comparison of data among the 34 priority municipals of Ceará State and the rest of 150 municipals related to incidence of cases of HFD and DWC, serotype circulating and lethality been afterwards consolidated and shown in absolute and relative frequencies. At 2011, in Ceará, were confirmed 171 cases of HFD with 13 obits and lethality of 7,6% and 451 cases of DWC with 48 obits and lethality of 10,6%. Of these obits, 39(81,3%) and 9(18,7%) by DWC and 6(46,2%) and 7(53,8%) by HFD in priority municipals and others 150,respectively. In relation to viral circulation we view the prevail of serotype DENV-1 with 98% of samples done; 2% with DENV-3 and 1% with DEBV-4 of total of isolation done in State. Verified a meaningful increase of DWC cases, considering that, to each severe case registered in 2011 existed 90 cases of classic dengue when in 2011 this number was 383. Fact that is probably related to influence and determination of factors associated to simultaneous cases of 3 serotypes viral, dialogue of population previously to infections by others serotypes and consequently increasing the probability of severe forms. Thus, at Ceará in 2011, the priority municipals were responsible by majority of cases of HFD and DWC as well as all obits with predominance of DENV-1 serotype in circulation and with lethality of 7,6% to HFD and 10,6% to DWC. . **E-mail:** janeclc@gmail.com

Dengue015- **Epidemiological aspect of suspected case of dengue endemic to Northeastern Brazil in the years 2009 and 2010**

Serra, R.M[a]*; Colares, J.K.B[a];[b], Neto, A.S.L[a]; Lima, D.M[a].
[a]University of Fortaleza, School of Medicine - UNIFOR, Brazil. [b]São José Hospital for Infectious Diseases, Fortaleza, CE, Brazil.

Introduction: The state of Ceará (CE) in northeastern Brazil is one of the most important areas in terms of numbers of reported cases of dengue hemorrhagic fever (DHF), with possible epidemics in rainy

periods, especially in urban areas. Dengue virus infection may be asymptomatic or may lead to undifferentiated fever and the main clinical signs and symptoms: headache, retro-orbital pain, and myalgia, arthralgia, rash and bleeding. The city of Fortaleza (2.5 million inhabitants), in northeastern Brazil, is an endemic area of reported cases of classical dengue and dengue hemorrhagic fever (DHF). The objective of this study was to analyze the clinical forms of the suspected cases of dengue fever (DF) which were notified to the Brazilian Case Notification Information System (SINAN), in 2009 and 2010 and associates with them to rainfall. **Material and Methods**: This is a descriptive, cross-sectional and retrospective study; included patients with symptomatic dengue (SINAN) in the 2010. Excel 2010 and EpiInfo were used to analyze the data. **Results**: In the year 2009 (9), 6883 cases of suspected dengue were notified and 8341 in 2010(10). Levels of precipitation: 2218 mm(9) and 516 mm(10). In 2009, an association between records and rainy period was identified (January to June), versus an unexpected climax of cases on dry season period (<1.8mm/month in November to August) in 2010. Prevalence between sexes was similar. Analyses of age groups in 2010 indicated majority in 0-10 years group (22%), 11-20 (23%) and 21-30 (14%); 2009: 0-10 years (22%), 11-20 (22%) 21-30 (23%). Classic respective rates of dengue and DHF were: 65.4%, 0.5% (10) and 63%, 0.2% (9). There was 0.3% deaths (10) and (9). Test IgM revealed positive values: 14% of total records (10) and 2,1% (9). There were not performed viral isolation, histopathology, and NS1 tests in 99% of patients. It was reported tourniquet in 1% (in 27.7% positive result). Only 1% of the notifications had complications: especially thrombocytopenia <20.000mm^3 (39%). There was Hemorrhagic manifestations in 0.8% of the total, whose principal were, respectively for 2010 and 2009: petechiae (54.5%; 52%), epistaxis (23.4%;22%), gastrointestinal bleeding (19,5%;34%).Of the 116 neighborhoods, in 30 the incidence exceeded 2% of the notifications (> 150 cases /area). Over 90% of them are located near the course of the two main rivers or in coastal regions. **Main Conclusions:** Reports of dengue increased 21%, and rainfall decreased 76% in 2009-2010. Because of the inconsistency of the rainy period with incidence in 2010, more studies are needed to confirm there was notification dating mistakes. There was increased incidence in children and young adults (<30 years). Classical dengue was confirmed in 65% (10) and 63% (9); FDH <0.5%. Thrombocytopenia predominated as a complication. The most usual hemorrhagic manifestations were, in order: petechiae, epistaxis and intestinal bleeding. The IgM test achieved <50% notifications; tourniquet was recorded in only 1%. These tests are probably underreported by the inadequate completion SINAN surveys.The highest incidence of cases (urban: 99%) in neighborhoods localized near rivers or sea may be associated with the life water cycle of *A. aegypti.* **Support:** PET Medicina Unifor, CNPQ*. **E-mail:** danimalta@uol.com.br

Dengue016- Epidemiological profile and access to health services in relation to dengue in a neighborhood of Campina Grande, Paraíba, Brazil

Romano, G.L.; Barbosa, D.A.; Santos, K.R..
Institution: Federal University of Campina Grande

Intrduction: The primary health care (PHC) as a strategy to guide the organization of the health system and respond to population needs requires an understanding of health as social right and deal with social determinants to promote it. The good organization of PHC services contributes to improved attention with positive impacts on public health and efficiency of the system 1. This study is intended to make the link between the epidemiology of dengue, the patient population's access to health services and how this access occurs. **Materials and Methods:** The study was done from a percentage analysis of a questionnaire applied to 515 homes in the neighborhood of a micro-area of the Malvinas in Campina Grande, Paraiba, Brazil, from November 2010 to February 2011. The visits were made by students of environmental surveillance and dengue PET in conjunction with community health workers of Primary Care Family Health (PCFH) Malvinas 4, 6 team. In the questionnaire were multiple choice questions and subjective questions. **Results:** Of 515 respondents, 101 (19.61%) stated that there were cases of dengue fever at his residence, 414 (80.39%) denied dengue. In all, 121 cases of dengue, because in one case 60 households (49.59%), two in 32 cases (26.45%), three in 21cases (17.36%) and eight homes there were 4 occasions disease (6.61%). Of the 101homes affected by the disease, 66 (65.35%) reported that patients sought medical attention and 35 (34.65%) denied the demand for health services. With respect to where they usually seek medical attention: of the 515 respondents, 202 (39.22%) are the basic health unit,

184 (35.73%) are seeking public hospitals, 57 (11.07%) go to hospitals or private clinics and 72 (13.98%) do not usually seek medical attention. **Conclusion:** From the data analysis, is that 19.61% of respondents had dengue fever at home; this rate considered high by the federal government believes that high incidence from 300/100 thousand inhabitants, which contrasts with the low demand for health services, where 65.35% stated that they seek medical attention. And if we extrapolate the numbers on the entry form in the health system we find that 35.73% enter through the public hospital, this percentage is not justified by dengue, which is a benign disease /outpatient care in most cases. This may contribute significantly to the erroneously overwhelm hospitals of high complexity. Therefore, we notice the absence of a broader policy orientation of the population on the gateway into the health system. **E-mail:** gleiros_@hotmail.com

Dengue017- **Epidemiological profile of dengue cases confirmed deaths and serious in 2nd regional board of health / DIVEP / SESAB.**

Reboucas, R. C. L,
Epidemiological Surveillance, 2nd DIRES/DIVEP/SESAB- Feira de Santana-BA. Brazil.

Introduction: Dengue is a major public health problems in the world. The World Health Organization (WHO) estimates that approximately 550,000 patients requiring hospitalization and at least 20,000 die from the disease. The epidemiological picture of the country points to the vulnerability of occurrences of epidemics, as well as the increase in severe forms, enabling the risk of increased deaths. Of the 22 municipalities that make up the 2nd DIRES, two of them are considered priority actions for dengue control. **Method:** This is a descriptive exploratory study, conducted through the records of SINAN online research, between 2009 and 2010 and used for data tabulation spreadsheet Excel 2007 and TABWIN. Results: We confirmed in 2009, 181 cases of severe dengue, 149 (82.3%) of DCC, 30 (16.5%) of DHF, 2 (2.7%) of SCD and 3 (1.6 %) deaths were distributed in eight of the 22 municipalities. In 2010, there was a decrement of 61.3% in the number of severe cases in the previous year, 43 (61.4%) of DCC, 26 (37.1%) of DHF, 1 (1.4%) SCD and 4 (5.7%) deaths, also distributed in eight counties. The largest number of cases occurred in the municipality of Feira de Santana in both years. The female was involved in a percentage between 55% and 56% male and between 44% and 45% respectively in 2009 and 2010. With regard to mortality, 3 (42.8%) men and 4 (57.1%) women died from the disease. In the years 2009 to 2010, the age group most affected were those over 15 years, ranging from 53% to 62.8%, respectively. In 2009, mortality was higher in the age group below 15 years (1-9 years) 2 (66.6%) deaths. However, in 2010 the highest percentage occurred in over 15 years (20-49) 3 (75%) deaths. **Discussion:** Dengue has been behaving so endemic in most cities of this Region. In 2009 occurred the greatest epidemic in this DIRES with 8006 reported cases have been isolated serotypes DENV-1 and DENV-2. The simultaneous circulation of two serotypes facilitated the emergence of severe cases, with report of 181 cases and a fatality rate of 1.6%. However, the analysis of the results obtained in the following year identified a change in the behavior of the disease as much as the monthly distribution of severe cases. Along with the sharp increase in mortality of 1.6% in 2009 to 5.7% in 2010, it was noticed the movement of more than one serotype - DENV-3 combined with the fragility of the field work as well as the unpreparedness of the professional service patient with dengue fever. The World Health Organization considers acceptable for the lethality of FHD up to 1%. What was observed in these years of study is that the fatality rate of DHF / DSS were above the acceptable. The proportion of causes related to gender, was similar in the two years being the most affected women and the highest number of deaths also followed this same trend. **Conclusion:** With the macro determinants for the occurrence of dengue present in most municipalities, among other factors, concludes that it is essential to improve the quality of field work, train professionals to provide adequate care to the patient and thus prevent deaths from is disease. **E-mail:** sanerou@hotmail.com

Dengue018- **Epidemiology of Dengue in the State of Rondônia**

Bogoevich ACA[1]; Lucena LT[1]; Oliveira LA[1]; Pereira DB[1,2]
[1]Universidade Federal de Rondônia, Porto Velho, Rondônia, Brasil, [2]Centro de Pesquisa em Medicina Tropical de Rondônia, Porto Velho, Rondônia, Brasil

Introduction: Dengue is an arbovirus that affects all Brazilian territory. It's caused by a Flavivirus and transmitted primary by *Aedes aegypti*. The serotypes found in the country are DEN-1, DEN-2, DEN-3 and DEN-4[1]. Dengue can manifest in three ways: dengue fever (DF), dengue hemorrhagic fever (DHF) with or without dengue shock syndrome (DSS) and dengue with complications (DWC). The incidence of dengue in the years 2000 to 2008 in Porto Velho was higher than the Brazil's, the Northern's and the state's one. The objective of this study is to analyze the situation of dengue in Rondônia between the years 1999 to 2010, comparing with the national scene at the same time. **Materials and Methods:** Ecological descriptive study realized in Porto Velho, Rondônia. The data was collected from the Sistema Nacional de Agravos de Notificação (SINAN), Ministry of Health, from the Agência Estadual de Vigilância Sanitária (AGEVISA), Rondônia state and from the Departamento de Informática do Sistema Único de Saúde (DATASUS), Ministry of Health, including the period from 1999 to 2010. For data analysis, was considered the classification of the Ministry of Health, which characterizes the "reported cases" and "confirmed". **Results:** In 1999 to 2010 were reported 105 378 cases of dengue, of which 66 691 were confirmed. The year 1999 had the lowest number of reported cases (969), confirmed cases (701) and incidence rate (75.18 / 100 000), that can be explained in part by the incipient notification. In contrast, the year 2010 showed the highest number of reported cases (27 910), confirmed (18 865) and the highest incidence rate (1 228.49 / 100 000). The major outbreak occurred in 2009, with an increase of 247.6% of confirmed cases over the previous year. Moreover, between the years 1999 to 2010 were reported 1195 cases of severe dengue. Of those, 55% were in the form of DWC, 28.5% of DHF and 16.5% progressed to DSS. Between 2001 and 2003, DEN-1 predominated in Rondônia. DEN-3 began to circulate in the state since 2004 and DEN-2 in 2006, both associated with DEN-1. In 2010, only serotypes DEN-1 and 2 were detected in circulation. **Conclusion:** The cases of Dengue in the State of Rondônia has shown an increase in a cyclic form, either by the increasing of exposed population, the improvement in detection and reporting of cases and the presence of at least 3 serotype circulating. Due to the significant increase of dengue cases in Rondônia, the Ministry of Health started to invest in support measures of financial, surveillance and vector control. Nevertheless, in 2011, Porto Velho was among the 24 municipalities with a higher risk of an outbreak of dengue, according to the Dengue Risk. Therefore, it is necessary to consolidate and ensure the effectiveness of actions to achieve more significant results. **E-mail:** dheliopereira@yahoo.com.br

Dengue019- **Incidence of dengue fever in an urban slum community in Salvador, Brazil**

Queiroz TL[1], Kasper AM[2,3], Gonçalves AH[2], Silva MM[1,2], Lima HCAV[2], Calcagno J[2], Cruz JS[2], Takahashi D[2], Reis MG[2], Ko AI[2,3], Ribeiro GS[1,2,3]
[1]Instituto de Saúde Coletiva, Universidade Federal da Bahia, [2]Centro de Pesquisa Gonçalo Moniz, Fundação Oswaldo Cruz, [3]Yale University School of Public Health, United States

Introduction: Symptoms of dengue infection are nonspecific, complicating diagnosis and case reporting. Active surveillance is needed to better characterize disease burden. The objectives of this study were to estimate the incidence and identify risk factors for dengue fever (DF) in an urban slum community in Salvador, Brazil. **Materials and Methods**: We conducted enhanced surveillance for febrile illness from April 2009-March 2011 at the only public emergency unit in the Pau da Lima community. Acute and convalescent sera were collected from residents ≥5 years old presenting for acute febrile illness during standard business hours. Community members presenting with fever outside of recruitment hours were identified by chart review. DF cases were confirmed by positive NS-1 or IgM or IgG seroconversion. Using age-stratified dengue rates among participants, we first projected the DF frequency among community members evaluated for febrile illness, and then estimated the incidence of DF in Pau da Lima using 2010 census data. We assessed potential sociodemographic and clinical factors associated with DF using χ^2 and Mann-Whitney U for categorical and continuous variables, respectively. **Results:** During the study period, 12,379 community members who were ≥5 years old presented to the unit due to a febrile illness. Of these, 3,075 (25%) were recruited into the study. No sociodemographic or clinical differences were seen between recruited and non-recruited patients. Of the recruited patients, 578 (18.7%) had laboratory-confirmed dengue infection. The median age of cases was 19 years old. Patients with DF were more likely to be male (OR 1.5, p<.01), to have education higher than primary school (OR 1.3, p=.02) and to

have lower income (p<.01). In addition, they more frequently reported retro-orbital pain (<.01), arthralgia's (p<.01), rash (p<.01), and prostration (p=.05). Thirty-one (1%) cases were hospitalized. The estimated mean annual incidence of DF was 1,636.8 per 100,000 (95% CI: 1,571.3-1,704.4). The 5-14 years old age group had the highest incidence (4081.6 per 100,000, 95% CI: 3,835.4-4,339.6). **Main Conclusions**: The estimated incidence of DF in this community was >7 times higher than reported in Salvador for 2009 and 2010 (217.7 and 229.0 per 100,000, respectively). This discrepancy may result from regional variances, but it more likely reflects better case ascertainment by enhanced surveillance. Enhanced surveillance is an essential step in quantifying dengue burden and understanding its transmission dynamics at the community level. **E-mail:** tassialq@hotmail.com

Dengue020- **Introduction and spatial distribution of DENV-04 in state of state of Bahia, 2011**

Ciuffo IMA, Rego MFS, Pereira FM, Lordello HCN, Zarife MAS.
Laboratório Central de Saúde Pública do Estado da Bahia, Brasil.

Introduction: The DENV-04 did not circulate in the country for almost 30 years. The reemergence of this serotype in the state of Bahia in 2011 call the attention of the Public health System leaving them on alert since much of the population was susceptible to the disease. The 1st single case occurred in March, in Salvador Tancredo Neves district. A few days later, another case happened in Salvador, but in the Cosme de Farias district. The virus has been isolated throughout the years, from different regions of the State. **Material and Methods:** Serum samples were analyzed from the various municipalities. ELISA for NS1 search (PAMBIO) was used as a screening test for subsequent viral isolation. Samples and reagents for antigen NS1 inconclusive were inoculated in C6/36 mosquito Aedes albopictus cells and then indirect immunofluorescence was performed for group and type detection. **Results:** In the month of March were isolated two cases in the city of Salvador (Tancredo Neves and Cosme de Farias districts). In April, one case in Salvador was observed (São Cristóvão district). In May were six cases, four in Salvador (three different districts), one in Wanderley and one in Dias D'Avila. In the month of June 29 cases were detected, all from Salvador (16 different districts). In July, were 20 cases, all of them from Salvador (eight different districts). In August 43 cases were observed, 41 from Salvador (nine different districts), one from Guanambi and one from Lauro de Freitas. In September, were 18 cases, 17 from Salvador (seven different districts) and one from Feira de Santana. In October, we had eight cases, six from Salvador (two different districts) and two from Feira de Santana. In November, were nine cases, eight from Salvador (four different districts) and one from Feira de Santana. In December, were nine cases, six from Salvador (one different district), one from Nilo Peçanha, Araci and Feira de Santana. **Conclusion:** The reintroduction of a new serotype impacts in the population that does not have immunity for this new circulating serotype. After this first new isolated serotype, every month there were new cases in different districts and different cities. The spread of the DENV-04 in Salvador and Bahia was slowly but gradually showing the same pattern occurred in other states of the country. **E-mail:** imaciuffo@hotmail.com

Dengue021- **Incidence of Dengue in Priority Municipals of Ceará´s State at 2011**

Costa, J.R.A.[1] ; Cunha, J. C. L.[2][3]; Quirino, A.[2]; Mendonça, S. V.S.[3]; Oliveira-Lima, J. W.[3]
[1]Consultor técnico da Secretaria de Vigilância em Saúde, [2] Secretaria de Saúde do Estado do Ceará, 3 Universidade Estadual do Ceará.

Dengue is one of the main problems of worldwide public health with high socioeconomics costs. This is an endemic of hard control and until nowadays there is no specific protection as a vaccine. According with National Program of Dengue Control, Ceará have 34 priority municipals to dengue, which ones were responsible in the last three years, average, by 80% of all cases. The present work aims to describe the epidemiologic situation of dengue in priority municipals of Ceará according the incidence of cases of Dengue, at 2011 year. The data were collected during the period of October-2011 to January-2012 of SINAN, DIADENGUE and Weekly Report of Dengue by State Health Secretary. It did an comparison of incidence of cases among the 34 priority municipals of Ceará State and the rest of 150 municipals being afterwards consolidated and shown in absolute and relative frequencies. At 2011,in Ceará, were notified

89.578 suspected cases of Dengue, in 1884 municipals being 55736 were confirmed in 177, in other hand, 80,3% in priority and 19,7% in others 150.In general mode the incidence of disease among lesser than 1 year old was 637,1; 579,6 in 1 to 4 years old and 630.4 by 1000 thousand inhabitants in age tax of 5 to 9 years old and age tax of 20 to 29 years old with 778 cases by 100000 inhabitants. Among these 34 municipals 9 were featured as low (<100/100000, 11 average (>100 and <300) and 14 high incidence (>300).The apex of transmission took place in March and April months with 12.785 and 15692 cases, respectively. In this period, were intensified activities of control of Plans of Contingency by State Health Secretary in partnership with Municipals Heath Secretaries and others public and private institutions causing meaningful reduction of cases. In May there was reduction of 46% of confirmed cases (8550) related to April. The same repeated of May to June (3066) cases with decrease of 64.1%. Observed either from May on a meaningful reduction in number of municipals with transmission and cases. However, the State Heath Secretary keeps the alert to intensification of actions to fight dengue and mainly alerting to early diagnosis and assistance to patients with severe dengue. Concluding that at 2011 year the priority municipals kept representing 80,3% of all cases, that the age tax of higher expressivity, 20 to 29 years old and that the transmission occurred inside the typical seasonal to state with higher concentration of cases in winter period. **E-mail:** janeclc@gmail.com

Dengue022- Modeling *Aedes aegypti* and *Ae. albopictus* site-occupancy dynamics and co-occurrence under imperfect detection: results from three years of monitoring in urban Amazonia

Padilla-Torres SD[1], Ferraz G[1,2], Luz SLB[3], Zamora-Perea E[3], Abad-Franch F[3*]
[1]Instituto Nacional de Pesquisas da Amazônia, Manaus, Amazonas, Brazil; [2]Smithsonian Tropical Research Institute, Balboa, Ancón, Republic of Panama; [3]Instituto Leônidas e Maria Deane, Fiocruz, Manaus, Amazonas, Brazil

Introduction: *Aedes aegypti* and *Ae. albopictus* are the vectors of dengue, the most important arboviral disease of humans. Dengue prevention heavily relies upon vector control; this requires detailed knowledge of the population ecology of these two mosquito species, which have been shown to compete for key resources. Yet, all reports on *Aedes* ecology published to date assume that the vectors are truly absent from sites where they are not detected; since no perfect detection method exists, this assumption is unwarranted. **Material and Methods:** We use a modeling approach that explicitly accounts for imperfect detection to analyze a 38-month, 55-site presence/absence dataset (~5,800 trap-weeks) from a neighborhood of Manaus, Brazil. We tested for evidence of inter-species competition and measured the effects of routine vector control interventions on site-occupancy dynamics, considering meteorological and household-level covariates. Hierarchical logistic modeling was implemented using the program PRESENCE 4.0; models were compared with Akaike's Information Criterion. **Results:** Both species occurred independently at the household level (Species Interaction Factor [SIF±SE]: $SIF_{Occurence}=1.03\pm0.02$), but we found evidence of inter-species avoidance at the breeding container level ($SIF_{Detection}=0.89\pm0.03$). Mean monthly *Ae. aegypti* site-occupancy estimates (~0.91, range 0.79-0.97) were over one order of magnitude higher than reported by routine surveillance using 'rapid larval surveys' (~0.03, range 0.02-0.11). Mean site-occupancy by *Ae. albopictus* was also high (~0.83, range 0.66-0.94). Occupancy fluctuated seasonally, mainly due to the negative effects of high summer temperatures. Routine vector control interventions had only a transient negative effect, indistinguishable from zero, on the probabilities of household infestation by *Ae. aegypti* ($\beta_{Control}=-0.81$, 95%CI −2.03-0.41) and *Ae. albopictus* ($\beta_{Control}=-0.27$, 95%CI −0.69-0.14). **Main conclusions:** Our results suggest that inter-species competition among dengue vectors is locally weak, likely because climate and resource availability are close to optimal. We quantitatively show that regular vector surveillance-control systems perform surprisingly poorly. Better alternatives are urgently needed, particularly for the reliable assessment of infestation rates in the context of control program management. The straightforward approach we use here could greatly contribute to the development and testing of such alternatives. **Funding:** PDTSP-Dengue/VPPLR-Fiocruz (RDVE 04), CNPq/PEC-PG (190023/10-4), Fiocruz-Fapeam agreement. **E-mail:** fernando@amazonia.fiocruz.br

Dengue023- Mathematical description of the impact of Wolbachia on Dengue transmission

Mendes, C.S.M.[1]., Lopes, J.S.[1], Struchiner, C.J.[2] & Gomes, M.G.M.[1]
[1] Instituto Gulbenkian de Ciência, Oeiras, Portugal; [2]Programa de Computação Científica, Fiocruz, Rio de Janeiro, Brazil

Introduction: The efficacy of interventions against infectious diseases, such as vaccines, is often evaluated considering a homogeneous population and collapsed into a single number related to the risk ratio of disease frequencies in control and intervention groups. These simple measures are then included in mathematical models of disease transmission to project the expected impact on disease prevalence over time. Here we contribute to the debate that correction for realistic heterogeneities may change model projections in important ways. A conceptual mathematical description of dengue transmission, with particular attention to the use of endosymbiont *Wolbachia* in the *Aedes aegypti* population, is used to illustrate this point and give some insight into the likely outcomes of such intervention. **Mathematical models:** Transmission models explicitly including the vector population are analyzed, and interventions reducing the susceptibility of mosquitoes to dengue are considered as unimodal ('leaky') or bimodal ('all-or-none') and compared. The models account for changes in mosquito densities due to the intervention as well as multiple circulating dengue serotypes. Different scenarios for the release of *Wolbachia* in mosquito populations will be implemented and impact on dengue incidence in humans will be assessed. **Results:** The basic reproduction number, R_0, is sensitive to the mean but insensitive to how resistance is distributed among individuals. This is not true for prevalence, however, where we find that heterogeneity in the level of resistance conferred leads to greater reductions in prevalence. The size of the mosquito population also impacts on prevalence. A minimal model with these components and two serotypes can account for multianual cycles in serotype dynamics. Spread of *Wolbachia* into the mosquito population is predicted to reduce the amplitude of epidemics. **Main conclusions:** Heterogeneity in the resistance conferred to *Aedes aegypti* by *Wolbachia* is expected to affect aspects of dengue transmission that are not captured by R_0. Moreover, a fitness cost of carrying *Wolbachia* is expected to cause a reduction in the mosquito population with consequent reduction in transmission. Finally, *Wolbachia*-based interventions may be effective in reducing deleterious effects of multiple serotype circulation and interaction, such as large epidemics with many secondary cases of potentially increased severity. **Keywords:** heterogeneity, Wolbachia, Aedes aegypti, dengue. **E-mail :** cmmendes@igc.gulbenkian.pt

Dengue024- Clinical-epidemiological aspects of dengue patients with individuals in the city of reef in the year 2011

Ferreira, G. C.; Milk, A. C. C. S.; Novaes, P. B. M. N; Santos, G. S. F. M., Silva, M. R. G.

Introduction: The emergence of dengue cases has been observed and reported since the 80's in several Brazilian states. It is an infectious disease caused by an arbovirus, which has four serotypes: DEN-1, DEN-2, DEN-3 and DEN-4, and transmitted to humans by the mosquito Aedes aegypti. The dengue fever may develop symptoms such as sudden onset of high fever, headache, myalgia, retro-orbital pain, skin rashes and blemishes may be associated with these symptoms to vomiting, diarrhea and nausea within 2 to 6 days. Hemorrhagic Dengue is the most severe form of the disease, in which the person has bleeding, severe abdominal pain, weak pulse and rapid, sometimes progressing to death in up to 24 hours of onset of first signs. Treatment is supportive, with fluid replacement and maintenance of the activity lost blood, making use of antipyretic and analgesic for relief of symptoms. **Objective:** Identify the key clinical and epidemiological aspects of patients with dengue in the city of Recife in 2011. **Materials and Methods:** The study was descriptive with quantitative approach, developed from secondary data available on DATASUS of 2011. **Discussion:** In 2011 were reported 6063 cases of dengue in the city of Recife, where 3,441 patients were between 20-59 years and females accounted for 3,396 of the total.(Table 1). Only 1487 patients had the diagnosis confirmed by laboratory testing. Among the reported cases, the dengue fever was a form of presentation with the largest number of reports showing 5,178 cases, the other results followed by 830 cases with inconclusive results, and elsewhere were cases of dengue with complications with 14 notifications. The evolution of the case, 4141 were

cured, 24 died and the other cases were ignored. (Table 2). **Conclusions:** The results demonstrate the predominance of the age group 20-59 years, where the female was the most affected and classical Dengue the main form of presentation of the disease. Variables ignored hinder the completion of the research, because such data is critical to the outcome of the cases, besides being important in identifying the types of circulating viruses. With the identification of the number of confirmed cases and characteristics of infected individuals, it is possible to develop strategies that enhance the decline of dengue in Recife, contributing to better health conference. **E-mail:** gizelly_cferreira@yahoo.com.br

Dengue025- **Risk factors associated with severe dengue fever in the city of Rio de Janeiro, an ecological study**

[1] Gerusa Gibson; [1] Reinaldo Souza-Santos
[1]Departamento de Endemias Samuel Pessoa, Escola Nacional de Saúde Pública- ENSP, Fundação Oswaldo Cruz (FIOCRUZ). Rua Leopoldo Bulhões 1480/607, Manguinhos. CEP 21041-210. Rio de Janeiro, RJ – Brazil.

Background: The city of Rio de Janeiro experienced the most alarming epidemic of dengue fever in 2008, with large number of severe cases, especially in children. **Objective:** To evaluated the association between incidence of severe dengue in 2008 and indicators of socioeconomic conditions, previous dengue infection and access to health services. **Methods:** An ecological design study was performed to analyze the occurrence of severe dengue cases in 156 neighborhoods of the city. The data were incorporated into a negative binomial regression model with the incidence of severe dengue in each neighborhood as an outcome variable. **Results:** Neighborhoods with greatest number of dengue cases in the previous epidemic of 2001 and with the highest percentage of black people had higher rates of severe dengue cases in 2008 (IRR = 1.20, 95% CI = 1.10 - 1,54 and IRR = 1.35, 95% CI = 1.17 to 1.56 respectively). On the other hand, neighborhoods with lower incidences of severe dengue in 2008 were those with more units of the Family Health Strategy (IRR = 0.86, 95% CI = 0.75 to 0.98). **Conclusion:** The results suggest that the sequence of epidemics caused by serotypes DEN2 DEN3 may have contributed to the excess of severe cases among children in the epidemic of 2008 in the city of Rio de Janeiro. Furthermore the highest proportion of black people living in neighborhoods with higher incidence of severe dengue may be an effect from poor living conditions and low coverage of health services, suggesting health inequalities. **Keywords:** Severe Dengue; Health Services. **E-mail:** gibsonge@gmail.com

Dengue026- **Positive predictive value of dengue reported cases in epidemic periods in Brazil, 2000 to 2010**

Zara, A.L.S.A.[1]; Siqueira-JR, J.B.[1-2]; Coelho, G.E.[2]
[1]Federal University of Goiás, Goiânia, Brazil; [2]Ministry of Health, Brasília, Brazil

Introduction: The positive predictive value (PPV) is one of the quantitative attributes of surveillance systems. Continuous evaluation of this attribute is essential due to its usefulness in routine dengue control activities and adequate clinical management of suspected cases. The aim of this study is to analyze the PPV of dengue reported cases with a focus on the epidemic periods. Methods: We conducted an observational descriptive cross sectional study using secondary data from the National Dengue Surveillance System in Brazil. Cases reported from 2000 to 2010 with an IgM ELISA test result from a blood sample collected between the 6th and 30th day after the onset of symptoms were selected for the study. PPV was estimated as the proportion of cases that were confirmed among the dengue suspected cases that were tested using the serological test. Results: Globally, the PPV ranged from 46% to 71% during epidemic periods and from 27% to 47.5% during non epidemic periods. The PPV according to sex or population size of municipalities presented similar results. PPV increased with age in all the years analyzed. Exanthema was the symptom with the highest PPV, ranging from 66% to 83%. The PPV also increased with the number of symptoms presented by the patients during all the study period, possibly reflecting a more specific diagnostic. The most common clinical presentation included fever, arthralgia, headache, retro-orbital pain, myalgia and prostration presented a lower PPV. PPV was higher among patients with at least four symptoms, usually including exanthema. Conclusions: The analysis of

the PPV is essential to evaluate the quality of the data from the surveillance system and the magnitude of dengue in the country. Our results highlight the need for improvement in the routine notification of dengue suspected cases. These results should also be used in the current discussion on the adoption of the new dengue case classification proposed by the World Health Organization in Brazil, particularly in the revision and adoption of new surveillance forms and other improvements in the disease surveillance system. **E-mail:** giovanini.coelho@saude.gov.br.

Dengue027- **Positive Predictive Value Suspected Dengue Cases Reported. Belo Horizonte, MG, 2001 to 2011**

Pessanha, José Eduardo Marques; Brandão, Silvana Tecles; Morais, Maria Helena Franco; Almeida, Maria Cristina de Mattos; Cunha, Maria da Consolação Magalhães and Fiúza, Vanessa Pires.
Belo Horizonte City Health Department, Brazil.

The behavior of dengue in the Americas, especially Brazil, has differed from Asia with a prevalence of disease among adults, including severe forms of the disease. We conducted an observational, descriptive, cross-sectional use of secondary data in the information system of dengue in the city of Belo Horizonte between 2001 and 2011. We calculated the Positive Predictive Value, PPV of clinical diagnosis determined by the proportion of laboratory confirmed cases by anti-IgM serology and suspected cases reported in the city. For the years 2010 and 2011we analyzed the PPV of the symptoms reported. The PPV ranged from 82.9% (May/2010) in epidemic year, to 4.3% (Oct/2007), non-epidemic period. During the period under review, we highlight the year 2010, with a PPV of 75.6% the year of greatest epidemic. In 2011, the year that followed a major epidemic, the PPV was only 25.5%. The analysis of data according to the age group showed a pattern of higher PPV in accordance with age. Children under five years of age had the lowest PPV, usually with values less than 40%, reaching a minimum 21.6% in 2008. Signs and symptoms of the reported cases of dengue, the isolated analysis of these showed that the rash showed the highest PPV in all the years analyzed, ranging from 86.7% in 2010 to 39.7% in 2011. The other symptoms were very similar to the PPV, very low in 2011 (values close to 25.0%), around 50.0% in the years 2007-2009 and 70.0% in 2010. PPV also showed a tendency to increase in accordance with the symptoms. The percentage of suspected cases is not confirmed by laboratory variability. In addition to underreporting, another problem is the occurrence of high number of reporting false-positive cases in periods after outbreaks, confirmed only by clinical and epidemiological criteria. Thus, it becomes necessary to invest in collecting samples and investigate the potential diseases that make differential diagnosis with dengue, so as to increase the predictive ability of the surveillance system. The introduction of rapid diagnostic tests, in addition to reducing costs, could reduce the inappropriate prescribing of antibiotics for viral diseases such as dengue. The surveillance system should be able to generate early warnings to target measures aimed at interrupt the chain of transmission and prevention of new cases of the disease. **Keywords:** Dengue Fever, Surveillance, Symptoms. **E-mail :** edumpessanha@hotmail.com

Dengue028- **Positive relationship between socio-environmental condition and number of dengue cases in municipality districts of Serra Talhada, Pernambuco, Brazil.**

Lima, F,T.[1]; Oliveira, C. K. S.[1]; Nascimento, J.M.[1]; Bezerra, H. M. S.[1]; Ferreira, A. P.[1]; Barbosa, Mª E. O.[1]; Gomes Jr, P.P.[2]*
1,2 - UFRPE/UAST, Serra Talhada, Brazil

Introduction: Tropical diseases are linked to inadequate or nonexistent infrastructure and lack of commitment from the government. As dengue considered a major public health problems and their control is through mosquito vector control. Countries like Brazil, has faced outbreaks frequently. Among the Brazilian regions suffering most from the increased number of cases as northeastern region due to drought in common areas of the states. In Serra Talhada in the interior of Pernambuco state the number of cases has grown, despite the efforts of local government in vector combat. The present study shows, once again, that the lack of environmental hygiene, coupled with poor public services and lack of

environmental education among the population make the problem insoluble. **Material and methods:** At April 2010 to march 2012, 746 questionnaires were administered (0.5% of the population) to the population of urban region of Serra Talhada. Then, people who reported positive cases of dengue were analyzed from the viewpoint of socio-environmental aspects of their neighborhood, with regard to public services and infrastructure. **Results:** The municipality district with the highest number of cases had intermittent water supply, which make the population to store water without carefull. In addition, there are dumps and open sewers. While municipality districts with the lowest number of cases had continuous supply of water, sanitation and regular garbage collection. In all districts occur bimonthly visits by agents endemic control diseases. **Conclusion:** Despite the preventive action of the municipal health department and popular participation in the campaigns of vector during the outbreak, lack of sanitation has contributed to the lack of dengue fever in Serra Talhada, Pernambuco. The main important strategies for dengue control are environmental education and commitment of the government, **E-mail:** ppgjr2005@yahoo.com.br

Dengue029- **Pupal Productivity and Competitive Effects of *Aedes albopictus* (Diptera: Culicidae) on *Aedes aegypti* in Natural Areas in Rio de Janeiro, Brazil**

Camara DCP[1], Riback TIS[2], Pereira GR[3], Honorio NA[1], Codeço CT[2]
[1]Laboratório de Transmissores de Hematozoários, IOC/Fiocruz, [2]Programa de Computação Científica, Fiocruz, [3]Núcleo de Apoio a Pesquisas em Vetores, IOC/DIRAC/Rede Dengue, Fiocruz

Aedes aegypti, the main vector of dengue in Brazil, is one of the most common container-dwelling mosquitoes found in association with man. However, this scenario has changed over the past decades with the invasion of another mosquito, *Ae. albopictus*, who competes for the same breeding spots of *Ae. aegypti*. Since then *Ae. albopictus* established in many places previously inhabited by *Ae. aegypti*, displacing or even locally extinguishing the latter. One possible explanation for this is the competitive advantage of *Ae. albopictus* over *Ae. aegypti*. In countries like Brazil where dengue control measures target the vector, quantifying the relationship between these mosquitoes can be important to determine more vulnerable areas for each species. We measured the pupal productivity of *Ae. aegypti* and *Ae. albopictus* in natural conditions without interference of man and tested the hypothesis that different densities of *Ae. albopictus* can induce mortality on *Ae. aegypti*. We placed 45 vases filled with water in a forest surrounded by a densely populated area in the fall of 2011, with naturally accumulated leaf detritus as resources. For 30 days we observed the daily pupal productivity and at the end we counted all immature forms in order to conduct the mortality x density experiment. For this we placed newly hatched larvae of *Ae. aegypti* and *Ae. albopictus* in three treatments with different densities (35:0, 35:35 and 35:70, the mean number of immatures found during the whole study period) to verify if the presence of *Ae. albopictus* is capable of exercising a negative effect on *Ae. aegypti*. The mean productivity per vase was 14,4 ± 15,31 pupae per day, and we found that *Ae. aegypti* is capable of colonizing vases inside a forest and produce viable pupae even in the presence of *Ae. albopictus*. *Ae. albopictus* has a negative influence in the population growth of *Ae. aegypti*, with the mortality of *Ae. aegypti* on the three different densities being respectively 8,57%, 36,70% e 39,12%. We concluded that forests and other natural areas in the middle of densely populated areas can serve as shelter and refuge for *Ae. aegypti* during periods of vector control activities. These areas may serve as important sources for maintaining populations of *Ae. aegypti*, being responsible for the production of a significant number of pupae in a short period of time. The introduction and presence of *Ae. albopictus* can negatively affect populations of *Ae. aegypti*, which may have significant impact in the presence of the vector in dengue endemic areas. **E-mail:** daniel.cardoso@ioc.fiocruz.br

Dengue030- **Recent detection of Dengue virus type 4 (DENV-4) in Rio de Janeiro City**

Campos RM[1]; Veiga CSB[2]; de Souza LM[2]; de Meneses MDF[1]; da Silva KN[2]; Fernandes CA[2]; de Albuquerque JP[1,3]; Neto JBA[4]; Tanurí A[4]; de Aguiar SF[2]; Marinelli RS[2]; Ferreira DF[1]
1-Laboratório de Interação Vírus-Célula, IMPPG, UFRJ, Rio de Janeiro, Brazil, 2-Laboratório Central de Saúde Pública Noel Nutels, Rio de Janeiro, Brazil, 3-Departamento de Ensino, UFRJ, Macaé, Brazil, 4 - Laboratório de Virologia Molecular Animal, Instituto de Biologia, UFRJ

In Brazil, DENV-4 was first detected during a short period in 1982 in the Amazon region. After this period the virus was detected again only in 2008 in three patients in Manaus, Amazonas, without any traveling history. In the State of Rio de Janeiro, DENV-4 was detected in Niteroi city in March 2011 during an outbreak of DENV-1. Since the first reports on the circulation of DENV-4 surveillance actions have been implemented, based on methodologies for fast identification of all dengue serotypes at acute phase. According to this surveillance program, 10% of the samples from patients presenting fever assisted by the public health system are analyzed by the State Central Laboratory (LACEN-RJ) for the presence of NS1 and IgM by the ELISA test. All reactive samples are submitted to virus isolation in C6/36 cells and serotype identification by rt-PCR. As a result of this surveillance, the first case of DENV-4 was detected in the city of Rio de Janeiro. The patient, from the province of Padre Miguel, west region, went to the hospital one day after the initial symptoms, in December 2011. The second case, a patient from Vila Isabel (about 26 Km from the first case), was assisted three days after the symptoms started. Both cases were positive for NS1 ELISA, and DENV-4 was identified by rt-PCR and rt-PCR Real Time. The nucleotide sequencing from the structural polyprotein was performed and the two sequences had 99,3 % homology, also presenting homology up to 99% when compared to samples isolated from Roraima/2010, São Paulo/2011, Colombia and Venezuela (2005, 2006 and 2007). These data suggest that the DENV-4 virus detected in the city of Rio de Janeiro is probably related to the virus that has been circulating in Latin America. During the first weeks of 2012, DENV-4 was the main serotype isolated corresponding to 61,7% of the cases, followed by 38,3% of DENV-1. It is also important to note that the screening methodology based on NS1 detection from sentinel patients or regular patients in acute phase, followed by PCR typing, allowed an increase in sensitivity of virus isolation and serotype identification. **Financial support:** FAPERJ**. E-mail:** renatacampos@micro.ufrj.br

Dengue031- **Spatial dispersion and transmissibility of dengue in a mid-size city in Brazil**

M. A. P. Horta[1] , F. T. O. Ker[2], R. B. Oliveira[1], A. Navarro[3], C. M. S. Catita[3], A. P. Ferreira[1]
1.National School of Public Health / Oswaldo Cruz Foundation, 2.Health Department / Coronel Fabriciano City, 3. Sciences Faculty / University of Lisbon

Introduction: Increased urbanization, economic development, and the expansion in the number of water-storage locations have allowed *Aedes aegypti* to reinvade South America since the 70's. To measure the potential reproductive success of dengue infection and its probability to invade susceptible populations, authors use R_0 estimates and new tools of spatial analysis. **Material and Methods:** The study was conducted in the urban area of Coronel Fabriciano city (19º30'52,21''S; 42º37'31,32''W, 105,000 inhabitants), Minas Gerais State, Brazil. Warm temperatures, rainfalls and the geographic position of the city has created an ideal location for breeding sites of Aedes aegypti populations assuring their survival for all the year. Control measures are currently focused on community participation in vector control and larval source reduction. Suspected and confirmed cases of DF by onset of symptoms during the period of January 2002 to December 2009 were obtained from the dengue database of the Health Department which feeds the national surveillance system (SINAN). In order to obtain the DF dispersion pattern within the city limits for the year of 2009, a dataset with respective addresses for each notified case during the period and provided by City Health Department was used to geo-reference the dengue events. Weekly DF notification data were entered into a Coronel Fabriciano digital base map containing the city limits and census tracts by using GIS. We also estimated the reproduction number from epidemic data using two different models that consider an initial exponential growth of the epidemics. **Results:** Using method I, we

estimated reproduction numbers that ranged from 1.48 to 5.54. Using method II the reproduction number varied from 1.7 to 14.61. We observed an increase of reproduction number as the method becomes more complex by incorporating more parameters that take into account vector and host intrinsic properties. Epidemic peaks occur between 14th and 15th week of the year. When using Kernel density maps to observe the evolution of dengue notifications in Coronel Fabriciano`s urban territory, the DF epidemic waves are originated in the northern region of the city where late urbanization process took place. DF notifications are then dispersed to the central region and occupy southeastern areas in the movement. **Main Conclusions:** These results emphasize the need for local planning in controlling dengue epidemics in urban centers. Predicting the force of transmissibility and direction of the epidemic wave may help local Health Departments in dengue control strategies. **Work supported by** FIOCRUZ-RJ, CAPES, FAPERJ. **E-mail:** mhorta@ensp.fiocruz.br

Dengue032- **Sueveillence of notification of dengue cases in municipal administrative region 1.0: a comparative study of the years 2011 and 2012**

Quintão, L. M. C; Neto, M; Maciel, C J. V; Borges, D T; Macedo, T. S. C; Silva, J.L; Secca, C. R.
Divisão de Vigilância em Saúde – Coordenação de Área Programática 1.0 – Secretaria de Saúde e Defesa Civil da Cidade do Rio de Janeiro – RJ – Brasil, A Vigilância do Agravo de Notificação Dengue na Region de Planejamento 1.0: estudo comparativo entre 2011 e 2012

The current study has as its objective to study the incidence of Dengue Fever cases within the 1.0 Region of the City of Rio de Janeiro. Dengue Fever is an endemic disease of Brazil and, in the specific case of Rio de Janeiro; this endemicity varies from region to region within the same city. Therefore, surveillance of the incidence of disease cases as well as populational progression makes itself necessary. For this purpose, it is our goal to analyze the epidemiological aspects of the incidence of cases of Dengue Fever in the 1.0 Administrative region of Rio De Janeiro between the first and ninth epidemiological weeks of 2011 and of 2012.A quanti-qualitative study, with an analytical approach of the social factors that contribute to define the overall Health profile of a population. The collection of data was conducted by the Transmissible Diseases Notifications system and crossed with the data provided by the City department of Health and Civil Defense of Rio de Janeiro. The analysis was done through means of an integrated, triangular review of the number of notifications within the 1.0 Administrative regions. The surveillance of new disease cases of dengue fever is vital for better, improved patient care as well as for better environmental control and combat of the vectors (mosquitoes) involved in transmission of the disease in areas of viral circulation. New cases of dengue fever occurring within the 1.0 Administrative regions were monitored by so-called Regional Units while direct blocking actions were undertaken by regional Environmental Surveillance Teams. When we proceed to compare the years of 2011 and 2012 we see a sharp decrease in the number of newly notified cases from 1112 to 683.this is a clear sign of greater coverage of the population at risk, reflected I the improvement of strategies used by health surveillance agents. This improvement in strategies and measures can be seen through several examples such as: better educational tactics, social awareness programs for the population concerned, a greater number of house visits and direct vector combat and control. All these measures translate into a positive outcome on the overall indicators of health in the 1.0 region as well as better surveillance. **E-mail:** leaquintao@gmail.com

Dengue033- **The correlation between dengue transmission and solid waste management in a market in the city of Belém do Pará**

Almeida, Daiane L. Brasil; Crvalho, Luana Ferreira; Diniz, Eliane C. Pingarilho; Gama, Kamila N. Gonçalves; Maciel, Zeze L. Cunha; Neto, Manoel S. Cruz.
University State of Pará (UEPA)

Introduction: The public health situation in Brazil is adverse; it seemed that controlled diseases such as dengue have become serious problem in urban areas. Such a framework is favored by the conditions that rapid urbanization gave *Aedes aegypti*, due to the inadequate disposal of solid waste. How the Amazon endemic region suffers from recurrent outbreaks, especially the state of Pará. The aim was to analyze the

correlation between the improper disposal of solid waste and dengue transmission. **Material and methods:** The study was qualitative; we performed a descriptive study, based on the method of field research. The research was conducted at the Municipal Market of Guamá neighborhood, considered one of the five most affected by dengue in the city of Belém, and is the second most populous. The data collection instrument was a form containing eleven items for observation of physical infrastructure, waste management and three to four questions from the local merchants. **Results:** During the observation it was found that the storage conditions of solid waste in the market were not adequate. There were only three containers for the storage of all types of waste on their physical condition, were broken and dirty, had no capacity to store everything, so many marketers were using paper boxes. Regarding the presence of garbage collectors at the fair, there were only four people who were carrying out sweeping the place, being paid by the merchants. It was observed in the external and internal market the presence of debris such as boxes, plastics, bones, remains of food, as well as all hall, ditches and culverts, which were open and burdened by these items, culminating in the accumulation of water. We performed the following questions to the fairground: What are the hours and days of garbage collection in place? According to them, is held every day at the end of the day, cut up the inside of the fair and then is collected by garbage truck on a daily basis. On the existence of selective collection, said they did not perform. Finally, asked if there had been cooperative in place to collect the waste can be recycled. They said that there is only one private company that collects some bones for possible use. **Conclusions:** The cases of dengue grow due to several factors already mentioned, providing means for the proliferation of *Aedes aegypti*. These situations can be reversed if there is greater participation of society and the government, because simple measures can contribute to the reduction of cases of the disease. **E-mail:**dayagape@hotmail.com

Dengue034- **The use of platelia dengue NS1 AG-ELISA to detect dengue virus in dried Aedes aegypti collected in the field with adult traps: a potential tool to improve dengue surveillence**

Sylvestre GR1, Gandini M2, Araújo JMG3, Kubelka CF2, Lourenço-de-Oliveira R1, Maciel-de-Freitas R1
1Laboratório de Transmissores de Hematozoários, IOC, Fiocruzundação Oswaldo Cruz/IOC, Rio de Janeiro, Brazil; 2Laboratório de Imunologia Viral, Fiocruz, Brazil; 3Laboratório de Flavivirus, Fiocruz, Brazil

Introduction: The circulation of a new or a long time absent dengue serotype is often observed only after the human cases already started. Due to logistic issues, monitoring dengue virus in mosquito population is rare, costly and labor intensive, despite the obvious pros. Herein, we reported the effectiveness of the Platelia Dengue NS1 Ag-ELISA assay developed by Bio-Rad as a surveillance tool to detect dengue virus in dried mosquitoes collected with mosquito traps from the field during a dengue epidemic in Rio de Janeiro. **Material and Methods:** Three experiments were conducted. First, we compared the efficacy of NS1 against qRT-PCR in detecting dengue virus in mosquitoes that were dead and maintained at insectary conditions (27±2°C, 75±5% rh) for 0, 6, 12, 24, 48 and 72 hours. We had a total of 120 females infected with DENV-2 strain 16681: 60 were analyzed with NS1 and 60 with qTR-PCR, with 10 insects per time per technique. Second, we addressed the effectiveness of NS1 against virus isolation and RT-PCR in mosquitoes dead and maintained at insectary conditions for 0, 6, 12, 24, 48, 72, 96, 120, 144 and 168 hours, i.e., one week. We infected 180 females and performed the three DENV detection methods in all mosquitoes. Finally, we collected 1277 Ae. aegypti females in 28 neighborhoods in Rio during a dengue outbreak in 2008-9 and assessed their infection status comparatively with RT-PCR and NS1. **Results:** When we compared the effectiveness of NS1 and qRT-PCR between 0-72h, we detected DENV in 57 (47.5%) mosquitoes (34 with NS1 and 23 with qRT-PCR). Intriguingly, optical density of NS1 positive samples remained constant with the number of RNA copies presented a tendency to decrease over time. The NS1 approach was again more effective in detecting dengue virus between 0-168h: 57 (31.7%) samples were positive with NS1, 34 (18.9%) by virus isolation and only 2 (1.1%) by RT-PCR. A total of 63 *Ae. Aegypti* females were infected (36 of them were detected with RT-PCR, 29 with NS1 and two with both methods). **Main Conclusions:** The NS1 approach showed to have a greater accuracy in detecting DENV in dried mosquitoes than qRT-PCR, RT-PCR and virus isolation. Furthermore, it also performed DENV detection in females collected in the field with mosquito traps. This early detection of

DENV in natural mosquito populations rather than in humans may be used as a tool to improve dengue surveillance and thus minimize dengue incidence in endemic regions. **E-mail:** sylvestre@ioc.fiocruz.br

Dengue035- **Time-series of confirmed and suspected dengue cases in the sentinel dengue pole In Rio de Janeiro, Brazil**.

R.B. Oliveira[1], M..A.P. Horta[1], M.A.L.C. Netto[2], O. Lupi[2], R. Nogueira[3], P. Brasil[4]
1. National School of Public Health / FIOCRUZ 2. Center for Strategic Information and Health Surveillance / FIOCRUZ 3. Oswaldo Cruz Institute / FIOCRUZ 4. Evandro Chagas Clinical Research Institute / FIOCRUZ

Introduction: About 11% of the annually worldwide dengue cases occur in Brazil. In the last 20 years, the city of Rio de Janeiro has been affected with dengue fever epidemics causing several impacts on public health with high morbidity, deaths and economic losses. Therefore, an epidemiological surveillance able to provide information on the occurrence of the injury, detect changes in the determinant factors and support prevention and control recommendations is crucial for the success of dengue control. **Material and Methods:** The Sentinel Dengue Pole (SDP) is based on three health assistance units belonging to Fiocruz, in Rio de Janeiro. In this work the dataset was collect from IPEC unit. DF case is detected in patients of all ages with clinical suspicion, and health assistance is conducted by these Fiocruz network Health Units, where it is executed the medical registration, collected blood samples, initiate prompt treatment and immediately notifies the Municipal Health Department. The Acute Fever Disease Laboratory, an IPEC Health Unit, utilize the Syndromic clinical algorithm approach of the patients with acute fever disease to optimize DF case detection. The National Reference Laboratory of Flavivirus in the Oswaldo Cruz Institute (IOC), receives the blood samples for dengue ribonucleic acid (RNA) polymerase chain reaction (PCR) detection and virus isolation. Time series of suspected and confirmed dengue cases enrolled by Polo Dengue from January 2007 to December 2011 was analyzed. **Results:** For the period of study, the Sentinel Dengue Pole detected 1140 suspected cases of Dengue Fever, of which 583 were confirmed. It was observed that the curves of the relationship suspected / confirmed in the years 2007 and 2011 approached in November and December, respectively, coinciding with the pre-epidemic period. A rise in correlation index values between the curves of suspected and laboratory confirmed cases were also observed. During the last five years the SDP conducted 1036 serological tests, 324 PCR tests and 226 NS1 strip tests. 448 patients were confirmed with classic dengue, 87 with dengue with complications, 48 with dengue hemorrhagic fever and one case with dengue shock syndrome. **Main Conclusions:** Despite of the low number of notifiable cases when compared to municipal report, the high number of confirmed cases when compared to the suspected ones makes the Sentinel Dengue Pole sensitive and effective in the detection of epidemics as well as changes in dengue patterns. **E-mail:** robsonb@fiocruz.br

Dengue036- **Time-space analysis of the dengue epidemic outbreak in Manaus (2011)**

[1]Terrazas, W.C.M; [2]Pinto, R.C; [3]Tadei, W.P; [4]Albuquerque, B.C; [5]Passos, R.A.
FVS-AM [1 2 4 5] / INPA[3]

Introduction: In 2011, the township of Manaus-AM went through the heaviest dengue epidemic outbreak in its history. In only 20 weeks, a total of 42,249 cases were confirmed, with 5,302 of them being recorded just in EW-08. Case notification was performed in 63 neighborhoods, with Cidade Nova presenting the largest number of cases, yet Praça 14 de Janeiro presented the highest incidence. It should be pointed out that Praça 14 de Janeiro noticed the first signs of *Aedes aegypti* mostly concentrated in garages, tire and car part shops with Strategic Spots SS, being identified nearby, back in 1996> **Objective:** To determine dengue transmission dynamics in the Manaus urban zone by means of time spatial analysis throughout the epidemic outbreak [EW-01 to EW-20], 2011. **Methods:** Epidemiological data were gathered from reports available at SINAN-Net data bank, referring to Epidemics Weeks EW-01 to EW-20/2011; population data and cartographic basis, in a local scale [neighborhoods], were made available by IBGE according to the 2010 census sector net. ArcGis 10.0 software was used for areas of risk aggregating them into High Risk [INC>300.00/100,000]; Medium Risk [INC>100.00≤300.00/100,000h],

Low Risk [INC>0≤100.00/100,000] and Transmission Free [INC=0.00/100,000]. **Results:** Neighborhoods Cidade Nova, Jorge Teixeira and Cidade de Deus accounted for 23.37% of the confirmed cases. However, Praça 14 de Janeiro, Glória and Presidente Vargas recorded the highest incidence rates, with Glória standing out by recording rates of 1,131.47; 1,561.92 and 1,069.98 cases per 100,000hab in EWs 07, 08 and 09 respectively. When analyzing dengue risk thematic charts in Manaus, one may conclude that EW-03 already showed signs of epidemics development with clusters [Hot Spots] in the region of Glória and Pres. Vargas. From EW- 06 onwards the epidemic outbreak got itself installed, reaching practically every neighborhood in the southern and mid-southern zones of the city, with the epidemic peak being registered in EW-08. From then on, the epidemics got to be gradually controlled, getting to EW-19 with only one medium risk cluster at Jorge Teixeira. **Conclusion:** Time space Visualization of epidemiological events important to public health care as the recent dengue epidemics outbreak in Manaus, becomes a major managing support tool, for field trial and health care managers, since it enables them to find out what city zones and neighborhoods might be presenting the highest risk to the population of falling hill from dengue.**FUNDING:** FVS-AM/INPA/FDB. **E-mail:** wagner.terrazas@hotmail.com

Dengue037- **Use of dialogic educational technologies in fighting and prevention of dengue: experience in the state of Bahia**

Almeida, C.A.[1]; Biscarde, D.G.S.[2]; Souza, V.B.[1]; Silva,J.S.[1]; Jesus, J.M.[1]; Costa, J.P.[1]; Oliveira, M.S.[1]; Costa, R.S.N.[1]; Sampaio, S.S.[1]
[1] Universidade Federal do Recôncavo da Bahia, [2] Universidade Federal da Bahia

Dengue is currently a big public health problem, presenting high incidence in many Brazilian cities due to environmental conditions, sanitation, habits and conditions living of the population, favoring the development of vector Aedes aegypti, mainly in urban areas, causing epidemic events of great magnitude. In Santo Antonio de Jesus, Bahia, in 2007, the rate of building infestation (IIP) was in the alert level. Given the high incidence of disease and the possibility of positive interventions through intersectoral action between universities, elementary schools and the Family Health Strategy, Health Education discipline, developed in undergraduate nursing, promoted the involvement of students in activities education and extension, considering the importance of educational activities in all the practices of health care and prevention of dengue. During the activities, the students performed the socio-sanitary diagnostic analysis of the reality, interacting with residents during visits with the community health workers, the micro-areas of a neighborhood in city with high IPP. From the diagnostic analysis, there was the planning and implementation of activities in schools and community spaces, strategic locations for the Health Education In order to include different age groups and foster an environment of dialogue for discussion and clarification of doubts, were held workshops conducted from different educational technologies, potentiating the participation of children, adolescents and adults. The strategies used were theater plays, educational games, and parodies, construction of posters by participants, preparation of educational materials and visualization of the stages of the mosquito in magnifying glass. During the execution of educational activities was perceptible the satisfaction of participants that, in their reports, demonstrated greater clarity about the concept of dengue, transmission, vector, signs and symptoms as well as preventive aspects. Moreover, were interested in intervening in the home and community from the knowledge built up over the educational activities. To undergraduates was possible to articulate theoretical knowledge to practice, showing the relevance of potentiate dialogical educational actions with community in order to sensitize them about prevention and consequences of dengue. Health Education, based on dialogical educational technologies and autonomous, in the Brazilian context, is an indispensable tool for professional and strategically performance for the prevention of dengue. **E-mail:** candy_lanai@hotmail.com

Dengue038- **Active surveillance of dengue disease in endemic areas in Latin America**

Arredondo JL[1], Carrasquilla G[2], Deseda C[3], Dietze R[4], Luz K[5], Morales J[6], Reynales H[7], Garbes P[8], Miranda MC[9], Rivas E[10], Dayan G[11], Noriega F[11].

1Instituto Nacional de Pediatria. Unidad de Apoyo a la Investigación Clínica. Ciudad de Mexico, MX. 2Centro de Estudios de Investigación en Salud (CEIS) - Fundación Santa Fe de Bogotá. CO. 3Caribbean Travel Medicine Clinic, San Juan. PR. 4Nucleo de Doenças Infecciosas/UFES, Vitoria, BR. 5Hospital Infantil Varela Santiago/UFRN, Natal, BR. 6Clinical Research Puerto Rico, Guayama. PR. 7Centro de Atención en Investigación Médica (CAIMED), Bogotá, CO. 8Sanofi-Pasteur, Sao Paulo, BR 109Sanofi-Pasteur, Bogotá, CO 11Sanofi-Pasteur, Mexico City, MX 12Sanofi-Pasteur, Swiftwater, USA

Introduction: Increasing dengue morbidity/mortality has been observed in the Americas over recent decades. However surveillance in Latin America is mainly based on passive reporting. As part of a longitudinal cohort study conducted to prepare for a dengue vaccine efficacy trial in Latin America, we established an active surveillance system in 20 sites in 4 countries. Here we present data on dengue cases detected via this active surveillance system. **Material and Methods**: A closed cohort of 3,000 children aged 9–16yo was established in dengue endemic areas in Brazil, Colombia, Mexico and Puerto Rico from Jun10 to Oct11 through schools or communities-based recruitment activities based on the epidemiological information available at site level. Surveillance was performed by passive and active methods. *Passive method*: Participants were asked to spontaneously visit the investigational sites (IS) in the event of dengue suspected case (DSC defined as fever ≥ 38°C for 2 consecutive days); those attending other healthcare facilities were to inform the Investigator within 24h of fever onset. *Active method*: Participants were contacted weekly by phone. Additionally, a staff member could visit healthcare facilities in the catchment area to retrieve information on DSC, if needed. Acute blood specimens were collected within 5 days of the fever onset; convalescent samples were collected 7–14 day later. If the subject did not return for follow-up, the IS team contacted the subject. Dengue was serologically confirmed by a 4-fold increase in IgG titer (ELISA) between acute and convalescent samples, or a positive IgM ELISA test result in either sample. Cases were virologically confirmed by a positive NS1 antigen ELISA test result. **Results**: Overall, 7.8% of subjects in the study cohort experienced ≥1 DSC during the follow up period (study duration was 504 days and mean duration of follow-up was 177.6 days). The overall incidence density of DSC was 17.7 per 100 person-years of follow-up, with 20.5, 15.3, 17.8 and 22.0 per 100 person-years of follow-up for Brazil, Colombia, Mexico and Puerto Rico, respectively.

		Serology			NS1			Serology or NS1			Serology and NS1		
	DSC	Cases	%	95% CI	Cases	%	95% CI	Cases	%	95% CI	Cases	%	95% CI
All countries	235	50	21,3%	16.2-27.1	18	7,7%	4.6-11.8	57	24,3%	18.9-30.3	11	4,7%	2.4-8.2
BR	42	15	35,7%	21.6-52.0	5	11,9%	4.0-25.6	16	38,1%	23.6-54.4	4	9,5%	2.7-22.6
CO	98	8	8,2%	3.6-15.5	6	6,1%	2.3-12.9	13	13,3%	7.3-21.6	1	1,0%	0.0-5.6
MX	44	1	2,3%	0.1-12.0	1	2,3%	8.2-32.7	8	18,2%	8.2-32.7	1	2,3%	0.1-12.0
PR	51	19	37,3%	24.1-51.9	6	11,8%	4.4-23.9	20	39,2%	25.8-53.9	5	9,8%	3.3-21.4

The incidence density of DSC classified as serologically-probable and virologically-confirmed was 3.6% and 1.3%, respectively. The density incidence of DSC with both lab-confirmed (NS1) and probable dengue (serology) was 0.8 per 100 person-years of follow-up with some variability between countries (CI 95%: 0.4 to 1.4). **Conclusions**: Although this study was not designed to determine dengue incidence, our data suggests that dengue burden is underestimated when solely based on routine surveillance. **E-mail:** pedro.garbes@sanofipasteur.com

Dengue039- The Social, Ecological and Biological Determinants for Dengue Risk in Machala, Ecuador: A Situational Analysis

Breilh J[1], Spiegel J[2], Beltrán E[3,4], Mitchell-Foster K[5], Arichabala A[6], Adrian J[3], Ordóñez T[3]
1. Universidad Andina Simón Bolívar Sede Ecuador, Quito, Ecuador, 2. Global Health Research Program, University of British Columbia, Vancouver, Canada, 3. Servicio Nacional de Control de Enfermedades Transmitidad por Vectores Artropodos, Machala, Ecuador, 4. Universidad Técnica de Machala, Machala, Ecuador, 5. Interdisciplinary Studies Graduate Program, University of British Columbia, Vancouver, Canada, 6. Ministerio de Salud Pública, Machala, Ecuador

Introduction: Machala, a city marked by infrastructural weaknesses and a history of uncontrolled growth, is endemic for dengue and experiences frequent outbreaks and epidemics; *Aedes* indices are generally high (House Index 12.6 and Breteau Index 18.3). Dengue prevention and control in Machala is managed by vertical insecticide-based programs, despite relative success there is a collective push toward a more integrated approach directed toward the Social-Eco-Bio determinants of dengue risk. **Materials and Methods:** 2000 families in 20 neighborhoods were surveyed once in each the rainy (February 2011) and dry (July) seasons. A comparative analysis of existing data describing the ecosystem, human and vector populations as well as new information gathered through the cross-sectional entomological and household surveys, social network analysis and stakeholder analysis was done with impressionistic social stratification and a developed Social Insertion Index (INSOC) to explore dengue transmission risk patterns. **Results:** Household level data shows that the vast majority of study participants are familiar with dengue (99.1%), believe that it is a serious health issue (82.05%) and correctly understand the dengue transmission cycle (86.5%). Pupa Per Person Index (PPP) and productive container types did not correlate well with impressionistic social stratification data, however, distinct patterns emerged when analyzed with INSOC data. Upper INSOC strata neighborhoods had a rainy season PPP index of 0.8 while those of middle and lower INSOC strata had a PPP of 1.6 (ANOVA p < .001). The most productive containers for upper strata were smaller than 5 L, for middle strata they were basins of 5 to 20 L, and lower strata were ground-level tanks of 200 L. Social and stakeholder analyses found a lack intersectoral coordination in prevention and control planning efforts and vacant lots as pervasive public health issues linked to dengue transmission risk. **Main Conclusions:** Access to basic sanitary infrastructure and reliable potable water provision remains a concern for many of the middle and lower INSOC neighborhoods; this is reflected in the most productive container type and size. Vacant lots present a unique opportunity for intersectoral collaboration in dengue prevention in Machala. **E-mail:** foster5@interchange.ubc.ca

Dengue040- **Dengue in Brazil and Colombia: a proposal of an ecosystem approach to control**

Santos, SL [1]; Augusto, LGS [2]; Pineda, EA [3] Parra-Henao ,GJ[3]
(1) Federal University of Pernambuco-Recife/Brasil; (2) University of Pernambuco and Aggeu Magalhães Researches Center-Fiocruz-Recife/Brasil; (3) Colombian Institute of Tropical Medicine- University CES/Medellin/Colômbia.

Objective: This study was conducted with the aim of implementing the strategy of ecosystem approach to health to the case of dengue, a disease highly endemic in Colombia and Brazil, which requires the application of new approaches for control. **Material and method:** The study was conducted in two countries in Latin America. In Colombia was passed in four districts located in the municipalities of Apartado and Carepa, Uraba Antioquia. In Brazil was passed in Santa Rosa neighborhood of a city of the region Northeast of Brazil. A characterization of the micro context in the neighborhoods studied, and characterization of the macro context in the municipalities; identified the knowledge, attitudes and practices of social actors about the dengue; were carried out entomological surveys to determine the status of infestation *Ae. Aegypti*; was conducted observation and a series of community workshops in which I get to a dialogue of knowledge that allowed build a model to explain these local Dengue. **Results:** In Brazil, 89% of the people interviewed showed knowledge adjusted on the habits of the transmitting mosquito, and 79% showed inadequate knowledge about measures of mechanical control against the mosquitoes. 87% showed unfamiliarity to the types of products used in larvae control. The habit of covering and changing the water in reservoirs was adequate in 91% and 82% of the interviewed, respectively. Cleaning infected reservoirs was considered inadequate by 73% of the people interviewed. Little participation in social groups (23%) was verified and the domestics care measures with reservoirs water are carried through by women in 80% of the households. In Colombia most respondents showed unsatisfactory attitude about dengue prevention. Most of the answers as to prevent dengue fever related to mosquito control. In the primary prevention aspect, the use of mosquito net is very low (6%). On the side, hydration is a measure that has proven effective, but little applied by the surveyed population (2%). Regarding the attitude of the vector control, specifically for the elimination of larval breeding sites, this was unsatisfactory, because only 48% of respondents referred to periodically wash reservoirs, a situation that allows development cycle in the mosquito breeding. **Conclusion:** The model ecosystem approach

can be made in influencing behaviors and representations regarding prevention, interaction between people and institutions of health and access to biological aspects of the vector. In both countries consider comprehensively the natural environment with the urban environment and according to this multivariate framework seek interdisciplinary communication, which involved decision makers, community, community leaders and academics from different backgrounds (social and biological). **E-mail**: solange.lsantos@ufpe.br

Dengue041- **Epidemiological and entomological characteristics of dengue in rural area of Anapoima municipality, Colombia**

Vargas SL[1,] Olano VA[1], Jaramillo JF[1], Matiz MI[1], Lenhart A[2], Stenström TA[3, 4], Overgaard HJ[4]
[1]Instituto de Salud y Ambiente, Universidad El Bosque (UEB), Bogotá, Colombia.[2]Liverpool School of Tropical Medicine (LSTM), Liverpool, UK. [3]Department of Parasitology, Mycology, Water and Environmental Microbiology, Swedish Institute for Infectious Disease Control, Sweden. [4]Department of Mathematical and Technological Sciences (IMT), Norwegian. University of Life Sciences (UMB), Ås, Norway.

Introduction: In Colombia the number of dengue cases has increased over the past 10 years and the geographical distribution of dengue transmission expanded widely. While dengue has traditionally occurred mainly in urban areas, many cases are now occurring in rural areas. Rural propagation of dengue is caused by the interaction between socio-demographic, environmental, and entomological factors. Little is known about dengue in Colombia's rural areas. The aim of this study was to characterize the epidemiological, social, entomological, and environmental factors that influence the risk of dengue transmission in a rural area of Colombia. **Material and Methods:** Anapoima municipality is located in Cundinamarca, Colombia. The altitude is 700 m.a.s.l., the annual temperature ±26 ºC, the annual precipitation 1300 mm. Anapoima has 11,225 inhabitants, 36% in urban areas and 64% in rural areas. There are 30 veredas (non-administrative subdivisions). A descriptive study was carried out in 684 rural households to determine the infestation levels of *Aedes aegypti*; assess the knowledge, attitudes and practices about dengue; and to assess environmental aspects that might influence dengue transmission. Epidemiological information was obtained from the national health surveillance database 2010. **Results:** In 2010, there were 69 probable cases of dengue in the municipality. The incidence in the urban area was 4 times higher than the rural area. 20 (29%) were rural cases, coming from 14 veredas. Most rural cases were from areas located close to an urban area. 30% of rural cases occurred in May. The average age of cases in rural areas was 31 yrs, with 60% occurring in people aged 20-64 yrs. Of all rural cases 55% were women. Although 90% of rural patients consulted a clinic during the first 5 days of onset of symptoms, laboratory confirmation was not performed. The rural population had moderate knowledge of the types of mosquito breeding places, dengue symptoms and methods of disease prevention. Only 30% of those surveyed washed their tanks weekly. A total of 4006 adult mosquitoes and 1433 immatures were collected. 42.3% of the adults and 50.5% of the immatures were *Ae. aegypti*. 97% of the veredas were *Ae. aegypti* positive (all with Breteau index ≥ 5). The house index for adults was 46%. The main breeding sites were ground tanks (69%) and discarded objects (22%). The most important environmental factors that favor the presence of dengue vector breeding sites were lack of water supply and households having inappropriate rubbish disposal practices. **Main Conclusions:** High levels of *Ae. aegypti* infestation and presence of dengue cases are the main risk factors for transmission of dengue in rural Anapoima. However, the precise transmission dynamics are unknown, since it is unclear whether the reported dengue cases were locally transmitted or imported. Interventions for vector control should be directed toward the water storage tanks and rubbish removal in rural areas of Anapoima. **E-mail:** hans.overgaard@umb.no

Dengue042- **Climate change effects on distributional shifts in dengue vectors and virus transmission risk in Mexico**

Ramsey JM, JF Pinto, CN Ibarra-Cerdeña
[1]Centro Regional de Investigación en Salud Pública, Instituto Nacional de Salud Pública. Tapachula, Chiapas, México

Introduction: Although dengue was traditionally limited to coastal and hotter climate states in Mexico, it is now transmitted over most of the territory, reporting cases in 30 states, with only the higher urban areas of Mexico City and Tlaxcala free from the vector. Ecological niche modeling (ENM) provides the opportunity to quantitatively study spatial trends of dengue virus and vector dynamics for control program planning. Known occurrences are related to ecological conditions (bioclimatic variables), to model species ecological requirements and project those into geographic space, and time periods, and shifts in niche suitability across different scenarios of climate change are evaluated. **Material and Methods:** 13,500 dengue case occurrence points for type 1-4 virus from 10 years of national surveillance projects were integrated in a GIS database with 376 data points of *Aedes aegypti* and 96 for *Ae. albopictus*. Eight bioclimatic variables of the WordlClim database summarizing temperature and precipitation conditions and topographic variables were used to model niche. The ENMs were constructed using GARP in OpenModeller desktop ver 1.1.0. We projected niche into two contrasting CSIRO and HADCM3 circulation models for 2020, 2050 and 2080 using A2 and B2 scenarios. Maps were constructed for the overlap niche of dengue and *Ae. aegypti* (DAae) and Dengue + *Ae. albopictus* (DAal) and gain/loss of niche and at-risk population for *dengue* transmission calculated for each period and scenario for México. **Results:** DAae distribution in Mexico is predominantly Neotropical currently, but a shift to Neartic areas after 2050 is predicted for a consensus of A2 and B2 scenarios and for both circulation models. Temperature seasonality for predicted exposure areas remains constant over this trend and is associated > 90% with cities > 5000 inhabitants. Regions for DAal are more reduced and discontinuous than the former, and their future trends indicate a loss of almost all the southeast distribution while persisting in the northeast. An increase of 40%(A2)-50%(B2) of at-risk Mexican populations is predicted for 2080 for the DAae model, conversely there is a no consistent pattern for DAal. **Conclusions:** There are areas currently with exposure and transmission of dengue virus that will be unsuitable for *Aedes aegypti* and potentially for dengue virus exposure in the next decades, but this is inconsistent and depends on the CC scenario used. In contrast, there are consistent projected gains in risk areas and populations, which could be targeted for preventive and specific surveillance by the healthcare system, given the results obtained herein. **E-mail:** jramsey@insp.mx

Dengue043- **Dengue and other Flaviviridae in sylvatic mammals in Tapachula, Chiapas**

Puerto-Avila MB, López-Ordoñez T, De la cruz HK, *Ramsey JM.
Centro Regional de Investigación en Salud Publica, Instituto Nacional de Salud Pública. Tapachula, Chiapas, México.

Introduction: Zoonotic surveillance for emerging and re-emerging pathogens that affect human populations is absent in Mexico, even though there is increasing exposure to wild animals and pathogens due to environmental modifications (population growth, social development, and natural disasters). At least 150 viruses are described which cause human infections, principally from the virus families of the Flaviviridae, Bunyaviridae and Togaviridae, and about 40 of these cause severe clinical syndromes. The aim of this study was to evaluate a surveillance strategy for potential mammal reservoirs and dipteran vector species of previously mentioned virus families, in the Tapachula urban area. **Materials and methods:** Wildlife (Rodentia, Marsupialia, and Chiroptera) and mosquitos resting in intra-urban vegetation fragments were sampled from four cemeteries in Tapachula over rainy and dry seasons, using saturation sampling. Mammals were taxonomically identified, and liver, heart and lung tissues preserved directly in Trizol at -80C. Tissues were analyzed using an RT-PCR technique for the presence of virus family markers. Samples positive for family level markers were subsequently analyzed using species specific primers for groups such as dengue viruses, and amplicons sequenced and compared using GenBank for identification. **Results:** A total of 213 specimens of 10 species in dry (111) and rainy (103) seasons were collected. Positive results were obtained only for the Flaviviridae family, including 15 mammals captured from 4 different species in the dry season and 6 mammals from 2 species in the rainy season. Sequence analysis supported a 98% similarity with serotype 2 dengue virus in one sample from *Artibeus jamaicensis* collected in the dry season. Other sequences obtained from Flaviviridae positive samples (200pb) contained a fragment of 26 bp with 100% similarity for various other viruses, although none had full identity with sequences registered in GenBank. None of the 45 *Aedes aegypti*, 43 *Aedes albopictus* or 108 *Culex quinquefasciatus* collected were positive for any family level markers.

Conclusion: The identification herein of dengue 2 virus in *Artibeus jamaicensis* does not demonstrate their role in transmission to human populations and will require further collections, viral culture, and mosquito infection to ascertain a potential role as reservoir. Some of the Flaviviridae viral sequences identified in this study are consistent with a specific region of this family´s genome, although their complete sequences do not match any specific organism and may represent new registries within the Flaviviridae. **E-mail:** jramsey@insp.mx

Dengue044- Dengue and Chikungunya Infections Imported to the Czech Republic: Evaluation of Direct Diagnostic Methods

[1,2,3]Stejskal F., [1]Trojanek M., [4]Sojkova N., [4]Maixner J., [1]Maresova V., [5]Walterova L.
[1] 1st Department of Infectious Diseases, 2nd Faculty of Medicine, Charles University and Bulovka Hospital, Prague, Czech Republic, [2] Institute of Immunology and Microbiology, 1st Faculty of Medicine, Charles University, Prague, [3] Department of Infectious Diseases, Regional Hospital Liberec, Czech Republic, [4] Department of Virology, Health Institute, Prague, [5] Department of Clinical Hematology, Regional Hospital Liberec

Introduction: Arboviral infections are common febrile diseases in travellers returning from the tropics. In the Czech Republic, there were reported 82 cases of dengue fever (DF) in the national surveillance system during last 7 years. The aim of our study was to evaluate epidemiological, clinical aspects and diagnostic methods in imported cases of dengue and chikungunya. **Methods:** In a prospective study there were diagnosed 60 patients with DF and 8 patients with chikungunya fever (CF) at Bulovka Hospital in Prague and Regional Hospital in Liberec between 1/2005 and 3/2012. Acute DF was confirmed by the positivity of IgM and seroconversion of IgG anti-dengue antibodies (ELISA) and detection of viral RNA (RT-PCR) or NS1 antigen. Acute CF was diagnosed using ELISA or RT-PCR. **Results**: The study included 60 patients with DF. 36 were hospitalized but only two, 21-year old woman (polyserositis) and 31-year old man (TTP), had complicated clinical course. DF was acquired in Asia (52), Latin America (7) and West Africa (1). The most common symptoms included fever (all patients), rash and cephalea (both in 67.6%), arthralgia and myalgia (both in 50%). In the laboratory findings dominated leukocytopenia (median 2.1 k/µl), thrombocytopenia (69 k/µl) and elevation of aminotransferases (median AST 103.5 IU/l, ALT 104.4 IU/l). RT-PCR was performed in 22 patients with acute DF, 14 were positive and 8 negative (sensitivity 63.6%). NS1 Ag detection was done in 30 patients, 23 were positive and 7 negative (sensitivity 76.7 %). Acute CF was diagnosed in 8 tourists returning from Mauritius (4) or South-East Asia (4). The predominant symptoms were fever and arthralgia (both in all pts), rash (75%) and GIT symptoms (50%). Laboratory results were: WBC (median 3.5 k/µl) and platelets (151 k/µl), aminotransferases (median AST 40.8 IU/l, ALT 24.6 IU/l). **Conclusion**: The main pitfalls of dengue serology are the presence of false positive anti-dengue IgM and cross-reactivity of anti-dengue IgG antibodies in persons previously vaccinated against YF and TBE. Methods of direct detection (RT-PCR and NS1 Ag) should be implemented into routine diagnostic protocol in febrile travellers returning from the tropics. **Supported by** the grants of Ministry of Education (SVV-2012-264506) and Scientific board of Regional Hospital Liberec. **E-mail:** fstej@lf1.cuni.cz

Dengue045- Understanding dengue transmission through Eco health approach in Bangladesh

Dhar Chowdhury, P[1]; Haque, C.E.
University of Manitoba, Winnipeg, Manitoba, Canada

Background: Globally, vector borne diseases are becoming a significant public health problem, with a number of 'old' diseases resurging in recent years alongside newly emerging infectious diseases. Among them, Dengue has become most prominent example as dengue fever (DF) and dengue hemorrhagic fever (DHF) are characterized by a complex epidemiology, resulting from the underlying biotic and abiotic determinants in the human-environment system. While dengue is regarded as one of the most alarming infectious diseases, its resurgence reflects the failure of traditional reductionist disciplinary approach in understanding dengue disease transmission process as well as in eliminating and controlling dengue

vectors (i.e., *Aedes aegypti* and *Aedes albopictus*). My research is based on the notion that the understanding of the dengue disease transmission requires the development of a holistic epistemology that can assess the eco-bio-social determinants and their interactions with human action and vice versa. The proposed study has four components: i) determination of dengue virus prevalence, ii) determination of vector density and its correlation with dengue prevalence; iii) effects of local-level social-ecological and human behavioural factors on vector density; and iv) enhancement of local community capacity for public participation in health intervention and development policy forums. **Methods:** The proposed research has adopted a Trans disciplinary approach as the basis for understanding dengue transmission in Bangladesh and for identifying community-centered interventions. In order to attain the objectives of the research, a total of 842 households from 12 urban wards were surveyed with a specific survey instrument. Vector distribution was monitored and vector density has been calculated by the commonly used larval indices and the human-hour catch and per room collection of adult vector population. For in-depth understanding and identification of potential interventions, Focus Group Discussions were held in three selected wards of the City of Dhaka. These were supplemented by semi-structured interview of 30 stakeholders representatives; responses from 300 ward/community members; 12 policy- and/or decision makers (national and local institutions), and Mental Map construction of 24 ward representatives (supplemented by 300 ward members). **Results and conclusion:** Overall, the findings have revealed that vast majority of the community members are well aware of Aedes infestation, however, very few have taken specific measures to control them in their household and in the neighbourhood.   In terms of policy recommendation, it is suggested that more community ownership will be required to make Aedes control a success. **E-mail:** umdharch@cc.umanitoba.ca

Dengue046- **Dengue fever in a non endemic country**

Perret CF[1,2], Balcells E[1], Vizcaya C[1,2], Hirsch T[1], Azócar T[2], Martinez C[2], Montecinos L[2], Ferrés M[1,2].
Infectious Diseases Unit[1], Infectious Diseases and Virology Laboratory[2], School of Medicine, Pontificia Universidad Católica de Chile, Santiago, Chile.

Introduction: In the last decade dengue cases and dengue severe cases have increased significantly in The Americas, mainly in South America. Chile reports cases only on Easter Island but not on the continental territory where *Aedes aegypti* does not exist. Objective: To analyze imported cases of dengue in Chile and to identify risk factors associated with dengue infection. **Material and Methods:** Database analysis of travelers with travel related diseases seen in a University Hospital and in our outpatient clinics from October 2003 to March 2012. Dengue diagnosis was confirmed by dengue-IgM ELISA after 5 days of illness. **Results:** 378 travelers were seen during this period, 183 (48%) females, average age was 27.8 years old. Main diagnosis syndromes were Acute Diarrhea 90 (24%), Febrile systemic illness 86 (23%), Dermatologic 83 (22%) and Respiratory 52(14%). Among patients with febrile illness, 49(68%) of them were confirmed with dengue infection. 44 patients lived in Chile. In dengue cases the region of exposure was South America 33 (67%), Caribbean –Central America 11(22%) and South East Asia 5(10%). The main countries of exposure were Brazil 22 (45%), Bolivia 3 (6%), Ecuador 3 (6%), Thailand 3 (6%), Colombia 2 (4%), Dominican Republic 2 (4%), Costa Rica 2 (4%), Venezuela 2 (4%) and Mexico 2 (4%). The overall incidence of dengue was 129/1000 ill returned travelers, 128/1000 ill returned travelers to South America and 349/1000 ill returned travelers to Brazil. Average age in patients with dengue was 35.1 years old, average duration of the trip was 41 days. In 33(67%) cases the duration of the trip was ≤14 days and in 25% was ≤ 7 days. 32(65%) were outpatients and 5(11%) had pre-travel encounter. Compared with other febrile illnesses, patients with dengue infection traveled for a significantly shorter period (41days vs. 67 days, p=0.04) and sought less frequently for pre travel encounter (11% vs. 38% p<0.01). Risk factors for dengue infection compared with travelers with other febrile illness were: travelling within South America (OR= 2.7; 95%CI 0.98-5.2), travel to Brazil (OR=7.1; 95% CI 2.2-23), tourism as reason for travel (OR= 2.4; 95%CI 0.98-6.3). Dengue serotypes were not determined. **Main conclusions:** In a non endemic country dengue fever is related to travel and it is the most likely diagnosis in travelers from Chile returning with fever. Travel within South America, specifically to Brazil represents high risk of dengue infection. Clinicians must be aware of this risk and suspect this diagnosis in travelers to South America. Pre-travel encounter must include insect bite prevention and use of day time repellent. **E-mail:** perret.cecilia@gmail.com

Dengue047- **The impact of actions in heath to control Dengue in an Administrative Region of the Programmatic Area (AP) 1.0**

Macedo, T.S.C.; Quintão, L.; Silva, J.L.; Secca, C.M.; Neto, M.; Maciel, C.
Secretaria Municipal de Saúde e Defesa Civil do Rio de Janeiro/ Coordenadoria Geral de Saúde AP 1.0

Introduction: Throughout the last few years the dengue fever transmitted by the *Aedes aegypti* mosquito has become a significant human viral pathology. Prevalence is high throughout Brazil, especially in the city of Rio de Janeiro, which gathers weather conditions for the proliferation of the mosquito transmitter. Nowadays there are four different serotypes circulating in the city. The symptoms can vary widely, including the ones very similar to the flu, such as head aches, fever and joint pains and severe ones such as hemorrhages and hemodynamics instability. Given the history of the disease, the Municipal Health and Civil Defense of Rio de Janeiro, outlined a plan for coping with the year 2012, which, among other strategies, included the training of professionals, increasing the number of surveillance agents health, and organization of assistance and care, with the opening of service centers for dengue. The centers operate daily on journeys of 12 and 24 hours, making the reception, appointments, tests, monitoring and hydration of patients**. Objective**: To evaluate the impact of actions in heath in a basic health unit at AP 1.0, comparing the notifications made in Administrative Region II comparing the quantity of notifications in the years 2010, 2011 e 2012. **Method:** It consists of documentary research, through the Information System for Notifiable Diseases, available on the website of the Municipal Health and Civil Defense of Rio de Janeiro. In this survey, we selected the following criteria: Dengue epidemiological weeks 48-52 and 1-9 years of 2010/2011 and 2011/2012, reference and epidemic Administrative Region II. The data were attached to the protocols, streams and notification, and analyzed by optical statistical percentage of the number of notifications. **Results**: There was a significant decrease in the number of dengue fever notifications in the geographic area considered, from 205 to 118, when a comparison was made taking the same epidemic period into account in the years under scrutiny that amounted to a 42,4% reduction. It is important to emphasize that the health care facility considered in this study already had a center for dengue fever treatment during the 2011 and 2012. **Conclusions:** The decrease in the number of notifications was clearly related to a decrease in the number of cases of dengue fever. This result shows in an irrevocably manner the impact of the effort dispensed by the different actors of the Planning Area 1.0 committed to control the disease, such as human resources training, awareness toward the importance of notification, actions of vector blocking and control and public mobilization to increase conscience and responsibility toward fight and control of this disease. **E-mail:** meditati@yahoo.com.br

Dengue048- **Social representations about education and control of dengue campaigns**

Reis, CB[1] (State University of Mato Grosso do Sul)
Andrade, SMO[2] (Federal University of Mato Grosso do Sul)

Health policies and actions to combat dengue are based on vector control, pushed into the background activities of health education. Understand the social representations of professionals and users of health on family education campaigns for dengue control is the goal of this research aimed at controlling the disease. Qualitative study was conducted with semi-structured interviews with professionals and users of the health strategy of the family of six selected cities, and the data tabulated by the technique of Collective Subject Discourse, resulting in four discourses: on the speech showed that the campaigns are of quality but no continuity found four distinct aspects: 1) on the means and forms of dissemination, with television and other media of mass appearing as a source of learning, and local media rarely used, 2) about the lack of continuity shows that the incorporation of the continuous character of an action is lacking in campaigns that occur at specific times, depending on the seasonality of the disease, 3) campaigns need to shift focus to highlight the occurrence of dengue and endemic growth of complications that increases the number of severe cases and deaths, and 4) campaigns have investments but the return does not appear, since the professionals perceive little attention with respect to distributed educational materials about dengue. About the discourse of shares affected by the requirement of productivity we see that even if they disagree with the methodology of work for goals, respondents accept

the situation a decision to be vertical. In the third speech, it is observed that there is achieved by limiting public educational activities, taking advantage of the opportunities for discussion already in place, such as meetings of hypertensive, diabetics and pregnant women. On the last speech, it is observed that the information available but are not observed in daily life: there is high rate of knowledge of content, but insufficient knowledge about the disease severity by little emphasis on this aspect of the campaigns of dengue. We conclude that the social representations of dengue between both groups are very similar, showing similarities in many central ideas. The level of awareness of population about the disease is significant, but not reflected in preventive behavior, and communication between professionals and users based on the transfer of information on prevention and treatment. Thus, it considers it necessary improvements in the quality of health services at all levels of care, and implements specific actions aimed at changing behaviors and keep them long term. **E-mail:** cassia@uems.br

Dengue049- **Dengue: Conducts basic to the prevention and control of dengue in Vasco da Gama district of Recife, PE. with an emphasis on Education and Health in Recife (PE) in 2011**

Silva, M. B. A[1, 2]; Silva, MC[2];Silva, C.C.A.V[1]; Oliveira, A.S[1], Paula I. K. S. A[1], Correia,T.C.S[1]
University of Pernambuco-UPE, Recife-PE, Brazil [1] Central Laboratory of Public Health, LACEN – Recife-PE, Brazil [2]

Introduction: Dengue virus infection is responsible for major public health problems in the world. In 2011 the Ministry of Health reported that of 561 cities were monitored, 48 are at risk of an outbreak of dengue, 236 were on alert for the disease. The states capitals are in an alert situation: Salvador stand out, with infestation of 3.5%; 3.1% Recife; 2.2%; Belem; 1.6% São Luiz; 1.5% Aracaju. Objective: This study aimed to promote health education actions and direct changes in public health conditions, establishing a new interaction way between the individuals and its community health care, to build a sustainable healthy foundation for the wellbeing of individuals and the community. **Methods**: This was an action research through which educational activities were developed using cultural diversity scope being discussed with the Community Health Agents (CHA) texts and videos of the Ministry of Health related to the theme, as well as development of panels about the subject. The activities were set at the Family Health Units in Vasco da Gama neighborhood, who belong to the Health District III in Recife/PE. Collecting data through a questionnaire administered to participants (pre-and post-test) and relying on individuals socioeconomic data linked to the subject. **Material and Methods**: The impact of educational activities has been verified through questionnaires counting twenty-four CHA and evaluating the increase of knowledge. Initially performed to characterize the study sample with 83.3% women and 16.7% men, 75% of professionals had high school and 75% had light duties for more than 05 years. Regarding the participation in training activities and the importance of health education, 54.17% attended 03 or more and 100% find it important to the actions of health education. In pretest 29.17% had poor knowledge in the post-test yielded a 50% increase in the classification. On knowledge about dengue was a satisfactory 62.5% increase. **Conclusions**: The implementation of educational measures, promoted by this work encouraged community participation and professionals involved, since it is a concern the growth of dengue cases in the state today. As shown by this research, the implementation of actions in Health Education should be part of government public policy, healthy environments and new oriented line of health services and educational practices will promote a better quality of life for a human being. **Keywords:** Dengue, Education, Community Health Workers, Pernambuco. **E-mail:** silvamba@yahoo.com.br

Dengue050- **Control of dengue by laboratorial surveillance in Pernambuco state, Brazil, during 2011**

Silva A*, Silva MBA**, Barbosa TV*, Fontenele OCA*, Silva SCB*, Silva FC*, Carvalho TTJ*
***Laboratório Central de Saúde Pública Dr. Milton Bezerra Sobral – LACEN/PE/SES. Av. Conde da Boa Vista, 1570, Boa Vista, Recife/PE. Brasil. **Universidade de Pernambuco. Rua Arnóbio Marques, S/N – Santo Amaro, Recife/PE. Brasil**

Introduction: In the present moment, dengue is considerate one of the main problems for public health in the entire world with a larger appearance in intertropical areas. This disease is the result of the disorganized urbanities that happens mainly in countries with an emergent economy. In Brazil the *Aedes aegypti* represents the principal vector and has shown a great capacity to adapt itself to the urban life and it's way of spreading out is a privilege due to it's modern habits. The Endemic Diseases Central Laboratory of Pernambuco (LABEND / LACEN-EP) is developing activities in membership with the three spheres of the government, attending the most various techniques that are necessary to make clear the worsening of the public health. In the State of Pernambuco until May 2011 were notified 16991 people with the dengue virus that were distributed over 178 municipalities that are distributed administratively over 11 Regional Health Managers (GERES). **Objective:** Update technicians from laboratories and the ones that work out doors monitoring the infestation of *Aedes aegypti*. **Method:** dialoged exposition of general entomology, basics elements of microscopic optical. Classroom practice of the main characters of culicideos immatures/reproductive cycle and its issues. **Material and Methods**: Theory lesson – dialogued exposition. Addressing basic notions of general entomology, biosecurity during outdoor research and basic requirements for external quality evaluation, basic topics of optical microscopy, to keep and to transport materials; Practice lesson – identification of the main items of culicideos immatures/reproductive cycle of the *A. aegypti, A. albopictus, Culex*, for the outdoor technicians and for the laboratory; Presentation of the film: *Aedes aegypti e Aedes albopictus* "Uma ameaça nos trópicos" MS/ FIOCRUZ and Problematization of the subject: team work. **Results:** During the period of march/2011 and June/2011 3 GERES were trained: I,II and X they are: Limoeiro with 45 professionals, Carpina with 52 and Afogados da Ingazeira with 30 health professionals. **Conclusion:** Educational Interventions, social participation and intersectoral partnerships for the development of sustainable actions have been pointed out with big importance to public health issues, and among them all dengue stands very importantly. With a good laboratorial surveillance, LACEN/PE and the community come undoing paradigms on the control of this disease in Brazil. **Key words:** Dengue, Control, Pernambuco, Brazil. **E-mail:** andreiasilva.bio@hotmail.com

Dengue051- **Study sites selection for a large, multicenter dengue vaccine extended efficacy trial in Latin America**

Garbes P, Miranda MC, Rivas E, Zambrano B, Dayan G, Noriega F
Sanofi-Pasteur, Sao Paulo, BR; Bogotá, CO; Mexico City, MX; Montevideo, UY; Swiftwater, USA

Introduction: A tetravalent dengue vaccine is being evaluated for protective efficacy in an efficacy study among ~20,000 children in Latin America. Here we present our strategy for selecting the efficacy study investigational sites (IS). **Material and Methods**: Investigational Sites (IS) were selected based on the WHO criteria for dengue efficacy trials, as well as a review of routine dengue epidemiological passive surveillance data, seasonality, age-specific incidence rates, circulating serotypes, and an assessment of IS feasibility (accessibility, security, health care infrastructure and political stability, GCP compliance and investigator availability). For each criterion, a traffic-light system was developed to rank potential IS, e.g., average incidence (AI) in specific target population (TP) over past 5 years. **Results**: We selected 22 IS from 149 locations: Brazil, 5 IS, AI: 0.64% (TP: 10-14yo); Colombia, 9 IS, AI: 0.86% (TP: 5-14yo); Honduras, 1 IS, AI: 0.79% (TP: 5-14yo); Puerto Rico, 2 IS, AI: 0.65% (TP: 9-16yo) and Mexico, 5 IS, AI: 0.78% (TP: 10-14yo). Although dengue cases were reported throughout the year, there were three distinct patterns of seasonality: predominant from January–April in Brazil, from April–August in Colombia, July–December in Mexico and Puerto Rico, and June–November in Honduras. All serotypes circulated in all countries during the period indicated, except for Brazil, where DENV-4 was introduced late in 2010. **Conclusions**: All selected IS cover specific areas of high, sustained dengue activity, even with the limitations of passive surveillance methods, which were not necessarily implemented homogeneously in such countries. Considering the limitations of passive surveillance methods in case detection and consistency of diagnostic confirmation, active surveillance system is needed to reliably detect and confirm cases of dengue disease. This evaluation also supported us in estimating the sample size for a large extended efficacy clinical trial of a tetravalent dengue vaccine. **E-mail:** pedro.garbes@sanofipasteur.com

Dengue052- Clinical and epidemiological aspects of dengue in the municipalities of São Luis – MA and Teresina – PI, during the year 2011

Filho, Antero Pinto Cardoso; Furtado, Ana Carolina Mota; Araújo, Lícia Alexandrino, D.E.
Universidade Estadual do Maranhão, Caxias-MA, Brasil

Introduction: Dengue is considered the most important arthropod borne viral disease affecting human, because in terms of morbidity and mortality it is believed that every year more than 100 million people of tropical countries become infected with the virus. It is an acute febrile disease of viral etiology, whose initial diagnosis is clinical and can be presented in following ways: Classic Dengue (DC), Dengue Hemorrhagic Fever (DHF), dengue with complications and Dengue Shock Syndrome (DSS). In recent years, dengue cases in Brazil represent 80% of the number of reported cases in Americas. **Material and Methods:** Descriptive and retrospective study, with quantitative approach. Used data obtained by Reportable Information System Notification (SINAN), through Municipal Health Foundation reports of Teresina-PI and Municipal Health Secretariat of São Luís-MA, both containing epidemiological information and expansion of the disease in the year 2011. The data obtained were organized into charts and tables, using the Microsoft Office Excel 2003 spreadsheet and TabWin program and were later analyzed statistically. **Results:** In the year 2011 were registered 5370 cases of dengue in São Luís and 6758 cases in Teresina, totaling 12,227 records. In the city of São Luís, the months that the incidence of dengue had the higher number of cases were June (968), July (813) and August (979) and with fewer records were November (61) and December (58). At Teresina, the peak was in April (970), May (1132) and June (989), and with fewer cases were October (192) November (275) and December (258). The most affected age group in both towns was of adults. In São Luís 41% of cases occurred between 20 and 49 years, in Teresina, 43% between 20 and 39. Regarding clinical form, the classical form of dengue prevailed with 90% in both counties, with 4794 cases in São Luís and 6103 in Teresina. There were, however, 85 cases of dengue with complications in São Luís and 22 in Teresina, followed by 25 records of DHF form in São Luís and 11 in Teresina. With regard to evolution, healing prevailed with 96.5% of cases in São Luís and 99.6% in Teresina. However, there were 22 deaths of 12,227 records. **Conclusion:** Most of the cases described reached adults, for being one of the most active age group, and made the classic form of dengue, with much evolving into healing. The occurrence of dengue is linked to the climatological conditions, mainly to rainfall. It was noted that the rainy season offers not only the formation of new breeding grounds, but also the beginning of perpetuation of the vector while there is accumulation of water. Therefore, it is necessary to more effective campaigns for combating vector, with effective participation of society in reducing potential mosquito breeding grounds. **Keywords:** Dengue, Epidemiology, Teresina, São Luís. **E-mail:**antero_filho@hotmail.com

Dengue053- What are the symptoms of dengue known by the population of a great neighborhood of Campina Grande?

Romano, G.L.; Barbosa, D.A.; Santos, K.R..
Federal University of Campina Grande

Introduction: Dengue is an acute febrile disease caused by a virus, a benign course in most cases, and its main vector is the *Aedes aegypti* mosquito, which grows in tropical and subtropical areas. There are two forms of dengue: the classic and hemorrhagic, the classic features are usually fever, headache, myalgia, arthralgia and retro ocular pain, whereas the hemorrhagic is more severe, as these symptoms besides bleeding may occur occasionally shock and death. There are four serotypes of dengue and once sick, the virus only one serotype confers immunity, there is still no vaccine available and treatment is based on fluid replacement. The intent of this research is to bring information about the population's knowledge about the symptoms of dengue. **Materials and Methods:** The study was done from a percentage analysis of a questionnaire applied to 515 homes in the neighborhood of a micro-area of the Malvinas in Campina Grande, Paraíba, Brazil, from November 2010 to February 2011. The visits were made by students of environment monitoring and dengue PET in conjunction with community health agents of Basic unit of family health (BUFH) Malvinas 4-group 4. Were listed by respondents nine symptoms: fever, headache, discomfort, skin rash, diarrhea, vomiting, muscle

aches, eye pain, bleeding gums. **Results:** Of the 515 households visited 485 (94.17%) respondents knew the symptoms of dengue, and only 30 (5.83%) did not know. Of those who knew the symptoms: 449 (87%) knew the fever, 334 (65%) headache, 54 (10%), prostration, 172(33%) spots, 89 (17%) diarrhea, 160 (31%) vomiting, 334 (65%), muscle pain, 90 (17%), eye pain, 16 (3%) bleeding gums. **Conclusion:** Based on this analysis, we conclude that the majority of respondents know the symptoms of dengue, among which the best known is the fever. This is probably due to massive government campaign against dengue made by the ministry of health, acting on mass media, reaching the most people, and besides prevention should also address these symptoms in order to guide the search health service and increase levels of reporting of this disease. **E-mail:** gleiros_@hotmail.com

Dengue054- **Accuracy of the Brazilian Ministry of Health clinical definition of suspected classic dengue fever**

Silva MM[1,2], Gonçalves AH[1], Kasper AM[1,3], Lima HCAV[1], Calcagno J[1], Cruz JS[1], Takahashi D[1], Reis MG[1], Ko AI[1,3], Ribeiro GS[1,2,3]
[1]Centro de Pesquisa Gonçalo Moniz, Fundação Oswaldo Cruz, [2]Instituto de Saúde Coletiva, Universidade Federal da Bahia , [3]Yale School of Public Health

Introduction: The Brazilian Ministry of Health (MS) definition for cases suspected of classic dengue fever is simple and widely used for surveillance purposes, but its accuracy has not been widely evaluated. We examined the validity of the MS clinical case definition for classic dengue fever in an urgent-care setting. **Materials and Methods:** From April 2009 to March 2011, we conducted surveillance for acute febrile illness at an urgent care center in the slum community of Pau da Lima in Salvador, Brazil. Patients who presented with a ≤7 day history of fever were interviewed to obtain sociodemographic data and clinical history, including the symptoms listed in the MS definition of suspected dengue fever (presence of any two of the following symptoms: headache, retro-orbital pain, myalgia, arthralgia, prostration, and exanthema). Acute and convalescent-phase blood samples were collected; any patient with a positive NS1 antigen acutely or IgM or IgG seroconversion between acute and convalescent samples was defined as confirmed dengue. Receiver operating characteristic curves were constructed to evaluate the validity of clinical diagnostic algorithms compared with laboratory diagnosis of dengue. **Results:** We identified 2768 patients with febrile illness and collected acute and convalescent-phase blood samples from 2355 (85%) patients. Among those with paired sera, 521 (22%) had laboratory-confirmed dengue. Among patients with dengue, 84% reported headache, 82% experienced prostration, 72% had myalgias, 50% had retro-orbital pain, 44% had arthralgias and 21% experienced exanthema. We found that the MS criterion had a sensitivity of 91% (95% CI: 88.6-93.5%), a specificity of 14% (12.5-16.0%), a positive predictive value of 26% (24.6-28.7%), and a negative predictive value of 83% (77.8-86.9%). We also tested the performance of modified MS criteria. Each additional symptom required to define suspected dengue successively increased specificity at the cost of sensitivity (AUC=0.53, 95% CI 0.52-0.55%). Using the most stringent criteria (need of all 6 symptoms for diagnosis of dengue), the specificity improved to 97% (96.3-98.0%), but the positive predictive value remained low at 41% (30.2-52.5%). **Conclusion:** The results of this study show that the case criterion used by the MS to define a suspected case of dengue fever has good sensitivity but low specificity. Health professionals should be aware of the epidemiological patterns within their community and employ laboratory testing for dengue to improve diagnostic accuracy. **E-mail:** monaisemadalena@hotmail.com

Dengue055- **Acute kidney injury among patiets with dengue fever**

Jacinto CN[1], Silva Junior GB[1,2], Carvalho Junior PC[1], Cruz Neto MF[1], Lima JB[1], Girão MMV[1], Souza JB[1], Martiniano LVM, Abreu KLS[1], Daher EF[1]
[1]Department of Internal Medicine, School of Medicine, Federal University of Ceara. Fortaleza, Ceará, Brazil; [2]School of Medicine, University of Fortaleza, Fortaleza, Ceará, Brazil

Introduction: Dengue fever (DF) is an arthropod-born viral infection affecting humans and is endemic in tropical areas. Acute kidney injury (AKI) is reported in patients who are affected mainly with dengue

hemorrhagic fever (DHF), which is a severe presentation of the disease. The aim of this study is to investigate the occurrence of AKI among patients with DF. **Material and Methods:** This is a retrospective study conducted at a tertiary infectious diseases-specialized hospital in Fortaleza city, Northeast Brazil, including all patients with confirmed diagnosis of DF admitted in the period from February 2001 to August 2008. AKI was defined according to the RIFLE criteria. Statistical analysis was done with SPSS program, version 16.0, considering as significant $p<0.05$. **Results:** A total of 155 were included, with a mean age of 33±16 years and 65% were female. The main signs and symptoms were fever (93%), headache (84.5%), myalgia (82%), asthenia (60.6%), anorexia (50.3%), rash (55.5%), abdominal pain (50.3%), vomiting (49.7%), retro orbital pain (37.4%), dizziness (34.8%), diarrhea (33.5%) and arthralgia (29%). Hemorrhagic symptoms were gingivorrhage (18.7%), petechiae (27%) and hematuria (8.4%). The tourniquet test was positive in 16 cases (10.3%). The signs of severity were dehydration (23.2%) and hypotension (14.8%). The main laboratory tests at admission showed: Hb=13.8±1.8g/dL, Ht 38.8±6.1%, leukocytes 4204±2696/mm^3, platelets 74531±54399/mm^3, Urea 25±26mg/dL, Creatinine=0.8±0.4mg/dL. The maximum levels of urea and creatinine were 27±29mg/dL and 0.8±0.5mg/dL, respectively. AKI was observed in 10 cases (6.4%), being 6 in RIFLE-R (60%) and 4 in RIFLE-I (40%). Among the patients with AKI 6 (60%) presented AKI at admission. Oliguria was found in 7 cases (4.5%). Renal function recovery was observed in almost all cases. Only one patient did not recovery renal function at the time of hospital discharge. Death was observed in 5 cases (3.2%), and 3 of them had AKI, so AKI-associated mortality was 30%.**Main Conclusions:** AKI is not a common complication of DF. The main possible causes are hemorrhage, leading to a pre-renal AKI. DF-associated AKI is mild (no patient had AKI in RIFLE-F), with complete renal function recovery at the time of hospital discharge. **Financial Support:** CNPq (Brazilian Research Council). **E-mail:** ef.daher@uol.com.br

Dengue056- **Main clinical and pathologic findings in autopsies of deceased patients due to dengue epidemic in 2011 in Ceará, northeastern Brazil**

Aguiar MG, Castiglioni M, Silva LMA, Braga DNM; Araújo FMC, Lima AAB, Pamplona LGC.
College Christus, Fortaleza, Brazil; Death Verification Service , Fortaleza, Brazil; Central Laboratory of Public Health, Fortaleza, Brazil; Federal University of Ceará, Fortaleza, Brazil; São José Hospital of Infectious Disease, Fortaleza, Brazil; State Health Secretariat of Ceará, Fortaleza, Brazil.

Introduction: In areas where there is sequential dengue infections and co-circulation of more than one serotype may experience more severe disease. In recent years, atypical dengue cases with the involvement of the central nervous system, liver and myocardium has been reported in the Americas, always associated with high fatality rate. Thus the objective of this study was to analyze the most relevant clinical and pathologic features of deaths due to dengue epidemic occurred in 2011. **Methods:** This is a descriptive study (retrospective and prospective) involving all deaths that were autopsied by the Death Verification Service (DVS) of Ceará, as suspected dengue cases, between January 1st and December 31, 2011. Cases in which the family did not authorize the autopsy were excluded, as approved by the Research Ethics Committee (nº 078/2011). Data were analyzed using Epi-info. **Results**: Fifty nine cases were necropsied, they showed a median age of 34 years (0-89) and 56.9% were male. The largest number of deaths was confirmed in February with 14 (23.7%) deaths. The average time between onset of symptoms and death was seven days. Among the necropsied cases, only 20(46.5%) reached DVS with a suspicious diagnosis of dengue. Among the most common hemorrhagic manifestations were identified: hematemesis (35.5%), petechiae (25.8%) and ecchymosis (19.4%). Among the patients with neurological manifestations, the most important were seizure (42%) and disorientation (31.6%). Other symptoms found were cough (26.7%) and dyspnea (23.3%). Among those who had co-morbidities, the most important were: hypertension (61.9%), diabetes (50%) and hematological disease (15.4%). The cavity pour more frequently reported were pleural effusion and ascites. Regarding laboratory aspects, 30 (68.2%) were positive by immunohistochemistry, 24 (64.9%) had positive viral isolation, 19 (52.8%) were positive in NS1 and 18 (52.9%) patients had positive IgM. Among 59 cases some were positive in up to four tests. The serotypes isolated were 16 (51.6%) DENV-1 and two DENV-3 (6.5%). Regarding the histopathological findings, congestion was detected mainly in the brain (62.7%), kidney (55.9%) and spleen (45.8%). Edema was more frequent in the brain (75.9%), lung (61%) and heart (25.4%). There was hemorrhage mainly in the lung (39%) and necrosis in the kidneys (32.2%) and liver (22%). Were also recorded 42.4% of hepatitis, 30.5% of myocarditis and 46.6% of pneumonitis? **Conclusions:** It is

important to understand the mechanism causing fatal outcomes of patients with dengue fever to improve strategies for prevention of disease mortality, and improve clinical procedures in severe cases to avoid deaths. **E-mail:** pamplona.luciano@gmail.com

Dengue057- **An analysis of the clinical forms of suspected cases of dengue fever notified to the SINAN during the first semester of 2009 in the State of Ceará, Brazil.**

Queiroz, R.I.C.*[a]; Serra, R.M.*[a]; Neto, A.S.L [a]; Colares, J.K.B.[a,b]; Lima, D.M [a]. [a]University of Fortaleza, **School of Medicine-UNIFOR, Brazil; [b]São José Hospital for Infectious Diseases, Fortaleza, CE, Brazil.**

Introduction: According to the World Health Organization (WHO), dengue fever is considered the most important viral disease, due to its big impact on morbidity and mortality rates. In Brazil, the state of Ceará is considered one of the areas of major significance in relation to the number of notified cases. However, according to the Unitary Health System (SUS) data base, in 2009 there were only 4.209 notifications, a much smaller number compared to 2008 when 34.110 cases were notified. Thus, the objective of this study was to analyze the clinical forms of the suspected cases of dengue fever which were notified to the Brazilian Case Notification Information System (SINAN), during the first semester of 2009. **Material and Methods**: A retrospective quantitative and qualitative study. The data for age, gender and the classification of clinical forms were collected from 151 SINAN records. **Results**: Of the 151 cases analyzed, 25 patients were hospitalized (16.56%) and 126 were treated as outpatients (83.44%). Of the total number of cases, 19 were classified as dengue fever (DF) (12.6%), 4 as dengue hemorrhagic fever (DHF) (2.65%), 4 as dengue with complications (DCC) (2.65%). Two of the patients classified as DCC had less than 20.000 per platelet and 2 had less than 20.000 platelets (50%) and 2 did not fit the criteria for DHF (50%). Among the 27 confirmed cases of dengue, the proportion of females (59.3%) and adults (59.3%) was higher, predominantly in the 20 to 39 age group (37%). In those patients with DHF, 75% presented petechiae, 33.3% had hemoptysis, and 25% had gingival bleeding and epistaxis. Regarding the total number of patients, 124 did not fit the classification criteria for dengue (82.1%); this was predominantly the case for males (52.4%) and adults (71%), principally in the 20 to 39 age group (67%). **Main Conclusions**: Dengue is the most prevalent in this study and hemorrhagic manifestations were petechiae that prevailed in DHF. **Support:** PET Medicina Unifor, CNPQ*. **E-mail:** danimalta @uol.com.br

Dengue058- **Analysis of laboratory abnormalities in patients with classic dengue and dengue with complications, hospitalized in a reference hospital in the State of Ceará**

Mororó, K.Fa*; Lima, C.M.B.Ba; Matos, F.A.Xa, Fontes R.Mb, Praciano, C.Cb, Colares, J.K.Ba,c, Lima, D.Ma,b.
A University of Fortaleza, School of Medicine - UNIFOR, Brazil. B Department of Pathology and Legal Medicine, Federal University of Ceará-UFC, CE, Brazil. C São José Hospital for Infectious Diseases, Fortaleza, CE, Brazil.

Introduction: Nonspecific laboratory tests more performed in the diagnosis of dengue are: blood count, liver function test and serum albumin, urea, creatinine, sodium and potassium. The most frequent alterations in patients with dengue are: leucopenia, lymphocytosis, atypical lymphocytes, elevated hematocrit and thrombocytopenia. In some cases there are increase at liver enzymes, urea and creatinine, and hypoalbuminemia. Hyponatremia and metabolic acidosis can be observed in more severe cases. From laboratory and clinical data, patients are classified into classic dengue (CD), dengue with complications (DWC) and dengue hemorrhagic fever/dengue shock syndrome (DHF/DSS). The Brazilian Ministry of Health defines as dengue with complications (DWC) every severe case that does not fit the WHO criteria for DHF. **Material and Methods:** A quantitative and qualitative retrospective transversal study. Data were collected from medical records of 200 patients in 2008, older than 18 years. **Results:** Among 200 patients studied, 88.5% were classified as DWC and 11.5% as CD. Showed hemoglobin below 12g/dL, 32.5% of the total, with the percentage of 29.4% in DWC, and 56.5% in CD. It was seen in

17.5% of patients, hematocrit greater than 47% and 97% these patients had DWC. It was noticed in 57.5%, white blood cell count below 4000/mm³, with frequency of 62.5% in CD and 56.2% in DWC. It was seen in 86.5% of patients, relative lymphocytosis present in 88.1% of patients with DWC and 73,9% of those with CD. It was observed atypical lymphocytes presence in 66% of patients, being present in 70.6% at those with DWC and 30.4% in CD. It was observed in 96.5% of patients, plateles less than 100,000/mm³, present in 98.3% of patients with DWC and 82.6% in CD. Urea was measured in 129 patients, noting values between 40 and 100mg/dL in 8.7% of patients with DWC and 7.1% those with CD. Sodium and potassium were measured in 135 patients, being seen hyponatremia in 40% of patients, present in 51,3% of patients with DWC and 44.4% in CD. Hypokalemia was seen in 25.9% of patients, being present in 23.9% of those DWC and 38.9% of those with CD. **Main Conclusion:** DWC is the most prevalent classification in this study. Among the changes, the hemoglobinemia was more pronounced in CD, atypical lymphocytes and increase in hematocrit in DCC. Leukopenia, thrombocytopenia and lymphocytoses showed differences between CD and DCC, as well as hypoalbuminemia, changes in liver function tests, urea, creatinine, hypokalemia and hyponatremia. **Support:** PET Medicina Unifor, CNPQ*. **E-mail:** danimalta@uol.com.br

Dengue059- **The clinical and laboratory profiles of dengue cases in a reference hospital in Fortaleza, Brazil**

Pinto, HC[a]*; Araújo, ETS[a]; Queiroz, RIC[a]*; Neto, AS[a]; Lima, DM[a]; Colares, JKB[a,b]. [a]University of **Fortaleza, School of Medicine - UNIFOR, Brazil.** [b]**São José Hospital for Infectious Diseases, Fortaleza, CE, Brazil**.

Introduction: Dengue fever has been prevalent in Brazil for about 32 years, during which time several epidemic outbreaks have occurred. In the year 2011, 34,456 cases of suspected dengue were notified in the state of Ceará (CE). The CE is one of the most important areas in terms of numbers of reported cases of dengue fever (DF) and dengue hemorrhagic fever (DHF). In CE, the reference hospital for dengue is the São José Hospital for Infectious Diseases (HSJ), which receives patients from the entire state. **Material and Methods:** A quantitative, analytical study was conducted of the medical records of dengue patients admitted to HSJ, Fortaleza, CE. A total of 179 medical records were analyzed, including records of dengue cases, from January to July 2011. A standard questionnaire for dengue records was used. The classification followed the SINAN (Information System for Notifiable Diseases) database of the Municipal Health Department, totaling 136 confirmed cases of dengue at this hospital during this period. Excel 2007 and GraphPad Prism 5.0 were used to analyze the data. **Results:** Of the 136 confirmed dengue patients, 70% were diagnosed using laboratory testing (IgM ELISA) and 30% by clinical and epidemiological criteria. Among the confirmed cases, 35.3% of the cases were classified as DF, 41.2% as dengue with complications (DCC) and 23.5% of cases as DHF. Twenty-eight percent (28.7%) of patients were aged below 19 years, 55% between 20-59 years and 16.3% over 60 years, most of whom (53,7%) were female. Regarding origin, 48.5% were from Fortaleza and 51.5% were from the countryside of the state. The most prevalent symptoms among the 3 clinical presentations were fever (99%), headache (71%), abdominal pain (65%), arthralgia/myalgia (63%), hemorrhagic manifestations (60%) and vomiting (55%). Among patients with DHF, 78% had hemorrhagic manifestations, compared with 61% of cases of DCC and 46% of cases of DF. The hemoglobin and hematocrit were lowered in more than 70% of the cases regardless of clinical status. Lymphocytosis occurred in the cases of DCC over the DF and DHF and 50% of cases of DHF had lymphopenia. A decrease in the platelet count <20.000/mm^3 was observed in 19% of cases of DHF and DCC, and 6% of DF cases. Transaminase values were elevated, especially in patients with DCC and DHF, compared to the DF cases (p=0,001 for AST and p=0,031 for ALT). Albumin levels were significantly reduced in DHF (83%), followed by cases of DCC (62%) and DF (39%). Serum levels of urea, creatinine, sodium and potassium were normal in 80% of cases. **Main conclusions:** There was a preponderance of cases of DCC. The symptoms observed are consistent with the existing literature. As expected, there was predominance of hemorrhagic manifestations in DHF. Laboratory data showed a predominance of near normal levels, except for anemia, which was present in all forms, and levels of transaminases and albumin, which behaved according to the literature, with an increase of the former and a decreased of the latter. **Support:** PET Medicina Unifor, CNPQ*. **E-mail:** kenycolares@uol.com.br

Dengue060- **The main clinical and laboratory findings of children and adults classified with dengue with complications in 2008 at a reference hospital in Fortaleza**

Lima, C.M.B.B[a]*; Mororó, K.F.[a]*; Fontes R.M[b], Praciano, C.C[b], Lima, D.M[a,b]; Colares, J.K.B[a,c].
[a]**University of Fortaleza, School of Medicine-UNIFOR, Brazil. [b]Department of Pathology and Legal Medicine, Federal University of Ceará-UFC, CE, Brazil. [c] São José Hospital of Infectious Diseases, Fortaleza, CE, Brazil.**

Introduction: Dengue is an infectious disease considered to be the most significant arbovirus in the world. According to the World Health Organization (WHO), the classification of dengue fever depends on both clinical and laboratory criteria. The Brazilian Ministry of Health defines dengue with complications (DCC) as every severe case that does not fit the WHO criteria for dengue hemorrhagic fever (DHF). The following clinical and /or laboratory findings are sufficient to close the case as DCC: neurological or cardiac dysfunction, liver failure, major gastrointestinal bleeding; effusions; thrombocytopenia of less than 20.000/mm3 in children and less than 50.000/mm3 in adults; leukocytosis below 1000/mm3 and suspected cases of dengue which led to death, but did not have all the criteria required for a diagnosis of DHF. Brazil has adopted these criteria since 2002 and they are based on the recognition of clinical and laboratorial factors and the associated conditions that may be indicative of gravity, in order to guide the appropriate treatment for each situation and avoid death. **Material and Methods:** During the period from March to February 2011 a retrospective, quantitative and qualitative study was conducted, to review 150 medical records of patients classified with DCC, of whom 100 patients were older than 15 years and 50 patients younger than 15, admitted to the São José Hospital for Infectious Diseases in Fortaleza-Ceará, Brazil in 2008. A questionnaire was used to collect clinical data and laboratory and image results. Excel 2007 and EpiInfo 3.5.3 were used to analyze the data. **Results:** Of the 100 adults analyzed, 45% were female and 55% male, and of the 50 children analyzed 52% were female and 48% male. Thrombocytopenia was observed in 95% of the adults, whilst in children, the rate of thrombocytopenia was 70%, consequently thrombocytopenia is the main criteria used to classify patients with DCC in all age groups. The findings for the other classification criteria were: 2% of patients with effusions in the adult age group and 38% in children, indicating the predominance of this important finding in children when compared with adults. Approximately 3% of adults had abnormal neurological symptoms, including paralysis, paresis, somnolence and 6% of children presented neurological problems such as encephalitis, irritability and drowsiness. Cardiac dysfunction was reported in 4% of adults and 14% of children. Twelve percent (12%) of adults and 16% of children had gastrointestinal bleeding; there was no statistically significant difference in this criterion, which was infrequent in both age groups. The presence of liver failure was not observed in adults compared to the rate of 4% in children. The presence of other criteria for DCC was not observed in either group. **Main Conclusion:** It is concluded that thrombocytopenia was the most common complication among the criteria for DCC in both groups, followed by effusions in children. Therefore there are no statistical differences between the main clinical and laboratory findings for classification of DCC in both age groups. Although other criteria are not very common, they are present in some cases, deserving proper and timely treatment. **Support:** PET Medicina Unifor, CNPQ*.
E-mail: kenycolares@uol.com.br

Dengue061- **Clinical and epidemiological characteristics of severe cases and deaths from dengue, Minas Gerais, from 2008 to 2010**

Campos, KB[1],[2]; Araújo, VEM[1],[3]; Amâncio, FF[1],[2]; Carneiro, M[1]
[1]**State Secretariat of Health of Minas Gerais, [2] Federal University of Minas Gerais, [3] Department of Health of Belo Horizonte**

Introduction: Dengue is an acute benign or severe febrile disease and it can cause death, depending on its presentation: inapparent, classic dengue, dengue hemorrhagic fever or dengue with complications. Estimates that occur annually 80-100 million infections, 400,000 cases of DHF and 22,000 deaths from dengue. Objectives: To analyze the clinical and epidemiological profile of severe cases and deaths from dengue in Minas Gerais in the period 2008-2010, describe the occurrence and the factors associated of deaths. **Methods:** We conducted a descriptive epidemiological study of cases and deaths from dengue

and a historical cohort study according to the outcome (cure or death from dengue) of patients, based on secondary data. Were evaluated: age, gender, population, residence city, region, hospital, patient outcomes, final classification, clinical signs and symptoms, criteria for case confirmation, tests results performed specific and unspecific, symptoms onset dates, hospitalization and death, and comorbidities complications. We analyzed the frequency of severe cases and deaths by demographic and clinical variables, incidence and mortality indicators, central tendency and dispersion measures. Logistic regression analysis according to the occurrence of death or cure permitted the identification of variables associated with death. **Results:** The total 2214 cases (82,7% DWC e 27,4% FHD), with 156 deaths and 2058 healing. Mortality due to dengue was higher in municipalities with up to 100,000. There was no gender difference in the occurrence of cases and deaths. In 40.2% of deaths from DWC missed only one criterion for their classification in DHF. The severe case and mortality incidence were higher after 65 years. The second higher fatality was among children under 5 years. The most frequently reported signs were petechiae, positive tourniquet test and epistaxis. The median interval between symptom onset and hospitalization was 5 days, and between onset symptom and death was 8 days. Comorbidities more reported were cardiovascular disease and hypertension. They introduced themselves significantly associated with increased chances of death from dengue: city of residence less than 100,000 population, age> 65 years, plasma extravasation, confirmed by specific laboratory tests and classification in DHF. **Conclusion:** The severe cases and deaths from dengue were distributed throughout the state of Minas Gerais, more often in extreme age groups, reinforcing the recommendation of treatment manuals for these patients receive special care from the onset of the disease. It is necessary to increase the sensitivity of the surveillance system of severe cases and deaths by promoting appropriate interventions for its reduction. **E-mail:** kauaraveterinaria@yahoo.com.br

Dengue062- **Gallbladder wall thickening is a confident marker of severity in adults hospitalized with dengue fever**

Tavares MA1, Melo TC2,3, Onety Junior JA2,3, Pivoto João G3, Moreira PC1, Chehuan YF3, Bastos MS1,3, Alves VR1, Gimaque JB3, Figueiredo RP3, Oliveira CM3, Lacerda MVG1,2,3, Mourão MPG1,2,3
1. Universidade do Estado do Amazonas (UEA), Manaus, Amazonas, Brazil., 2. Universidade Nilton Lins (UNL), Manaus, Amazonas, Brazil., 3. Fundação de Medicina Tropical Dr. Heitor Vieira Dourado (FMT-HVD),, Manaus, Amazonas, Brazil.

Introduction: In recent decades there has been a significant increase in epidemic activity, expansion of geographical distribution, simultaneous transmission of multiple serotypes and emergence of severe forms of dengue fever in tropical areas. Establishing reliable and feasible prognostic markers for identifying potential severe forms of dengue fever still represents a research priority. In the first quarter of 2011, the city of Manaus (Western Brazilian Amazon) experienced its most important epidemic of dengue, with the report of more than 40,000 cases and a pioneer simultaneous circulation of the four viral serotypes in Brazilian territory. **Materials and methods:** From March to April 2011, in the city of Manaus, all adult patients with acute febrile syndrome and any criteria for in-hospital observation were prospectively followed at a tertiary healthcare facility (FMT-HVD). A random sample of subjects underwent abdominal ultrasonography at the bedside by a single observer, confirmatory tests and other procedures for routine care for patients with dengue fever. Clinical classification of cases was achieved through the criteria established by the Brazilian Ministry of Health (2007), separating subjects into one of the following categories: classic dengue fever (DF), dengue hemorrhagic fever (DHF) and dengue fever with complications (DCC). Laboratory confirmation of dengue infection was considered only for positive NS1 and/or RT-PCR samples. All main causes of acalculous cholecystitis were ruled out through serologic assays. **Results:** During the study period 144 hospitalized patients with confirmed dengue infection were enrolled, 37(26%) DF, 62 (43%) DHF and 45 (31%) DCC patients. 79 (55%) were female patients and the age range was 13 to 90 years-old (mean age of 36.13 ± 15.9). The gallbladder wall thickening (GBWT) was observed in 55 patients, from whom 32 (58.2%) were DHF patients, 15 (27.3%) DCC and 8 (14.5%) DF patients. Pleural effusions and/or ascites were observed in 47 patients, from whom 41 (87.2%) were DHF and 6 (12.3%) were DCC patients. GBWT was present in 55% and 60% of patients with pleural effusion and ascites, respectively. GBWT had significant association with abdominal pain (p=0.042), effusions (p<0.0001) and DHF (p=0.014). **Main conclusions:** In this case series GBWT

showed up as a confident marker of severity in hospitalized dengue patients. **Funding:** FAPEAM & CNPq (Rede Dengue). **E-mail:** mariapaula.mourao@gmail.com

Dengue063- **Myocarditis in BALB/c mice infected by dengue viruses serotypes 1 and 2**

Rasinhas, A.C.; Silva, M.A.N.; Barth, O.M.; Barreto-Vieira, D.F.
Fundação Oswaldo Cruz, Instituto Oswaldo Cruz, Laboratório de Morfologia e Morfogênese Viral, RJ, Brazil

The dengue virus (DENV) is an arbovirus (arthropod born virus) of the *Flaviviridae* family, being responsible for the tropical disease known as the Dengue Fever (DF). Yearly, infections occur around the world, with thousands of cases of Dengue Hemorrhagic Fever (DHF) and thousands of deaths. Cardiac manifestations of the disease are less common, and are often associated with DHF. Due to the viral infection of cardiomyocytes and endothelial cells, these manifestations can lead to cases of atrioventricular conduction disorder, supraventricular arrhythmia and myocarditis. Upon microscope observation, the presence of lymphocytic infiltrate and myocytolysis of cardiac cells is considered a definite diagnosis of myocarditis. Even so, cases of myocarditis caused by DENV have proven to be mostly benign throughout the course of the disease, without long term complications, and, sometimes, may even remain asymptomatic. Several studies have already shown the susceptibility of mice to DENV infections, showing that the virus can be detected in the spleen, lung, liver and brain. In these works the strains of virus were neuroadapted, i.e., the virus was inoculated into the brain of a newborn mouse, having as goal to increase the virulence. The experimental animal model utilized in the present by the use of non-neuroadapted strains of DENV, and intraperitoneal and intravenous routes of inoculation. The mice were infected with DENV-2, reinfected with DENV-1 and later euthanized. The tissues were harvested and stored in 2% glutaraldehyde. In sequence these tissues were then cleaved into smaller pieces, and embedded in epoxy resin. After properly hardened, semithin and ultrathin sections were obtained. The subsequent histopathological and ultrastructural analysis was performed by both photonic and transmission electron microscopy. Tissue samples have shown cardiac cells with a slight loss of cytoplasm, areas with inflammatory infiltrate, disorganization of cardiac fibers and inflammatory cells. Alterations observed in present studies were similar to the ones described in DHF human cases of the disease, which show mice represent indeed an adequate model for the study of heart infection by the DENV. **Financial support:** IOC, Faperj. . **E-mail:** arthur.rasinhas@ioc.fiocruz.br

Dengue064- **Experimental murine model for the pathogenesis study of dengue viruses**

D.F. Barreto-Vieira[1], O. M. Barth[1], H.G. Schatzmayr[1]
[1]Fundação Oswaldo Cruz, Instituto Oswaldo Cruz, Laboratório de Morfologia e Morfogênese Viral, RJ, Brazil.

A great difficulty to study dengue virus (DENV) infection in humans and for a virus vaccine developing is the absence of a suitable animal model which presents a disease with similar aspects of the Dengue hemorrhagic fever and Dengue shock syndrome. In the majority of models the animals are immunocompromised and/or inoculated by routes like the intracerebral, with neuroadapted DENV. Tissues of adult BALB/c mice infected with non-neuroadapted DENV-1 and DENV-2 serotypes from patient sera were analyzed. The tissue fragments were processed following the standard techniques of photonic and transmission electron microscopy. In primary infection with DENV-1 and DENV-2 morphogical alterations were observed inside hepatic, lung, kidney and cerebellum tissues. DENV-1 particles and specific DENV antigen was observed in C6/36 cells inoculated with the supernatant of spleen and lung macerates and with the animal sera. Ultrastructural studies of alveolar macrophages of animals infected with DENV-2 showed DENV-like particles inside the rough endoplasmic reticulum and Golgi complex, suggesting viral replication. DENV particles were ultra-structurally identified, and immunolocalized inside C6/36 cells, inoculated with the supernatant (liver, lung kidney and cerebellum) of tissue macerates. The corporal temperature in the majority of mice increased after the second day post-infection. Elevated enzyme levels of alanine aminotransferase and aspartate aminotransferase were observed. In secondary infections morphological alterations were observed in liver, lung and heart. The

tissue injuries were more severe than those seen in animals with signs of primary infection. DENV-1 particles, specific DENV-1 antigen and DENV-1 RNA were present in C6/36 cells inoculated with the animal sera. These studies confirm the susceptibility of BALB/c mice to infection and reinfection by DENV-1 and DENV-2 and those they can be used as a model for testing of drugs and vaccine candidates against DENV. **ACKNOWLEDGMENTS:** To the Flavivirus Laboratory (Instituto Oswaldo Cruz) for virus isolation and CNPq and Faperj. **E-mail:** barreto@ioc.fiocruz.br

Dengue065- **Clinical and laboratory diagnosis in patients with suspected dengue were negative in the immunological tests**

Silva, D.A.[a]*; Bezerra, L.F.M.[a]; Gomes, A.M.M[a]; Fontes, R.M.[a]; Guimarães, A.L.O[a]; Lavôr, E.A.[c]; Lima, D.M.[a, b];Colares, J.K.B.[b, c].
[a]Department of Pathology and Legal Medicine, Federal University of Ceará-UFC, CE, Brazil. [b]University of Fortaleza, School of Medicine - UNIFOR, Brazil. [c]São José Hospital for Infectious Diseases, Fortaleza, CE, Brazil.

Introduction: Dengue (DEN) is a disease with a broad clinical spectrum and laboratory confirmation is performed using specific tests such as viral isolation or serological analysis. The most common biochemical tests are altered liver function tests: serum aspartate aminotransferase (AST) and serum alanine aminotransferase (ALT); a decrease in albumin in the blood and albuminuria also occurs. The objective of this study was to analyze the clinical manifestations and results of nonspecific tests in patients with a clinical diagnosis of dengue fever, but who tested negative in the immunological tests.
Materials and Methods: Sixty-five (65) samples were collected from patients who had symptoms of DEN. Of these, 42 samples were positive in at least one of the immunological tests carried out: enzyme immunoassay kit (NS1), and Elisa Dengue Duo Test Bioeasy (NS1/IgM/IgG) and 23 samples were negative in all tests. **Results:** Twenty-three patients with a negative laboratory diagnosis for DEN were analyzed. All 23 patients had fever, 22 had headaches, 15 had retro-orbital pain, 21 had myalgia, 18 had arthralgia, 12 suffered from fatigue, 9 had rashes and 22 patients had at least one of the other manifestations such as coughing, vomiting, diarrhea, nausea, anorexia, edema, itching and sore throat. Two patients had positive tourniquet test and 2 showed signs of alarm. In the nonspecific tests, 10 patients had at least three altered nonspecific tests. Five patients had altered hemoglobin values below 12.0 mg/dL, 5 patients had a hematocrit count below 35.0 mg/dL, 10 patients had leukopenia (<4000/mm^3) and two patients with an altered white blood cell count over 11 000 mm3, 2 patients had neutrophils values below 40%, 8 patients had altered lymphocyte values below 20%. Twelve patients with thrombocytopenia (<150 x 103/mm3), 13 patients with AST> 40 U / L. Eight patients had ALT results above 31 U/L for women and 41 U/L for men, of the 23 patients studied five patients had no ALT value and 3 patients had no AST. **Main Conclusion:** This study suggests that using nonspecific laboratory tests for dengue, such as thrombocytopenia, leukopenia, and abnormal liver function tests (ALT and AST) and clinical data such as fever, headache, retro-orbital pain do not provide an accurate diagnosis. Thus, it is extremely important to carry out specific tests to minimize potential confusion in the clinical diagnosis and to ensure timely treatment interventions to avoid complications in the course of the disease. **Financial support:** Fundação Cearense de Apoio ao Desenvolvimento Científico e Tecnológico (FUNCAP 007/2008- PPP)/*CNPq - Conselho Nacional de Desenvolvimento Científico e Tecnológico. **E-mail:** kenycolares@uol.com.br

Dengue066- **Clinical presentation of hemorrhagic dengue and evolution subsequent to platelet and plasma transfusion, Rio Branco, AC, Brazil**

Fujimoto, D. E.; Koifman, S.
Universidade Federal do Acre, Rio Branco/Brazil, Escola Nacional de Saúde Pública/Fiocruz, Rio de Janeiro/Brazil.

Introduction: Platelet or plasma transfusion have been widely used in the treatment of dengue patients with hemorrhagic manifestations in Brazil, but an evaluation on the efficacy of such therapeutics still lacks. **Material and Methods:** A quasi-experimental study was carried out in Rio Branco, AC, Brazil,

aiming to explore the clinical evolution following platelet and plasma transfusion in the treatment of hemorrhagic dengue. Patients with serologically confirmed dengue and hemorrhagic manifestation diagnosed between January 2007 and May 2011 were enrolled. Hemorrhagic manifestations were defined whenever bleedings and platelet counting < 100.000/mm3 occurred in patients with a confirmed dengue infection. Mortality risk ratio and further mortality prognostic factors following transfusion were ascertained using the multivariate Cox Proportional Hazards model. **Results:** In the studied period, 164 cases either filled the study requirements or had their records traced and retrieved. They included 57% of women, median age of 36 yr, and 15.2% presenting comorbidities, mainly hypertension and diabetes. Bleeding occurred in 37.2% (95% C.I. 29.8-45.1) with petechiae in 15.9% (95% C.I. 10.6-22.4) and gingival bleeding in 13.4% (95% C.I. 8.6 -19.6). Around 11.0% had some type of plasma extravasation, followed by hypotension in 61.1% (95% C.I. 35.7-82.7) and hemodynamic instability in 22.2% (95% C.I. 6.4-47.6). Cardiac dysfunction occurred in 6.7% (95% C.I. 3.4 -11.7) of cases, anemia occurred in 44.5% (95% I.C. 36.8-52.5) and eosinophilia in 20.1% (95% C.I. 14.3- 27.1). The mean platelet counting during hospitalization was 26,368 UI/mm3 and 111,213 UI/mm3 blood at discharge. Forty patients (24.4%) received transfusion of platelet concentrate (mean of 7,5 UI per patient) and fresh frozen plasma (mean of 5,3 UI per patient). Death occurred in 10.0% (95% C.I. 2.8-23.7) of those receiving transfusion, and in 6,5% (95% C.I. 2,8 a 12,3) of those who did not. The death risk ratio comparing patients that received or not transfusion of platelet concentrate was RR=1,55 (95% IC 0,49-4,88). Mortality among patients who developed cardiac dysfunction was 81,8%, compared to 2% among those who did not. Hazard ratios of death were: transfusion of platelet concentrate with HR=0,92 (95% IC 0,23-3,66, p-value=0,9077), plasma transfusional with HR=0,64 (95% IC 0,10-3,86, p-value=0,1557) and respiratory distress with HR=3,55 (95% IC 0,62-20,42, p-value=0,6248). **Main Conclusions:** The preliminary observed results in the studied sample are not suggestive that platelet transfusion in hemorrhagic manifestation in dengue may be more efficient to prevent patients' death. **E-mail:** denys.fujimoto@hotmail.com

Dengue067- **Demographic and clinical manifestations analysis related to dengue symptoms in children admitted at a reference public hospital in Brazilian Amazon region**

[1]Teixeira KS, [3]Freitas GBRP, [1]Soares HCB and [2,3]Cruz ACR.
[1]UFPA/ HUJBB; [2] IEC/ SVS/ MS; [3] UEPA – Belém, Pará, Brasil.

Introduction: *Dengue virus* (DENV – *Flaviviridae, flavivirus*) is the major arboviral threat in Brazil due its clinical spectra and recurrent epidemics. Four serotypes (DENV 1-4) are found to circulate in the country and children are more likely to present severe cases as stated by epidemiological data. Our aim was to perform a retrospective study on cases dengue fever in children's reference hospital in Brazilian Amazon, João de Barros Barreto Hospital University, during 2009 to 2011. **Material and Methods:** Throughout this time period, 154 dengue cases were screened. Descriptive statistical methods used and inferences: qualitative variables (absolute and relative) and quantitative variables (median and interquartil range). The variables examined were: age, gender, area of residence, distribution by municipalities, signs and symptoms, date of hospitalization, onset symptoms date, clinical form of the disease, platelet and hematocrit values, and liver enzymes. **Results:** There was no significant difference observed between genders. Most confirmed cases of dengue patients were from 68 municipalities in Pará state (57.6%). The largest of hospitalized children were coming from Belém (42.2%), Castanhal (21.3%) and Ananindeua (21.3%). Fever was the most found symptom (98.7%), while petechial was the most frequent hemorrhagic manifestation (76.6%). Amongst the warning signs for Dengue Hemorrhagic Fever (DHF), abdominal pain and vomiting were present in 77.3% of patients. There was no association between levels of the hepatic enzyme and clinical symptoms. The hematocrit ranged from 15% to 52.8%, median of 38% on admission in the hospital and 33.6% after the discharge from the hospital. Therefore, hematocrit was considered as a factor for distinguishing classical dengue (CD) and severe dengue (SD). Likewise, platelet count was another factor for discrimination the cases of dengue: CD (115.000 platelets/mm^3) and SD: Dengue with complications (37.000 platelets/mm^3), DHF (30.000 platelets/mm^3) and shock syndrome dengue (27.000 platelets/mm^3). **Main conclusions**: Records retrieved from the admission hospital date revealed that only after five to seven days from the beginning of the clinical symptoms, the patients had access to treatment at hospital. These results indicate the need to improve basic health services, allowing early diagnosis and

treatment in pediatric patients, avoiding overlap with other viral diseases prevalent in childhood. **E-mail:** anacecilia@iec.pa.gov.br

Dengue068- **DENV- 4 infections in HIV positive patients**

Silva, C.C; Bressan, C, Romero C, Valls R, Grinstein B; Nogueira R; Brasil, P
IPEC/FIOCRUZ, Rio de Janeiro, Brazil.

Introduction: Dengue is the most worldwide spread arthropod-born disease, and endemic in Rio de Janeiro, Brazil. DENV-4 sorotype was first introduced in the city in 2011, when some predictions were made on a possible epidemic for the year of 2012. Few data are currently available regarding how dengue infection would behave in HIV positive patients, and none describes clinical features of the co-infection DENV-4 and HIV. Our objective is to explore some clinical and laboratorial aspects of this specific interaction. **Material and Methods**: A retrospective observational study was performed. Cases were selected from our electronic database and medical records reviewed. HIV-positive patients who had DENV-4 isolated, by PCR method, from blood samples from January 1st to March 15th, 2012 were included. HIV-negative patients and HIV-positive patients presenting Dengue by other DENV serotype or cases without PCR confirmation were excluded. Information of seven patients was obtained. **Results**: Five out of seven patients were male, from 35 to 50 years; the mean time of HIV diagnosis was nine (4-12) years. Six patients were on regular HAART, with mean duration of treatment of four (1-6) years; one had never used HAART. The mean CD4 cell count was 817 (346-1148) and only two patients did not have an undetectable viral load (<50 copies). These tests were conducted on average 4.28 (1-6) months before Dengue infection. All patients referred fever, myalgia, arthralgia, back pain, prostration; 85% referred headache, 57%, vomiting, 57%, liquid diarrhea, none of which was persistent, 42%, retro-orbital pain, 42%, abnormal taste, and 14%, photophobia. As of the alert signs, although nobody had postural hypotension, 42% referred dizziness and 28% had abdominal pain in the right hypochondrium. Four out of seven patients presented diffuse macular rash, and two of those had petechiae on the legs, as the only hemorrhagic manifestation. One patient presented hemoconcentration, one, hipoalbuminemia, 57%, atypical lymphocytes, 57%, leukopenia with mean value of 2810 cells/mm^3 (1570-3840), 57%, neutropenia with mean value of 268 cells/mm^3 (150-340), two (28%) had thrombocytopenia <100.000 platelets/mm3, with mean value of 83.000 platelets/mm^3. 71% presented mild transaminases elevation (up to 1,6 times the reference values). PCR levels were elevated in 100% of patients, with mean value of 2,72 (1,61-4,92). None of these patients fulfilled OMS criteria for DHF: two were classified as DF and five as uncomplicated DF with alert signs. There was no hospitalization and all recovered well. **Main conclusions**: It was observed that DENV- 4 infection had a benign course in these HIV positive patients and that this co-infection did not seem to have an impact on HIV-related outcomes. **E-mail:** clarissa.cavalin@globo.com

Dengue069- **Elevated expression of IL6 and TGF-beta in human liver lesions and its implication in the pathogenesis of dengue hemorrhagic fever**

Pagliari C[a], Fernandes ER[a], Stegun FW[a], Brasil RA[b,d], Andrade Jr HF [a,c], Quaresma JAS[e], Barros V[f], Vasconcelos PF[f], Duarte MIS[a]
a- Fac. de Medicina da Universidade de São Paulo, Depto. Patologia, São Paulo, Brasil. b- Instituto de Infectologia Emílio Ribas, Depto. Anatomia Patológica, São Paulo, Brasil. c- Instituto de Medicina Tropical de São Paulo,São Paulo, Brasil. d- Instituto Adolfo Lutz, Seção de Anatomia Patológica, São Paulo, Brasil. e- Núcleo de Medicina Tropical, UFPA, Belém, Pará, Brasil. f- Instituto Evandro Chagas, Ananindeua, Pará, Brasil

Introduction: Dengue is an important tropical disease worldwide. High levels of IL6 and IL8 were correlated with clinical presentation of dengue hemorrhagic fever (DHF) and it was demonstrated that endothelial activation induces an increased expression of those cytokines. It was also demonstrated that the expression of IL6 is mediated by dengue virus. TGF-beta promotes the activation of Foxp3+ regulatory T cells but IL6 can significantly suppress Foxp3 expression induced by TGF-beta. The dengue virus presents tropism for hepatocytes and this was an urge to study hepatic lesions. **Material and**

Methods: We performed an immunohistochemical study in 14 specimens of liver from patients with DHF to evaluate the presence of cells expressing IL6, TGF-beta and Foxp3, to investigate the regulatory immune response and a possible role in the pathogenesis of hepatic injury. The control group included liver specimens from individuals who died without any infectious disease or liver damage, confirmed by histological evaluation. **Results:** The histological alterations were frequently localized in the midzonal or acinar sites. Mainly in the portal tract, it was observed an inflammatory infiltrate of lymphocytes, macrophages and plasma cells, associated to edema. The expression of IL6 was present in all lesions of DHF, observed in mononuclear cells and lymphocytes, distributed in the inflammatory infiltrate in portal tract and hepatic acinus. All specimens presented expression of TGF-β, frequently observed in Kupffer and mononuclear cells, mainly in zone 2 of hepatic acinus and correlated to hepatocytes apoptosis. Cells expressing Foxp3 were absent in all the cases, both in portal tract or hepatic acinus. **Main Conclusions:** Considering the elevated number of cells expressing IL6 and TGF-beta, but absence of cells expressing Foxp3, we could suppose that the expression of Treg cells is diminished as a result of the high frequency of those cytokines. Besides this suppressive effect on Treg cells, they probably play a role in the increased vascular permeability and edema observed in dengue liver specimens, with consequent plasma leakage and severity of the disease. **Supported by:** INCT-FHV (MCT/CNPq/FNDCT/CAPES/ FAPESPA Nº 15/2008) process 573.739/2008-0 and CNPq process 501549/2003-0. **E-mail:** cpagliari@usp.br

Dengue070- **Evaluation of the new classification for the dengue cases proposed by the World Health Organization**

Fortes MC, Lustosa GP, Mota LAM, Mota DAM, Lima AB, Vilar DCLF, Holanda SGS, Escóssia KNF, Coelho ICB, Pamplona LGC.
College Christus, Fortaleza, Brazil; ; State Health Secretariat of Ceará, Fortaleza, Brazil; São José Hospital of Infectious Disease, Fortaleza, Brazil; Federal University of Ceará, Fortaleza, Brazil.

Introduction: Classifying cases of dengue to be compared is still a major challenge. The current classification is retrospective and presents laboratory criteria too rigid. This feature, among other limitations, made with countries such as Brazil to create a new category, called dengue with complication. Faced with this situation the who has proposed a new classification. The goal of this work was to evaluate the new classification of dengue, proposed by OPAS/OMS. **Methods:** Prospective descriptive study: where were studied all patients suspected of dengue hemorrhagic fever (DHF), served during the epidemic of 2011, St. Joseph's hospital. This hospital is a reference in Ceará to infectious diseases and notifies about 85% of cases of DHF. The work was approved by the CEP of the HSJ, under Protocol 011/2011. The information was collected from a form created by researchers where they had clinical laboratory information, in addition to the socio-economic and demographic data. The data were analyzed using the Epi-info. **Results**: 84 patients were notified and all were investigated. Among these 45 (53.6) are male. The median age of cases was 29 (5-83). All have at least one positive laboratory test for IgM serology being the most frequent in 75 (89.3) patients. Was only isolated serotype DENV-1. According to the current classification 1 (1.2) patient was classified as classical Dengue, 31 (36.9) as DHF and Dengue 52 (61.9) as with complication. In the new classification proposed 4 (4.8) Dengue patients showing no signs of alarm, 28 (33.3) were classified as Dengue fever alarm Signals with 52 (61.9) as Severe Dengue. The value of the hematocrit lower presented a median of 35.5 (15.4 – 45.6) while the higher the median was 43.5 (30.3-57.5). The median number of platelets these patients was of 18,000 mm³ (12,000-85,000). Shock signs were present in 22 patients (26.5). The serious commitment of organs was reported at 2483 (28.9) patients. However, the presence of severe hemorrhage could not be evaluated because of a possible subenrollment this evolution. The bleeding from mucosa was detected on 2869 (40.6) and the gastrointestinal bleeding in 2166 (31.8). The shock affected 2283 (26.5) patients and the extravasation of plasma was documented in 3175 (41.3) patients. **Conclusions:** While recognizing the usefulness of current classification, the difficulties in documenting all clinical and laboratory manifestations limited its use because many serious cases do not meet the criteria for DHF and may not be conducted properly. The new classification proved to be more sensitive to detect serious cases, regardless of laboratory results or criteria that sometimes can not be assessed in real time. This rating can still bring clinicians of

epidemiologists and contribute to better conduct of serious patients, reducing the lethality by dengue. **E-mail:** pamplona.luciano@gmail.com

Dengue071- **Timeliness of the dengue, exanthematic diseases, meningitis and tuberculosis surveillance systems in Brazil**

Mandacarú, PMP[1]; Siqueira-Jr, JB[1]
[1]Federal University of Goiás, Goiânia, Brazil

Introduction: Epidemiologic surveillance is based on systematic, timely and continuous activities to provide information for diseases control. Surveillance systems present essential attributes to perform properly and timeliness is one of the key attributes. This work aims to evaluate the timeliness of the surveillance systems for dengue, meningitis, exanthematic diseases and tuberculosis. **Methods**: We conducted an observational descriptive cross sectional study using secondary data from two versions of the National Notifiable Diseases Information System (Sinan) between 2005 and 2008. We evaluated the timeliness of disease notification, data entry and investigation activities. **Results**: The analysis of notification timeliness for tuberculosis cases has shown that more than 50% of the cases were reported on the same day of the diagnostic, reaching 90% after 40 days. For the other diseases evaluated, the median time for notification was up to 3 days, with 90% of the cases being reported within 13 to 17 days. There was no difference in the timeliness of notification according to sex. The analysis of investigation timeliness highlighted that 90% of the cases initiated this process on the same day of the notification. The analysis of the interval for data entry in the information system presented a significant loss of timeliness, with a median of 10 to 14 days after the notification for the acute diseases evaluated. The median of the data entry interval ranged from 25 to 31 days for tuberculosis. The analysis of treatment timeliness for tuberculosis showed that 70% of the cases started their treatment at the day of diagnostic. The timeliness for the conclusion of the investigation of reported cases was adequate for all evaluated diseases, except for dengue and exanthematic cases in 2007 and 2008. **Conclusions**: The national surveillance system presented adequate timeliness of notification and investigation for all the diseases evaluated in this study, regardless of the version of Sinan. However, it is necessary to improve the timeliness of data entry, treatment and completion of the investigation of the cases. **E-mail:** siqueirajb@gmail.com

Dengue072- **Development of Serotyping Antibody Reagents against Dengue Virus NS1**

Lebani. K, Jones. M. L, Mahler. S. M*
Australian Institute of Bioengineering and Nanotechnology, The University of Queensland

Introduction: Dengue virus (DENV) infections are an increasingly significant health problem, with nearly 3.5 billion people in the tropics and sub-tropics at risk of infection. The arthropod-borne flavivirus has four serotypes (DENV 1-4) that can each cause a wide spectrum of clinical manifestation that range from mild fevers to severe plasma leakage. The lack of a DENV vaccine and a specific treatment for infection means that highly specific and sensitive diagnostic tests are necessary for management of acute infection and screening of blood donations for DENV to prevent risk of transmission by transfusion of vireamic blood. Non-structural protein 1 (NS1) of DENV is known to be an early marker of acute infection. Thus, the current work endeavours to develop a NS1 capture assay for diagnosis and screening. To enable this, novel antibodies that specifically discriminate all four serotypes of DENV, with high sensitivity, will be isolated. These antibodies will be used independently in a lateral flow test for patient testing and in combination with other markers of DENV infection in a multimodal assay for blood screening. **Materials & Methods:** Two phage libraries containing 'naive' human antibody fragments were interrogated for serotype specific binders to DENV NS1. A subtractive biopanning strategy was utilised to deplete the library of non-specific and cross-reactive binders, and to select for binders specific for each serotype. **Results:** A panel of 20 unique, phage bound antibody fragments with varied reactivity against NS1 from all four DENV serotypes was isolated. Within the 20 clones, one specific, phage-bound binder was isolated against each of DENV 1, 2 and 3 NS1 serotypes while two were isolated for DENV-4 NS1. The remaining clones showed cross-reactivity between two or more serotypes. Antibody fragments were

reformatted to full immunoglobulin G (IgG) using a mAbXpress vector and their antigen recognition was re-evaluated using ELISA. Specificity was maintained for clones that bound to DENV 2, 3 and 4 NS1. The clone that was specific for DENV 1 NS1 however, gained shared reactivity to DENV 3 NS1. **Main Conclusions:** This work highlights that the naive human antibody repertoire has antibodies against the DENV NS1 antigen and that these can be exploited for diagnostic purposes. The diagnostic or screening utility of the isolated antibodies however, still needs to be assessed further. Surface Plasmon Resonance will be used to rank reformatted IgG according to the affinity and the kinetics of antigen–antibody interaction. Fine tuning of the properties of these clones will be performed to achieve high sensitivity for both diagnostic and blood screening applications. **E-mail:** s.mahler@eng.uq.edu.au

Dengue073- **Rapid Immunochromatographic (IC) Tests for Early Diagnosis of Dengue Infection: comparison of three NS1 antigen capture tests**

Lima, MRQ[1], Nogueira RMR[1], Fillipis AMB[1], Souza CS[1], dos Santos FB[1]
1 Laboratory of Flavivirus, Oswaldo Cruz Institute, FIOCRUZ, Rio de Janeiro, Brazil.

Introduction: Dengue is associated with explosive urban epidemics and has become a major public health problem in many tropical developing countries, including Brazil. The laboratory diagnosis of dengue can be carried out using several approaches, however sensitive and specific assays useful to diagnosis the disease in the early stage of fever are desirable. The NS1 protein, a highly conserved and secreted glycoprotein, is a protein used for rapid diagnosis of dengue and its usefulness in ELISA format has been previously shown. **Material & Methods:** We aimed to evaluate the sensitivities of 3 commercial rapid IC assays (NS1 Ag Strip [Biorad], Dengue Early Rapid [Panbio] and Dengue Duo [SD]) in a panel of 120 serum samples, from the collection of the Flavivirus Laboratory at Oswaldo Cruz Institute. When present in the sample, NS1 antigen will complex with the gold colloidal particles coated with anti-NS1 antibodies. After migration, the complexes will be capture by the anti-NS1 antibodies at the Test Line, where a purple line will appear. **Results:** In this study, both, NS1 Ag strip and the Dengue Rapid Early showed the same overall sensitivities (66.1%; 43/65) in dengue confirmed cases. The lower sensitivity was showed by the Dengue Duo (52.3%;34/65). The sensitivities presented by the NS1 Ag Strip were 85.7% (12/14), 83.3% (10/12) and 47.3% (9/19) in DENV-1, DENV-2 and DENV-3 cases, respectively while the Dengue Rapid Early showed sensitivities of 78.5% (11/14), 83.3%(10/12) and 52.6% (10/19), in the same groups. The Dengue Duo was the least sensitive in all groups, confirming 57.1% (8/14), 50.0% (6/12) and 47.3% (9/19) of DENV-1, DENV-2 and DENV-03 cases, respectively. DENV-3 cases were the least confirmed by all 3 kits. However, specificities were 100%, in all assays, based on the analysis of sera of healthy individuals and individuals negative for dengue. No cross-reactivity was observed for the Dengue Rapid Early and Dengue Duo, nevertheless, the NS1 Ag Strip showed cross-reactivity with one yellow fever vaccine. The detection rate by the NS1 Ag Strip and the Dengue Early Rapid were the same (60.0% - 12/20) in the presence of IgM, while the Dengue Duo was 55.0% (11/20). No differences were observed by the tests NS1 antigen (*p>0,05*) in confirming primary and secondary infections, although the detection rate was higher in acute phase primary serum samples. **Conclusions:** The results indicate that, despite the high specificity presented by all IC tests analyzed, the sensitivities obtained in this study with a panel with well characterized samples, was low. Therefore, for a more reliable evaluation a larger sampling would be suggested. **Financial support:** FAPERJ, CNPq, CAPES, PDTIS and FIOCRUZ. **E-mail:** flaviab@ioc.fiocruz.br

Dengue074- **Evaluation of dengue NS1 rapid test for sensitivity, specificity and relationship to primary and secondary infection**

Horta M.A.P[1], Oliveira R.B[1], Nunes I.R[3], Georg I[3], Daumas R.P[1]., Boga C[1], Valls R[3] Nogueira R[2], Brasil P[3]
1. National School of Public Health ENSP / FIOCRUZ , 2. Oswaldo Cruz Institute / FIOCRUZ, 3. Institute of Clinical Research Evandro Chagas IPEC / FIOCRUZ

With the circulation of four Dengue Fever serotypes in Brazilian territory, annual epidemics are frequently affecting thousands of people. Several tests have been adopted to detect dengue fever infection. The rapid dipstick test, the dengue NS1 Ag strip, can provide results within 15 minutes and have been used

as a useful tool in dengue diagnostic in several healthcare facilities and it's supported by Brazilian Health Ministry. Some authors have tested the validity of NS1 strips applied in dengue diagnostics. Results of laboratory diagnosis of a population of 1,251 patients presenting acute-febrile illness suspect of dengue fever seen in two Sentinel Dengue Units (IPEC and ENSP/ FIOCRUZ) from January 2005 through December 2011, were reviewed. Two groups of serum samples were used for evaluation of the NS1 strip test sensivity and specificity utilizing reverse transcriptase polymerase chain reaction (RT-PCR) as the gold standard diagnosis. The first one considered 706 (135 positive and 571 negative RT-PCR) patients samples collected 1 to 8 days from the onset of fever. The second one considered 499 (111 positive and 388 negative RT-PCR) patients samples collected in the first 96 hours from the onset of fever. Secondary infection was considered as the presence of IgG in the first serum sample when collected between the first and fourth day of disease. In the first group, NS1 strip test had specificity of 97% (0.96 – 0.98 CI) and sensivity of 42% (0.29 – 0.55 CI). When compared to PCR, samples collected in the first 96 hours of the disease, a similar result was found: 98% of specificity (0.97 – 0.98 CI) and 46% of sensivity (0.33 – 0.60 CI). When compared the results of patients with secondary infections, the specificity of NS1 was 99% (0.98 – 1.00 CI) and sensivity, 33% (0.14 – 0-52 CI). Instead, when compared NS1 strip test to PCR of serum presenting IgG negative in the first 96 hours of disease, it was found 96% of specificity (0.92 – 0.99 CI) and 72% of sensivity (0.55 – 0.89 CI), the highest value found in this study. The results indicate the power of NS1 strips to confirm dengue infection given its high specificity. However, when using this test to identify true negatives, the prevalence of secondary dengue infections should be taken in account and differences in utility in different geographical settings be considered. **Supported by:** REDE DENGUE, FIOCRUZ-RJ. **E-mail:** mhorta@ensp.fiocruz.br

Dengue075- **Expression and Purification of a DENV-3 NS1 recombinant polypeptide for potential use in the early diagnosis of dengue infections**

de Sousa, CS[1]; Leite, MB[2]; da Silva, M[2]; Nogueira, RMR[1]; Lima, MRQ[1]; dos Santos, FB[1]
[1] **Laboratory of Flavivirus, Oswaldo Cruz Institute , Oswaldo Cruz Foundation, Rio de Janeiro, Brazil.** [2] **Laboratory of Viral Hepatites, Oswaldo Cruz Institute, Oswaldo Cruz Foundation, Rio de Janeiro, Brazil.**

Introduction: The dengue virus (DENV) is associated with explosive urban epidemics and has become a major public health worldwide. The laboratory diagnosis of dengue can be carried out using several approaches, however sensitive and specific assays useful to diagnose in the early stage of fever are desirable. Previous studies have shown the role of NS1 antigen capture tests for the early diagnosis of dengue infections, however a significant lower sensitivity of those assays was observed in DENV-3 cases. The use of recombinant antigen may eliminate the problems associated with the standardization of DENV antigen prepared in mouse brain or cell culture and avoids the laborious procedures associated with these methods. The cost of most commercial kits for dengue diagnosis is prohibitive for many dengue-endemic countries and the in-house production of recombinant polypeptides could provide a safe and valuable resource for DENV serodiagnosis. Therefore, here we aimed to produce a DENV-3 recombinant NS1antigen potentially useful for the early diagnosis of dengue. **Material and Methods:** To express the DENV-3 NS1 recombinant polypeptide, the DNA fragment amplified by RT-PCR was cloned into TA vector pCR 2.1 (Invitrogen, San Diego, CA). The insert was then sub cloned into expression vector pQE32 (Qia*Expressionist*; Qiagen, CA) in frame with the vector's hexahistidine tag. The resulting plasmid was transformed into *E. coli* M15 (pRep4) (Qia*Expressionist*; Qiagen) and for expression, a single colony was grown in Luria-Bertania (LB) medium and induced by the addition of isopropyl-β-D-thiogalactoside (IPTG). After SDS-PAGE analysis of expression, purification of hexahistidine-tagged polypeptides was performed by nickel affinity chromatography under denaturing conditions using Ni-NTA agarose (Qiagen, CA) and the specificity of the protein was addressed by immunoblot analysis using anti-histidine antibodies. **Results:** We identified and produced in *Escherichia coli* a candidate diagnostic polypeptide corresponding to the C-terminal portion (179 amino acids, 20.3kDa) of the DENV-3 NS1 protein. The polypeptide was successfully purified under denaturing conditions; however the low expression did not yield enough for the purification under native conditions. Furthermore, the polypeptide showed to be specific when tested against anti-histidine antibodies. **Conclusions:** The pD2-7(NS1) recombinant polypeptide identified in this study was found to be a potentially useful diagnostic antigen or for monoclonal production as it is easy to prepare and suitable for mass production. However, its

reactivity needs to be accessed against human DENV-positive sera. **Financial support:** FAPERJ, CNPq, CAPES, PDTIS and FIOCRUZ**. E-mail:** flaviab@ioc.fiocruz.br

Dengue076- **Immobilization of DNA probes in pencil graphite electrodes to detect DENV-3 serotype.**

Oliveira, N. C. L. [1]; Campos-Ferreira, D. S.[1]; Nascimento, G. A.[1]; Ribeiro, W. S. B.[1]; Arruda, M. S.[1]; Zanforlin, D. M. L.[1]; Borba, M. A. S. M. [1]; Kang, T.H.A. [1]; Lima-Filho, J. L[1].
[1]Laboratório de Imunopatologia Keiso Asami,UFPE - PE.

Dengue fever is a vector-borne viral disease most prevalent in the world with approximately 100 million people infected every year. This virus belongs to family Flaviviridae and has 4 different serotypes (DENV-1 to DENV- 4). Currently, in a large area of Brazil, there is a co-circulation of the four serotypes, which may increase the number of cases with severe manifestations of disease, like the dengue hemorrhagic fever (DHF). New analytical devices, such as biosensors, applies biomolecules attached to a transducer to detect a specific analyte. Among them, DNA biosensors consist of a immobilized DNA single strand as element of recognition, which by binding with the target sequence, produces a measurable signal. The immobilization of biological element on electrode is the first point to be considered in the construction of a biosensor. Thus, in this study, we aimed to attach DNA sequences to develop an inexpensive and effective device to detect dengue fever. Using sequences obtained from the database of National Center of Biotechnology Information (NCBI), the DNA electrochemical analysis were carried out with the AUTOLAB PGSTAT apparatus. Pencil graphite (PGE) was used as working electrode, while Ag/AgCl was chosen as reference electrode. The polished surface of the working electrode was activated by applying a potential of 1,8 V for 5 minutes. After that, different concentrations of DNA probes were immobilizated at a 0,50 V imposed potential to the activated electrode in acetate buffer. It was found that the best probe concentration to be immobilized onto PGE surface was 0,50 mM. Using DNA probes for diagnosis at the molecular level may contribute to advances in a specific and rapid detection of dengue. **Keywords**: dengue fever, DNA probes, electrochemical biosensor. **E-mail**:: nataliacybelle.89@gmail.com

Dengue077- **Genotyping dengue virus, Mato Grosso do Sul, 2011**

Bertolacci, L.G.[1]; Motta-Castro, A. R. C.[1], Cunha, R.V. [2]; Lichs, G.G.C.[3]; Castro-Jorge, L.A.[4]; Esposito, D. L. A.[4]; Fonseca, B.A.L. [4].
1 Department of Biochemistry and Pharmacy, UFMS, Campo Grande, Brazil, 2 Department of the Faculty of Medicine, UFMS, Campo Grande, Brazil, 3 Central Public Health Laboratory - LACEN, Campo Grande, Brazil, 4 University of Sao Paulo - USP, Ribeirão Preto, Brazil.

Introduction: The molecular epidemiology of dengue virus (DENV) has a notable role not only in identifying serotypes (DENV-1, DENV-2, DENV-3 and DENV-4), genotype and viral surveillance, as well as tries to explain the variation genetics of the virus and its clinical and epidemiological importance. **Material and methods:** in order to characterize the circulating DENV genotypes in Mato Grosso do Sul, between interepidemic period of 2011, 51 serum samples positive for viral isolation of DENV in C6/36 cells from Aedes albopictus larvae were submitted RNA extraction and amplification of the region NS1 for Reverse Transcription (RT-PCR), and the cDNA used for the quantification of samples for the detection of a serotype of DENV. PCR products were purified and subsequently sequenced (Applied Biosystems). Phylogenetic tree was constructed using fragments of the NS1 gene along with sequences selected from GenBank. **Results:** Of the 51 samples that screened positive by virus isolation, 17 were confirmed by amplification of the genome of DENV by RT-PCR and 6 samples had the determination of nucleotides in the region of the NS1 gene, to identify the infecting genotypes. Using the classification Hwang et al. (2003), which classifies the DENV-1 in three genotypes, the phylogenetic analyzes of the 6 amplified samples revealed that the samples belong to DENV serotype 1, genotype III. **Conclusion:** This result opens the way for further analysis of evolution and gene flow of DENV in Brazil and its relations with DENV isolated in other regions of the Americas. **E-mail:** liviabertolacci@hotmail.com

Dengue078- Suspected and confirmed cases of dengue hemorrhagic fever in 2011, in Natal, Rio Grande do Norte, Brazil

Araújo, Aíla Marôpo[1], Amorim, Ingrid Gurgel [1], Cavalcante, Elisangela Franco de Oliveira[1], Souto, Maria Cristiana da Silva[1], Barbosa, Isabelle Ribeiro [2]
1 Work for Health Educational Program – PET Health/Health Surveillance (PET Health/VS) – Federal University of Rio Grande do Norte (UFRN), NATAL/RN/BRAZIL 2 Pos graduate Programe in Public health - Federal University of Rio Grande do Norte (UFRN), NATAL/RN/BRAZIL

Introduction: the Dengue Fever is one of the major world public health problems. It is an arbovirus caused by the virus Flavivirus mainly spread in the tropical countries. The existing serotypes are: DEN-1, DEN-2, DEN-3 and DEN-4. The infection has the following clinical forms: Classical Dengue (CD), Dengue with Complications (DWC) and Dengue Hemorrhagic Fever (DHF). And the last one can evolve into a Dengue Shock Syndrome (DSS). According to the World Health Organization (WHO), the DHF is classified into the following severity levels: I, II, III and IV. The main evidenced clinical manifestations are: increased vascular permeability, plasma overflow and hemorrhagic manifestations. Painful hepatomegaly cans happen and eventually, splenomegaly. It was aimed to characterize the confirmed cases of DHF IN 2011 in Natal/RN/Brazil, from the notified suspected ones. **Material and methods:** exploratory descriptive study of quantitative approach. The data was collected from January to December/2011, through the Damage Notification Information System (SINAN) of the Municipal Health Secretary of Natal (SMS-Natal). **Results:** 687 suspected cases of Hemorrhagic Dengue were notified. After the investigation, they were concluded as: CD (40,6%); DHF (20,4%); Dengue with complication (20,2%); DSS (0,1%); discarded (6,3%) and pending (12,4%). From the DHF confirmed cases, it was observed that: 3,6% are type I, 53,6% are type II, 39,% are type III and 3,6% are type IV. Concerning gender, 53,2% are male and 46,8% female. The predominant age groups were: 5 to 9 years old (22,7%), 10 to 14 years old (17,0%), 30 to 39 years old (12,8%) and 40 to 49 years old(10,6%). The DHF cases distribution by the Sanitary District (SD) showed that 19,9% were concentrated in the east SD, 5,4% in the west one, 3,5% in the north II, 3,4% in the north I and 3,2% in the south. Regarding the notifying units, 85,5% of the notifications came from the public hospitals, 5,7% from the private ones, 5,0% from the philanthropic ones and 3,5% from more than one service. In relation to the cases evolution, 13 people with the Dengue Fever confirmed diagnosis ended dying, seven of them due to the DWC and six because of the DHF. **Main Conclusions:** The intersectoral actions execution, added to the preventive measures, advance diagnosis and proper clinical management, based on the epidemiology, is highly important to provide a better effectiveness in the assistance and satisfactory case evolution. **E-mail:** cristiana.souto@natal.rn.gov.br

Dengue079- Viremia associated with disease severity in two epidemics of DENV-2 in Rio de Janeiro, Brazil

Nunes P.C.G.[1*], Filippis, A.M.B.[1], dos Santos F.B[1], Santos, J. B.[1], Lima, M.R.Q.[1], Nogueira, F.B.[1], de Santis, B[1], Faria, N.R.C[1], Santos, C.M.R[1], de Sousa, C.S[1], Sampaio, S.A[1], Araújo, E.S.M[1], Nogueira, R.M.R.[1],
[1]Laboratory of Flavivirus (LabFla), Instituto Oswaldo Cruz, Fundação Oswaldo Cruz/FIOCRUZ, Av. Brasil 4365, CEP: 21045-900, Rio de Janeiro, RJ, Brazil.

Introduction: Over the past 20 years, the state of Rio de Janeiro was marked by extensive dengue epidemics, resulting from introduction of dengue virus-1 (DENV-1) in 1986, DENV-2 in 1990, DENV-3 in 2000 and DENV-4 in 2011. Since the introduction of DENV-2 American/Asian genotype, two additional outbreaks associated with this serotype occurred in 1990 and 2008. The 2008 epidemic was considered the greatest in magnitude in Brazil not only for the high number of reported cases, but also due to disease severity and high case-fatality rates. Considering the distinct epidemiological features of 1990 and 2008 DENV-2 epidemics, we investigated virological, immunological and demographic factors as a possible determinant to the pathogenic pattern of 2008 epidemic. **Material and Methods:** The level of plasma dengue viral load was assessed in one-hundred two DENV-2 cases from 1990 and 2008 epidemics using quantitative RT-PCR (qRT-PCR). Results were correlated with the following variables: disease severity (dengue fever and dengue haemorrhage), days of illness, age, gender and immune status

(primary/secondary). Genotyping data of DENV-2 from 1990 and 2008 specimens were also obtained. **Results and Discussion**: In our cohort, no statistical correlation with level of viremia versus age, days of illness and immune status was found in samples from both epidemics. However, plasma viral load of cases from 2008 ($7{,}10 \times 10^{06}$ RNA/mL) were higher than those of 1990 ($4{,}70 \times 10^{04}$ RNA/mL), $p = 0.001$. Furthermore, viremia was higher ($1{,}4 \times 10^{07}$ RNA/mL) in DH patients from 2008 epidemic ($p = 0.001$) than in DH cases from 1990 ($3{,}9 \times 10^{04}$ RNA/mL). Sequencing analysis of samples from both epidemics confirmed the American/Asian genotype in samples from 1990 and 2008 and identified a new lineage of DENV-2 in 2008. **Conclusion:** This study demonstrated that in 2008 epidemic high levels of virus in patient sera were associated with disease severity. The detection of a new lineage of DENV-2 in 2008 deserves more studies to investigate whether this lineage is more virulent and have contributed to the pathogenic profile of 2008 epidemic. **E-mail:** pricgn@ioc.fiocruz.br

Dengue080- Detection of dengue virus in mosquitoes *Aedes aegypti* and *Aedes albopictus* captured in the urban zone of Manaus, AM, Brazil

Cardoso, A.J.L.[1] Pereira, S. R.[1], Luz, S. L. B.[2,] Costa, C. A.[1]
1Instituto Nacional de Pesquisa da Amazônia ; INPA; Av. André Araújo, 2936, Aleixo, CEP 69060-001, Manaus – AM. 2Instituto Leônidas e Maria Deane / Fundação Oswaldo Cruz ; FIOCRUZ; Rua Terezina, 476. Adrianópolis, CEP: 69.057-070, Manaus – AM, Brazil.

Dengue is a viral disease that represents a major problem for public health. The virus is a single-stranded RNA virus, positive polarity, belongs to the family *Flaviviridae*, genus *Flavivirus*. The transmission of the virus is caused by the *Aedes aegypti*, an anthropophilic mosquito which activity biting is during the day. Manaus is a city in the Amazon Forest, the climate is humid equatorial, thus, has ideal conditions for the emergency of DENV causing epidemics. The *Aedes aegypti* was found for the first time here in November of 1996 and, in March of 1998 occurs the first cases of Dengue caused by the DENV 1 and DENV 2 serotypes, and since then sporadic outbreaks have occurred. The mosquitoes were collected during a period of epidemic surveys in the year 2011, in cooperation with the Entomology Laboratory of the Oswaldo Cruz Foundation, Leonidas and Maria Deane Institute (ILMD, FIOCRUZ Amazonia). Mosquito captures were based on previous information on living places of dengue patients. Mosquitoes were trapped in patient houses as well as in their neighbor houses. A number of 145 Aedes aegypti were captured and pooled into 24 lots and five captured Aedes albopictus were pooled into four lots. Each pool of mosquitoes was macerated and diluted in a 1% solution of bovine albumin in phosphate buffered saline (PBS). Mosquito macerates had the RNA extracted using the Axy Prep Body Fluid Viral DNA/RNA Miniprep kit (Axygen) and these extracts were submitted to a RT-PCR (Reverse Transcriptase – Polymerase Chain Reaction) for detection of flavivirus genus followed by a Nested-PCR for identification of Dengue virus species, both based on size of amplicons (Lanciotti et al, 1992). Dengue serotype 4 was detected in one pool of *Aedes aegypti* containing 10 animals; Dengue serotype 3 in three pools with four, eight and 10 animals, respectively and, one pool with Dengue Serotype 2 (with four animals). All positive samples were sent for isolation and amplification in C636 cell culture. It shows that during the last year in Manaus was occurring a continuous transmission situation by *Aedes aegypti* mosquitoes, where cases are caused by three of the four dengue serotypes. **Financial support:** CNPq Pronex / Fapeam. **E-mail:** antoniocardoso01@yahoo.com.br

Dengue081- Detection of *Dengue virus* in larvae of *Aedes aegypti* and in clinical samples from Sete Lagoas, MG, Brazil

Menezes, A.P.; Vallon, S.B.L.; Santos, A.S.B.; Andrade, R.P.; Pessanha, J.E, Caldas, S.; Cecílio, A.B.
Fundação Ezequiel Dias, Diretoria de Pesquisa e Desenvolvimento, Divisão de Ciências Biomédicas, Laboratório de Biotecnologia e Saúde. Belo Horizonte, Minas Gerais, Brazil.

Dengue is a serious disease of large epidemiological impact, which has become a growing public health problem. There are four serotypes of *Dengue virus* (DENV): DENV-1, DENV-2, DENV-3 and DENV-4. Advances in molecular epidemiology are needed for understanding the origin of DENV that are circulating in an area as well as the correlation of their virulence. The aim of this study was to identify and correlate

the DENV types circulating in larval forms of *Aedes aegypti* and in patients from Sete Lagoas, MG, Brazil. Ovitraps were collected during the months of May to August of 2011 by endemic disease control agents. The eggs collected were hatched and the larvae were maintained in -80°C. As required, the larvae were used in order to extract the viral RNA. Pools of 30 larvae were identified by date and place of collection. Viral RNA was extracted by QIAMP Viral RNA Kit (QIAGEN, USA) followed by RT-PCR and semi-nested PCR for DENV. Simultaneously, 12 clinical samples of individuals with manifestations suggesting infection of DENV were subjected to RT-PCR, virus isolation, typing using *Taq®Man* system and immunochromatographic assays for detection of IgG and IgM. The presence of DENV was observed in 12 larvae pools out of 167 pools. Among the positive samples was detected up to 3 DENV serotypes simultaneously, including 2 with DENV-1, 6 with DENV-2, 3 with DENV-3 and 9 with DENV–4. The minimum infection rate was 1:471, which although it was low, corroborates with other studies in the literature. No clinical samples were positive for IgM and IgG tests. DENV-4 was identified in seven clinical samples in a total of 12, while the others were negative for DENV. These data could be related to those observed in larvae, since the 12 positive larvae pools, nine had the serotype DENV-4. The serotype 4 has been found in some localities of Minas Gerais since the year 2010. The negative results of immunological tests suggest primary infection of DENV, which may explain the absence of serious cases of the disease in these patients. However the detection of the four serotypes in immature larval forms suggests that the risk of serious cases of the disease in the city of Sete Lagoas/MG could be higher in the next epidemic period. The use of larvae to realize the monitoring of DENV circulation may be a good method in order to develop a epidemiological surveillance. **E-mail:** alzira@funed.mg.gov.br

Dengue082- **Dengue Virus Type 1 from Field-Caught Vectors and Humans in Brazil, 1986-2011: Different Lineages of the American African Genotype**

Nogueira FB[1], Castro MG[2], Nogueira RMR[1], Ferreira AA[2], Faria NRC[1], Nunes PCG[1], Lourenço-de-Oliveira R[2], dos Santos FB[1]*
[1]**Laboratório de Flavivírus, **[2]**Laboratório de Trasmissores de Hematozoários, Instituto Oswaldo Cruz, FIOCRUZ. Av. Brasil 4365, Rio de Janeiro, RJ, 21045-900, Brasil**

Introduction: In Brazil, dengue became a major public health problem after DENV-1 introduction in 1986 in Rio de Janeiro (RJ) and in 2009, this serotype re-emerged causing major epidemics in the country. Since then, a virological and entomological program was established for monitoring dengue viruses (DENV) in human sera and vectors and it has constituted an important tool for dengue epidemiology and vector-virus-host interactions studies. **Material and Methods:** *Aedes aegypti* specimens collected in 1986 (*n*=120) and in 2001 (*n*=2,434) in Nova Iguacu (RJ) and collected in Boa Vista (RR) in 2010 (*n*=3,705) were pooled and analyzed. Six DENV-1 isolates (three from *Ae. aegypti* and three from humans) were available. Vector macerates were submitted to conventional RT-PCR and virus isolation in C6/36 cells. Viral RNA was extracted using QIAamp Viral RNA Mini kit (Qiagen). For viral quantification, the RNA from original *Ae. aegypti* individually macerated was submitted to Real Time qRT-PCR. Sequencing for the complete E gene (1,485 nucleotides) was performed as recommended by the BigDye Dideoxy Terminator sequencing kit (Applied Biosystems). Sequence analysis was performed using BioEdit, the multiple alignments by CLUSTAL W and phylogenetic analysis by MEGA 5, using the "Neighbor-joining" method. **Results:** DENV-1 was identified by virus isolation and RT-PCR during the 1986, 2001 and 2010 entomological surveillances performed in RJ and Roraima (RR) and the Real Time qRT-PCR detected $1.6x10^{4}$ copies/mL of DENV-1 in the macerate of a single *Ae. aegypti* female naturally infected. The phylogeny demonstrated that DENV-1 isolated from both field-caught vector and humans belong to genotype V (Americas/Africa), although the co-circulation of two distinct lineages (lineages II and III) was detected. A higher sequence divergence was observed between lineages II and III, and most amino acid substitutions were observed on domain III from E protein. Moreover, some residues were exclusive to some lineages, and may be predicted to be differentiating the three lineages. **Conclusions:** The use of molecular techniques combined to virus isolation showed to be important approaches for the surveillance and molecular characterization studies of DENV from field-caught vectors. The molecular characterization showed sequence differences lineage-specific in genotype V, independently in which host the virus was isolated. **Financial support:** CNPq, FAPERJ, FIOCRUZ. . **E-mail:** flaviab@ioc.fiocruz.br

Dengue083- Positive Predictive Value Suspected Dengue Cases Reported. Belo Horizonte, MG, 2001 to 2011

Pessanha, José Eduardo Marques; Brandão, Silvana Tecles; Morais, Maria Helena Franco; Almeida, Maria Cristina de Mattos; Cunha, Maria da Consolação Magalhães and Fiúza, Vanessa Pires.
Belo Horizonte City Health Department, Brazil.

The behavior of dengue in the Americas, especially Brazil, has differed from Asia with a prevalence of disease among adults, including severe forms of the disease. We conducted an observational, descriptive, cross-sectional use of secondary data in the information system of dengue in the city of Belo Horizonte between 2001 and 2011. We calculated the Positive Predictive Value, PPV of clinical diagnosis determined by the proportion of laboratory confirmed cases by anti-IgM serology and suspected cases reported in the city. For the years 2010 and 2011we analyzed the PPV of the symptoms reported. The PPV ranged from 82.9% (May/2010) in epidemic year, to 4.3% (Oct/2007), non-epidemic period. During the period under review, we highlight the year 2010, with a PPV of 75.6% the year of greatest epidemic. In 2011, the year that followed a major epidemic, the PPV was only 25.5%. The analysis of data according to the age group showed a pattern of higher PPV in accordance with age. Children under five years of age had the lowest PPV, usually with values less than 40%, reaching a minimum 21.6% in 2008. Signs and symptoms of the reported cases of dengue, the isolated analysis of these showed that the rash showed the highest PPV in all the years analyzed, ranging from 86.7% in 2010 to 39.7% in 2011. The other symptoms were very similar to the PPV, very low in 2011 (values close to 25.0%), around 50.0% in the years 2007-2009 and 70.0% in 2010. PPV also showed a tendency to increase in accordance with the symptoms. The percentage of suspected cases is not confirmed by laboratory variability. In addition to underreporting, another problem is the occurrence of high number of reporting false-positive cases in periods after outbreaks, confirmed only by clinical and epidemiological criteria. Thus, it becomes necessary to invest in collecting samples and investigate the potential diseases that make differential diagnosis with dengue, so as to increase the predictive ability of the surveillance system. The introduction of rapid diagnostic tests, in addition to reducing costs, could reduce the inappropriate prescribing of antibiotics for viral diseases such as dengue. The surveillance system should be able to generate early warnings to target measures aimed at interrupt the chain of transmission and prevention of new cases of the disease. **Keywords:** Dengue Fever, Surveillance, Symptoms. **E-mail :** edumpessanha@hotmail.com

HIV/AIDS

HIV/AIDS001- Recorded AIDS cases affecting the elderly in the state of Amazonas, Brazil

Santos ECS [1], Moura MAS [2], Nogueira GC [3], Castro MC [3], Mota CB [2,4,5], Lins RT [2 6], Saraiva MGG [2,7]
1 Universidade Federal do Amazonas. 2 Fundação de Medicina Tropical "Doutor Heitor Vieira Dourado". 3 Universidade do Estado do Amazonas. 4 Fundação de Vigilância em Saúde. 5 Universidade Ananguera Uniderp. 6 Instituto de Ensino Superior Materdei. 7 Universidade Nilton Lins. Manaus, Amazonas, Brasil.

Introduction: AIDS has shown to be amongst the pathologies notified annually affecting populations of different age groups and gender, in the state of Amazonas. **Objective:** to examine epidemiological aspects of cases of AIDS in people 60 years old and who were residing in cities in the state of Amazonas, who were diagnosed in from January 2007 to December 2011. **Material and methods:** SINAN NET secondary database information from /Foundation for health surveillance Coordination/STD/AIDS/HV served as the basis for case frequency stratification by year of diagnosis, evolution, gender, age, schooling, race/color, and residing municipality. **Results:** 59 AIDS cases were diagnosed and registered in this period, of these 11 (18.6%) evolving toward death. The lowest record, seven (11.9%) occurred in 2007 and the highest, 15 (25.4%) in 2010. Males repotted 43 (72.9%) and females contributed with 16 (27.1%) cases. The age varied between 60 to 80 and over, 42 (71.2%) being between 60 and 69 years,

and 17 (70%) from 70 to 80 and over. Schooling varied between illiterate four (6.9%); middle school completed two (3.4%); ignored/blank information 42 (72.4%); Observing the race/color results, mixed race with 46 (79.3%) presented the highest occurrence, followed by whites with six (10.3%) and indigenous with one (1.7%). As to the record by the municipality of residence, Manaus showed 50 (84.7%) cases, Itacoatiara five (8.5%), Benjamin Constant three (5.1%) and Tabatinga one (1.7%). **Conclusions:** In the Amazon AIDS affecting elderly people is even more recorded in males, probably on account of their higher exposure, however it is important to turn our attention to women of this age group. Manaus is the municipality with highest number of cases possibly due to its population quota. Therefore, the actions regarding the explanation regarding prevention/control of this disease should occur continuously, and suit the different cultures of people in urban and rural areas. **E-mail:** gracasaraiva@fmt.am.gov.br

HIV/AIDS002- **Overview of the elderly patients infected with the HIV in a reference center of STD/AIDS in São Luís**

Azevedo CMPS, Azevedo FS, Silva NF, Ribeiro JVF, Cysne DN.
Federal University of Maranhão, São Luís, Brazil.

Introduction: the age group that AIDS is more prevalent, considering both genders, is between 25 and 49 years old. However, the disease has spread and reached people with more than 60 years. The sexual transmission has been predominant in this age group. There are many reasons for that spread, as the raise in the life expectancy of the people living with the HIV, raise in the contamination of the elder, etc. Before the raise of the infection in seniors, it is necessary to know the regional characteristics of this population, justifying this research. **Material and Methods:** descriptive, retrospective study that included all the patients with 60 or more years and infected with the HIV, in the years of 2011 and 2012. **Results:** we have collected the data of 34 people living with HIV, with more than 60 years, under treatment. The average of age was 66,52 years. There was a predominance of males, with 61,76% of the cases. São Luís was the most common city of origin, with 22 patients. Concerning the reason of the first medical consultation, 25 patients sought medical assistance because of the positive result of the anti-HIV tests. Nine sought it because of their symptomatology. In the first consultation was found diarrhea in 11 patients, weight loss in 5 and fever in 3, while 11 patients were asymptomatic. There was an average of 293 CD4+ T cells per mm^3 in the first count and 422 cells/mm^3 in the last count. Regarding the viral levels, the initial average was 163.951 copies/mL (3 patients had undetectable viral level) and the last count was 10.594 copies/mL (22 patients with undetectable viral level). Regarding the time to the diagnosis, 16 patients were diagnosed in less than 5 years. Out of those, 2 had CD4+ T cells count lower than the initial one, in other words, there was a worsening; 10 patients had undetectable viral levels. Nine patients were diagnosed between 5 and 10 years ago, all showed improvement of the CD4+ T cells count and 7 progressed with undetectable viral levels. The other 9 patients were diagnosed for more than 10 years, 2 had reduction of the CD4+ T cells count, 2 raised their viral levels and 4 had viral load suppression (>20 copies/mL). Concerning the treatment, the association with zidovudine (AZT) and lamivudine (3TC) was prescribed to 21 patients, 12 were using efavirenz (EFZ) e 16, protease inhibitors. **Conclusion:** it was concluded that, besides the older age population, there was a good disease progression and satisfactory adhesion to the treatment. The most of the patients progressed with undetectability of the viral levels and sustainable raise of the CD4+ T cells. **E-mail:** conceicaopedrozo@gmail.com

HIV/AIDS003- **Epidemiological analysis of AIDS in elderly in the state of Rondônia, Western Amazon**

Vieira, GD; Alves, TC; Sousa, CM.
Faculdade São Lucas, Porto Velho, Brasil

Introduction: In the 1980s, AIDS was considered a disease restricted to young people, therefore, preventive policies and awareness campaigns were directed almost exclusively to young and adult population, excluding the elderly population. With significant advances in medicine and the pharmaceutical industry, the elderly could maintain an active and regular sex life and regular over a

longer period. Unfortunately, the prejudice of society and even the elderly about its sexuality, makes this group do not use basic methods of preventing, revealing an aggravating factor of HIV infection in this population. Currently, the epidemiology of the disease has been changing with this apparent increase in the burden of the disease in the elderly. Thus, the purpose of this work was to quantify and analyze HIV infections among persons aged 50 years and older in the state of Rondonia. **Material and Methods**: Data were collected in AGEVISA / RO, through epidemiological data source Sinan NET and SinanW. The data set obtained refers to the period from January 2000 to August 2011, using as variables: Age bracket, gender, mode of transmission, year of diagnosis and progress of the disease. **Results:** 2252 cases were recorded with individuals between 14 and 81 years old, of which 323 (14.3%) are people over 50 years of age, and 67.2% are men and 32.8% women. The most common mode of transmission found in this study was through sex and among heterosexual, of which 179 cases of sexual transmission to women and men with 115 cases and vertical transmission was considerably lower, having only one case. Considering the age bracket, the highest number of cases is concentrated between 50 and 59 years, totaling 246 cases. Concerning the progress of the disease, 256 patients are under treatment and 69 died. **Main Conclusions**: Over the past 10 years there was a 440% increase in reported cases of AIDS cases among elderly population in the state of Rondonia, changing the epidemiology of the disease. These results are probably associated with the improvements in the health service or the increased the demand for people interested in performing HIV testing. **Keywords:** Epidemiology, AIDS, Elderly, Rondonia, Amazon. **E-mail:** camila@saolucas.edu.br

HIV/AIDS004- Evaluation of level of knowledge about HIV/AIDS among students of one public education school from Arapiraca, Alagoas, Brazil

Santos , E.O.[1, 2]; Silva, A.F.[1]; Gonçalves, M.[1]; Silva, J.L.A. [2]; Souza, V.S.B[2].
[1] **Postgraduate Program in Tropical Medicine, Center for Health Sciences (CCS), Federal University of Pernambuco (UFPE), Recife, Pernambuco, Brazil;** [2] **State University of Alagoas (UNEAL).**

Currently, HIV/AIDS in Brazil is presented as real health problem due to its multifactorial nature and complex dynamics which promotes great impact on the practices, concepts and social values regarding sexual behavior of young people. The aim of this study was to evaluate the degree of knowledge about Sexual Transmissible Diseases (STD)/AIDS among students at a public school education in Arapiraca city, Alagoas, Brazil. We examined the responses obtained by questionnaire from 200 secondary school students of the School Lions Club. For data analysis techniques were used descriptive statistics, by use of program Epi Info 3.5.1. Of the total students assessed, 61% were female and 39% male, aged between 13-32 years old. Among the respondents, 78% had not started their sexual activities. While 13.5% (27/200) reported having sex. It was observed that 69% of male students reported sexual activity initiation between 12 and 16 years, and 48% of girls initiated it between 17 and 20 years old. About information sources, 46% of students claimed to have received sexual education at school, 10% with family and another 10% with friends. About the possibility of talking about sex with parents, 75% said they did not discuss this matter with the family. "No use of condom" was cited by 90% as the main risk factor for HIV infection, although only 68% of them reported to use it. Regarding the most appropriate method of prevention against STD/AIDS, 97% affirmed to be the "use of condoms" and 3% believe erroneously the "rhythm method" is the appropriate alternative. According to data on schoolchildren, we found the unpreparedness of teenagers dealing with sex, the early initiation of sexual activity, the lack of dialogue with parents and the condom use below the desired index. Thus, we emphasize the need to implement strategies to promote continuous education of safe sex practices, in order to reduce the chance of HIV transmission among schoolchildren and young people. **Keywords:** Sexual Transmissible Diseases (STD)/AIDS, Epidemiology, risk factor. **E-mail:** erlon.medtropical@hotmail.com

HIV/AIDS005- Frequency and host factors associated to the late diagnosis of HIV-1 infection in individuals from Londrina, Paraná, Brazil.

Wiechmann SL, Bragato EF, Pinheiro MT, Reiche EMV, Morimoto, HK, Almeida ERD, Ueda LT, Pereira, MTMA, Nader PA, Lentine EC; Bonametti AM.
University Hospital, State University of Londrina, Londrina, Paraná, Brazil

Background: Previous studies carried out in Brazil showed that 43.6% of individuals initiated, lately, treatment for HIV-1 infection, and 40.0% of mortality rate is related with the late diagnosis. The delay in the HIV-1 infection diagnosis has been sponsored the some factors such as the difficulty to have access to health services units and by the resistance to search health care. This previous study also reported that late HIV-1 infection diagnosis is more frequent among men, in age > 40 years old, and in individuals from North and Northeast Brazilian regions. The aim of the present study was to evaluate the frequency and factors associated with late HIV-1 infection diagnosis in individuals from Londrina. Material and Methods: A longitudinal and prospective study was carried out to evaluate sociodemographic, epidemiological, clinical, and laboratory characteristics of adult individuals with HIV-1 infection diagnosis during the period November 2009 to April 2011 in the metropolitan region of Londrina, Southern Brazil. **Results:** The study evaluated 187 HIV-1 patients and the late HIV-1 diagnosis was obtained in 101 (54.0%), 73 (72.3%) were male, and the aged ranged from 24 to 72 years old (mean 42.6 ±11.2, median 42.0). The $CD4^+$ T cell counts, evaluated in 97 (96.0%) patients, ranged from 2 to 347/mm^3 (mean 94.6 ±73.9, median 66.5). In 41 (42.3%), the CD4+ T cell count was ? 50 cellsmm^3. The HIV-1 viral load, evaluated in 93 (92.0%) patients, ranged from 1,200 to >500,000 copies/mL (mean 249,047 ± 190,000, median 249,047). Most of the patients (55/59.1%) presented HIV-1 viral load levels? 100,000 copies/mL. Among the patients that were admitted in hospital units, HIV-1 defined diseases most frequent were esophagic candidiasis, pneumocystosis, neurotoxoplasmosis, cryptococcosis, tuberculosis, and histoplasmosis. At the end of follow-up, 24 (23.8%) patients died and 12 (50.0%) of deaths occurred in the first month after the HIV-1 serological diagnosis. Of the 24 patients that died in the period evaluated, 16 (66.7%) reported that health services were searched in the last year, with symptoms suggesting immunodeficiency and 19(79.2%) found that were infected only when were admitted in the hospital units. Conclusions: The study confirmed that the late HIV-1 diagnosis is more frequent among male, and among individuals aging? 42 years old. These results are in agreement with those reported by the Health Ministry of Brazil. However, the frequency of late HIV-1 diagnosis was higher than previous reported. Population from Londrina and region has facilities to access health services and the fact that most of them that died with aids in the period evaluated searched a health service previously, may reflect that opportunities to early diagnosis of HIV-1 infection are been missed and this situation may be occurring in other Brazilian regions**. E-mail:** swiechmann@sercomtel.com.br

HIV/AIDS006- Modeling shows that concurrent sexual partnerships do not explain sub-Saharan Africa's HIV epidemics

Sawers L[1,] Stillwaggon E[2]
[1]American University, Washington DC, USA, [2]Gettysburg College, Gettysburg PA, USA

Introduction: If, as many claim, overlapping sexual partnerships (concurrency) were a principal explanation for sub-Saharan Africa's extraordinary HIV epidemics, concurrency there would have to be higher than in regions with low HIV prevalence; our systematic review of the empirical evidence shows that there is no evidence for higher concurrency in sub-Saharan Africa. Moreover, recent Demographic and Health Surveys (DHS) in Lesotho, Mozambique, and Malawi (the only DHS measuring concurrency with UNAIDS-approved questionnaire design) find point prevalence of concurrency of 2.0 to 5.0%, which is low compared with Europe and US. Moreover, if concurrency were a principal driver of sub-Saharan Africa's epidemics, it would have to be more effective in spreading HIV than sequential monogamy. Morris and Kretzschmar's sexual-network stochastic simulation model (MK-model) is widely cited to support that claim, but critics show that their model uses implausible parameter values that exaggerate concurrency's effect. In response, Morris asserts the MK-model actually understates concurrency's importance by not incorporating vital dynamics (AIDS deaths). **Material and Methods:** We first

incorporate vital dynamics into the MK-model and then replace their transmission rate with staged and unstaged rates from Hollingsworth et al. We then introduce more realistic assumptions about average partnership duration and coital dilution. **Results:** Incorporating vital dynamics into the MK-model in an 11-year simulation produces 99% HIV prevalence at all levels of concurrency, an impossible result showing the model cannot track actual epidemics with its original parameters. Using actual concurrency rates from DHS in Lesotho, Mozambique, and Malawi, we simulate the MK-model adding both vital dynamics and a more realistic unstaged transmission rate. In a 90-year simulation, HIV prevalence reaches only 1.0% with the concurrency prevalence of Lesotho or Mozambique or 0.9% with Malawi's, compared with 0.8% HIV prevalence with only sequential partnering. Using even more realistic staged instead of unstaged transmission rates generates continuously falling HIV prevalence and epidemic extinction at rates of concurrency well above those found in recent DHS. Adding realistic assumptions about average partnership duration and/or coital dilution (lower coital frequencies in secondary partnerships) produces epidemic extinction at any considered level of concurrency. Other models since the MK-model also cannot demonstrate concurrency's importance without unrealistic parameter values. **Main Conclusions:** Correctly parameterized models with correctly measured levels of concurrency show that concurrency does not explain HIV epidemics in sub-Saharan Africa. **E-mail:** lsawers@american.edu

HIV/AIDS007- **The internalization of AIDS in the state of Rio Grande do Norte: a retrospective between the years 2000 and 2009**.

Souza, RAM[1]; Souza, MA[1]; Nunes, RFF[1]; Pereira, WO[1]
Research Group in Infections Diseases, University of State of Rio Grande do Norte

Introduction: The dynamics of the Brazilian epidemic of Acquired Immunodeficiency Syndrome (AIDS) in the last decade, as evidenced by changes in the epidemiological profile of patients with the disease, is noticeable in the State of Rio Grande do Norte (RN), especially the internalization of the disease, key issue of this work for being the RN one of the states with the highest number of small towns with a growth in the number of cases above the national average. **Material and Methods:** This is a time series study performed with secondary data from the Sistema de Notificação e Agravos (SINAN), the state and national epidemiological bulletins of 2011 for AIDS in adult patients living in the RN, the Secretaria de Saúde Pública do RN (Sesap / RN) and the Instituto Brasileiro de Geografia e Estatística (IBGE). Several characterists were carriers from the capital Natal and other towns in the state were analyzed. **Results:** Between the years 2000 to 2003 there was an equivalence of the numbers of AIDS between the capital Natal and other towns in the state, a fact that has been changing slowly since 2004, with the increase of cases diagnosed within the state. Regarding the incidence rate, Natal has a higher of 12.03 cases/100mil rate cases in the last years (4.5%). However, the growth level was higher in the countryside, recording 7.85 cases/100mil (68.8%). The same results can be observed in mortality, with 4.71 deaths/100mil in Natal and 2.79 deaths/100mil in countryside, with equivalence of 25% and 220%, respectively. Regarding about gender, the ratio between men/women is more discrepant in Natal than in the other towns, observing an average of 2.3, while within the state this value drops to 1.4. Observing the ratio capital/towns in the countryside, there is a higher proportion of men with AIDS in the capital, represented by the average of 0.93, compared with the statistics of women, with an average of 0.65. Regarding age, there are no glaring differences between the capital and the towns within the state, being the group of 20 to 49 years the most representative of the new disease carriers. **Conclusions:** Despite the prevalence and incidence of AIDS is still greater in Natal today, the growth rate of incidence and mortality is much higher within the state. Moreover, it is important to focus on heterosexual groups from 20 to 49 years who lives in the countryside, homosexuals HSH and users of injectable drugs in the capital of the same age. Thus, it's imperious the implementation of public health policies focused on prevention and treatment of the cases already reported, in order to avoid further spread of the disease. **Keywords:** HIV/AIDS. Epidemiology. Internalization. **E-mail:** wogel.uern@gmail.com

HIV/AIDS008- **Status of HIV / Aids in individuals referred to Instituto Evandro Chagas (IEC), National Secretariat of Health Surveillance, Brazil's Ministry of Health from 2009 to 2011, in Belém, Pará State, Brazil**

Macêdo, Olinda; Nascimento, Daniela; Freitas, Celina, Reis, Raimundo.

The Aids epidemic in Brazil began in 1980 and by June 2011 had a record of 608,230 cases of Aids or clear disease. In 2010, there were 34,218 reported cases of the disease with an incidence rate of 17.9 cases per 100,000 inhabitants (http://www.aids.gov.br/pagina/aidsnoBrasil). The objective of this study was to analyze the databases of the Retrovirus Laboratory of Instituto Evandro Chagas to determine the profile of seropositivity of the HIV-1/2 viruses. Diagnosis was performed using the ELISA (Symbiosis), Indirect immunofluorescence (IFI) or Immunoblot fast (IBR) assays, all made by Biomanguinhos and/or Western Blot (WB). Serum samples of 2,022 individuals were analyzed for the detection of anti-HIV 1/2 between 2009 and 2011. We used the following information: distribution in relation to age and gender of people diagnosed. The positivity rates were higher in 2010 and 2011, including the ages: 21-30 years (8.8% and 12%) 31-40 years (18.3% and 15%) and 41-50 years (14% and 9.4%), respectively. The prevalence in Belém was higher in males from 21 to 50 years old. Total positivity of cases was of 5.7%. These results are important because they alert health agents and contributing to a better understanding of the distribution of Aids in Belém, and to establish measures to prevent and control this disease. **E-mail:** olindamacedo@iec.pa.gov.br

HIV/AIDS009- **Socio-economic profile of users in a service reference to AIDS in the city of Belém, Pará, Brazil**

Silva, M. C. M.[1]; Almeida, R. G. L. [1], Bastos, M. L. C.[1]; Costa, E. V. S. [1], Dias, C. K. B.[1], Guimarães, N. M. [1], Luz, D. A.[1]; Pinheiro, A. M.[1]; Pontes, A. C. A. A.[1]; Santos, C. C.[1]; Sarmento, R. M.[1]; Silva, A. D. V.[1]; Silva, J. V. S.[1]; Silva, L. C.[1]; Silva, M. L.[1]; Silva, R. P.[1], Silvestre, J. V. [1], Dolabela, M. F.[2].
1Grupo PET farmácia, Universidade Federal do Pará (UFPa), Belém – Pará - Brazil; 2Faculdade de farmácia UFPa, Tutora do PET-farmácia.

Introduction: In Brazil, the first cases of Acquired immune deficiency syndrome (AIDS) were identified in the early 1980s, recorded predominantly among homosexual adults, intravenous drug users and hemophiliacs. However, due to the profound inequalities of Brazilian society, the spread of epidemic infection in the country reveals that comes over time undergoing changes in its epidemiological profile. The outbreak previously restricted to the national cities reaching mostly the male homosexual practice. Today the pattern of infection has become different due increased transmission cases among women. The virus distribution not shows homogeneity about regions, sex, age and educational level. Projects and campaigns to prevent AIDS, the knowledge of the HIV profile comes to be an important factor in the choice of methodology, as well as allowing comparisons between geographic areas and different population groups. In the city of Belém – Pará – Brazil no studies were found regarding this profile, justifying the performance of this study. **Methods:** We conducted a retrospective study in which we analyzed 100 medical records, randomly selected from patients enrolled in the sexually transmitted disease/AIDS program, during 2011, in a reference institution from Belém. Percentage was used for data analysis. **Results:** We found that 65% patients are male and 35% female. In relation to sexual orientation, 24% are homosexual, 50% heterosexual, 11% bisexual and 15% does not report sexual preference. Regarding the life conditions, 44% live with relatives, 27% with a partner and children, 8% alone and 21% do not inform. The marital status of the users matches, 11% Stable, 12% are married and 52% single. Considering age, 5% of patients have between 0 - 10 years, 7% have between 11 - 20 years, 45% have between 21 - 30 years, 26 % have between 31 - 40 years, 14% have 41 - 50 years and 3% . **Conclusion:** The socio-economic profile obtained is composed mostly of men, single, heterosexual sexual practice, between 21-30 years old and life with relatives. This profile matches the national profile of HIV carriers. **E-mail:** milenacristina8080@hotmail.com

HIV/AIDS010- Sociodemographic aspects and current health problems of the elderly who have serum examination for HIV / AIDS in Goiania-GO, Brazil

Junqueira MFR, Costa Neto SB, García-Zapata MTA.
Re-Emerging Agents Research Center / DMTD / IPTSP and Teaching Hospital / Federal University of Goias & Municipal Social Welfare Department, Goiania – GO, Brazil

Introduction: The purpose of this study is to assess in elderly the sociodemographic, health problems today, the quality of life and to perform routing and search for serology test result for HIV / AIDS, as well as analyze the psychological aspects and quality of life. **Materials and Methods:** The clientele was composed of elderly subjects, aged 60 years and older enrolled in local community centers and the Open University of the Third Age: Catholic University of Goias, and Center for Testing and Home / Reference Centre Diagnosis and Therapy / CRDT in the period 2011 to 2012. The instruments used were: Questionnaire Socio Demographic Information Sheet and the Respondent - the World Health Organization - WHO / adjusted (current health problems) and Quality of Life Questionnaire. **Results:** In the analysis of tests of 92 participants there was no incidence of HIV / AIDS. All participants said they were heterosexual, 100% of them reported receiving retirement pension and not make use of injecting drugs, does not belong to indigenous ethnic group, not a hemophiliac. The vast majority, 73 people (79%) did not use condoms, 14 (15%) used condoms during sexual intercourse, 5 (5.43%) used condoms in some relationships, according to their confidence in the partner (s). A minority, 32 people (34%) has sexual intercourse with a steady partner. People who had no sexual partners (especially women). As for educational level: none (a) participant has expertise, master's or doctorate, 02 (2.17%), have a college degree, 08 (11.5%) completed high school, 04 (23%) secondary school, , 01 (1%) complete primary education, 46 (50%) elementary school, and 27 (29.34%) are illiterate. A small minority have hearing difficulties, visual and mobility, acquired due to age or health problems and accidents. Met the criteria received support from the Department of Citizenship and Labor of the State of Goiás - More Citizens Income Program of the Ministry of Health and Welfare - Continuous Cash Benefit. Many see as expendable condom use, confirmed by behavior by women, by maintaining a sexual relationship with exclusive sexual partners. There was the occurrence of sexual intercourse with elderly drug user. A few people said to have done surgeries and have received or donated blood, which favors the non-contamination by HIV / AIDS. **Conclusions:** Despite the reduced number of individuals who use condoms, it is assumed that no finding of HIV / AIDS in this group may be related to reduced exposure to risk factors: a) use of syringes for drug abuse (0), b) sexual intercourse with homosexual partners (0) and c) constant exchange of sexual partners - mainly from the female population. **E-mail:** mctulianglobal@gmail.com

HIV/AIDS011- Seroprevalence of HIV in the female prison population in state of Pará

[1]Silva, AM; [1]Costa, RAA; [1]Almeida, MKC; [1]Santos, KN; [1]Silva, AV; [1]Freitas, AS; [1]Fecury, AA; [2]Dias, CAGM; [3]Paixão, ART; [3]Ferreira, EPM; [3]Assumpção, JB; [3]Fernandes, NC; [3]Aguiar, SRV, [1]Martins, LC.
[1] Clinical Pathology Laboratory of the Center for Tropical Medicine, [2] Laboratory of Neuroscience and Behavior Research Center for Theory and Behavior., [3] School of Nursing , Universidade Federal do Pará, Belém, Pará, Brasil.

Introduction: The growing incidence of STDs, especially among young women, gave Brazil the most rapid increase of AIDS cases described in the female population in the world. In Pará, until June 2009, the relation was 1.58 males to each female, requiring to the government a special attention to the female population. In 1996, 17% of reported AIDS cases in the country were from the prison system and in 1997, an estimated 8.900 inmates had AIDS and that 35 to 47.000 were HIV positive. However, there are few studies on incidence, prevalence and other epidemiological aspects related to STDs, including HIV/AIDS in prison population, and particularly effective in women. The need to know the prevalence of HIV infection among women of the only female penitentiary in Pará State is justified both because this is a population exposed to risk, how to stimulate a response from health services and prevention provided to this population. This study aimed to determine the seroprevalence of HIV/AIDS and risk variables for the

acquisition of HIV infection that were exposed to the inmates of the Centro de Recuperação Feminino (CRF) do Coqueiro. **Materials and Methods**: The study included 313 women from the Centro de Recuperação Feminino (CRF) do Coqueiro who agreed to participate in a free and enlightened research and answered an epidemiological questionnaire. Were collected blood samples (10 mL) to test the presence or absence to antibodies IgG anti-HIV using the Rapid Test named *Determine* and confirmed these antibodies presences by ELISA technique? The study was approved by the Ethics Committee in Research (Comitê de Ética em Pesquisa do Núcleo de Medicina Tropical). **Results**: HIV infection was present in 3.5% (11/313) of inmates. The age of infected inmates had an average of 29 years, 7/11 said they were heterosexual and 6/11 remains stable unions. Regarding education, 90.9% have primary education. Studies indicate that married heterosexual women, low educational level are more likely to acquire HIV infection. The lack of condom use, multiple partners, injecting drug use and the presence of tattoos risk variables were observed for viral acquisition. **Conclusions**: The implementation of strategies to control infection and to encourage campaigns in prisons in relation to the use of condoms during sexual intercourse, it is necessary during the period of the sentence, because it can contribute to reducing the spread of HIV both inside and outside the prison. **Keywords**: HIV, seroprevalence, prison population, female, Pará. **E-mail:** rmfaguiar@hotmail.com

HIV/AIDS012- **Registry of AIDS in rural area of the municipality of Manaus, Amazonas**

Neta IMB [1], Lima RMX[1], Santos ECS [2], Moura MAS [3], Mota CB [3, 4, 5], Nogueira GC [7], Saraiva MGG [3, 5]
1 Distrito Rural/Secretaria Municipal de Saúde de Manaus. 2 Universidade Federal do Amazonas 3 Fundação de Medicina Tropical "Doutor Heitor Vieira Dourado". 4 Fundação de Vigilância em Saúde. 5 Universidade Ananguera Uniderp. 6 Universidade Nilton Lins.7 Universidade do Estado do Amazonas. Manaus, Amazonas, Brasil.

Introduction: The city of Manaus, has reported AIDS in distinct ages group in populations residing in different urban, peir-urban and rural areas. **Objective:** To analyze the epidemiological aspects of AIDS cases in people living in the rural zone of Manaus, who have been diagnosed and reported from January 2007 to December 2011. **Materials and methods:** SINAN NET secondary database information served as basis for determining the following variables: time and duration of diagnosis, gender, age, occupation and race/color. **Results:** In the period 2,400 cases of AIDS were diagnosed and reported in Manaus, of these 24 (1%) were rural AIDS cases, of which four (16.7%) were nearly dead. The highest record (33.3%) eight cases occurred in 2008; and the lowest one (4.2%) in 2010. Males presented the highest recorded 14 (58.3%) and females contributed with 10 (41.7%) cases. The age range varied from 20 to 64 years, with the largest number (15; 62.5%) between 20 and 34 years. Mixed race/color presented 21 (87.5%), white one (4.2%) and indigenous two (8.3%). **Conclusions:** In the rural area of the municipality of Manaus, the occurrence of AIDS was higher in males. The occurrence in indigenous peoples indicates special attention must be paid to this race. Therefore, action involving information required for this disease's prevention/control programs, must be adjusted the different cultures of the population in the rural areas of the capital of Amazonas. **E-mail:** gracasaraiva@fmt.am.gov.br

HIV/AIDS013- **Rush to Judgment: Sources of Confounding in STI-HIV Prevention Trials**

Sawers L[1,] Stillwaggon E[2]
[1]American University, Washington DC, USA, [2]Gettysburg College, Gettysburg PA, USA

Introduction: Substantial evidence indicates that sexually transmitted infections (STIs) promote HIV transmission and acquisition by producing genital ulcers, inflammation, and viral shedding. The burden of untreated STIs is far higher in sub-Saharan Africa than in any other region. Ten randomized controlled trials in sub-Saharan Africa examined effects of STI control on HIV incidence. Only one produced statistically significant results. Consequently, support for STI treatment for HIV prevention has faded. **Material and Methods:** We conducted an intensive review of methods and outcomes of the 10 STI-control trials in sub-Saharan Africa and subsequent analyses. **Results:** All 10 trials reveal potentially

serious confounding from multiple untreated genital morbidities. Some trials studied the impact of treating bacterial STIs on HIV incidence; others studied treatment of viral (herpetic) STIs. None studied both. None examined treatment of genital morbidity from other causes that could enhance HIV transmission or acquisition. The trials excluded consideration of fungal and protozoan STIs, which can cause inflammation that could promote HIV acquisition or transmission. None considered genital ulceration and inflammation from non-sexually transmitted pathogens, most importantly *Schistosomiasis hematobium,* which infects 15% of the population in sub-Saharan Africa. None considered ulcers caused by abrasions infected with streptococci or staphylococci, also common in the region. Treating one type of genital morbidity may have little effect on HIV incidence when there is untreated genital morbidity from multiple sources. Other important potential sources of confounding come from changes in sexual behavior in control arms. Eight trials reported the same or lower levels of risky sexual behavior in the control arm as in the treatment arm or reported the same or larger reductions in risky behaviors among controls. (Two trials did not report on sexual behavior.) That could have resulted from the trials' successful interventions in the control arm or from spontaneous reductions in risky behavior prompted by the trial. **Main Conclusions:** In the 9 trials lacking statistically significant results, confounding by genital morbidity of multiple etiologies, behavioral change, and other factors that we discuss elsewhere renders those trials unable to inform HIV-prevention policy. Given abundant evidence that STIs promote HIV spread, STI treatment should be considered an important method for reducing HIV incidence in sub-Saharan Africa and elsewhere. **E-mail:** lsawers@american.edu

HIV/AIDS014- **Genital health, tropical epidemiology, and HIV-prevention policy**

Stillwaggon E[1], Sawers L[2]
[1]Gettysburg College, Gettysburg PA, USA, [2] American University, Washington DC, USA

Introduction: The most severe generalized HIV epidemics developed in complex health environments in which multiple morbidities interact to accelerate HIV spread. Substantial evidence indicates that malaria, urogenital schistosomiasis, untreated STIs, other reproductive-tract infections, and nutritional deficiencies increase HIV transmission and acquisition by increasing viral load, genital viral burden, or causing genital lesions or inflammation. HIV-prevention protocols, however, do not include interventions to reduce these cofactors of sexual and vertical HIV transmission. An obstacle to integrated disease prevention is the limited information that can be derived from randomized controlled trials (RCTs) in populations with multiple interacting morbidities. **Material and methods:** We apply basic epidemiological principles to understand amplified HIV transmission and derive appropriate preventive interventions. We evaluate the limitations of RCTs for determining effects of interventions when multiple pathogens or conditions disrupt the integrity of genital microbial communities. **Results:** HIV in multi-burdened populations is poorly understood. STI-HIV trials are confounded by high prevalence of other genital lesions caused by STIs of types not treated in the trial, or by schistosomiasis, staphylococci, streptococci, and of fungal and protozoan disease. The protective ability of genital mucosa depends on microbial communities gravely disrupted by disease. Even with treatment for schistosomiasis or STIs, recovery of the genital environment exhibits hysteresis – delayed restoration of integrity of protective mucosa. As with STI trials, proposed and ongoing RCTs of schistosomiasis treatment for HIV prevention face confounding from multiple genital morbidities and ethical obstacles because safe, proven, cost-effective treatments are available for STIs and genital schistosomiasis. Thus trials are unlikely to detect statistically significant effects on HIV incidence, in spite of having beneficial effects on treated individuals. RCTs cannot provide definitive evidence on questions that entail complex interactions of component causes or when non-treatment is unethical. Lack of full scientific certainty should not be used as a reason for postponing cost-effective measures to prevent threat of irreversible damage. **Main conclusions:** Sound epidemiology reveals fundamental misdirection of HIV-prevention policy, which is stymied by limited understanding of the complexity of microbial communities of the genital tract. Insistence on confirmation of treatment for cofactors (STIs, schistosomiasis) with an unachievable 'crucial experiment' for complex health problems, such as HIV in sub-Saharan Africa, is incorrect epidemiology and bad public health policy. **E-mail:** stillwaggon@gettysburg.edu

HIV/AIDS015- Construction and application of technologies for the development of educational activities with teens in combating the transmission of STD / HIV / AIDS

Almeida, C.A.[1]; Silva, J.S[1]; Souza, V.B.[1]; Santos, J.V.J.[1]; Jesus, J.M.[1]; Costa, J.P.[1]; Oliveira, M.S.[1]; Santos, D.V.[1]
[1] **Centro de Ciências da Saúde/Universidade Federal do recôncavo da Bahia – CCS/UFRB.**

Introduction: Adolescence is the age group that has the highest incidence of sexually transmitted diseases (STDs). Thus, access to information for the prevention of STD / AIDS and adolescent unplanned pregnancy is fundamental, since it is a basic strategy for the control of transmission in this and all other phases of life. This prevention can take place through constant educational activities for teens that focus on risk perception, changes in sexual behavior and the promotion and adoption of preventive measures with emphasis on proper use of condoms. This study aimed to enable the santantoniense population, from an educational technology to establish actions which stimulate their autonomy in the prospect of being able to reduce risk behaviors and to multiply attitudes of health promotion. **Methodology:** As proposal of curricular component Health of Children and Adolescents of UFRB, there was an educational activity, in Santo Antonio de Jesus, Bahia, during health fair in combating the transmission of STD / AIDS in the world day to combat AIDS, in partnership with the Municipal Secretary of Health. To implementation, was made a cardboard television, which was presented a comedy history, using illustrations associated to dubbing with playful language, humorous and regional, followed of problematization with the target public about that had been presented, ending with condom distribution. **Results:** During the educational activity was noticeable the ability of the technology used to keep the attention of participants who demonstrated good level of understanding, as elucidated doubts about risk behaviors and methods of preventing transmission of STDs / AIDS, demonstrating finally a positive attitude in extent that most of these accepted the offered condom. **Conclusion:** The application of creativity, dialogue, autonomous in health education practices developed by health professionals concretize essential condition to the success of this educational activity designed with the teenage audience, since they are a group that lives in constant transformation inculcated of intense curiosity by unknown and extremely able to make connections with the experiences learned from the world around you. **E-mail**: candy_lanai@hotmail.com

HIV/AIDS016- Clinical and epidemiological profile of people living with HIV/AIDS when admitted to the Service Specializing in São Luís, MA

Azevedo CMPS, Azevedo FS, Silva NF, Ribeiro JVF, Cysne DN

Introduction: the acquired immunodeficiency syndrome (AIDS), identified in 1981, has become a global and dynamic phenomenon. In fact, the distribution of the human epidemic in the world depends on several factors, emphasizing the individual and collective human behavior. According to data provided by the Ministry of Health, the incidence of AIDS in Brazil in 2010 was 17,9 cases per 100.000 inhabitants, while in the city of São Luís, MA, the rate was 30,9. Thus, knowing that the epidemiological aspects print important role on the clinical profile of patients with HIV/AIDS, it was decided, in the present study, to analyze the clinical and epidemiological features of people living with HIV/AIDS when admitted to the Specialized Care Service (SAE) of the Health Center of Fátima, in São Luís, Maranhão. **Material and Methods:** it is a descriptive study with retrospective component, in which analyzed people were living with HIV/AIDS seen at the health care service during the year of 2012. The main source of information was the medical records of people registered for the service. **Results:** it was collected data from 188 patients infected with the HIV, in 2012. Most of them were male (55,21%). The average age was 33,88 years old and 88,29% of the patients were from São Luís. The average time since diagnosis was 5,57 years. The most frequent complaint was diarrhea, seen in 44 patients (23,4%), followed by weight loss in 37 patients (19,7%), fever in 33 (17,5%) and cough in 17 (9%). A group of patients (40,9%) was asymptomatic. Concerning the immunologic aspect, there was an average of the initial CD4+ T cells count of 298 cells/mm^3, which progressed to an actual count of 458 cells/mm^3. It is relevant to notice that 34 patients had a decrease of CD4+ T cells, characterizing worsening of the immunologic system.

Regarding the viral levels, the initial average was 49.334 copies/mL and the current average is 9.621. Twenty one patients had undetectable viral levels in the beginning of the medical care (they were already being treated). When we compared the initial and current viral levels, 85 patients progressed with undetectability of the levels. However, 37 (23,4%) sustain viral levels detectable, besides the anti-retroviral therapy over one year. Anti-retroviral (ARV) was prescribed to 158 patients. Out of them, 111 use the association of zidovudine (AZT) and lamivudine (3TC). Sixty five (34,5%) use efavirenz (EFZ) and 64 (34%), protease inhibitors. Regarding the clinic progression, 69,68% of the patients were asymptomatic in the last medical consultation. **Conclusions:** there is a higher prevalence of males, with involvement of young adults. Although a large percentage of asymptomatic patients seek medical care, gastroenteritis is an important disease, in the moment of the AIDS diagnosis. There were 158 patients being treated with ARV but 23,4% of them had detectable viral levels, showing that adhesion to treatment and viral resistance should be investigated. **E-mail:** conceicaopedrozo@gmail.com

HIV/AIDS017- Clinical and immunologic features of hospitalized patients that carry the HIV in a reference hospital in São Luis (Maranhão, Brazil) in 2010

Azevedo CMPS, Azevedo FS, Silva NF, Lima URS, Lima CS, Silva GF.
Federal University of Maranhão, São Luís, Brazil.

Introduction: since the arrival of the highly active anti-retroviral therapy (HAART) in 1995, there was a significant reduction in mortality associated with reduction of the incidence of opportunistic diseases. However, with the pauperization of AIDS and its spread to the country, there is a delay in the serological diagnosis in patients from determined regions. Thus, it is clear that this epidemic illness has a complex behavior, with each region having a different aspect of the epidemic. **Material and Methods:** descriptive, retrospective research, with medical records analysis of all the patients hospitalized with AIDS diagnosed, in 2010. **Results:** 206 patients were included in this research. The main opportunistic diseases found were anemia (62,6% of the cases); neurotoxoplasmosis (30,1%); gastroenteritis (23,8%); candidiasis (21,8%) and lung tuberculosis (20,4%). In the most of the cases of opportunistic diseases there was counting of CD4+ T cells below 100 cells/mm^3, as pneumocystosis (81,8%); candidiasis (78,9%); neurotoxoplasmosis (72%); gastroenteritis (71,4%) and anemia (69,9%). The lung tuberculosis followed the same pattern, with greater incidence in patients with lower count of CD4+ T cells, totalizing 67,7%. However, there was 12,9% of cases of tuberculosis in patients with 350 cells/mm^3 or more. The main complications that culminated with death were also analyzed. Of the 206 patients, 72 died. Out of these, the main death causes were respiratory failure (20,83%); neurotoxoplasmosis (16,66%); pneumocystosis (11,11%); gastroenteritis (9,72%); other lung diseases (6,94%) and central nervous diseases (5,55%). It is important to highlight that most of those patients had the HIV diagnosed after the onset of the opportunistic diseases.**Conclusions:** it was noticeable through this research that the patients infected with the HIV are being hospitalized mostly because of the opportunistic diseases that determine AIDS. The anemia also highlighted itself as important complication in the admission of these patients. We also concluded that all of the opportunistic diseases, as well as anemia, are more frequent in patients with low CD4+ T cells count (below 100 cells/mm^3). At last, the diagnosis of HIV infection is being delayed to most of this group. **E-mail:** conceicaopedrozo@gmail.com

HIV/AIDS018- AIDS children survival in a general hospital at Rio de Janeiro city, using epidemiologic surveillance data

Pereira AGL, Marques MRVE, Escosteguy CC, Matos HJ, Braga RCC, Pimenta OP
Serviço de Epidemiologia, Hospital Federal dos Servidores do Estado, Ministério da Saúde, Rio de Janeiro, RJ, Brazil

Introduction: Despite the implementation of strategies that have improved access to diagnosis and treatment, the acquired immunodeficiency syndrome (AIDS) remains an important public health problem worldwide. Survival studies conducted in Brazil and several countries have been fundamental in the evaluation of these strategies and the development of new proposals. This study aimed to evaluate survival in children with AIDS diagnosis reported in a federal general hospital in Rio de Janeiro city, using

epidemiological surveillance data. **Material and Methods:** The universe of the study was the notified cases of AIDS in children (<13 years old), reported in the local database of the National Information System of Notifiable Diseases (SINAN NET), according the case definition of the Brazilian Ministry of Health. Statistical analysis was carried out with SPSS 18 and EpiInfo 3.4.1, including descriptive analysis, construction of survival curves using the Kaplan-Meier estimate of survival probability and Cox proportional hazards models. **Results:** There were 117 cases of AIDS diagnosed in children, between 1987 and 2011; 60 were female (51.3%); the mean age was 3 years and 8 months (range 1 day -12 years); 112 children were exposed to vertical transmission, 4 children were infected through transfusion of blood/components and 1 child had indeterminate exposure form. The most frequent comorbities were hepatomegaly (48; 41.0%), persistent generalized lymphadenopathy (44; 37.6%), chronic anaemia (37; 31.6%), recurrent bacterial infections (37; 31,6%), candidiasis (33; 28.2%), splenomegaly (28; 23.9%) and chronic diarrhea (27; 23.1%). 91 (77.8%) children had HIV-related diseases compatible with moderate or severe immunodeficiency. The mean length of survival was 5299 days; 85.9% were alive at least five years from the diagnosis. Overall, there were 13 deaths (11.1%). In a Cox proportional hazards model, risk of dying was higher for children with chronic anaemia (hazard ratio=17.317, confidence interval (CI): 13.470, 86.426) and for children with Aids diagnosis before 1996 (hazard ratio=4.010; 95%CI: 1.143; 14.283). **Main conclusions:** This study adds evidence to the knowledge of factors related to survival in children with AIDS in Rio de Janeiro, Brazil, and indicates survival improvement over time. Chronic anaemia and diagnosis before 1996 were factors associated with a poor prognosis. The use of SINAN NET at the local level was considered useful and pertinent, and able to feedback the services with clinical indicators. **E-mail:** alepereira.md@gmail.com

HIV/AIDS019- **Factors associated with mortality in patients with HIV / AIDS and AKI**

Araújo CLM[1], Vieira APF[1], Costa CR[1], Falcão FS[1], Souza JB[1], Alves MP[1], Lima JB[1], Silva Junior GB[1,2], Daher EF[1].
[1]Department of Internal Medicine, School of Medicine, Federal University of Ceará, Fortaleza, Ceará, Brazil; [2]School of Medicine, Health Sciences Center, University of Fortaleza, Fortaleza, Ceará, Brazil.

Introduction: It is estimated that 39.5 million people are HIV positive, is currently considered a worldwide epidemic. Renal involvement of these patients becomes a relatively common complication, resulting in significant increase in mortality. The objective of this study is to investigate the factors associated with mortality in patients with HIV / AIDS in the tertiary infectious diseases hospital. **Materials and Methods:** This is a retrospective study conducted at a tertiary infectious diseases hospital in Fortaleza city, Northeast Brazil, including 84 patients with confirmed diagnosis of AIDS admitted to the intensive care unit. Severity was assessed through APACHE II criteria. A comparison between survivors and non-survivors was done. Statistical analysis was done with SPSS program, version 16.0, considering as significant p<0.05. **Results:** Patient`s average age was 41.43±10.56 years. Death was observed in 51 cases (60.8%). The comparison between survivors and non-survivors showed no difference regarding age (40.69±6.86 vs. 41.82±11.6 years, p=0.7131). Non-survivors presented lower levels of systolic (123.44±29.46 vs. 105.8±19.9mmHg, p=0.0086) and diastolic blood pressure (74.06±22.32 vs. 64.12±16.9, p=0.0643), arterial pH (7.38±0.12vs. 7.24±0.15, p0.0014), serum creatinine levels (3.775±2.1 vs. 2.82± 1.2 p= 0.0257), serum urea (98.15±48.85 vs. 97.48±49.01 p= 0.0471) and protrombin time (74.7±17.9 vs. 51.3±23.4 p= 0.0290). APACHE II score was higher among non-survivors (40.71± 18.8 vs. 65.15±16.94, p=0.0015). There was no significant difference regarding the the use of dialysis in the treatment of patients (28.6% vs. 71.4% p= 0.3456%, p=0.31). **Conclusions:** Acute kidney injury is a common complication in AIDS. Observed in the analysis of the data that some factors are associated with mortality in patients with this condition as, lower levels of systolic and diastolic blood pressure, arterial pH , serum creatinine levels, serum urea and Protrombin time. **Financial Support:** CNPq (Brazilian Research Council). **E-mail:** ef.daher@uol.com.br

HIV/AIDS020- Prevalence of respiratory failure as a cause of death in patients with AIDS in the HUAC in Campina Grande-PB Brazil

Barbosa, D.A.; Fonsêca, C.R.; Vasconcelos, D.K.A.; Santos, K.R.; Vale, T.M.; Romano, G.L.; Jácome, T.N.; Marques, A.C.; Sousa, S.M.B
Federal University of of Campina Grande

Introduction: The immunosuppression caused by HIV is responsible for the development of several opportunistic infections in AIDS patients, the lung being one of the organs most affected in these patients. Respiratory failure is a common cause of death among these patients, especially when there is co-infection of HIV with other infectious agents such as pulmonary Koch's bacillus of tuberculosis. Early diagnosis, monitoring and treatment of patients with the syndrome are crucial to prevent the progression to respiratory failure and possible death. **Materials and Methods:** The study was based on analysis of the books of deaths at the Hospital Universitário Alcides Carneiro (HUAC) during the period of five years (2006-2011), redemption of the medical records of these patients and the reporting of cases not yet reported .From the research, were related to the causes of death in patients with AIDS and reported the high incidence of death from respiratory failure among these patients. **Results:** During this period, 73 patients were seen with this syndrome who died and from the analysis of the medical records, correspondence was observed in 38 patients (52.05%) which had as one of the causes of death failure acute respiratory, of which 26 are men and 12 women are suffering from AIDS. Among these patients, there - 21 in the presence of concomitant lung diseases such as pulmonary tuberculosis (06 patients), pneumonia (06patients), infectious lung disease (04 patients),Pneumocystis carinii pneumonia (04patients) and COPD (01 patients) who were also listed as causes of death in death certificates screened. **Conclusions:** The research and analysis of medical records revealed a high incidence of respiratory failure as the cause of death among patients in the HUAC, and a higher prevalence among male patients. Among the patients studied, most showed some pulmonary comorbidity, such as tuberculosis, which probably was the cause of pulmonary insufficiency. It is noteworthy then the importance of monitoring HIV-positive patients, especially in relation to infections and other comorbidities lung by CD4 count ,and the establishment of the appropriate treatment with antiretroviral drugs for these patients to prevent the death of the same. **E-mail:** deilanazevedo@hotmail.com

HIV/AIDS021- Oral manifestations related to HIV and AIDS: a systematic literature review

Silva SM; Ribeiro-Rotta RF; García-Zapata MTA
Universidade Federal de Goiás, Goiânia, Brazil

Introduction: HIV/SIDA manifestations are frequent on head, neck and oral cavity and include opportunistic infections, neoplasms and reactive diffused adenopathies. Their spectrum seems to depend on immunologic status, ethnic, geographic and social factors. For that reason we carried out a Systematic Literature Review to know about the oral manifestations situation and its meaning in the last 10 years around the world. **Material and Methods:** we developed a Systematic Literature Review using descriptors from Biblioteca Virtual em Saúde (DECs) and Mesh terms (PubMed) to verify the prevalence and meaning for the oral lesions related to HIV and AIDS among different authors. **Results:** 337 scientific articles were identified at PubMed, Scopus, Scielo, Lilacs and Capes. After Relevancies tests I and II, 22 papers were selected and data were collected from them. Reviews, case description, updates and editor's letter were excluded. Only 5 original papers were from Brazil. The results shows that some events are still present (Oral Candidiasis) while lesions like Oral Hairy Leucoplasy and Kaposi's sarcoma are declining in occurrence. On the other hand, salivary glands diseases and Human Papillomavirus lesions are increasing even with Antiretroviral Therapy. **Main Conclusions:** a) the prevalence for these lesions ranges from 36,8% to 97,2% at different regions; b) fungal lesions are the most commons, principally Oral Candidiasis on its variations. Subsequently, appears Oral Hairy Leucoplasy, a viral lesion; c) oral diseases may be the first signal from HIV infection; d) oral candidiasis is associated to a low CD4 count and an increasing viral load; e) oral candidiasis may be a marker for immune depression and AIDS and for therapeutic failure in patients under Antirretrovirals; f) at developing countries oral opportunistic

lesions may be a singular way to follow up the immunologic status of HIV patients and to check if therapy is successful; g) additional studies using standardized methods should be carried out around all the world to investigate a better way to protect against oral lesions which cause discomfort and difficulty on nutrition affecting quality of life of seropositive patients. **E-mail:** solmor@cultura.com.br

HIV/AIDS022- **Effects of a stretching and relaxation program on depression and anxiety of people living with HIV/AIDS**

Áurea Regina Telles Pupulin, Adrielli Priscila Machado, Giuliano Gomes de Assis Pimentel **Universidade Estadual de Maringá – PR**

Introduction: AIDS, discovered in 1981, is currently a major public health problem worldwide. During the progress of HIV infection, psychiatric disorders are common and may raise the levels of depression and anxiety, with negative results on patients' lives. Stretching and relaxation are some of the many options that enable individuals to relax the mind and regulate the body, relieving mental and emotional pressures. **Objective:** Current study implemented a stretching and relaxation program for HIV/AIDS patients to check their behavioral changes related to depression and anxiety. **Material and Methods**: Stretching and relaxation program were conducted during 16 weeks for AIDS-infected people, aged between 39 and 59, living in Maringá PR Brazil, who were willing to participate in the study. Questionnaires "Montgomery & Åsberg Depression Rating Scale (MADRS)" and "Anxiety Rating Scale by Hamilton" were used for data analysis. Data were collected before the start and at the end of the program. **Results**:. A previous examination showed they were depressed patients, whereas a significant improvement in the clinical conditions of all patients who underwent stretching and relaxation was registered. Two patients showed slight depression; 2 had severe depression and one featured very severe depression before the start of the interventions. After the application of the stretching and relaxation program, no depression was reported in any patients. With respect to anxiety scores assessed before and after the intervention, there was significant improvement in all patients enrolled in the stretching and relaxation program. Although 4 out of 5 patients studied had severe anxiety and a moderate anxiety before the intervention, none showed any anxiety after application of the program. **Conclusion**: Results show significant improvements related to depression and anxiety disturbances, even their absence, which justifies the need for further studies and interventions with this population. **Financial Support by**: Fundação Araucária **. Keywords:** Stretching. Relaxation. HIV/AIDS. Depression. Anxiety. **E-mail:** artpupulin@uem.br

HIV/AIDS023- **Interleukin-10 profile in HIV-infected pregnant women followed at a maternity in Recife, Pernambuco, northeast of Brazil.**

Figueiredo, ALC[2]; Sampaio, AS[1]; Morais, CNL[1]; Vasconcelos ALR[1]; Montenegro SML[1].
1-Oswaldo Cruz Foundation- Aggeu Magalhães Research Center, 2- PIBIC/FIOCRUZ-CNPq

Introduction: In the last years, Brazil has seen a significant increase in the number of cases of HIV infection in women. So, HIV in children due to vertical transmission emerged as a public health problem. In pregnancy, the immune system is modified allowing the "immune tolerance" of concepts, for pregnancy to develop successfully. It is need a proper balance since of proteins produced by many cell types, which modulate the function of other cells, called cytokines. Some authors have studied the maternal cytokine profile and its correlation with the HIV dynamics replication and lymphocytes counts, however this subject still not clear. This study aimed to evaluated the profile of a cytokine type 2, Interleukin-10 (IL-10), correlating to HIV viremia and lymphocytes in HIV pregnant women. **Material e methods:** A cross-sectional study was conducted with women over 18 years, containing 3 groups: G1 (20 HIV-positive pregnant women); G2 (20 non-pregnant women HIV-positive); and G3 (20 HIV-uninfected pregnant women), followed at a Service specializes in HIV / AIDS in Recife, Pernambuco, Brazil. Nested in this method, there was an intervention in which the G1 was evaluated before and after the use of antiretroviral therapy (ARV) for observe the plasma levels of IL-10, using ELISA Immunoassay, correlating the levels of viremia and lymphocytes count. The socio-demographic informations were collected through a structured questionnaire, and consulting medical records and prenatal cards. **Results:** The mean age were 27,

50% (29/60) were from Recife, 40%(24/60) had primary school graduation and only 7%(4/60) had incomplete college degree. Among the sample, 88% (53/60) had a stable relationship, and only 51% of the partners had been tested for HIV, being 52% negative. The IL-10 measured in plasma found similar means between patients in G1 and G3. After 3 or 4 months of initiation of ARV, the levels of IL-10 had increased in G1 patients. The means of TCD4$^+$ cells were lower in G2 than G1 after ARV. In addition, these cells counts were lower in G1 before than after ARV. There was a statistically significant correlation between the levels of IL-10 and viral load of patients after ART G1 (r= 0,5796706 e p=0,0298) and G2 (r=0,6270422 e p=0,00535) . **Conclusion:** Many questions about the interaction between HIV, pregnancy and the immune system remain unanswered. However, this study brings important contributions about the cellular immune response in pregnant women. The understanding of changes in the network of cytokines during pregnancy together with the physiopathology of HIV in the mother should contribute to interventions for better control of vertical transmission of HIV. Efforts to develop studies involving groups of pregnant women, as well as using larger samples size are needed. Thus, the resulting information can improve the protocols of assistance for this population, such as the use of immunotherapy or vaccine. **E-mail:** ligynha_figueiredo@hotmail.com

HIV/AIDS024- Mucocutaneous Manifestations of HIV Infection and their Relationship with the CD4 counts and Evolutionary Phases of HIV

Oliveira FL[1], Vasconcellos BO[2], Schons LC[3], Nery JAC[4]
Instituto de Dermatologia Professor Rubem David Azulay (IDPRDA) – Santa Casa da Misericórdia – Rio de Janeiro (RJ), Brazil / Fundação Oswaldo Cruz - FIOCRUZ - Rio de Janeiro (RJ), Brazil

Materials and Methods: This study lasted for 23 months, from January 2009 to December 2011. Data on skin disorders and CD4 counts were obtained by physical examination and laboratory/histopathological tests; as well as demographic information was important in this study. An analysis was performed on 104 Brazilian HIV-infected patients older than 13 years-old at Instituto de Dermatologia Professor Rubem David Azulay – Santa Casa da Misericórdia RJ and these patients were divided according to the CD4 categories defined by the AIDS Surveillance Case Definition for Adolescents and Adults. The objective of this study is to identify mucocutaneous lesions and establish their relationship with CD4 cell count among HIV patients in our sanitary dermatology ambulatory in Brazil. **Results:** On the 104 subjects studied, 96 (92,30%) were male and 8 (7,69) were female. The majority of patients were in the age group 40-49 years and the most common mode of HIV transmission was homosexual (58,65%), followed by heterosexual (35,57%) and bisexual (5,76%) contacts. None of the patients related intravenous drug abuse in this study. The distribution of patients in terms of current CD4 cell counts was as follows: 31,73% with between 50 and 199/μL, 39,42% with between 200 and 499 /μL and 28,84 with at least 500 x 10^6/L. The two most commons skins diseases were human papillomavirus genital infection and secondary syphilis. Kaposi's Sarcoma was rare in this study. **Main Conclusions:** A careful examination of skin and mucosae should always be performed in HIV positive patients since the correlation between CD4 count and dissemination of certain mucocutaneous lesions is an indicator of prognosis of HIV infection and may help prevent neurological sequelae and development of neoplasms as observed in syphilis and HPV, respectively, diseases of highest incidence in our group of patients. **E-mail:** oliveiraflmed@gmail.com

HIV/AIDS025- The HIV viral load and the Lambda interferon polymorphism

Ferreira, V. M.[1,2]; Mola, C.[3], Vasconcelos, L. R. S.[1,3]; Coelho, R.[2]; Guimarães, F. A. N.[3], Moura, P.[3]
(1) Laboratório Central de Saúde Pública - LACEN-PE, Recife, Brasil; (2) Programa de Pós-Graduação em Medicina Tropical da Universidade Federal de Pernambuco, Recife, Brasil; (3) Universidade de Pernambuco, Recife, Brasil.

Introduction: Innate immunity is the first line of defense against infections. Type I and III interferons are molecules that play an important role in controlling viral replication. It is believed that the host genetic diversity plays an important aspect in the progression of HIV infection. Several studies have shown that type I interferons have key roles in fighting viruses and innate and adaptive immune response regulation. Lambda interferons activate the same genes as type I interferons, and share biological functions. Lambda IFNs, also known as Interleukin-28b (IL-28b), are functionally similar to the family of type I interferons (α-

IFN and β-IFN) and activate the ERSI (elements responses stimulated by IFN) acting as antiviral activity. Studies also demonstrate a strong association between the polymorphism in the IL28B gene and spontaneous viral clearance in Hepatitis C virus (HCV). Considering that the innate immunity could interfere in the HIV infection progression, the aim of this study was investigate whether the presence of single nucleotide polymorphism (SNP) of IL-28b gene can influence the viral load of HIV. **Material and Methods:** Genotyping of IL-28B(C/T) SNP (rs12979860) was performed using Real Time PCR technique. We enrolled 98 HIV+ treated patients at Correia Picanço Hospital, Recife, Brazil, which were separated in two groups regarding the three years of consecutive viral load after treatment: group 1 (N=51): detectable viral load; group 2 (N=47): undetectable viral load (2009 to 2011 period). **Results:** The frequency of allele C and T was 55.88% in group 1 and 44.12% in group 2. Also the genotype frequency of CC, CT and TT was 33.33%, 45.09% and 21.56% in group 1; and 21.28%, 63.83% and 14.89% in group 2, respectively. **Main Conclusions:** Although no significant differences were found between the groups, the frequency of the TT allele was slightly higher in the group 1. The TT allele has been shown to super activate the interferons pathway leading to unfavorable response against HCV. A larger population should be studied to investigate further the definitive role of this polymorphism in the HIV viral load. **E-mail:** mola.carla@gmail.com

HIV/AIDS026- Virological and immunological effectiveness of darunavir-, raltegravir- and/or enfuvirtide-based therapies in treatment-experienced HIV-1-infected patients in Minas Gerais State, Brazil

Ribeiro KM[1], Biscione FM[2], Westin MR[2], Machado DP[2], Greco DB[2], Tupinambás U[2]
[1]**Health Sciences and Tropical Medicine Postgraduate Course, Belo Horizonte, Brazil,** [2]**Minas Gerais Federal University School of Medicine, Belo Horizonte, Brazil**

Introduction: the development of new antiretroviral (ARV) drugs, allied to the use of genotype tests, enabled salvage therapy in HIV-positive patients with similar efficacy of initial HAART. However, effectiveness of salvage therapy with novel ARVs is understudied in Brazil. **Material and methods:** retrospective cohort study of HIV-infected patients from three referral centers in Belo Horizonte, who begun a salvage therapy between 2005 and 2010, after virologic failure. The primary endpoint was the proportion of patients with viral load (VL) <50 copies/mL at week 48 (± 4 weeks). Change in CD4 cell count was also evaluated. Analyses were conducted on an intent-to-treat basis applied to observational studies. Sensitivity analysis was conducted to evaluate the impact of missing data at week 48. Predictors of virological failure were examined using rare-event, finite sample, bias-corrected logistic regression. **Results:** among 143 patients, 73.4% were male, with median age of 44.3 years. They had long standing infection (median 11.1 years) and advanced disease (77.6% had an Aids-defining condition). Most were experienced to protease inhibitors (PI) (95.8%) and nonnucleoside reverse transcriptase inhibitors (NNRTI) (78.3%) and the median duration of ARV exposure was 10.3 years. They had multiresistant virus, with a median of three thymidine-associated mutations, two NNRTI resistance-associated mutations (RAMs), and three primary PI mutations. In addition, 9.1% of patients had three or more DRV-RAMs. Virological success at week 48 was achieved in 78.7% (95% CI = 60.7-86%), 76.5% (95 CI% = 65.8-85.3%), and 67.2% (95% CI = 47.9-75.2%) of patients who begun a regimen with DRV, RAL and ENF, respectively, with a mean CD4 cell count increase from baseline of 131.5 (95% CI = 103.4-159.6), 123.4 (95% CI = 88-158.9), and 147.2 cells/mm3 (95% CI = 100.3-194.1). In multiple analysis, higher VL (RR = 1.043; 95% CI = 1.009-1.088) and higher number of DRV-RAMs (RR = 1.234; 95% CI = 0.947-1.483) were independently associated with virological failure in DRV-containing regimens. Concurrent use of DRV in RAL-containing regimens (RR = 0.882; 95% CI = 0.535-0.998) and ENF-containing regimens (RR = 0.232; 95% CI = 0.064-0.798) and overall genotype sensitivity score higher than two in RAL-containing regimens (RR = 0.824; 95% CI = 0.511-0.964) were predictive of virological success. **Conclusion:** virological suppression is possible and is a realistic endpoint for most treatment-experienced patients who begin a salvage therapy with DRV and/or RAL and/or ENF outside the controlled conditions of a randomized trial, at a routine care setting and in the Brazilian context. This strengthens the national strategies adopted in Brazil for the rational use of these new drugs. **E-mail:** karinamotaribeiro@gmail.com

HIV/AIDS027- Effectiveness of Genotypic Antiretroviral Resistance Testing in HIV-Infected Patients with Treatment Failure in Belo Horizonte, Brazil in 2010 and 2011

Duani, H.[1,†]; Saraiva, I.S.[1]; Morais-Caporali J.[1]; Saraiva, I.E.[1]; Aleixo, A.W.[2]; Tupinambas, U.[1, 2.]
[1]**Infectious Diseases Department, Hospital das Clínicas, Federal University of Minas Gerais, Belo Horizonte, Brazil,** [2]**School of Medicine, Federal University of Minas Gerais, Belo Horizonte, Brazil**.

Introduction: The development of antiretroviral (ART) resistance in HIV-1 is one of the most important causes of therapeutic failure among HIV-infected patients. The HIV-1 genotypic ART resistance test (Geno) provides information about drug susceptibility and guides the ART change. The effectiveness of Geno and the proposed salvage therapy in HIV-infected patients with treatment failure has not been evaluated in Belo Horizonte, Brazil, to date. It is very important to understand the impact of this highly complex and high cost tool in clinical practice. **Materials and Methods:** We collected data from 95 patients, among 556 Geno performed at DIP-UFMG laboratory during the period of January 01, 2010 to June 30, 2011. Clinical and laboratorial data were grouped together to build a TCE - treatment change episode, with the baseline parameters: virus genotype and the viral load (VL) obtained before the start of new ART. The response to treatment was assessed using the change in VL up to 48 weeks after starting a new ART. These data were obtained from the national data banks SISCEL and SICLOM. **Results:** A total of 95 patients were analyzed, mean age was 43+/-11.7 years, 64% were men, mean baseline CD4 count and HIV VL were 230+/-195 cells/mm3 and 28,327+/-49498 copies/ml. After the ART change, according to genotyping suggestions, 66 (69%) patients had VL< lim (50 copies/ml), 12 (12,6%) had VL reduction >2 log, 5 (5,3%) had VL reduction >1 log e 12 (12,6%) patients had VL reduction < 1 log. The most common ART change was the substitution of a NNRTI for a PI, occurring in 50 (52,6%) patients, 9 (18%) of which had therapeutic failure. Thirty-seven (38,9%) patients received rescue therapy with "new" drugs: DRV, RAL, ETV and/or T20, 30 (81%) patients in this group had VL< lim, 5 had VL reduction >2 log and 2 had therapeutic failure. **Main Conclusions:** The effectiveness of using Geno to guide therapy change in this group of patients was high: 69% of the patients had a VL reduction to <50 copies/ml and 86% had VL reduction > 2 log with the proposed ART. The use of DRV, RAL, ETV and T20 was associated with a higher effectiveness (81%), showing that even in patients with a more resistant virus profile, the therapeutic response is similar to initial ART schemes. This preliminary data showed the need to evaluating the actual impact of Geno on therapeutic success, and also to analyze the causes of therapeutic failure after Geno and the Geno cost-effectiveness in a population of Belo Horizonte, Brazil. **E-mail:** hduani@gmail.com

HIV/AIDS028- Factors associated to poor haart adherence in adult HIV patients in Goma, D.R. Congo, case of the provincial Hospital of North KIVU

Nduwayo B.A.(1), Bulabula N.A.(2), Kitoga M.(2), Makelele K.(1)
Provincial Hospital of North Kivu, University of Goma, Goma, D.R.Congo (1), the Catholic University of Bukavu, Bukavu, D.R.Congo(2)

Introduction: Antiretroviral care program exists in Goma, but still no study has been conducted yet on HAART adherence in HIV patients. This study aims to determine the factors associated to poor – adherence to HAART in Goma. **Material and Methods:** A prospective study was conducted at the HIV service of the Provincial Hospital of North Kivu, from June 2010 to February 2011. 140 patients were included after their consent; a questionnaire was distributed for data collection. The dependent variable was the adherence to HAART, the independent variables were: sociodemographic variables, biological variables (CD4 count) and the parameters related to therapy and evolution (therapy duration, physician change, daily drug intake). We defined adherence as a ratio in percentage of the number of doses taken divided by the doses prescribed. In this study we considered as adherence a ratio ≥ 90%, poor-adherence as a ratio ≤ 90%. Statistical analysis, we used SPSS 15, P-value < 0.05, Confidence Interval at 95% was considered as significant. Two groups were established: adherence to HAART group and poor–adherence. **Results:** Overall rate of poor-adherence to HAART was 34%. Males represented 28.5% (40/140) vs females 71.5% (100/140). After analyzing different variables and the dependent one, we had the following rates of poor adherence to HAART: traders had 60%, students 33.3%, jobless people 33.3%

(P = 0.02, P<0.05); divorced people 100%, married people 17.6%, single 33.3%, widowers 46% (P=0.0001, P<0.05); Adventist Christians 100%, traditional believers 20%, catholic 38.5%, Muslims 50% (P=0.02, P<0.05); HIV transmission mode : sexual 27.6%, iatrogen 60% (P=0.0002, P<0.05). HAART duration: >3 years 50%, 1–3 years 20% and <1 year 22% (P=0.0015, P<0.05). HAART prescriber: nurse 66.7%, doctor 37.5% (P=0.03, P<0.05). ARV combination: AZT-3TC-EFV 50%, d4T-3TC-NEV 50%, AZT-3TC-NEV 26%, ddl-ABC-LPV/r 50% (P=0.04, P<0.05). Number of daily drug intake: 3 times per day 66.6%, 2 times per day 31% (P=0.01, P<0.05). Clinical evolution: bad evolution 100%, good 30% (P=0.0055, P<0.05). HAART side effects: respiratory 50%, digestive 41%, cardiovascular 33.3%, neuropsychiatric 27.8% (P=0.02, P<0.05). Patients confidence in their physicians: non confident 80%, confident 26.6% (P=0.0001, P<0.05). **Main conclusions:** The poor adherence to HAART rate is high in Goma. Traders, divorced, widowers, Adventist Christians, number of daily drug intake, HAART duration since beginning of three years or more, ARV combination, side effects and the HAART prescriber are factors significantly associated to poor HAART adherence in this study**. E-mail:** kitogam@gmail.com

HIV/AIDS029- First Brazilian Experience with HIV Resistance WHO Indicators: Preliminary Data of a Public HIV/AIDS Health Care Unit at Amazonas state

Oliveira, R.S.M.[1,2]; Gonçalves, J.[2] ;Abtibol, K.[3];Ravasi, G.[4]
1. University of the State of Amazonas, Amazonas, Brazil 2.Tropical Foundation Dr. Heitor Vieira Dourado, Amazonas, Brazil 3. Federal University of Amazonas, Amazonas, Brazil 4.OPAS, Brasília, Brazil

Introduction: Brazil has a percentage of people living with AIDS who is multiexperienced in antiretroviral therapy (ART), about 8% at the Brazilian universal ART free access, which concerns about improve in mortality and complications in quality of life. World Health Organization has provided countries with "Early Warning Indicators" (WHO EWI) to monitor ART sites and minimize the emergence of drug resistance, using routine information from medical and pharmacy records. This research evaluates two cohorts at a public health care site at Amazonas, with more than 5.000 patients registered, to propose the indicators validation on this population. **Material and Methods:** Following the WHO EWI 2010 methodology using the electronic local system patients who started ART 12 months ago and received care at the unit, were selected for WHO sample indicate. The search resulted in 155 adults patients (2009) and 160 (2010). Results were compared to the original WHO indicators. **Results:** For EWI 1 (ART prescribing practices with appropriate first-line regimen): the percentage of the studied site were 91% and 95%, for 2009 and 2010 respectively, WHO recommends 100% for this indicator. EWI 2 (patients lost to follow-up 12 months after ART initiation): 30% (2009) and 36% (2010), the WHO percentage recommended: less than 20%. EWI 3 (patients on appropriate first-line regimen 12 months after ART initiation): 40% (2009) and 49% (2010); WHO recommends up to 70%. EWI 8 (patients with viral load suppression after 12 months of ART): 31% for 2009, which WHO recommends up to 70%. At the studied site there are about 75% of patients who picked up ARV drugs on time (EWI 4), instead WHO recommends up to 90% of patients.**Conclusions:** Other countries implemented EWI to determine a valid tool compared to viral load, for example. Brazil does not have yet a national monitoring system for local teams to monitor their sites. This considered site is located at an HIV late diagnosis area, and showed deficit in maintenance of patients in the health care. The managers need to implement tools for improve and monitoring adherence and prevent HIV resistance by therapeutic failure, since there was not any local indicator which achieved the WHO percentage recommended. **E-mail:** rsmoliveira@hotmail.com

HIV/AIDS030- Deep venous thrombosis in HIV-infected patients under HAART in a Southern Amazon HIV clinic

Silva, T.C., Liberato, C.C.G., Saar, G.Q., Furtado, T.R.P, Setton, M.S., Rodrigues, A.M.
FACIMED, School of Medicine. Cacoal-RO, Brazil, FACIMED, School of Nursing, Cacoal-RO, Brazil, UFMG, School of Medicine. Belo Horizonte-MG, Brazil, SAE – SEMUSA. Cacoal-RO, Brazil, Hospital Regional de Cacoal – RO, Brazil.

Introduction: HIV-infected patients have a increased risk of venous and arterial thrombosis, this risk seems to be higher when the patients are under HAART. We investigate the incidence of venous thrombosis in the population of patient receiving HAAER at an HIV clinic in southern Amazon. **Material and Methods:** We conduct a retrospective cohort study. Between February 2011 and February 2012, 64 patients were assisted in AIDS specialized clinic in Cacoal-RO, and were under HAART. This service is a public health clinic with collaboration with local School of medicine and nursing. We review patients' charts to detect patients with any kind of venous or arterial thrombosis during this period of follow-up. **Results:** During this one year period 2 female patients with 33 and 42 years old presented with clinical characteristics of DVT, both were admitted to an hospital ward and the diagnosis of DVT were confirmed by a ultrasound venous scan of inferior limbs. Both patients acquired HIV by heterosexual transmission, and were under HAART for more than two years, one receive AZT+3TC+EFV, and the other receive AZT+3TC+LPV/r, both had undetectable viral loads, and normal CD4 count for many months before the thrombotic events. One patient was under use of leuprorelin for endometriosis. Both patients were treated with low molecular weight heparin for few days, and after both receive warfarin to maintain INR between 2 to 3 for 12 weeks. No other complication was observed and both patients had a good evolution. The incidence of DVT in our population during this period of time was 3125 per 100.000 patients' year, higher than any other series ever reported in literature. **Main Conclusions:** DVT is an frequent event in HIV infected patients under HAART. Services in duty of patients under HAART must be aware of this and be prepared to deal with this kind of health problem. Our numbers can be overestimated because the small number of patients in treatment in our clinic, or reflect an particular high risk population in southern Amazon. More time in follow up is necessary to determine the risks in our population. **E-mail:** gsveredas@ig.com.br

HIV/AIDS031- **Survey opportunistic infections in patients with AIDS**

Luz, D. A.[1]; Silva, M. C. M.[1]; Almeida, R. G. L.[1], Bastos, M. L. C.[1]; Costa, E. V. S.[1], Dias, C. K. B[1]., Guimarães, N. M.[1], Pinheiro, A. M.[1]; Pontes, A. C. A. A.[1]; Santos, C. C.[1]; Sarmento, R. M.[1]; Silva, A. D. V.[1]; Silva, J. V. S.[1]; Silva, L. C.[1]; Silva, M. L.[1]; Silva, R. P[1]., Silvestre, J. V.[1], Dolabela, M. F.[2].
1 - Member of the PET Group, Faculty of Pharmacy, Institute of Health Sciences, Federal University of Pará (UFPA), Belém-Pa, Brazil; 2-PET-Tutor Pharmacy.

Introduction: The acquired immunodeficiency syndrome (AIDS) was first described in 1981. The AIDS is caused by a retrovirus, Human Immunodeficiency Virus (HIV), which modifying in the immune system of individuals infected. Compromising the patient's cellular immunity and consequent high susceptibility to a variety of opportunistic infections. The opportunistic infections are usually the main cause of death among AIDS patients. The objective of study was identifying the major opportunistic infections that affect patients attending a Reference Unit in the city of Belém. **Materials and Methods:** We conducted a retrospective study in which we analyzed 100 medical records randomly selected from patients older than 18 years enrolled in 2011 in Reference Unit in Belém of the Pará was performed to analyze the data using percentage. **Results**: From the analysis of medical records, it was observed that 68% had some opportunistic infection, and the 100 patients, 16% had more than one type of infection. The most frequent infections were Pulmonary Tuberculosis (70%), Syphilis (60%), Human Papilomavirus (50%); Neurotoxoplasmosis (50%); Scabies (40%), pneumonia (40%), herpes simplex (40%); Ptiríase (40%), Intestinal Infection by *Helicobacter pylori* (30%); *Gardnerella vaginalis* infection (30%), Herpes Zoster (20%), gonorrhea (20%), Varicella (20%); Amebiasis (20%), oral candidiasis (20%), Hepatitis-B (20%), lymph node tuberculosis, Tuberculosis urinary, Pleural Tuberculosis, giardiasis, *pneumoniae Klebsiella* infection, infection with Gram-negative diplococcic, Influenza A, Rubella and chronic colitis (10% each). It was also noted the occurrence of Kaposi's sarcoma (20%), a malignant tumor associated with human herpes virus 8 (HHV-8).**Main findings:** The rate of opportunistic infection (68%), which is similar to the national incidence. The main opportunistic infection was tuberculosis, occurring in patients with pulmonary and extra pulmonary (90%), which is also similar to the national situation. Other bacterial diseases such as syphilis and pneumonia, also showed high occurrence, and bacterial diseases the major opportunistic infections, followed by the viral infections. Other diseases, such as Neurotoxoplasmosis, candidiasis, Herpes and Kaposi's sarcoma, also showed high occurrence, similar to the national scene. **E-mail:** araujo.diandraluz @ yahoo.com.br

HIV/AIDS032- Immune profile and opportunistic infections correlation in children treated at a school hospital in Sao Jose do Rio Preto, São Paulo State, Brazil

Furini, A. A.C.[1,2], Rodrigues, J. F[1], Lima, A. B.[1], Oliveira, A.R.F.[1], Pichel, S. F. C.[1], Freitas, C. K.[1], Schiesari Junior, A.[2], Barbosa, D.M.U.[3], Machado, R. L.D.[3]
[1] **Centro Universitário de Rio Preto,** [2]**Fundação Padre Albino,** [3] **Faculdade de Medicina de São José do Rio Preto.**

Introduction: AIDS is the most serious and advanced manifestation of the HIV virus. Induction of immunosuppression with changing on the number and function of LTCD4 $^+$ may result in the development of opportunistic infections and diseases. From 2007 to 2009 were reported 1271 HIV-1 cases in children at São Paulo State. **Objective:** Evaluate the medical records of patients with HIV-1/AIDS in a school hospital in the northwest of São Paulo considering the description of epidemiological characteristics, and establishing possible correlations between opportunistic infections (OI) and immunological profile. **Material and Methods:** A retrospective, cross-sectional and descriptive study was performed, which involved records analyses of 50 children and adolescents (0-18 years) diagnosed with HIV-1/AIDS, with monitoring at Hospital de Base, in the city of São José do Rio Preto, located in the São Paulo State, Brazil. **Results:** Age average was 12.54 years (SD = 3.66), with 52% males (1.08: 1.0). Virus transmission was 100% through vertical path and 46 patients using HAART. The Rescue Therapy (HAART and Enfuvirtide) is used by four patients. Seventeen patients had OI. The prevalence of OI was observed in LTCD4+ counts above 350 cells/mm^3 (71.42%) and viral load between 10.000 and 100.00 copies/mL (61.9%), without significant association. The most prevalent OI was the pneumonia by *Pneumocystis jiroveci* (42, 85%), followed by Herpes-Zoster (28,57%). Tuberculosis and atypical mycobacteria have been described for two patients with LTCD4$^+$ levels below 200 cells/mm^3 and viral load between 8.900 and 75.000 copies/mL. Two patients had congenital syphilis. **Conclusion:** Pneumonia caused by *P. jiroveci* is the most common opportunistic infection in HIV-1 seropositive children. The results suggest that the LTCD4+ levels and viral load are not determining factors for the establishment of opportunistic infections in this population. The usage of rescue therapy may be suggestive of viral resistance to HAART. **E-mail:** adriana.cruz.furini@gmail.com

HIV/AIDS033- Rhodococcus equi lung abscess causing septic shock in a HIV/AIDS patient

HE Zogbi, Japiassú AM
Evandro Chagas Clinical Research Institute (IPEC), FIOCRUZ, Rio de Janeiro, Brazil

Introduction: Rhodococcus equi is a soil-derived pathogen, causing opportunistic infection, such as Tuberculosis, in severely immunocompromised patients; R. equi can cause pneumonia, osteomyelitis, liver or brain abscess. **Material and Methods:** Case report of R equi lung abscess causing septic shock in AIDS patient. **Results:** We report the case of 33-year-old man, admitted to Intensive Care Unit (ICU) with 3-week high-degree fever (39° C), cough, purulent sputum, pleuritic pain, and dyspnea. His history revealed HIV diagnosis 3 months earlier and another hospital admission by left pleural empyema, treated with antibiotics for 21 days. He now presented with mental confusion and low consciousness, diminished sounds at lower left hemithorax and 30-kg emaciation. The CD4 cell count was 34/mm^3 at admission. The patient presented respiratory insufficiency and needed ventilatory support. Thoracic X-ray and CT scan revealed an abscess at lower left hemithorax. Thoracic ultrasound showed a pulmonary cavitated mass and associated pleural effusion. Direct examination of bronchial aspirate was negative for acid-alcohol resistant bacilli. We started piperacillin-tazobactam and vancomycin for the treatment of lung abscess, and R. equi was then identified at sputum and bronchoalveolar lavage. He developed septic shock, with severe renal dysfunction, and disseminated intravascular coagulation (platelet levels 30000/mm^3 and international normalized ratio 3.5). He progressively recovered with intravenous vancomycin plus imipenem and levofloxacin for 30 days. We started antiretroviral therapy (ART) (abacavir, lamivudine, lopinavir and ritonavir) on 20th day of hospital stay. After 3 weeks of ART, CD4 count was 34/mm^3 and the viral load was reduced to 144 copies/mm^3; and at the ambulatory level, after 8 weeks, CD4 count was 57/mm^3 and viral load was undetectable. As shown in this case, there is a high frequency of abscess

formation with this pathogen. In vitro susceptibility to antibiotics is wide, and one can choose 2 or 3 among macrolides, rifampin, fluoroquinolones, aminoglycosides, glycopeptides and imipenem for treatment of severe cases. We used IV vancomycin, imipenem and levofloxacin for 30 days. Sulfamethoxazole-trimethoprim and macrolides have been applied for secondary prophylaxis, and this scheme was used in our patient indefinitely (his CD4 cell count is still under 200/mm^3). Review studies suggest better prognosis for ART treated patients, but there is no definition of how early it should be instituted. We started ART by the 3rd week of ICU stay, by enteral route, and it was well tolerated through hospital stay and ambulatory surveillance. **Conclusion:** R equi should be remembered as an alternative cause of severe sepsis in AIDS patients. Early initiation of ART in this case could have contributed to the good result seen in the medium and long-term basis. **E-mail:** hez_zogbi@hotmail.com

HIV/AIDS034- **Prevalence of HIV infection, syphilis, viral hepatitis and socio-behavioral vulnerability in the number of patients treated at the Center for Counseling and Testing of Tropical Medicine Foundation of Amazonas. Dr. Heitor Vieira Dourado (FMT-HVD).**

Fernandes, BS, Miranda, AE, Talhari, S, Silva, LCF.
Tropical Medicine Foundation of Amazonas. Dr. Heitor Vieira Dourado.

Background: Brazil has accumulated extensive experience in testing and counseling for HIV/AIDS mainly conditioned by significant demand and responsibility to implement and expand the network of units/Counseling and Testing Centers in country. Individual counseling is a dialogue of trust that seeks to provide the user of health services (Center for Counseling and Testing) conditions to assess their vulnerability, their behavior, their own risks, facilitating decision making and judgment finding realistic ways of addressing its problems related to STD / HIV / AIDS. The Foundation for Tropical Medicine Dr. Heitor Vieira Dourado (FMT-HVD) functions how HIV Testing and Counseling Center for STD / HIV / AIDS (CTA/FMT-HVD). The aim of this study was to describe the epidemiological and socio-behavioral vulnerability on users of the CTA - FMT-HVD. **Methods**: Descriptive study will be cross-sectional in users of the CTA - FMT-HVD in the period July 2010 to June 2011. The procedures for data collection will follow the routine operations of the CTA FMT-AM, where the spontaneous demand of users will be screened and referred for nursing consultation and post-test. To determine the prevalence will use the results of HIV tests, VDRL and HBsAg and Anti HBc Total for hepatitis B and anti-HCV for hepatitis C. For the variable "reason for test" and the socio-behavioral frequency distribution will be held. Data were analyzed using the software EpiInfo Windows. For the prevalence of HIV infection, syphilis and hepatitis B and C, were calculated the percentage of reactive test results related to the total sample. The project was approved by the Ethics Committee in Research of the FMT-HVD. **Results:** Studied 339 cases. Of the total, 186 (57.2%) were male, whose gender ratio was 1.3 men for every woman. 147 (45.2%) were aged between 20 and 29 years - median of 27 years (23-36 DIQ). Schooling, 178 (53.3%) referred to the hight school. Of the total, 172 (51.5%) reported being single. Among women, 12 (8%) were pregnant at the time of service. Among the reasons for the CTA exams stood out story of risk exposure to STD / AIDS with 148 (43.9%). For the past 12 months, the prevailing type of partnership in both the heterosexual male (112 - 75.2%) and females (112 - 59.3%). Regarding the type of exposure, 303 (89.9%) referred to the sexual. Concerning the use of condoms with steady partner, 124 (36.7%) patients reported never having used a condom during the period. The most prevalent reason for not using condoms was a trusting the partner with 114 (33.7%). A total of 117 (34.5%) had symptoms related to HIV / AIDS. The reactive serology comprised 58 (17.1%) for HIV, 10 (3%) for VDRL, 3 (0.9%) for hepatitis C and no cases of hepatitis. There were 05 cases of HIV co-infection and syphilis. 224 (66.1%) patients returned to receive the results of tests performed. **Conclusion**: It was evidenced in this study a higher prevalence of HIV infection among cases compared with other infections studied. HIV infection was significantly high, being greater than or consistent with the findings of other studies. The socio-behavioral vulnerability evidenced indicates proximity of equality in HIV enter men and women, indicating greater vulnerability among the young adults, with a median schooling. Exposure to sexual risk remains the most common among the population, with heterosexual behavior and trust in a steady partner for not using condoms. **E-mail:** bruno_fernandes14@hotmail.com

HIV/AIDS035- **Prevalence of cytopathological diagnosis of cervical intraepithelial neoplasia in HIV patients**

Áurea Regina Telles Pupulin, Marcelle Rocha dos Santos, Miguel Spack
Universidade Estadual de Maringá – PR

Introduction: Published data show significant increase in the number of HIV-infected woman. Whereas some years ago, there was one HIV-infected female for every 15 cases of HIV-infected males, at present statistics show 1.5 males for one female. The relationship between HIV and cervical cancer was first suspected in 1988. As a result of the above and other findings, high grade intraepithelial lesions (NC II and III) were included in clinical category B (early symptomatic HIV infection) by the Center for Disease Control and Prevention (CDC) of the United States in 1993. On the other hand, cervical cancer is one of the most common malignancies associated with AIDS in some U.S. centers. The progress of the disease is affected by additional factors which include the host's immune-competence. Some studies have demonstrated the high risk for the development of CIN with HIV carrying the virus. **Objective**: Current study evaluates the prevalence of cervical cancer in HIV/AIDS and its epidemiological aspects. **Material and methods**: Samples were selected at random from the STD/AIDS records of the 15th (Maringá PR Brazil) and the 17th (Londrina PR Brazil) Regional Health Complex. The records and test results were analyzed and applied in an epidemiological form. **Results**: Twenty patients, mean age 37.9 years and an average 10-year infection, were evaluated. Sexually transmitted diseases were present in 85% of the patients, the most prevalent being yeast (40%), followed by HPV (20%), genital herpes (15%), syphilis (10%) and chlamydia (5%). Four patients (20%) were hysterectomized due to a diagnosis of cervical neoplasia. **Conclusion**: Results show that despite the high prevalence of sexually transmitted diseases in these women, it seems that they take better care of their health; concern to take routine tests for the treatment of diseases of the female reproductive system provides them with a better prognosis. Since this population has high HPV infection rates, the policy of the Ministry of Health for the right diagnosis and prevention of the infection should be enhanced. **Keywords:** cervix cancer, neoplasia, HIV. **E-mail:** artpupulin@uem.br

HIV/AIDS036- *MASP2* **haplotypes are associated with HIV and HIV/HBV co-infection**

Boldt, ABW; Santos, VL; Pilger, C; Grisbach, C; Messias-Reason, IJT.
Hospital de Clínicas, Federal University of Paraná, Curitiba, BR.

Introduction: South Brazil presents the highest mortality coefficient due to AIDS (9.4/100,000). This picture becomes aggravated with the high HIV-HBV and HIV-HCV co-infection figures in Brazil (41-54%), due to viruses that share the same infection routes. Co-infection leads to faster hepatic fibrosis and stronger hepatotoxic effects of high antiretroviral therapy. The MBL associated serine protease 2 activates the lectin pathway of complement, leading to pathogen opsonization for phagocytosis, as well as to its destruction by the lytic complex. Certain polymorphisms of the *MASP2* gene modulate serum levels of MASP-2 as well as of its alternate MAp19 product, being also associated with impaired MASP-2 function. In this study, we aimed to verify a possible association between the *MASP2* polymorphisms and susceptibility to HIV/HCV/HBV co-infection. **Material and Methods:** We evaluated 81 HIV+HCV-HBV-, 24 HIV+HCV+, and 67 HIV+HBV+ patients, and 337 Euro-Brazilian and 57 Afro-Brazilian controls. Using multiplex PCR with sequence-specific primers, we haplotyped 11 polymorphisms from the promoter to the last *MASP2* exon: rs7548659, *p.R99Q* (rs61735600), *p.D120G* (rs72550870), *p.P126L* (rs56392418), rs2273344 and rs9430347 (flanking the alternative exon 5 of MAp19), rs17409276, *p.D371Y* (rs12711521), *p.V377A* (rs2273346), *p.R439H* (rs12085877) and rs1782455. **Results**: We observed an association between haplotypes containing the *p.126L* variant (*CRDLAGCDVHC* and *CRDLAGCDVRC*) and HIV infection susceptibility (6/674 or 0.9% in the controls vs. 10/344 or 2.9% in the Euro-Brazilian patients, OR=3.3 [CI95%=1.2-9.3, P=0.017). This reflects the increase of the corresponding genotypes especially in the co-infected patients (6/337 or 1.8% in the controls vs. 7/91 or 7.7%, OR=4.6 [CI95%=1.5-14, P=0.009). We also noticed an increase in *CRDPAGCYVRT* haplotypes, which are associated with intermediate MASP-2 levels, in HIV+HBV+, compared with HIV+HBV- patients (11/134 or

8.2% vs. 4/162 or 2.5%, OR= 3.5 [CI95%= 11-11.4], P=0.024). In the HIV+HBV+ patients, we observed a trend for lower numbers of high MASP-2 producing genotypes, presenting the intron 4 "G" variant (rs2273344) (14/67 or 20.9% vs. 26/81 or 32.1% in the HIV+HCV-HBV- patients, P= 0.109). **Conclusion**: The *p.126L*, as well as *p.439H*, both of which occur in absolute linkage disequilibrium in the *CRDLAGCDVHC* haplotype, are associated with deficiency in complement activation and lower MASP-2 serum levels. This leads us to suggest that genetically modulated lower MASP-2 levels are associated with HIV infection susceptibility, whereas higher MASP-2 levels (as afforded by the rs2273344 polymorphism) may have a protective role against HIV/HBV co-infection. **Financial support:** CAPES/CNPq/Fundação Araucária. **E-mail:** iarareason@hc.ufpr.br

HIV/AIDS037- **Incidence of pneumocystis like the HIV defining illness deaths registeres In the center for epidemiological surveillance University Hospital of Alcides Carneiro in Campina Grande - PB**

Authors: Barbosa, D.A.; Fonsêca, C.R.; Vasconcelos, D.K.A.; Vale, T.M.; Jácome, T.N.; Marques, A.C.; Sousa, S.M.B.
Institution: Federal University of Campina Grande

Introduction: Pneumocystis is an opportunistic infection in immunocompromised patients, particularly those with Acquired Immunodeficiency Syndrome (AIDS) often occurring in patients with CD4 + lymphocyte count below 200 cells/mm3. People with less than 300 CD4 and other opportunistic infections have had also have increased risk of Pneumocystis (PCP). PCP is caused by a fungus formerly called Pneumocystis carinii, but scientists now renamed as Pneumocystis jiroveci. Dyspnea, cough and fever for days to weeks are common findings in the form of presentation of pulmonary pneumocystosis. Acute respiratory failure requiring mechanical ventilation occurs in about 20% of cases. **Materials and methods:** In order to report the incidence of PCP in HIV positive patients registered in the deaths of the Center for Epidemiological Surveillance of University Hospital Alcides Carneiro in Campina Grande-PB period between the months of June 2006 to December of 2010 were collected the data relating to deaths through index cards SINAM (Information System for Notifiable Diseases) of the infectious diseases ward extension of the project concerning the Epidemiological Monitoring of the hospital in question. **Results:** In a total of 53 deaths in which of the causes of death recorded is AIDS (Acquired Immunodeficiency Syndrome), 7 of them, ie 13,2% of the PCP also appears as a major cause of death, showing the occurrence of this form of lung infection in HIV positive patients and the relation of the appearance of pneumocystis pneumonia with mortality observed in these patients. Even among these deaths, four were male and three were female. **Main conclusion:** Respiratory diseases are the most common initial manifestation of AIDS. Pulmonary infections caused by Pneumocystis jirovenci has been one of the causes of increased mortality in people with HIV. However, currently the PCP is almost always preventable and treatable, mainly due to the benefits of primary and secondary prophylaxis. With late diagnosis the pneumocystosis is associated with worse outcome and in the absence of treatment, is fatal. Therefore, clinicians and surgeons should be aware of the need for invasive and early pulmonary workup. **E-mail:** deilanazevedo@hotmail.com

HIV/AIDS038- **Genetic Diversity of *Cystoisospora belli* (FRENKEL, 1977) in HIV-infected Patients**

Resende DV[2], Santos-Silva MC[1], Assis DC[2], Pedrosa AL[1], Correa D[1], Oliveira-Silva, MB[1]
[1] **Universidade Federal do Triângulo Mineiro, Minas Gerais, Brazil,** [2] **Universidade Federal de Uberlândia, Uberlândia, Minas Gerais, Brazil**

Introduction: *Cystoisospora belli* is a monoxenous protozoan parasite and the causative agent of human cystoisosporosis, a typically cosmopolitan infection which is frequent in tropical and subtropical regions. The disease manifests with symptoms such as diarrhea, steatorrhea, fever, vomiting, dehydration, and weight loss. The chronic character of cystoisosporosis and recurrences that affect both immunocompromised and immunocompetent patients are believed to be due to the ability of C. belli to infect extra intestinal sites, where the parasite forms tissue cysts that eventually return to the intestine

and trigger new pathogenic processes. However, this recurrence is not observed in all individuals infected with *C. belli*, suggesting that parasite- or host-related factors are involved in these processes. The aim of this study is to evaluate the extent of the intraspecific heterogeneity in the gene encoding the small ribosomal subunit (SSU rDNA) of *C. belli* among clinical isolates of this parasite using 18S rDNA gene sequence analysis. **Material and Methods:** Approximately 20µg of DNA obtained by PCR of *C. belli* 18S rDNA gene was sequenced in five isolates this parasite by using a two-directional procedure. Sequences were aligned and analyzed by using MEGA version 5. **Results:** The partial sequences of 970-1784 nucleotides from each 18S rDNA from the five *C. belli* isolates were determined. The similarities among these isolates sequences and reference sequences were 84%-99% at the 18S rDNA locus. Phylogenetic relationships among the *C. belli* isolates this study and *C. belli* strain CI1 (GenBank accession number U94787) allowed their division into three different groups, revealing a genetic heterogeneity among the isolates. **Conclusions:** Characterization of the C. belli populations by 18S rDNA gene sequence analysis demonstrated the genetic heterogeneity among clinical isolates of this parasite. Studies involving a larger number of clinical *C. belli* isolates obtained from different geographic regions will be necessary to determine the extent of heterogeneity among genotypes of this parasite and its relationship with the epidemiological chain of transmission of cystoisosporosis, resistance of the parasite to anticoccidial drugs and the different clinical manifestations seen in infected patients. **E-mail:** mbosilva@yahoo.com.br

HIV/AIDS039- *FCN1* haplotypes and HIV/HBV/HCV co-infection

Tizzot, R; Boldt, ABW; Messias-Reason, IJT.
Hospital de Clínicas, Federal University of Paraná, Curitiba, BR

Introduction: South Brazil presents the highest mortality coefficient due to AIDS (9.4/100,000). This picture becomes aggravated with the high HIV-HBV and HIV-HCV co-infection figures in Brazil (41-54%), due to viruses that share the same infection routes. Co-infection leads to faster hepatic fibrosis and stronger hepatotoxic effects of high antiretroviral therapy. M-ficolin (FCN1) activates the lectin pathway of complement, leading to pathogen opsonization for phagocytosis, as well as to its destruction by the lytic complex. Certain polymorphisms of the *FCN1* gene modulate serum levels of M-ficolin. In this study, we aimed to verify a possible association between the *FCN1* polymorphisms and susceptibility to HIV/HCV/HBV co-infection and disease progression. **Material and Methods**: We extracted whole blood DNA from 78 HIV+HCV-HBV-, 20 HIV+HCV+, and 66 HIV+HBV+ patients, and 324 Euro-Brazilian and 57 Afro-Brazilian controls and genotyped rs2989727 (-*1981G>A*), rs28909068 (-*791G>A*), rs10120023 (-*542G>A*), rs17039495 (-*399G>A*), rs28909976 (-*271IndelT*), rs10117466 (-*144C>A*) and rs10858293 (+*33T>G*). **Results**: Genotype distribution was in Hardy and Weinberg equilibrium. There was a trend for an excess of -*399A+33T* haplotypes in HIV infected patients (3/648 or 0.5% in Euro-Brazilian controls vs. 6/328 or 1.8% in Euro-Brazilian patients, OR=4.1 [CI95%=0.99-16.12, P=0.043). This variant combination is inserted in the *3A.3C2.B* haplotype, common in the Afro-Brazilian control group. In fact, its frequency among the Euro-Brazilian patients was as high as in the Afro-Brazilian control group. **Conclusions**: The -*399A+33T* variant combination seems to be associated with susceptibility to HIV infection and should be further investigated with an enlarged sample size and functional studies. **Financial support:** CAPES/CNPq/Fundação Araucária.**E-mail:** iarareason@hc.ufpr.br

HIV/AIDS040- **Epidemiology of mortality related to tuberculosis and HIV/AIDS co-infection in Brazil, 1999-2007**

Martins-Melo FR, Alencar CH, Ramos Jr. AN, Heukelbach J
Department of Community Health, School of Medicine, Federal University of Ceará, Fortaleza, Brazil; Swiss Tropical and Public Health Institute, University of Basel, Basel, Switzerland; School of Public Health, Tropical Medicine and Rehabilitation Sciences, James Cook University, Townsville, Australia.

Introduction: Tuberculosis and AIDS co-infection is an important public health problem that requires an evidence base to support disease control measures. In this study, we characterize the magnitude and patterns of mortality related to tuberculosis and HIV/AIDS co-infection in Brazil. **Material and Methods:** Mortality data were obtained from the Mortality Information System of the Ministry of Health

(*SIM/MS/DATASUS*). We studied all deaths in Brazil between 1999 and 2007, where tuberculosis and HIV/AIDS were mentioned in the same declaration of death, either as underlying or associated cause of death (multiple causes of death). We describe the epidemiological characteristics and mortality rates to analyze the temporal trend, using polynomial regression. **Results:** The association between tuberculosis and HIV/AIDS was mentioned in 14,883 deaths. AIDS appeared as the underlying cause in 98.9% (14,720) of deaths, while tuberculosis was the underlying cause in only 0.1% (18) of deaths. The mean rate was 0.93 / 100,000 inhabitants and the proportional mortality 0.17%. Males (71.3%), white skin color (48%), age 30-40 years (40.5%) and residents in the Southeast region (59.4%) were the most common characteristics. The predominant clinical presentation of HIV/AIDS deaths was HIV disease resulting in mycobacterial infections (B20.0) with 50.6% of deaths, followed by HIV disease resulting in multiple infections (B20.7) with 36.5%. The respiratory form of tuberculosis (A15-A16) was mentioned in 72% of deaths. Mortality maintained stable at the national level (r^2: 44%, p = 0.051), but with different patterns between regions. The Southeast region (r^2: 93%, p <0.001) showed a significantly decreasing trend, whereas the Northeast (r^2: 91%, p <0.001) and South regions (r^2: 60%, p = 0.014) showed a steady increase. **Conclusion:** Mortality related to tuberculosis and HIV/AIDS co-infection reflects the need to adopt specific control measures. Public health services should aim for the elimination of tuberculosis deaths through rapid diagnosis and early initiation of treatment. **E-mail:** rogerlandio@bol.com.br

HIV/AIDS041- **Case report: An HIV-infected patient presenting a rare manifestation of disseminated sporotrichosis.**

Valviesse VRGA, Galhardo, MCG, Curi A, Correa DF, Roger I, Oliveira PPC, Varon A, Lemos AS.
Instituto de Pesquisas Evandro Chagas/Fundação Oswaldo Cruz, Rio de Janeiro, Brazil

Introduction: Sporotrichosis is an endemic mycosis in Rio de Janeiro, Brazil, caused by the dimorphic fungus *Sporothrix schenckii*. Traditionally, occurs in people who work with soil or plants, however, since 1998, the main form of its acquisition has been through direct contact with contaminated cats. Particularly in immunosuppressed patients, severe manifestations can take place, as osteoarticular, neurologic, ocular and pulmonary involvements. **Material and Methods**: We present a rare manifestation of disseminated sporotrichosis in an HIV patient. **Results**: a 35-year old male patient, known to be HIV-infected for three years, but with lost of follow up and of antiretroviral therapy (ART), was hospitalized in the Instituto de Pesquisas Evandro Chagas with four months history of disseminated ulcerated nodules cutaneous and mucosal lesions, weight loss and arthralgia. One month before, he had restarted ART and the CD4 cells count was 53 cells/mm³. At admission, skin biopsy, nasal swab and blood cultures confirmed sporotrichosis. Fundoscopy was performed and choroiditis was associated to the disease. The patient also presented arthritis in lower members. During his hospitalization, he was treated with amphotericin B deoxycholate, but had to be discontinued after 12 days because of related adverse reactions, like severe anemia that required blood transfusion and hypokalemia. Oral administration of itraconazole at a dose of 200 mg was introduced. He stayed for 28 days at the hospital and kept treatment with zidovudine, lamivudine, fosamprenavir and ritonavir plus prophilaxis for other opportunistic diseases. He also treated secondary skin infection with amoxicillin-clavulanic acid for seven days and nosocomial pneumonia with piperacillin-tazobactam for 10 days. After seven months of treatment, the patient is significantly better with total regression of choroiditis and osteoarticular manifestations and partial regression of skin lesions that still revealed fungus on mycological exams. **Main Conclusions**: This report shows the importance of this endemic mycosis in Brazil and its possible association with acquired immunodeficiency disease syndrome (AIDS). It also illustrates rare manifestations of disseminated infection, like fungemia and choroiditis. The ocular lesion most studied is granulomatous conjunctivitis. Further studies are needed to describe all possible lesions, especially in HIV patients. **E-mail**: vitor.valviesse@ipec.fiocruz.br

HIV/AIDS042- **Pneumatocele as aa evolution of complicated nosocomial pneumonia with pleural leak on a carrier of Aids and Toxoplasmosis: case report**

Moraes Junior, IB[1]; Agrizzi, LM[2]; Loureiro, LG[2]; Silva, ND[2]; Silva, SAEHC[2]; Rodrigues, SC[2]; Casagrande, BVP[2]; Novaes, WPR[2]
[1] **Hospital Beneficente Portuguesa–Belém,Brazil,** [2] **Centro Universitário do Estado do Pará–Belém,Brazil**

Introduction: The Acquired Immunodeficiency Syndrome (AIDS) has become a serious world problem. The decrease of the immunologic system represents a risk for opportunistic diseases, being the neurotoxoplasmosis the most frequent neurological disorder. Besides, immunosuppressed patients are more subjected to acquire nosocomial infections, due to the prolonged time of hospitalar permanence, use of urinary catheter, invasive procedures, use of antibiotic and desnutrition. Among them, the pneumonia is the second most frequent, representing an important cause of death. **Method**: Male, 38 years old patient, brown skinned, intravenous drug user, resident in Marajó, Pará, Brazil. He was admitted in a hospital, in Belém, on November 26th, 2011. At the moment of the admission, was in a state of coma, dyspneic, emaciating, with tonic-clonic seizures, high and intermittent fever. He was diagnosed as HIV-positive by two samples submitted to the ELISA and Western-Blot tests. The cranial nuclear magnetic resonance presented multiple abnormality sites characterized for hiposignal on the weighted sequence of T2 and FLAIR, low signal in T1 with impregnation after the administration of venous contrast, accentuation of the sulcus between the cortical gyrus, proeminent lateral ventricles, which diagnosis was neurotoxoplasmosis. Thus, he was treated with sulfadiazine and pyrimethamine, evolving in a satisfactory way. Forty days after, he presented intermittent high fever, when the computerized tomography (CT) showed the presence of pleural leak in the left, with a cystic component and lung collapse. The analyze of the pleural liquid presented a negative bacterial culture, LDH:2364u/L;ADA: 39,7u/Lon the oncotic cytology: serous subtract, low number of red blood cell, high white blood cell count (95% neutrophils,5% lymphocytes), low histiocyte and mesotelial cells count. Liquid had a cloudy aspect and became xanthochromic after centrifugation. Nosocomial pneumonia was determined as the cause of the pleural leak and thus treated with Meropenem and Teicoplamina. After a second CT, it was verified the absence of the pleural leak, irregular increase of the airspace, formation of a cystic structure (pneumatocele) occupying the low-middle third transition of the left lung and homogeneous nodular opacity of 10mm, located in the right lung's base. By this time, patient is afebrile, conscious and stable, waiting for thoracic corrective surgery. **Conclusion**: The worsening of the immunologic response of AIDS carriers comes with a higher risk of opportunistic infections, the nosocomial infections among them.
E-mail: soso_cunha@hotmail.com

HIV/AIDS043- **Guillain- Barré Syndrome in HIV infection: a case report**

Mourão MC, Almeida MS, Oliveira MG, Carvalho TG, Matoso RO, Morais-Caporali JF, Fonseca MO.
Infectious Diseases and Tropical Medicine Department - Hospital das Clínicas, Universidade Federal de Minas Gerais (UFMG). Belo Horizonte, Brazil.

Introduction: Since 1985, Guillain-Barré Syndrome (GBS) has been reported among patients infected with human immunodeficiency virus (HIV) occurring concomitantly with HIV seroconversion, during the initial phases of infection or during the immunological reconstitution induced by antiretroviral therapy use. **Methods:** Review of medical records of a man diagnosed with GBS, being this syndrome presumably his first manifestation of acute infection by HIV. **Results:** In a public hospital of Belo Horizonte, Brazil, a 25-year-old man presented with history of acute onset of symmetric pain in the anterior thighs associated to difficulty to walk. Within two weeks he had developed symmetric paraplegia and paresthesia in both legs and symmetric paresthesia and paresis of both arms. Cervical and Thoracic Magnetic Resonance showed no abnormalities. The cerebrospinal fluid analysis was not done. Antibodies for toxoplasmosis and cytomegalovirus were both IgG + / IgM - . Anti-HCV and anti-HTLV I/II tests were both non-reactive. Hepatitis B serologic tests also resulted negative. ELISA was positive for HIV. The CD4 count and HIV viral load were 551 cells/mm3 and 280,190 copies/ml, respectively He had history of two years of unprotected sexual relations with an HIV+ male partner. After treatment with intravenous immunoglobulin (IVIG) for five days his clinical picture stabilized. He was discharged from hospital two weeks after his

admission and was referred to out-patient care at the Department of Infectious Diseases of UFMG. Ten days after hospital discharge, symmetric paraplegia of lower limbs and paresis of the upper limbs, associated with tetraparesthesia were still present. Forty days after, a small regression of upper limbs paresthesia and paresis could be observed, but paraplegia was still present. **Conclusion:** In this patient, the CD4 count and HIV viral load could be an indirect evidence of early phase of HIV infection, being GBS its initial manifestation. This case report reinforces the importance of considering HIV infection in a patient with GBS. **E-mail:** marisefonseca@medicina.ufmg.br

HIV/AIDS044- Evaluation of body mass index and anthropometric measures for prediction of 1-year mortality of HIV/AIDS hospitalized patients

Brito, PD[1]; Santo, RE[1]; Silva, PS[1]; Cardoso, CSA[1]; Almeida, CF[1]; Japiassu, AM[1]; Bozza, FA[1].
[1]**IPEC, FIOCRUZ, Rio de Janeiro, Brazil.**

Introduction: Malnutrition remains a common problem in HIV/AIDS patients and may influence prognosis. Although all body compartments are affected, loss of lean body mass is strongly associated with disease progression. Body mass index (BMI) is an objective parameter to assess nutritional status, although inaccurate for body composition. We evaluated anthropometric measures for definition of nutritional status and relation of malnutrition and 1-year mortality of HIV/AIDS hospitalized patients. **Methods:** We conducted 2-year prospective cohort of HIV-infected hospitalized patients. Nutritional status was defined as malnutrition according to 3 anthropometric parameters: body mass index (BMI<18.5 kg/m^2), tricipital skinfold thickness (TST<percentile 15), and arm muscle circumference (AMC<percentile 10). Variables were expressed as median (interquartile range). Logistic regression was conducted to determine variables associated to 1-year mortality. **Results:** We included 232 patients, with the following features: male (65%), age 40 (34–48) years, CD4 cell count 158 (53–408) cells/µL, viral load 1643 (<50–84053) copies/mL, time since AIDS diagnosis 5 (2–11) years, and opportunistic infections in 43%. Respiratory (30%), neurological (22%) and gastrointestinal (19%) syndromes were the most common causes of admission. Hospital mortality was 5%, while another 29 patients died in the following year (1-year mortality 18%). Malnutrition was present in 22% of patients according to BMI, 56% according to TST, and 50% according to AMC. BMI underestimates malnutrition when compared to TST and AMC (p<0.001). Gastrointestinal syndromes (odds ratio 6.4; CI95% 1.9-21.4) and AMC odds ratio 0.87; CI95% 0.77-0.97) were factors independently associated with 1-year mortality. **Conclusion:** BMI underestimates malnutrition in HIV/AIDS hospitalized patients. Nutritional assessment should include compartmental parameters, as AMC, which is a predictive factor associated with 1-year mortality. Patients with weight loss (mainly lean body mass) and gastrointestinal syndromes may benefit from early nutritional evaluation and intervention. **E-mail:** patricia.brito@ipec.fiocruz.br

HTLV Infection

HTLV001- Correlation between clinical symptoms and peripheral immune response in HTLV-1-associated myelopathy/tropical spastic paraparesis patients

Dias, G.A.S.; Gomes, L.F.; Caldas, C.A.M.; Sousa; Villanova FE; R.C.M. Quaresma, J.A.S.; Fuzii, H.T.
Immunopathology Laboratory - Tropical Medicine Unit- Federal University of Para – UFPA, Belém, Pará, Brazil

Human T lymphotropic virus type 1 (HTLV-1) is an exogenous retrovirus that persistently infects 20–30 million people worldwide. The majority of HTLV-1-infected individuals remain lifelong asymptomatic carriers (ACs) of the virus. However, about 3-5% can develop Adult T cell leukemia (ATL) or HTLV-1-associated myelopathy/tropical spastic paraparesis (HAM/TSP). HAM/TSP is characterized pathologically by chronic inflammation in the spinal cord, with perivascular cuffing and parenchymal infiltration of mononuclear cells (chronic myelitis). The virus preferentially infects CD4+ T cells, and rapidly induces cell

activation and proliferation and expression of many host genes, including IFN-γ. Cytokines play pivotal roles in the regulation of the immune response and the HTLV-1 transactivator protein Tax has been postulated to contribute to the inflammatory response observed in HAM/TSP as a result of the aberrant regulation of host cell cytokines. In the current study, we evaluated the peripheral immune response and correlated with clinical symptoms like spasticity and weakness of the lower extremities, and gait abnormalities. 28 HTLV-1 infected patients were studied. Eight of them developed HAM/TSP and 20 were ACs. Total RNA was extracted from peripheric limphomononuclear cells using the Trizol® reagent (Invitrogen, Carlsbad, CA, USA). The quantitative real-time PCR was performed to quantify IFN-γ, IL-4, IL-5 and IL-10. Total RNA (1µg) of each sample was subjected to reverse transcription with Superscript III (Invitrogen). Real-time PCR was performed in StepOne Plus (Applied Biosystems, Foster City, CA) and signal detection was obtained with the Sybr Green reagent (Applied Biosystems). The amount of mRNA in the sample was expressed as the relative amount to the GAPDH and β-actin genes, according to the formula 2-ΔCT, where ΔCT is CTgene – CThousekeeping. The clinical symptoms of each patient were examined. Spasticity was assessed on the Modified Ashworth Scale, the weakness of the lower limb was measured using a manual scale, and the gait was given scores to the devices that assist in gait. The HAM/TSP patients showed higher expression of IFN-γ (Median: 2,9 x 10^{-3}) than ACs (Median: 1,1 x 10^{-3}), with p = 0,07. The IFN-γ expression was positively correlated to spasticity (r = 0,2795), weakness (r = 0,6580) and gait (r = 0,7216). Interestingly, patients who need wheelchairs had a higher IFN-γ expression than those who don't need wheelchair (p = 0,03). The HAM/TSP patients showed higher Th1 response than ACs. The higher IFN-γ expression is correlated with the development and progression of the HAM/TSP. **E-mail:** hellenfuzii@gmail.com

HTLV002- **Co-infection of HTLV-1 and HTLV-2 in patients with *Strongyloides stercoralis*, Pará, Brazil**

Aguiar, S.A [1,2].; Sousa, M.S [2].; Carvalho, L.P [3].; Costa, J.H.G [1].; Costa, C.A [2].; Ferreira, L.S.C [3].; Batista, E.J.O [2].
1. Biological Sciences, Federal University of Pará, Belém, Pará, Brazil., 2. The Post - Graduate Diseases, Center for Tropical Medicine, Federal University of Pará, Belém, Pará, Brazil., 3. Faculty of Pharmacy, University Center of Pará, Belém, Pará, Brazil.

Introduction: Epidemiological studies the *Strongyloides stercoralis* have demonstrated the existence of an association of this parasitic disease with Human T-cell Lymphotropic Virus type 1 (HTLV-1). In regions where both agents are endemic, the co-infection may result in the development of severe strongyloidiasis, because HTLV-1 causes a reduction in the production of immune components participating in the defense mechanisms against *S. stercoralis.* This study aimed to estimate the prevalence of HTLV-1 and HTLV-2 in patients with *Strongyloides stercoralis* treated at University Hospital João de Barros Barreto (HUJBB) in the period July 2009 to June 2011. **Material and Methods:** The sample size was calculated, taking into account the population size (N = 221), sampling error of 5% and confidence level of 95%. Sampling was done by simple random sampling. Patients with parasite *Strongyloides stercoralis* (n = 109) were invited to participate in this study should attend the Center for Tropical Medicine (NMT), Federal University of Pará (UFPA) for the purpose of performing serology in the period from January 2011 to July 2011. Blood samples of patients with *Strongyloides stercoralis* were submitted to ELISA for antibodies anti-HTLV-1 and HTLV-2 (Ortho, USA). The reagents were confirmed and genotyped by molecular biology techniques (PCR). **Results:** The frequency of anti-HTLV-1 and HTLV-2 in these patients was 5.5% (6/109). And 94.50% (103/109) of the patients studied were not observed where no reactive serum to HTLV-1 and HTLV-2. Of the six positive serologic tests for HTLV, characterized PCR four samples (3.67%) as HTLV-1 and (0.92%) and HTLV-2. In one (0.92%) of serologically positive samples was not detected the viral genome. The frequency of HTLV in females was 66.67% (4/6) males and 33.33% (2/6). The mean age of patients with *Strongyloides stercoralis* and non-reactive reagents was 62.83 and 48.11 years, respectively. **Main Conclusions:** The present study demonstrated the existence of HTLV-1 and HTLV-2 in patients with *Strongyloides stercoralis.* The prevalence of HTLV-1 was higher than that of HTLV-2, the frequency of HTLV-1 was higher in females over males. The average age of co-infected was significantly higher than that of non-carriers of HTLV, was not identified in the viral infection carriers of *S. stercoralis* younger than 30 years. **Supported by:** Fundação de Amparo à Pesquisa do Estado do Pará - FAPESPA

HTLV003- **Atypical Herpes Simplex Infection in HIV – Positive Patients**

Oliveira FL[1], Sirio DMB[2], Machado MA[3], Nery JAC[4]
Instituto de Dermatologia Professor Rubem David Azulay (IDPRDA) – Santa Casa da Misericórdia – Rio de Janeiro (RJ), Brazil / Fundação Oswaldo Cruz - FIOCRUZ - Rio de Janeiro (RJ), Brazil

Introduction: The association between the HIV and the genital herpes simplex is noteworthy and can be atypical. Nowadays, is the main cause of genital ulcers.In HSV-infected HIV seropositive individuals, genital lesions are source of transmission of HSV, and are the focus of shedding of HIV due to the infected CD4 cells infiltrating the herpetic lesions. **Material and Methods:** Two HIV-positive patients who presented with exophytic verrucous lesions in the inguinal area. In both cases the results of VDRL and FTA-abs tests were negative and the punch biopsy diagnosed an atypical herpes simplex infection. **Results:** Case 1: A 34 years-old bisexual patient, HIV positive since 2009, presented with a 3 months history of progressively enlarging and painful verrucous plaques and exulcerations in the inguinal area, treated before with oral acyclovir with no regression of the lesions. He had no previous history of erosions or vesicles and did not have condyloma elsewhere. The patient had not started antiretroviral therapy since the diagnosis of HIV and his CD4+ T-cell count was 120 at the time of evaluation. A biopsy of the lesion revealed the central part of the ulcer with necrotic surface, mixed infiltrate (mononuclear and poly) and dilated and congested vessel. Bacterial and fungus culture were negative. A diagnosis of verrucous herpes was made, and the patient was treated with intravenous acyclovir at a dose of 10mg/Kg/ 3 times a day for 10 days. Disease recurrence was not detected after a 12-month follow-up. Case 2: A 38 years-old heterosexual patient, HIV positive since 2010, presented with painful verrucous nodule in the inguinal area. Previous history of recurrent oral herpes simplex infection treated with topical acyclovir. Cutaneous examination revealed multiple and confluent circular plaques measuring 1-2 cm in the back and large hyperkeratotic plaques in upper and lower limbs. A biopsy of the inguinal lesion revealed epidermis with exocytosis and presence of binucleated cells and hyperchromatic nuclei, typical of herpetic infection. Treated with oral aciclovir 400 mg three times a day for 10 days followed by long-term suppression with acyclovir 400 mg twice daily and started the antiretroviral therapy. After 3 months of therapy, the lesion had shown regression, but 2 months after finishing the treatment, the lesions recurred responding to the same acyclovir treatment scheme. The patient is included in routine follow-up and there is no lesion of herpes. **Main Conclusions:** There are few cases of hyperkeratotic verrucous lesions of herpes associated HIV reported in literature, although emphasize the constant diagnostic vigilance is important in cases of a non-healing ulcer or exuberant verrucous lesions existing for more than 6 weeks and the clinician in tropical or non-tropical countries must be aware of the possibility of recurrent manifestations of the disease, as well as the need of increased doses of antiviral therapy. **E-mail:** oliveiraflmed@gmail.com

HTLV004- **Rheumatologic manifestations in patients infected with the human T-cell lymphotropic virus in the Amazon region**

Gomes,LF[1]; Caldas,C.A.M[1]; Dias,G.A.S[1];Vallinoto, A.C.R[2]; Fuzii,H.T[1]; Medeiros, R.C[1];
[1]Núcleo de Medicina Tropical/UFPA, [2]Laboratório de virologia-ICB/UFPA

The human T-cell lymphotropic virus (HTLV), classified into four serotypes, HTLV 1, HTLV 2, HTLV 3 and HTLV 4, is a retrovirus that has played a role in perpetuating chronic inflammatory joint diseases, and the development of autoimmunity. The Brazil has the largest absolute number of cases of the disease, estimated at 2.5 million people. The highest prevalence of infection is observed in states of the Northeast, North and Southeast. Among the capitals, the HTLV is more prevalent in São Luís, Salvador, Recife and Belém. This observational study aims to describe the most common rheumatic complaints in patients with HTLV treated at Núcleo de Medicina Tropical (NMT), evaluating possible risk factors. These patients in follow-up service, 47 (37 HTLV 1 and 10 HTLV 2) met the inclusion criteria. The mean age was 47.9 years (76-16 years). Of these, 22 patients had a rheumatic complaint, being 77.27% (n=17) with clinical symptoms of arthralgia and 22.72% (n=5) with arthritis, in which at least 27,27% (n=6) complained of

morning stiffness reporting improvement after one hour. There were also inconclusive cases of low back pain, bursitis, low back pain, enthesitis, Heberden nodes being more frequent among the frames of HTLV type 1 carriers. There was predominant involvement of large joints involving mainly the lower limb joints. The most frequent manifestations reached a joint, with 31% (n=10) presenting an oligoarticular involvement and 50% monoarticular (n=16), while 19% (n=6) patients were classified as polyarticular. In this population, it was found that 91.48% (n=43) have dry mouth and / or dry eye. However, referred to the profile of protein electrophoresis, the rate of change to an alpha and gamma globulin is 1:3. The evidence of inflammatory activity and levels of CD4 and CD8 cells count were also higher in paraparetic group. They are evidence that the virus is a perpetuator of chronic inflammatory diseases. Together these results suggest that individuals infected with HTLV may be more prone to the development of rheumatic diseases, it is necessary to warn, because the use of biological products to treat diseases without adequate knowledge about the action of the virus can change immune response and its clinical manifestations. **E-mail:** leticia.figueiredogomes@gmail.com

HTLV005- **Molecular confirmation of intrafamilial transmission of HTLV-1 in Belem, Para, Brazil**

Almeida DS[1], Ferreira LSC[1], Costa CA[1], Ishikawa EAY[1], Costa ARF[2,] Lima KVB[2], Linhares AC[2], Sousa MS[1].
[1] Universidade Federal do Pará, Belém, Pará, Brasil., [2] Instituto Evandro Chagas, Ananindeua, Pará, Brasil.

Introduction: The human T-cell lymphotropic virus type-1 (HTLV-1) is associated with several diseases as tropical spastic paraparesis (TEP), leukemia/lymphoma Adult T-cell (MCL), strongyloidiasis and uveitis. This infection occurs slowly and progressively mainly from mother to child and by sex relationship. Most infected are asymptomatic, being the main cause of infection among contacts and family. Although there are studies that suggest the existence of interfamilial transmission, there are few who confirm and demonstrate the viral subtypes involved to better understand the epidemiology of the virus circulating in the population. **Material and methods**: Confirmation of transmission and viral subtype was made from analysis of 29 nucleotide sequences of segment 5 'LTR of HTLV-1 from 12 possible vertical transmissions and eight possible sexual transmissions, identified in Belém, between June 2007 and June 2011. **Results**: The samples of HTLV-1 identified in the families studied were classified as belonging to the Cosmopolitan subtype. Interfamilial transmission was confirmed in eight of the 12 families studied showing identical sequences of HTLV-1 among its members. In these families were confirmed six cases of transmission through sexual intercourse and nine episodes of vertical transmission. In four families the transmission was not confirmed because similarities ranging from 97.85% to 99.86%. **Conclusion**: This study provides molecular evidence for interfamilial transmission of HTLV-1 in Belem, confirming vertical and horizontal transmission between different generations of family and at the same time the possible suspected cases of familial transmission have not been confirmed. **E-mail:** almeida.danilo_s@hotmail.com.

HTLV006- **HTLV infection and its importance of immunosuppressive potential**

Mariela C. Asisi, Silvia N. Uehara, Anamaria Paniago, Ivone L. Martos, Luciana N. Odashiro, Sandra Leoni, Angelita F. Druzian, Gisele Maria B.de Freitas,Luciana Maçanori
Hospital Day Esterina Corsini - NHU / UFMS

HTLV infection is increasingly being explored as a research topic in the medical field. Carriers of this virus usually remain asymptomatic throughout life. The virus may have oncogenic and immunosuppressant, is directly associated with T-cell lymphoma, Tropical Spastic Paraparesis, dermatological diseases, immunological diseases (Herpes Zoster and severe and disseminated strongyloidiasis). **Cse report:** MW, 63, female, yellow, natural Sidrolândia, coming from Campo Grande, deceased parents (Okinawa Japan). She was admitted to Maria Aparecida Pedrossian HU, with a history of 40 days is presented cutaneous lesions in right posterior thoracic region, diagnosed and treated as Herpes Zoster, unaware of the medication in place. Showed improvement of skin lesions, but evolved with intense local pain, and prescribed Prednisone does not know the dose used for about 30 days. Evolved with severe

abdominal pain in the epigastric region, cramping without signs of peritoneal irritation was admitted for investigation. Hemogram with leukocytosis and left shift, hipoalbuminemia, ultrasound of abdomen: hepatic steatosis moderate, simple cyst in the left lobe of the liver, abdominal aortic atheromatosis, other organs and structures without ultrasonography changes, Upper GI Endoscopy: non-erosive esophagitis, hiatal hernia average , gastric polyps (directed biopsy), biopsy ileum: ileitis with moderate chronic active granulomas and structures that favor the Strongyloides sp, serology for HIV-negative, ELISA positive for HTLV1 / 2, confirmed by Western blot.**Discussion:** This case depicts the association of HTLV with Herpes Zoster and Strongyloidiasis severe form, enhances the immunosuppressive potential of the virus which has tropism for T-lymphocytes, which can interfere with key aspects of the host immune response. We also emphasize that the prolonged use of corticosteroids may have contributed to this outcome. Still, the case rekindles the importance of stool tests in the investigation of patients with a history of abdominal pain, especially those on steroid therapy. **E-mail:** mariela_assis@hotmail.com

HTLV007- **HTLV 1 and 2 seroprevalence of hemopi blood donors from Teresina**

Ribeiro, I. P. , Oliveira, E. G. , Gomes, A. C. A. , Silva, K. C. S., Soares, M. S. A. C.

Introduction: The exact number of people infected by HTLV (*Human T Lymphotropic Virus*) types 1 and 2 in the world is unknown. It is estimated that 15 to 20 million people are infected. The main causes of the associated clinical manifestations are the genetic and immunologic factors of the host. These factors can be divided into three categories: neoplastic, inflammatory, and infectious. HTLV transmission is the same as HIV, in a horizontal and/or vertical way. **Objectives:** To gather HTLV 1 and 2 seroprevalence from blood donors assisted by the local hematology and hemotherapy center (HEMOPI) in Teresina, according to the distribution of the Health Department, as well as to trace the epidemiological and social demographic profile from 2000 to 2010. **Methodology:** Retrospective field research with quantitative and descriptive characteristics. The sample was made of 152 patient files analyzed. A form was used to collect the data. Positive donors were divided according to the city regions (south, center-north and east-southeast), besides the gathering of absolute and percentage data according to epidemiological and social demographic variables: gender, age group, marital status, number of children, education, profession, kind of donation, vulnerability to HTLV infection and how the service is being carried out by HEMOPI. The data were processed by the SPSS software (Statistical Product and Service Solutions). The study was approved by the Ethics and Research Committee (CEP) of Faculdade de Saúde, Ciências Humanas e Tecnológicas do Piauí NOVAFAPI, with the CAAE:0162.0.043.000-11.**Results and Discussion**: The south and center-north regions achieved the same percentage (36.8%); 57.8% are men and 42.2% are women, over 70% were over thirty years old; 55.9% were married; 26.3% had children; reposition blood donation was the most common kind (62.6%); males have proven to be more susceptible to infection; 86.8% did not have any diseases other than HTLV in both genders. 73% had been assisted by a physician once and for only 37% this had happened two times or more. 94.7 used ELISA for serum triage and only two used Western Blot. **Conclusion:** The need of implementation during registration and/or recruiting of positive donors, as well as improvement in the file records, intensification, of serology investigation of other family members, serological triage during pre-natal, and awareness raising about the regular use of preservatives. Public policies need improvement, so the knowledge about HTLV can be broadened and the multidisciplinary team can receive support due to the peculiarities of this kind of infection. **Keywords:** Prevalence, Human T Lymphotropic Cells Virus type 1, Blood Donors, Nursing. **E-mail:** ivonizete@uol.com.br

HTLV008- **Dengue in HTLV-I Patients: Preliminary Report of a Series of Cases**

Longo CL, Brasil P, Espindola O, Leite AC, Lupi O, Neves ES
IPEC/Fiocruz Rio de Janeiro, Brazil

Introduction: We report a series of four HTLV-I patients who developed dengue-virus co-infection. HTLV-I is the etiologic agent of HTVL-I associated myelopaty/tropical spastic paraparesis (HAM/TSP), Adult T cell leukemia/Lymphoma (ATLL) and other clinical conditions such as uveitis, myopathy and pheripheral neuropathy. Dengue virus (DENV) causes an acute febrile disease, with a broad clinical

spectrum: from a mild febrile illness to dengue shock syndrome (DSS) with hypovolemic shock. Both are immunomediated diseases leading us to suppose that its physiopathology mechanisms can induce different clinical and laboratorial changes. In view of the paucity of data in medical literature about co-infections in patients with HTLV-I, the authors describe the main clinical and laboratory manifestations in this series. IPEC/Fiocruz is a reference center for acute febrile disease and neuroinfection, especially HTLV- I infection, with a cohort of 505 patients. During the 2011 epidemic, four HTLV-I patients presented dengue and were treated at the institution. **Case reports:** Case one was co-infected with HTLV-I and HIV. He is asymptomatic of both retroviroses. Case two had HAM/TSP with Kurtzke Expanded Disability Status Scale (EDSS) 7 and recurrent urinary tract infections secondary to neurogenic bladder in spite of regular intermittent vesical catheterization. Case three had HTLV-1-related polymyositis and EDSS was zero. Case four had HAM/TSP (EDSS 7). All of them had classic dengue, with fever, headache, retro-orbital pain, myalgia and arthralgia, without warning sings. Leukopenia during the febrile illness was observed in all four patients. Thrombocytopenia was observed in only one. The co-infection did not affect the clinical course of HTLV-I infection, without changes in the EDSS. When compared before and after dengue, the HTLV-I proviral load (HTLV-I PVL) revealed different patterns of change: remained the same in cases one and three, increased in case two, and decreased in case four. Case one continued with high levels of CD4 lymphocytes (939 cells/mm^3) and HIV viral load remained undetectable. **Main conclusions:** This is the first case report of dengue in patients with HTLV-I. The hypothetical interaction between these two infections, observed in co-infection of HTLV-I with strongyloidiasis and Hepatitis C was not observed. The co-infection did not affect the clinical course of HTLV-I infection, with no changes in EDSS. When compared before and after dengue, the HTLV-I PVL revealed different patterns of change. Similarly, in spite of the presence of leukopenia in all four cases, no patient presented the severe forms of Dengue fever. **E-mail:** elizabeth.neves@ipec.fiocruz.br

HEPATITIS

Hepatitis001- **Epidemiological profile of hepatitis A in Maceió / AL, Brazil (2007-2011)**

Cavalcante, J. C; Anjos, S.F.S; Antunes, T.M.T; Lins, L.N; Silva, T. M.
Universidade Federal de Alagoas; Secretaria Municipal de Saúde/ Maceió-Brazil.

Introduction: Hepatitis A is a disease with a worldwide presence, but more often in developing and emerging countries, having the relevant factor of the economic matter. This way, the epidemiological profile is of great importance, especially in tourist places, which includes the city of Maceio. The water paradise is also the Capital of the Federal Unit of Alagoas, belonging to Brazil Northeastern. The illness is caused by the hepatitis A virus (HAV), a genus of Picornaviridae Hepatovirus. The infection is transmitted by the fecal-oral route, water, food and spread from person to person. This disease is one of the most common viral hepatitis, accounting for 75% of cases, with higher prevalence in areas with low socioeconomic development. Brazil has an incidence of hepatitis A in the period 2007 to 2011 of 47,749 confirmed cases, according to data from DATASUS. Poor conditions of sanitation and hygiene favor enteric infections. In urban areas, the spatial and temporal distribution of cases of the disease can be influenced by the combination of the following factors: geographic, climatic, biological and human. **Methodology:** This is a descriptive analytic cross sectional study. Data were obtained through the Information System of Notifiable Diseases (SINAN) and processed by the Municipal Health by date of diagnosis in the period 2007-2011. We generated the incidence and cumulative proportions of it in the last five years (2007-2011) in Maceió / AL. **Results:** During this period 452 cases were diagnosed, corresponding to an incidence of 9.830/10000. Highlighting regions of the second and fifth health districts according to local spatial autocorrelation (LISA), presenting, then, the southern area as of higher incidence, and highlighted the neighborhoods of Guaxuma (40.73%), PontaGrossa (29.95%), Bebedouro (29.57) and Centro (27.57%). Was observed higher proportions of cases in the following cases: school months, like January, February, March and August in which are concentrated 10.4%, 10.8%, 13.3% and 10.0% of cases respectively; at ages of 5-9 years (31.86%), 10-14 years (22.35%) in males (60.18%);

source/mechanism of infection by food/water contaminated (54.42 %) followed by the home environment (34.51%) and unknown/blank (10.84%). The field of occupation was completed in 30 cases and, among them, students had the highest frequency going along with the rest of the data what suggests the hypothesis that the school may be a way of the propagation of the disease and the regions of epidemiological prevalence occurs in economically disadvantaged areas located in the south of the city. **E-mail:** tamimilan.ufal@gmail.com

Hepatitis002- The prevalence of hepatitis A associated risk factors in urban community Ribeirinha – Vila Candelaria , Porto Velho, Rondônia, western Amazon, Brazil

Helena Meika Uesugui[1], Leandro José Ramos[1], Renato André Zan[2], Dionatas Ulises de Oliveira Meneguetti[3], Luiz Hildebrando Pereira da Silva[4].
1. Department of Health, Faculty of Education and the Environment, Ariquemes, Rondônia, Brazil. 2. Department of chemistry, Faculty of Education and the Environment, Ariquemes, Rondônia, Brazil. 3. Department of biology, Faculty of Education and the Environment, Ariquemes, Rondônia, Brazil. 4. Postgraduate Program in Tropical Diseases, Federal University of Pará, UFPA, Brazil.

Introduction: This paper was carried out through a door to door questionary taken in the month of October, 2001, in a waterside community called Vila Candelária in the city of Porto Velho, Rondônia, north of Brazil. The aim of this research is to determine serum prevalence of hepatitis A and to define possible relations concerned with the risks of the disease. There were one hundred forty three people of both genders, which ages varied between zero and eighty. After registering them, the next procedure was to get data not only about their living conditions but also of their sanitation, family income and also about their biological material. **Material and Methods:** To detect all the antibodies of hepatitis A virus, we used ELISA (*Enzyme-Linked Immunosorbent Assay*), which is produced by *DiaSorin,* with specification: ETI – AB – HAVK – 3 (P001652). The percentage of serum prevalence found in the research were 41,6%; 55,5%, 66,6%; 88% and 100% in the ages of 0 to 4; 5 to 9; 10 to 14; 15 to 19 and over 40. **Results:** The results present a 86% serum prevalence of hepatitis A. This is a quite high rate, although there is a great reduction among 19-year-old young. This fact may be due to the public water supply in the area, which has been provided since 1982. **Conclusions:** The research also empathizes how important other researches are so that investments in social programs like living, healthy and sanitation can be put in a rank according to the needs of the communities. **Keywords:** serum prevalence; hepatitis A and sanitation. **E-mail:** dionatas@icbusp.org

Hepatitis003- Clinical and epidemiological analysis of the Viral Hepatitis cases confirmed by the State Health Secretariat, in Alagoas

Costa GVCO, Silva LCB, Alves WA.
Federal University of Alagoas, Maceió, Alagoas, Brazil

Introduction: Viral Hepatitis (VH) is a worldwide contagious disease caused by distinct viruses. The main virus types are A (AV), B (BV), C (CV), D (DV) and E (EV) and Humans are the only representative reservoir. Such viruses detain great epidemiological value in the Brazilian public health scenery due to high death rates and to long acute and chronic complications. Regarding the State of Alagoas, there are on average 541 cases per year. The supervision of these pathologies is active and passively verified depending on outbreaks of occurrence. The present study aims to improve clinical and epidemiological information related to confirmed VH cases in Alagoas during the period from 2007 to 2011. **Methodology:** The study used a cross-sectional analysis of 2,843 VH notified cases. The Database was gathered by reviewing the information system for morbities of mandatory notification –"*Sistema de Informação de Agravos de Notificação*", available on Brazilian Ministry of Health website (http://dtr2004.saude.gov.br/sinanweb). Relative risk (RR), Chi-square and p-values were calculated for differences between men and women with Hepatitis B (HB) and Hepatitis C(HC) whose transmission is also sexual and a p-value <0.05 was considered significant. **Results:** Regarding the reported cases, 52.3% were caused by AV, 28.7% by BV, 10% by CV, 0.03% by EV, 1.1% by BV and CV, 0.1% by AV

and EV, 0.3% by AV and CV and 0.03% by BV and DV. If considered skin-color, 71.6% infected were brown, 13.2% white, 4.3% black, 0.4% yellow, and 0.6% indigenous. Considering gender-type infection, 54.4% were men and 45.6% were women. Regarding age group, the predominance by virus type was: 1-5 (21.2%) and 5-9 (37.5%) years for AV, 20-39 (53.9%) years for BV and 40-59 (52.4%) years for CV. Among all the cases confirmed, 86.8% were laboratorial, 9.4% clinical and epidemiological, and 3.76% were filled as serological mark. Among all kinds, 97.6% cases of Hepatitis A (HA) were acute; 74.3% HB cases were chronic whereas 11.3% were acute. The cases referring to HC, 91.2% were chronic. Male gender was associated with HC (RR=1.6; p<0,00003) and female gender was associated with HB (RR=1.3; p<0,00004). **Conclusion:** As expected, children are the most affected by AV's infection whereas young adults and elders are by HB and HC, respectively. This pattern is associated to parenteral contact, for instance injectable drugs and sexual activities, generally related to adults and considered to be the main causes of BV and CV. Our Findings presented no significance in gender, with just slightly higher male exposure. The huge number of brown individuals infected is likely ought to Alagoas be a multiracial State. Regarding schooling, data interpretation was misleading since 43.3% of the cases notified were filled in as "Ignored/empty" or "not applicable". Similar problem was showed for "mechanism of infection". To sum it up, Alagoas socioeconomic reality reinforce HA predominance and other findings. **E-mail:** waneska.alves@yahoo.com.br

Hepatitis004- **Registration of hepatitis in the state of Brazilian Amazon**

Mota CB [1, 2, 3], Santos ECS [4], Moura MAS [1], Nogueira GC [5], Saraiva MGG [1,6]
1 Fundação de Medicina Tropical "Doutor Heitor Vieira Dourado". 2 Fundação de Vigilância em Saúde. 3 Universidade Ananguera Uniderp. 4 Universidade Federal do Amazonas. 5 Universidade do Estado do Amazonas. 6 Universidade Nilton Lins. Manaus, Amazonas, Brasil.

Introduction: Among all viral diseases that attack the populations of Amazonas, diagnosed and reported annually, viral hepatitis shows to represent a major public health burden. **Objective**: to examine epidemiological aspects of cases of viral hepatitis registered in the health care services of Amazonas, between January 2007 and December 2011. **Material and methods**: The analysis was performed as based on secondary database information from SINAN NET/Foundation for health surveillance Coordination/STD/AIDS/HV, with stratification of case frequency per year of diagnosis/symptoms, etiology, and classification by gender, age group and residing Township. On the spatial distribution of the cases we used the ArcGIS ® software. **Results**: 6,705 viral hepatitis cases were diagnosed and confirmed. Out of these, 3,620 (54%) were VHA, 1,974 (29.4%), VHB, 399 (6%) VHC, 499 (7.4%) VHB + D, 104 (1.5%) VHA + B, 95 (1.4%) VHB+ C, 12 (0.2%) VHA+C and two (0.1%) VHE. Males represent a bigger record than females 3,474 (51.8%) and 3,231(48.2%), respectively. Age group ranged from <1 to 80 year old and over, <1 year old and 1-4 years accommodated 686 (10.2%) cases and between 50 and 80 and over showed 729 (10.9%). Out of the total, the largest number 1,748 (26.1%) was recorded in 2009 and the lowest 826 (12.3%) in 2007; 1,259 (18.8%) cases of this disease were recorded in 2001 involving 45 municipalities in Amazonas (7.6%), with their higher occurrence in Manaus 728 (57.8%), followed by Boca do Acre 80 (6.4%) and Eirunepe 76 (60.0%). **Conclusions**: Hepatitis cases notification in different etiologies, particularly in children and elderly reflects the need for including the implementation of preventive measures in primary health care programs. The expressive number of VHA infection highlights the need of improving basic sanitation in the State municipalities.**E-mail:** gracasaraiva@fmt.am.gov.br

Hepatitis005- **Purification of specific immunoglobulin for the detection of hepatitis A virus**

Lima, LRP[1] ; Lanzarini, NM[1]; Vasconcelos, GA[1]; Silva, AS[1] ; De Paula, VS[1]; Pinto, MA [1,2]
1 Oswaldo Cruz Institute/FIOCRUZ, Rio de Janeiro, RJ/Brazil, 2 Veterinary Medicine School, C.C.S., UNIFESO, Teresópolis, RJ, Brazil

Text: Infection with hepatitis A virus (HAV) occurs worldwide and is the most common cause of acute viral hepatitis. Acquired primarily via the fecal-oral route, HAV infection is easily spread, either by personal contact or by ingestion of contaminated food and water. Currently in Brazil, due to improvement

of sanitary conditions the epidemiological profile of disease is changing to older ages resulting in the occurrence of outbreaks. An alternative method for immunodiagnostic of Hepatitis A disease is the Immunoglobulin Y (IgY) technology, since the anti-HAV antibodies currently marketed have low affinity and have high cost. Studies involving IgY have grown due to advantages such as easily accessible, large-scale production and appropriate methodology regarding the bioethical appearance. The aim of this study was the purification of anti-HAV IgY antibodies produced in immunized chickens against Hepatitis A virus for possible application in diagnostic tests. **Methods and Results:** Two groups of hens were immunized: the group one was immunized with hepatitis A vaccine plus adjuvant CPG oligodeoxynucleotides (CPG-ODN) and the group two only was immunized with CpG-ODN. The eggs from both groups were collected and IgY was purified from egg yolk by polyethylene glycol 6000 (PEG) followed by thiophilic adsorption, being dialyzed with PBS and concentrated by PEG. After purification, IgY was characterized by electrophoresis and "Western Blotting" methods**. Result and Conclusion:** The result of IgY purification with PEG precipitation followed by thiophilic adsorption proved to be more effective in removing impurities contaminants in egg yolk than purification using only PEG precipitation. The methodology used in this study to purify IgY from egg yolk was successful in obtaining an antibody without the presence of interfering proteins, which contributes to the possible application from of the antibody in diagnostic methods for detecting hepatitis A virus. **Financial support:** IOC/FIOCRUZ, Rio de Janeiro, RJ, Brazil. **E-mail:** lyana@ioc.fiocruz.br

Hepatitis006- **Hepatitis A vaccine coverage among Polish children and adolescents**

Aneta Nitsch-Osuch, Katarzyna Życińska, Kazimierz Wardyn, Małgorzata Januszewska
Department of Family Medicine, Warsaw Medical University

Background: In Poland the incidence of hepatitis A is defined as very low (<5/100.000 population), however, since 2007 there has been observed in increasing trend in the incidence of disease, and 45-52% cases of hepatitis A are imported from other countries, mostly characterized by lower hygienic and sanitary standards. We also observe the increasing trend of number of traveling children. Hepatits A vaccination should be considered as a priority recommended vaccine for traveler, both adults and children. **The aim** of the study was to estimate the hepatitis A vaccine among children and adolescents aged 1-18 years form one chosen primary care setting in Warsaw (Poland). According to Polish regulations hepatitis A vaccine is not included into the National Immunization Schedule, but it is a recommended not mandatory vaccine and it is paid by patients (parents). **Material and methods:** The analysis of medical documentation of vaccinations of 3549 children and adolescents was conducted. The proportion of vaccinated patients was calculated. The motivation for vaccination was also analyzed. **Results:** Vaccination against hepatitis A (two doses of vaccines) was conducted in 1015 pediatric patients (29% of pediatric population). 49% of patients were vaccinated during the routine prophylactic examinations which are required for children aged 2,4 and 6 years. 25% of children were vaccinated against hepatitis A because of expected travel, mainly to Mediterranean countries (Egypt, Tunisia, Spain, Italy). In 10% of patients the vaccination against hepatitis A was coadministrated with another vaccine (mainly DTPa or influenza).**Conclusion:** The vaccination against hepatitis A should be more promoted for traveling children in Poland. **E-mail:** anitsch@amwaw.edu.pl

Hepatitis007- **Sequence optimization, purification and antigenicity of recombinant HAV VP1 and VP3 fusion proteins expressed in *Escherichia coli*.**

Sousa, RCV[1]; de Paula, VS[2]; Marques, ETA[1]; Dhalia, R[1].
1- Instituto Aggeu Magalhães (IAM) – FIOCRUZ/PE. 2- Instituto Oswaldo Cruz (IOC) - FIOCRUZ

Hepatitis A represents the main type of viral acute hepatitis around the world remaining as an important public health problem. Serological diagnosis is required to make differentiation from other viral hepatitis and detect HAV-specific antibodies. Commercially available assays use viral particles as antigens, which are characterized by slow growth in cell culture, without cytopathic effect and low viral load. The aim of this work was to express, purify and evaluate the capacity of recombinant structural proteins VP1 and

VP3 to recognize anti-HAV antibodies from serum samples. Sequences were optimized using the genetic algorithm of the LETO 1.0® program and then were cloned into pRSETA bacterial expression vector, generating pRSETA_VP1 and pRSETA_VP3 plasmids to express respective fusion proteins with N-terminal poli-histidine tag. Under standard conditions, cells were induced at the early-exponential phase of growth adding IPTG at 0.5mM followed by protein purification by affinity chromatography in nickel resin column. Antigenicity was tested by enzyme linked immunosorbent assay (ELISA) to detect IgG anti-HAV. In brief, microtiter plates were coated with 5µg/ml of VP1/VP3 for 18h then they were incubated with 15 negative and 15 positive samples previously tested for anti-HAV. The cut-off was determined from the ROC curves calculated with the MedCalc® statistical program. The optimization process considerably improved sequence parameters such as codon usage, secondary structure, GC contents and restriction sites in order to obtain the better expression rate as possible. Both VP1 and VP3 had an insoluble form upon expression and were subjected to solubilization with urea to a final concentration of 2M. The ROC analysis showed a cut-off value of 0.406 together with a specificity of 86,7% and a sensitivity of 53,3% for VP1, while the assay for plate coated with VP3 presented a cut-off value of 0.485, specificity of 80% and sensitivity of 73,3%. Despite the ELISA needs to be optimized, the preliminary results indicate that proteins represents promising antigens for application in diagnostic kits. **E-mail:** renatosousa@cpqam.fiocruz.br

Hepatitis008- **Epidemiological profile of cases of hepatitis B and C among residents of the State of São Paulo, Brazil, from 2000 to 2011**

Coelho DM; Farias N; Souza I. Binelli C; Oliveira UB.
Epidemiological Surveillance Center "Prof. Alexandre Vranjac". Disease Control Coordination. State Secretary of Health of São Paulo. São Paulo, Brazil.

Introduction: Currently, there are no population-based studies to characterize the population with hepatitis B or C in the State of Sao Paulo. Data from Official Information Systems are important sources for knowledge of the problem and monitoring of viral hepatitis. The aim of this study was to analyze the evolution and characteristics of people with hepatitis B or C among residents in the State of São Paulo, from the records in the database of viral hepatitis in the state. Material and Methods: We conducted a study using secondary data reported to the National Databank of Major Causes of Morbidity of the State of Sao Paulo in the period 2000 to 2011. The hepatitis B cases were diagnosed by serology markers for HBsAg or Anti-HBc IgM or AgHbe. The cases of hepatitis C were diagnosed by anti-HCV ELISA (enzyme-linked immunosorbent assay), confirmed by the presence of HCV RNA using reverse transcription-polymerase chain reaction(RT-PCR). Results: The number of confirmed cases and recorded in the information system has increased over time, reaching, in 2011, 3,740 cases of hepatitis B and 5,404 cases of hepatitis C. Among the total number of cases of hepatitis B in the period (n = 28,914), the majority occurred in men aged 30 to 39 years (15%). Of all cases of hepatitis C (n = 50,373), the higher frequency was observed in men 40 to 49 years (21%). About 9% of hepatitis B cases were seropositive for HIV, more frequently in males (86%, 1,414). The co-infection HCV / HIV accounted for 12% of cases of hepatitis C, with greater frequency among men (72%; 2,758). The main source of transmission of infection by hepatitis B virus was sexual (56%), followed by drug abuse (7%) and transfusion (6%). In chronic hepatitis C, illicit drugs has been the main source (34%), followed by the transfusion (23%) and sexual transmission (18%).Conclusions: The main results coincide with those found in developed countries. These findings are important to implement prevention programs targeted to populations most vulnerable to infection with HBV and HCV. **E-mail:** dmcoelho@saude.sp.gov.br

Hepatitis009- **Performance of hepatitis C and hepatitis B virus rapid tests among reactive samples for other viral and protozoan infections**

Scalioni, L.P.[1]; Cruz, H.M.[1]; Miguel, J.C.[1]; Silva, E.F.[1]; Oliveira, J.C.[1]; Santos, F.B.[2]; Suárez-Mutis M.C.[3]; Pilotto, J.H.[4]; Lampe, E.[1]; Villar, L.M.[1]
[1]**Laboratorio de Hepatites Virais, Instituto Oswaldo Cruz – Fiocruz/RJ;** [2]**Laboratorio de Flavivirus, Instituto Oswaldo Cruz – Fiocruz/RJ;** [3]**Laboratório de Doenças Parasitárias, Instituto Oswaldo Cruz – Fiocruz/RJ;** [4]**Laboratório de AIDS e Imunologia Molecular, Instituto Oswaldo Cruz – Fiocruz/RJ**

Introduction: Hepatitis C virus (HCV) and hepatitis B virus (HBV) infection is diagnosed using enzyme immunoassays (EIA) and molecular tests, but rapid assays based on the immunochromatographic method could be useful in emergency situations where there is need to release the results in a short period of time. Little is known about the performance of rapid tests in the presence of other infections. So this study aims to evaluate the performance of anti-HCV and HBsAg rapid tests among sera samples reactive for other viral and protozoan infections in order to verify if there is some interference. **Materials and Methods:** Reactive sera samples for dengue virus (DENV) (n=35), human immunodeficiency virus (HIV) (n=30), *Plasmodium vivax* (n=17) and *Treponema pallidum* (n=20 to HCV tests and n=26 to HBV tests) were obtained from Reference Centers located at Rio de Janeiro, Brazil and tested for anti-HCV and HBsAg detection using commercial EIAs:HCVab (Radim, Italy) and ETI-MAK-4 (Diasorin, Italy). Rapid tests evaluated were: HCV Rapid Test (Bioeasy, Brazil), Imuno-Rápido HCV (*Wama*Diagnóstica, Brazil), HBsAgVikia (Biomerieux, France) and Imuno-RápidoHBsAg (*Wama*Diagnóstica). **Results:** Concordant results among EIA and Rapid Test for anti-HCV vary from 82.35% to 100% using Wama assay and 94.11% to 100% using Bioeasy assay. Regarding HBsAg, concordant results varies from 80% to 100% using Wama assay and 93.33% to 100% using Biomerieux assay. False negative results for anti-HCV were obtained for 3 samples using HCV Rapid Test [DENV (n=1), HIV (n=1) and *P. vivax* (n=1)] and 2 samples using Imuno-Rápido HCV [DENV (n=1), HIV (n=1)]. Furthermore, 3 false positive anti-HCV results were also obtained among reactive *P. vivax* samples using Imuno-Rápido HCV. For HBsAg, 3 false negative (one in Wama test and two in Biomerieux test) and one false positive results (Wama assay) were obtained among HIV reactive samples. No discordant results were obtained among *T. pallidum* reactive samples. **Main conclusions:** Low reactivity for HBV and HCV rapid tests was observed among reactive samples for Dengue, HIV, *P. vivax* or *T. pallidum* in this study showing that these assays can be used among individuals infected with other virus or protozoan infections. **E-mail:** le_scali@hotmail.com, lescali@ioc.fiocruz.br

Hepatitis010- **Validation of a method "in house" quantification-based Real-Time PCR for hepatitis B: application to the evaluation of the infection**

Alcione de O. dos Santos[1,2], Larissa D. Nicolete[1], Luan Felipo Botelho[1,2],Mayara Pereira[1], Juan Miguel V. Salcedo[1,2] e Deusilene S. Vieira[1,2].
1- IPEPATRO - Instituto de Pesquisa em Patologias Tropicais de RO/FIOCRUZ-RO – Fundação Oswaldo Cruz RO, 2-CEPEM - Centro de Pesquisa em Medicina Tropical de RO

Introduction: According to World Health Organization, two billion people worldwide have been infected by Hepatitis B Virus (HBV); 400 million of them developed chronic liver disease. The measure of viral load is indispensable for fowling up patients under medical treatment. **Objective:** For this reason, the aim of this study is develop an in house viral quantification, using Real Time PCR, for chronic HBV patients in occidental Amazonic region. **Methods:** A precore fragment with 109 bp was cloned and serial diluted to standard curve construction. The calibration of the HBV - DNA values was performed against OptiQuant® HBV-DNA Quantification Panel, Acrometrix Europe B.V.). Specifically, serial dilutions of the standard ranging from $2x10^2$ to $2·10^6$ were tested. Based on a linear regression, a conversion formula was calculated for the in -house measurements (copies/mL) to the international standard units (IU/mL). Pearson' s correlation coefficient was performed by GraphPad Prism 5.0 and it used to assess the strength of the linear association between the log10 -transformed values of the estimated (copies/mL) versus the expected values (IU/mL) and also between HBV-DNA quantifications using the in house real-time PCR assays. The results demonstrated a correlation between Acrometrix kit and in house assay (r^2=0,996 and p<0,0001). The fitted regression lines between IU/mL and copies/m L was given by the following equation: [Log(IU/ml)= - 0,5249 + 0,6618Log10(copies/mL)], suggesting that in our setting, 1UI/ml =0,79 Log10 copies/ml or 6,21 copies/ml. These qualitative findings suggest that the new version of the in-house assay performed equally well as the commercially available kit. **Main conclusions:** Nowadays, the viral load tests, performed in Rondonia state, can be accessed by the doctor between 60 and 90 days after patient´s blood collection, which implies a great relapsed time. The method used in this study suggests a lower final cost. In the state of Rondonia, and others states of Brazil, such quantification may prove useful in monitoring patients undergoing therapy. The ideal follow-up of a patient with chronic HBV implies quantitative molecular tests, as Real time PCR. Consequently, the validation of this in house

assay is the initial step for implementing on the laboratory´s routine. A lower cost and less time for release of patient´s results can be very helpful for clinical implications. **E-mail:** deusilene@ipepatro.org.br

Hepatitis011- **Hepatitis B and D serum markers prevalence among employees of Hospital das Clínicas do Acre – A project proposal**

Dattoli VCC[1,3], de Macedo LF[1,3], Teixeira RB[1,3], Pereira SBAV[1,3], Barbosa GV, Moraes FHP[1,3], Dantas TO[2,3]

[1] – Medical school student - Universidade Federal do Acre; [2] – Professor in Infectious Diseases - Universidade Federal do Acre; [3] – Liga Academica de Infectologia e Medicina Tropical do Acre- Brazil - Address: BR 364, Km 04 - Distrito industrial CEP: 69915-900 Rio Branco - Acre

Introduction: Population living in basin amazon region presents one of the highest incidence rates of Hepatitis B virus (HVB) around the world. Showing high percentage of Anti-HBc among those subjects. Indeed, hepatitis B infection is required to a Hepatitis D virus (HDV) infection. The co-infection or super infection HBV/HDV is associated with severe hepatic illness in this region. Health care workers are high committed by this infection, once the permanent contact with body fluids represents strong risk factor for theses virus. Prevalence among health professional had been 10 folds higher than general population. The direct contact with patients, blood and others body fluids manipulation, years of work and the non-use habit of personal protection equipment have represent the main risk factors. **Material and methods**: between May and June 2012 a transversal study will be developed. One thousand employees of "Hospital das Clinicas do Acre" will compose the population study. All employees will receive an institutional email informing about the project. Then our staff will visit each hospital's sector arranging the activities that includes singing statement, blood collection and questionnaires appliance. All subjects will be submitted to blood collection for HBsAg, Anti-HBs, Anti-HBc and Anti-HDV serology by rapid-Test and confirmed by Indirect ELISA. Information concerning risk factors will be accessed trough questionnaires application. **Expected results**: It has been expected a high prevalence of Anti-HBc marker, with higher prevalence among health workers in comparison with cleanness and secretary staff. The anti-HBc frequency has been supposed to be higher even than Acre state country-side counties, which has shown over 60% of this markers, once the "Hospital das Clinicas do Estado do Acre" is the reference unit for people to investigate and treat for Viral hepatites from all over the Acre population. **E-mail:** vdattoli@hotmail.com

Hepatitis012- **Hepatitis B in Amazon: Genotype and reserach of mutations in isolated villages in the western Brazilian Amazon**

Oliveira, CMC, Castilho, MC, Gimaque, JBL, Braga, WSM
Fundação de Medicina Tropical Dr. Heitor Vieira Dourado/ Gerencia de Virologia

Introduction: Studies conducted in the city of Lábrea, Amazonas state, show a pattern of moderate endemicity (3.3%) prevalence of HBV surface antigen (HBsAg) against 4.3% prevalence among healthy individuals the countryside. Currently, it is evident an heterogeneous pattern of prevalence of HBsAg in these communities ranging from 0 to 37.2%. **Purpose** research mutations genotype resistance to drugs used to treat HBV infection among individuals in a rural community in the municipality of Labrea. **Materials and Methods:** the Pres and S gene was amplified by polymerase chain reaction (PCR). Were the samples sequenced using the Big Dye Terminator v3.1 Cycle Sequencing Kit, According to the manufacturer's instructions. The reactions were performed in ABI PRISM 3130 XL Genetic Analyzer (Applied Biosystems). The sequences were aligned using the BioEdit Sequence Alignment Edit. The phylogenetic relationship of the S gene fragment sequences was determined using Mega version 5.0. The mutation was established in HepSeq database. **Results:** phylogenetic analysis classified the isolates 124 and 138 LBra LBra genotypes D and F, respectively. The alignment of the sequences 124 and 138 and references X65257 and X69798 showed identity ID = 99.46% and 98.54% respectively. The average nucleotide divergence intra-genotype D was 98.0% for 124LBra (st-dev.: 0.80) and 98.04% (st dev.: 0.65) for the sequence 138LBra genotype F. Regarding the analysis of mutations in the sequence 124LBra, we detected the polymorphic A21S, S57P, and F122L Q130P, the sequence was identified 138 LBra mutation of position 184 (T184L) related to the use of entecavir, but was not identified their corresponding

positions in the M204V/I and L180M. Besides the 184 mutation, identified the following polymorphic sites: M129L, S135T, S143T, G152A, R153Q, L155T, H156S, L157M, Y158F, H160C, R167K, K168E, I169N, P170T, M171L, G172W, L175A, S176Q, F178V, A181F, Q182S, F183L, S185G, C188G, V191G, R192G, A194L. Suggesting high polymorphism in this strain. **E-mail:** cmaraoliveira.cmc@gmail.com

Hepatitis013- **High prevalence of hepatitis B virus genotype F2a in remote villages of the western Brazilian Amazon**

Márcia da C. Castilho[1,2]; Cintia Mara C. de Oliveira[1,2]; João Bosco de L. Gimaque[1]; Sanmile C.N. Holanda[2], Heline L. Vasconcelos[1]; Wornei S.M. Braga[1,2]
[1]Gerência de Virologia/Fundação de Medicina Tropical Dr Heitor Vieira Dourado (FMT-HVD), Manaus, Amazonas, Brazil; [2]Universidade do Estado do Amazonas (UEA), Manaus, Amazonas, Brazil.

Introduction: Hepatitis B virus (HBV) belongs to the *Hepadnaviridae* family and the *Orthohepdnavirus* gender. Ten genotypes (A to J) of the HBV strain are known. These are further subdivided in subgenotypes (A1-A6; B1-B9; C1-C16; D1-D7; F1/F1a/F1b, F2/F2a/F2b, F3, F4) and have distinct geographical distribution in different populations. About two billion people worldwide are infected with HBV and 350 million are chronic carriers. The Amazon Basin region (northern parts of Brazil, Colombia, Venezuela and Peru) are considered regions with high prevalence of HBV infection. The aim of this study was to characterize the HBV genotypes in an endemic area of the Western Brazilian Amazon. **Material and Methods:** We conducted a molecular epidemiological study of HBV in individuals positive for the HBV surface antigen (HBsAg). The selected samples were collected during the course of serological surveys of HBV infection. From June to July 2008, we evaluated all of the individuals of three riverine communities of Lábrea County (Madeirinho, Samaúma and Praia do Buraco), of the Amazonas State. Of the 225 individuals studied 23 (10.2%) were chronic carriers (HBsAg-positive). Fifteen samples were amplified by PCR for a HBV DNA fragment of ~680bp comprising part of S gene. These PCR products were purified and sequenced. Nucleotide sequences were edited and aligned using a BioEdit Sequence Alignment Editor, version 7.0.9.0.18. The HBV genotype was determined using NCBI tool .The phylogenetic relationship of the S gene fragment sequences was determined using Molecular Evolutionary Genetics Analysis (MEGA), version 5.19 The Tamura–Nei algorithm was used, employing the neighbor–joining method. The phylogenetic groups were evaluated by the bootstrap test (1,000 bootstrap replicates). **Results:** Of the 15 samples sequenced, 14 were of genotype HBV/F and 1 of genotype HBV/D. All of the genotype F sequences in this study belonged to subgenotype F2a. **Conclusions:** Genotype F2a appears to be the dominant genotype in isolated villages of the Amazon confirming other Brazilian and Venezuelan studies. This may relate to the highly Amerindians background in this specific population. **Financial support**: FAPEAM. **E-mail:** mcastilho@fmt.am.gov.br

Hepatitis014- **interferon-alpha plus Entecavir in patients from Western Treatment of chronic hepatitis delta with pegylated Amazon Region, Brazil - Week 12 Interim Analysis**

Borzacov, L.M[1], Vieira, D.S[2,3], Botelho, L.F[2,3], Santos, A.O[2,3], Villalobos-Salcedo, J.M[1,3].
[1]Ambulatório de Hepatites Virais and [2]Laboratório de Virologia Molecular - Centro de Pesquisa em Medicina Tropical (CEPEM), [3]Instituto de Pesquisa em Patologias Tropicais –IPEPATRO (Fiocruz-Rondônia), Porto Velho, Rondônia, Brazil.

Background and aims: The hepatitis delta virus (HDV) is a defective RNA virus that needs Hepatitis B virus (HBV) envelope proteins for encapsidation and dissemination and cannot replicate without help of HBV. In Brazil, endemic areas correspond to Western Amazon States, including Rondonia state. Preliminary data show that Hepatitis D in Brazil seems to be more severe as compared to other regions; however there are few studies to reinforce this observational evidence. In other Amazonian countries, was described HDV genotypes I and III, but it is mainly genotype III that seems to cause severe hepatitis. Hepatitis D is the only form of viral hepatitis for which there is not an established treatment; however several therapeutic strategies can be employed. The current study aims to report preliminary results for clinical trial using pegylated interferon-alpha plus Entecavir in patients followed in a Hepatology outpatient

service in Brazilian Amazon Basin. **Methods**: Patients with chronic HDV, defined as anti-HD IgG positive and HDV-RNA positive, were prospectively included for treatment with 180□g PEG-IFN-a 2a plus Entecavir 0.5mg day for 48 weeks and followed for 24 weeks. Investigations included baseline level serum HBV-DNA and HDV-RNA and kinetic for 4, 12, 24 and 48 week, determination of HBV and HDV genotypes and histological evaluation. HBV-DNA level was assessed by real-time polymerase chain reaction assay, HDV-RNA by reverse transcriptase-polymerase chain reaction assay (RT-PCR) and serum IgG anti-HD by enzyme-linked immunosorbent assay (Sorin Biomedica). This is week-12 interim analysis. **Results:** Thirty patients were screened and enrolled. 28% white, 5% black, and 67% Amerindians; 56% female; mean age 45.3 years; 61% HBV-DNA positive with mean baseline 623 UI/mL and HDV-RNA baseline was 31.734 copies/mL. HDV genotype III was detected in all patients. Fibrosis score none to mild A1 22% F1 39%; moderate A2 45% F2 33% F3 17%; severe A3 33% F4 11%. All patients were positive HBV-DNA in 4-week including negative baseline patients. Eighteen patients completed 12-week of treatment and eighteen was HDV-RNA negative. **Conclusion**: Combined treatment with PEG-IFN-a 2a plus Entecavir, resulted in high early virologic response (EVR) rates in co-infected HBV/HDV patients with genotype III. **E-mail:**juanitto2001@yahoo.com.br.

Hepatitis015- **Behavior analyses of alanine transaminase during treatment for chronic hepatitis B with entecavir**

Nunes, P. H. T.[1]; Kippert, C. P.[1]; Kippert, J. P.[1]; Vilalobos-Salcedo, J. M.[1]; Pereira, D.B.[2]
[1]**Universidade Federal de Rondonia-UNIR ;** [2]**Centro de Pesquisas em Medicina Tropical –CEPEM (Fiocruz-Rondônia) Porto Velho, RO, Brazil**

Introduction: It is estimated that approximately 300 million people are carriers of hepatitis B virus (HBV) worldwide and 1 to 2 million deaths per year are credited to this agent. Laboratory evaluation of liver damage is possible through the transaminases, being the alanine aminotransferase (ALT) marker the most closely correlated with liver damage and a good predictor of liver inflammation triggered by HBV infection. In order to inhibit viral replication, entecavir (ETC) arises as an option in the pharmacological therapy against HBV, due to a potent antiviral effect, high genetic barrier, good tolerance and oral administration. **Material and Methods:** This is a retrospective and observational study in order to evaluate the behavior of ALT in patients with HBV treated with the antiviral entecavir. The population selected was patients followed at the hepatitis outpatient clinic of the Research Center in Tropical Medicine of Rondônia (CEPEM), that do not meet the exclusion criteria: HBeAg serology indeterminate, co-infected with hepatitis C or D. **Results:** 74 records were examined, of which 67 were included. The laboratory characterization indicates that before the treatment with ETC in the sample, the median levels of ALT were at 51 U/L, ie over the normal range (40 U/L). At this time only 34.3% (95% CI 23.2%-46.9%) had normal ALT levels, however, after 24 months of treatment this parameter reached 76,1% (95% CI 64.1%-85.7%). When stratifying the sample between HBeAg positive (30 patients) and negative (38 patients) aiming to compare therapeutic effectiveness after two years, it is observed that HBeAg positive achieved 69% (95% CI 49.2%-84.7%) ALT levels below 40 U/L and among HBeAg negative, this percentage was 81.6% (95% CI 65.7%-92.3%). The normalization of the median values for each of these groups was reached at 6 months for HBeAg negative, and at 11 months for the positive. **Main Conclusions:** ETC proved to be an antiviral able to normalize the long-term ALT values, doubling the number of patients reaching normal levels after 2 years of treatment. Succeeded in reducing the transaminase values regardless of the presence or absence of HBeAg, but had a particularly prominent effect in patients with HBeAg negative, indicating its ability to reduce the insult caused by the virus and to retrench the consequences of chronic damage to the liver. Further studies may deepen the knowledge on entecavir, which stands out as first-line monotherapy for HBV. **E-mail:** dheliopereira@yahoo.com.br

Hepatitis016- **Vaccination coverage and family income in the study of hepatitis B**

Maia RE[1]; Donato, ST[2]
[1]**:Academic of Medicine, Federal University of Campina Grande, Campina Grande – Paraíba;** [2]**:Professor Master Medical Microbiology (MSc) - Federal University of Campina Grande, Campina Grande - Paraíba**

Introduction: Viral hepatitis are infectious diseases caused by different etiologic agents that can be hepatotropic (Hepatitis viruses - HV) or not (Dengue, Herpes zoster, cytomegalovirus). The distribution of viral hepatitis is universal, with epidemiological, clinical and laboratory distinct, and the Hepatitis B and C viruses (HBV, HCV) are the most hepatotoxic, with potential evolution to cirrhosis and hepatocellular carcinoma. The vaccine against hepatitis B (HB) already exists and is part of the national immunization schedule consisting of three doses. HBV can be transmitted through sexual, parenteral, percutaneous and vertical. Data from blood banks in Latin America revealed that carriers of HBV exceed 6 million, and Brazil is one that presents highly endemic areas. The Ministry of Health estimates that in Brazil at least 15% of the population already in contact with HBV and that 1% of the population have chronic forms. The population can be studied according to vaccination history in order to set an alert to surveillance. **Material and Methods:** Application of a questionnaire to the population served by the Basic Health Unit Family Luiz Gomes de Andrade, the district Tambor - Campina Grande-PB, between November and December 2011, with a cross-sectional observational study using EPI-Info 6.0 for analysis data. **Results:** In the five micro-areas served, 299 individuals underwent a questionnaire. 32% (n = 96) reported no history or HB vaccine has not completed correctly the number of vaccines for full immunization. This percentage varied with the microarea I-47.7% (n = 21) II- 31.5% (n = 23), III-15: 9% (n = 11), IV-39, 3 % (n = 22) V-32, 8% (n = 19). In this population, family income was less than a minimum wage of 61.99% (n = 186) and was between two salaries in 14.33% (n = 46). **Main conclusions:** The fact that there are people still without adequate coverage in areas of low socioeconomic status, when the vaccine is free, suggests possible actions that should be prioritized in the work of prevention and health promotion, how to reach uncovered areas and invest in education health in low-income populations. Epidemiological surveillance is an essential tool for determining the risk profile of the infection and infected patients, allowing the implementation of prevention and control of viral hepatitis. Urge better collection of epidemiological information to improve the process of investigating and reporting in an attempt to promote health and prevent the complications of chronic conditions. **E-mail:**silviatdonato@gmail.com

Hepatitis017- **Vaccination status of health care workers and graduate students about hepatite B vacine**

Oliveira, C.M.A.[1]; Chaves, T.S.S[1]; Nonoato, N.S.[1]; Lucas, L.O.A.[2]; Pereira, S.F.[3]
1. Evandro Chagas Institute/Human Resourses Services/Workers Health Sector, Belém-Pa. 2. Paraense Broadcasting Foundation, Belém-Pa; 3. National Immunization Program/SVS/MS, Brasília-DF. Brazil.

Introduction: To promote the health and to protect the health care workers (HCW) integrity at them workplace is a common right, so, preventive measures are essentials for the health services and for our daily practices, demanding universal distribution, especially regarding the most basic such as vaccination. **Objectives:** Describe the experiment developed with workers from the Evandro Chagas Institute and graduate students from the Federal Institute of Pará, and analyze the vaccination status relative to the vaccination against hepatitis B. **Material and Methods:** This descriptive study was created with a quantitative data approach after the end of elaboration of the thesis for the master's degree and guidance for completion of course work, questionnaires were applied by interview, was realized retrospective survey of vaccination status and knowledge about the vaccine against hepatitis B, in Belém, Pará, Brazil. The project was accepted by Research Ethics Committee because involves humans. **Results:** Were interviewed 295 students; 54,6% were female; for received doses of vaccine against hepatitis B, 21,0% had already received the first dose, 13,9% the second, 7,8% the third and 57,3% had never been vaccinated; for the knowledge about the hepatitis B offered by the educational institution, 92,2% claimed not get any knowledge across the disciplines during the classes; among the main reasons for not vaccinating, 39,1% of students claimed not to know it's importance; from 528 health care workers who participated in the survey, 54,2% were male, 14,2% received the first dose, 9,7% only the till the second; 31,6% the third dose, therefore being vaccinated, and 44,5% didn't receive any dose of the vaccine. **Conclusion:** The immunity is long lasting after post- infection seroconversion or to be completed the post- vaccination schedule against hepatitis B, the vaccine induces protective levels about 90% of healthy adults vaccinated. The study's results shows the necessity to seek partnerships with managers and staff in order to have professionals and future professionals more aware and protected, which shows that improvements will be effected successfully only if all involved individuals participates; institutions must to direct their attentions for educational actions, creating a comprehensive vision and awareness by the

workers and students to the importance of protection to keep the health and quality of life. **E-mail**: candidaoliveira@iec.pa.gov.br

Hepatitis018- **Epidemiological analysis and genotype prevalence of HCV in riparian communities residents in lake of Tucuruí hydroelectric, state of Pará**

[1]Almeida, MKC; [1]Santos, KN; [1]Fecury, AA;[1]Silva, AM, [2]Aarão, TLS; [2]Fuzzi, HT; [2]Quaresma, JAS, [1]Martins, LC.
[1] **Clinical Pathology Laboratory, Center for Tropical Medicine, [2] Immunopathology Laboratory, Center for Tropical Medicine, Federal University of Pará, Belém, Brazil.**

Introduction: The genome of Hepatitis C has distinct patterns of variability and heterogeneity being classified into six major genotypes (1, 2, 3, 4, 5 and 6). Estimates indicate that there are 170 million people infected with HCV worldwide. In Brazil, the exact prevalence is unknown, but reports suggest it is between 1% to 2% of the general population and that different genotypes of HCV are found in distinct geographic distribution, with a predominance of genotypes 1, 2 and 3 in the world and Brazil following the same distribution. Studies analyzing the Brazilian regions showed a seroprevalence of 0.9% to 2.4% for the Northern Region. Bathed by the Tocantins River, the city of Tucuruí hosts the Tucuruí Hydroelectric. With the implementation of the dam, formed a huge lake with an area of approximately 2875km^2 composed of about 1.660 islands belonging to Eletronorte, where about 6.500 families reside. The riparians, local habitants, have the economic base in the extraction and marketing of regional fruits and fishing. These locations in the Amazon region are difficult to access, some practically isolated, where the inhabitants live in precarious conditions, without basic health care and in which had not been done any survey on the prevalence of viral hepatitis until the time of this research. **Materials and Methods**: The riverside communities studied were Alcobaça and Purucurí-Ararão Reservations, both like sustainable development, 668 randomly selected residents. Blood samples were collected to investigate the serological marker anti-HCV using enzyme immunoassay. Patients were tested serologically reactive molecular biology (RT-PCR and RFLP) for the detection of viral genotype. The study was approved by the Ethics Committee in Research of Center for Tropical Medicine. **Results**: Of the 668 individuals analyzed, we observed a predominance of females (61.38%) than males (38.62%). The average age was 38.78 years (18-83 years). Relating the marital status 76.50% (511/668) are married or have a stable relation. The majority of the population is fishermen (55.10%) and domestic (21.40%), with a low educational level, showed in 68.71% that had incomplete primary education and 17.06% are illiterate, 56.44% reported a family income of a minimum wage. It was observed that the majority using river water (78%) and have untreated sewer (74%). It was observed that 2.24% (15/668) were positive for anti-HCV research and that 66.67% were females aged 35-44 years. Viral RNA was detected in 67% (10/15) of these, 70% (7/10) had genotype 1 and 30% (3/10) genotype 3. Analyzing the risk factors, individuals who reported drug use, transfusion or received have been hospitalized have twice as likely to acquire HCV. **Conclusions**: We concluded that this region have an intermediate level of endemicity for HCV infection and the genotype 1 is the most the prevalent followed by genotype 3, like in other regions in Brazil. **E-mail:** mkca02@yahoo.com.br

Hepatitis019- **Importance of the choice of hepatitis C virus (HCV) RNA quantification methods for diagnosis and management of infection**

Portilho, M.M.[1]; Martins, P.P.[1]; Souza, P.S.F.[1]; Fernandes, C.A.[1,2]; Lewis-ximenes, L.L.[1]; Lampe, E.[1]; Villar, L.M.[1]
[1]**Viral Hepatitis Laboratory, Oswaldo Cruz Institute, FIOCRUZ, Rio de Janeiro – Brazil. [2] Noel Nutels Laboratory, Public Health Laboratory of Rio de Janeiro, Rio de Janeiro-Brazil.**

Introduction: HCV RNA quantification is an important tool for diagnosis and monitoring of antiviral treatment. Although several commercial methods are available, there is still some questions about the performance of them. This study was developed to identify the perfomance of three quantitative methods among sera samples of HCV infected individuals. **Materials and Methods:** Sera samples were obtained from 30 anti-HCV reactive individuals referred at Viral Hepatitis Laboratory in Rio de Janeiro, 24 of them donate one single sample (transversal study) and 6 of them donate serial samples (n=44) during the

course of HCV infection (prospective study). Individuals from prospective study donated sera samples from 2nd to 144th week after the onset of symptoms (jaundice, pale stools or dark urine). Three methods that amplify 5´non coding region of HCV genome were tested: Cobas Amplicor HCV Monitor v2.0 (Roche Diagnostics, France), VERSANT® HCV RNA 3.0 Assay (Siemens Healthcare Diagnostics, USA) and in house TaqMan real Time PCR. **Results:** Sixty-eight samples were tested by the three methods, and concordant results were observed among 62 samples, being 32 HCV RNA quantified and 30 HCV RNA undetectable by all methods. HCV viral load varied from log 3.39 to 7.71 copies/mL using Cobas Amplicor HCV Monitor (median log 6.39 copies/mL), log 3.79 to 7.21 copies/mL using VERSANT® HCV RNA (median log 5.10 copies/mL), and log 2.07 to 8.35 copies/mL using in house real time PCR (median log 6.09 copies/mL). A significant correlation was obtained (p=0.01) among the three methods, and no difference was observed between viral load and previous antiviral treatment or HCV genotype (1 or 3) in the transversal study. In prospective study, 2 patients (P1 and P2) had samples with discorcordant results among the methods tested. P1 donated 5 serial samples whose 3rd and 5th sample were reactive only by Cobas Monutor. P2 donated 10 samples where 7th and 10th sample were reactive only by Cobas Monitor and 9th sample was reactive by Cobas Amplicor HCV Monitor and Versant HCV RNA. **Main conclusions:** These results showed that all methods can be used for HCV RNA quantification to establish HCV diagnosis and treatment, but same method should be employed to monitore the course of infection or treatment response. Furthermore, in house TaqMan real time PCR developed in this study demonstrates a good correlation to commercial tests and provides evidence to be suitable for HCV RNA quantification, especially among limited resource laboratories. **E-mail:** moyramp@ioc.fiocruz.br

Hepatitis020- **Active search of infected virus "C" by blood centers**

Oliveira, EMC; Lopes PR; Fontel AT; Dias KAG; Santos, JAB; Brito, EB; Caricio, LC; Costa, CA; Crescente JAB*
*School of Medicine, Nucleus of Tropical Medicine, Federal University of Pará, Belém-Pará-Brazil

Introduction: Whereas public actions to identify new cases, as the CTA screening for hepatitis C, not yet implemented in Belem, the main active search in the discovery of new cases has been the State Hemocenter since by combining educational activities serological screening, can lead to perceived exposure to the virus by patients for not knowing that such a condition, aggravate the transmission chain and put at risk their health by slow progression of chronic liver disease. At Belem, based on prevalence among donors is estimated that 18,000 individuals ignore the fact that they are carriers of the virus C. By rule out or confirm the findings of screening, recognizing genotypes and liver damage staging of unsuitable donors treated in the ambulatory of Nucleus of Tropical Medicine try to repair a flaw in the public health system in the city of Belem. **Material and Methods:** Were evaluated from January 2007 to December 2011, 280 people of both sexes, unsuitable donors with suspected C virus infection, tested for molecular biology(PCR) for confirmation, recognition of the genotype, staging and preparation for percutaneous liver biopsy plan follow-up. **Results:** In the 280 studied, showed positive immunological tests 81.4% (228) and 18.6 (52) indeterminate. Of the latter, 21 cases have tested negative on retesting. 129 were confirmed cases of HCV molecular biology (HCV-RNA) and 140 results were undetectable for HCV. Among the confirmed cases, 30.3% were between 18-39 years and 68.7% were over 40 years. Regarding gender, 65.6% were men and 34.4% were women. We genotyped 86 cases, 79 are recognized as genotype-1 and only 8 cases as genotype-3. Histopathological findings of liver tissue, collected by percutaneous biopsy performed in 34 patients were classified according to the METAVIR in 8 cases at an early stage (A1F0, A1F1), 19 in moderate stage (A0F2, A1F2, A2F1 and A2F2) and 7-stage advanced (A2F3, A3F3 and A3F4). **Main Conclusions:** The results demonstrate the need for the program management levels of hepatitis sensitize to expand the screening tests as we continue to lose the opportunity to diagnose new cases of hepatitis C in young patients, more quickly refer to specialist services to lessen the hardships of a silent chronic infection. **E-mail:** carauco@gmail.com

Hepatitis021- **No association between HCV infection, hepatitis C progression and _MASP2_ polymorphisms**

Caldeira, P; Alves Pedroso, ML; Boldt, ABW; Messias-Reason, IJT.
Clinical Hospital - HC / Universidade Federal do Paraná - UFPR, Curitiba, Brazil.

Introduction: The hepatitis C virus (HCV) infects approximately 130 million people in the word. It is estimated that approximately 15% of infected individuals eliminate the virus spontaneously, 25% develop clinical lighter and 60% develop a chronic and progressive form. Complement is activated by the lectin pathway, if sugar or acetylated moieties associated with pathogens are recognized by mannose binding lectin or ficolines, interacting further with the MBL associated serine proteases (MASP-1 and MASP-2). Once activated, MASP-2 leads to pathogen opsonization for phagocytosis, as well as its destruction by the lytic complex. Certain polymorphisms of the _MASP2_ gene are associated with decreased serum levels and impaired function. In this study, we aimed to verify a possible association between the _MASP2_ polymorphism and susceptibility to HCV infection and disease progression. **Material and Methods:** Whole blood DNA was extracted and the polymorphisms rs72550870 (_p.D120G_, associated with _MASP2_ deficiency), rs2273344 and rs9430347 (intronic variants flanking the alternative exon 5 of MAp19), investigated by multiplex sequence-specific PCR in 67 HCV patients (41.8% female, 58.2% male; mean age 55.9 ± 4.8 years; 98.5% Euro-Brazilian and 1.5% Afro-Brazilian; 41.8%, 49.3% and 1.5% infected by HCV genotypes 1, 3 and 2, respectively; 46.3%, 32.8% and 20.9% with fibrosis stage 4, 3 and 2, respectively; 61.2% treated with interferon and 43.3% treated with pegylated interferon) and 333 healthy controls (35.4% female, 64.6% male; mean age 47.3 ± 10.6 years; 98.2% Euro-Brazilian and 1.8% Afro-Brazilian). **Results**: We found three haplotypes: _DAG_ (80-82% frequency in patients and controls, respectively)_, DGA_ (17-18%) and _GAG_ (1.6-1.7%)_. Allelic distributions were in Hardy and Weinberg equilibrium and did not differ between patients and controls, or between different fibrosis grades. **Conclusions**: At least for the investigated polymorphisms, we did not find any evidence for an association between _MASP2_ and HCV susceptibility and disease progression. These results should be confirmed using an increased sample size and extended _MASP2_ haplotypes. **Financial support:** CAPES. **E-mail:** iarareason@hc.ufpr.br

Hepatitis022- **Polymorphism analysis of gene promoter region of the interleukin 18 (-137 G/C AND -607 C/A) I patients with hepatitis C virus in Belém – PA**

[1]Santos, KN; [1]Andrade, R; [1]Marinho, A; [1]Almeida, MKC; [1]Fecury, AA; [1]Martins, LC
[1] **Clinical Pathology Laboratory, Center of Tropical Medicine. Federal University of Pará, Belém, Brazil.**

Introduction: Considered a public health problem, the infection for Hepatitis C Virus (HCV) has been recognized as a major cause of chronic liver disease worldwide and can lead to severe clinical manifestations, such as fibrosis, cirrhosis and hepatocellular carcinoma (HCC). Cytokines have a vital role in the differentiation, maturation, functional activation and regulation of immune cells that control of HCV clearance or persistence. Host genetic factors have been implicated in the persistence of HCV infection. Some studies have shown that two single nucleotide polymorphisms at position -607 C/A (rs1946518) and -137 G/C (rs187238) in the promoter region of the gene for IL-18 can modulate the expression and protein levels of this cytokine, influencing in the evolution of HCV infection, being associated with delayed viral clearance and persistence of the disease. This study aimed to analyze the frequency of polymorphisms in the promoter region of IL-18 gene at positions -137 G/C and -607 C/A in patients with HCV in the general population and in the city of Belém-PA, in from August 2011 to February 2012. **Materials and Methods**: Were collected blood samples from 152 individuals infected with HCV and 188 uninfected controls, both residents of the city of Belém-PA. The samples were subjected to RT-PCR technique (Reverse Transcriptase - PCR) to amplify and confirm the presence of viral RNA. Subsequently the samples were analyzed by RFLP-PCR (Restriction Fragment Length Polymorphism) for comparison of the polymorphism in the gene promoter region of IL-18, at positions -137 G/C and -607 A/C. **Results**: The results revealed no significant difference for IL-18 polymorphisms between the two groups (patients and controls). However, when divided between the sexes, men were significantly more heterozygous G/C (45.3%) and C/A (54.7%), to the positions -137 and -607, respectively, than in women (26.1% and

43.5%). In contrast, women showed a significant difference for the homozygous genotype G/G (39.1%) at position -137, and A/A (21.7%), position -607, relative to men (22.6% and 7.6%). **Conclusions**: The results showed evidence that among women, the significant presence of the polymorphism homozygous A/A at position -607 acts as a protective factor against HCV infection, since the genotype A/A (-607) in some studies has been related to liver disease and mild viral clearance. **Keywords**: HCV, polymorphism, interleukin 18. **E-mail:** caricio@ufpa.br

Hepatitis023- Presence of plus strand HCV-RNA in Peripheral blood mononuclear cell and serum as an indicator for relapse and resistance to interferon therapy in hepatitis C virus infected patients

Safieh Amini [1*], Seyed Moayed Alavian [2] , Ehsan Mostafavi [3], Rouhollah Vahabpour [1], Golnaz Bahramali [1], Mohammad Reza Aghasadeghi [1], Arash Arashkia [4] ,Sina Ghalamkari[5]
1. Hepatitis and AIDS Department, Pasteur Institute of Iran, Tehran, Iran. 2. Baqiyatallah Research Centre for Gastroenterology and Liver Diseases, Baqiyatallah. University of Medical Sciences and Tehran Hepatitis Centre, Tehran, Iran. 3. Department of Epidemiology, Pasteur Institute of Iran, Tehran, Iran. 4. Department of Virology, Pasteur Institute of Iran, Tehran, Iran. 5. Shahid Beheshti University of Medical Sciences, Tehran, Iran.

Introduction: The aim of our study was to analyse the association between the presence of positive/ negative strand HCVRNA in peripheral blood mononuclear cells (PBMCs), and serum at the end of Peg IFN /RBV therapy, with treatment response in HCV infected patients. **Material and Methods:** Forty three HCV infected patients who concluded 48 weeks of Peg IFN /RBV treatment, including 25 sustained virologic responders, 12 resistants and 6 relapsers conducted the study population. Positive/ negative strand HCVRNA was detected by RT-PCR in serum and PBMC. **Results:** The frequency of positive strand HCVRNA was significantly higher in PBMC and serum samples of relapsers and resistants, and this might have important implications in clinical practice and patient management. There was no correlation between presence of plus and minus strand HCVRNA with genotypes, except the fact that most of the patients having plus strand HCVRNA in PBMC (60%) and in serum (61.53%), belonged to genotype 1a. **Main Conclusions:** Presence of plus strand HCVRNA in PBMC and serum after termination of therapy is associated with viral relapse and resistance to IFN/RBV treatment in HCV infected patients. **Keywords:** Serum, PBMC**,** Strand-specific RNA, Peg/IFN/RBV therapy, relapsers, resistants, responders. **E-mail:** safiehamini@yahoo.com

Hepatitis024- Quantification of regulatory T cells and the correlation with hepatic fibrosis patterns found among patients with hepatitis C, schistosomiasis or co-infection.

Van-Lume, DSM[*1]; Souza, AI[1]; Castro, MCAB[1]; Pereira, VRA[1]; Moreira, RS[1]; Domingues, ALC[2]; Lopes, EPA[2]; Morais, CNL[1]; Montenegro, SML[1].
[1]Departament of Immunology, Aggeu Magalhães Research Center- Oswaldo Cruz Foundation, Recife, Pernambuco, Brazil, [2]Departament of Gatroenterology, Clinical Hospital, Federal University of Pernambuco, Recife, Pernambuco, Brazil.

Introduction: Currently, hepatitis C and schistosomiasis are some of the major public health problems in Brazil as well as worldwide. The main target of these two diseases is the liver tissue, and injuries tend to evolve to chronicity. In some regions of the world, these diseases can often be found in the same individual and may lead them to cirrhosis and hepatocellular carcinoma more quickly. It is believed that regulatory T cells are responsible to protect liver tissue damage caused by the strong cellular immune response. Therefore, our objective was to evaluate the presence of regulatory T cells (natural, induced and total) in patients with hepatitis C, hepatosplenic schistosomiasis and in the co-infection by flow cytometry and to correlate these results with the degree of fibrosis found in patients of the three groups. **Material and Methods:** Patients with hepatosplenic schistosomiasis, hepatitis C and co-infection, both sexes, aged up 18 to 65 years old, were selected from Clinical Hospital of Pernambuco and a blood sample was collected for PBMCs separation (Ficoll-Hypaque Method). The cells were labeled with anti-

CD4$^+$-APC, anti-CD25$^+$-FITC and anti-FOXP3$^+$-PE antibodies (BD-Biosciences) and the fluorescence samples were detected by BD FACScalibur flow cytometer. The analysis was performed by the CellQuest PRO software and the statistical methods utilized for comparison the quantities of regulatory T cells and liver fibrosis patterns in groups were Student t test and ANOVA, with p value <0,05. **Results:** From the immunological point of view, these cells are present in large amounts in diseases with less morbidity, as was observed in the group with hepatosplenic schistosomiasis when comparing the relative amount of regulatory T cells among the three groups of patients (p<0,05), which may indicate a protective effect of these cells. No differences was found when was compared the relative amount of regulatory T cells and the degree of hepatic fibrosis between the groups with hepatitis C and co-infected patients (p>0,05). However, when was evaluated for the pattern of fibrosis, was observed a higher relative amount of induced regulatory T cells in the group with advanced hepatosplenic schistosomiasis in comparison with co-infected group, with p<0,05. **Conclusion:** Despite these results, the higher quantities of regulatory T cells appear to be associated with less aggressive liver fibrosis patterns. However, further studies should be conducted to elucidate the role of these cells in front of these two diseases, both separately and together and if their presence may indicate a protective effect against liver tissue injuries observed in these pathologies. **Keywords:** Hepatitis C; Hepatosplenic schistosomiasis; Co-infection; Regulatory T cells. **E-mail:** vanlume@cpqam.fiocruz.br

Hepatitis025- **Evaluation the virologic response treatment of chronic hepatitis C in a service of public health**

Cerqueira, Hélvia Maia de Lima, Cerqueira, Erenilde Marques de
Universidade Estadual de Feira de Santana – UEFS , Núcleo de Pesquisa Integrada em Saúde Coletiva – NUPISC

Introduction: Viral hepatitis C is an important public health problem in Brazil and world. According to World Health Organization, with the development of laboratory techniques available since 1992, which allow a correct diagnosis made it possible to estimate that hepatitis C affects 3% of world population, about 200 million people (BRAZIL, 2005). **Objectives:** To evaluate the virologic response of patients who underwent treatment for chronic hepatitis C in a service public in the municipality of Feira de Santana, in the period 2007 to 2010; identify factors predictive of best response to treatment of chronic hepatitis C; characterize the profile of patients in relation to sociodemographic and epidemiological variables. **Material and Methods:** Cross-sectional study, retrospective approach in quantitative, exploratory and descriptive. Secondary data obtained from medical records of patients who underwent treatment for chronic hepatitis C in the municipality of Feira de Santana in the study period. We applied a form with questions containing variables socioeconomic, demographic, and epidemiological, treatment time, genotype, fibrosis, treatment used and response time sustained. The data were entered into the spreadsheet program Excel, and then exported to SPSS. The descriptive analysis included frequency distribution of the variables. We used measures of central tendency (mean and standard deviation). Approval by the CEP/ UEFS Protocol 019/2011. The study included 101 patients who underwent treatment with medication assisted in municipal service reference. The chosen treatment regimen for most patients, combination therapy was Pegylated Interferon + Ribavirin. Results: The age ranged from 26 to 72 years, the average being 55.2 (± 9.1). There was a predominance of males, aged over 40 years, genotype 1 (63.4%). The presence of co-morbidities was demonstrated in 34.7% (n = 35) patients and 3% (n = 3) have co-infection. The response at the end of treatment (RVFT) was observed in 60.4% (n = 61) of patients, these 66% (n = 35) were able Sustained Viral Response (SVR). In relation to the genus there is no difference between those obtained SVR (M = 68.5%, F = 60%). In terms of age, minors 40 years had a better response (75%) than those of other age groups. In relation to genotype, those with G2 reached 100% SVR; G3-66%, while the G1-61, 3% and G4 did not respond to treatment. Among patients with SVR, there was a predominance of patients with fibrosis F1 and F2. Conclusion: This study helped to affirm the effectiveness of treatment of hepatitis C in public health, when observed the ministerial guidelines of the Clinical Protocol and Therapeutic Guidelines Viral Hepatitis C. It also highlights that the medication assisted, allows reduction of costs related to assistance to infected patients. **E-mail:** helviamaial@hotmail.com

Hepatitis026- **Saliva samples can be used for detection of antibodies against Hepatitis C vIrus for epidemiological surveys?**

Cruz, H.M.[1]; Scalioni, L.P.[1]; Marques, V.A.[1]; do Ó, K.M.[2]; de Paula, V. S.[3]; Coimbra-Motta, A.R.C.[4]; Oliveira, J.C.[1]; Tourinho, R.S.[3]; Villela-Nogueira, C.A.[2]; Lewis-ximenes, L.L.[1]; Lampe, E.[1]; Villar, L.M.[1]
[1]**Viral Hepatitis Laboratory, Oswaldo Cruz Institue, FIOCRUZ, Rio de Janeiro – Brazil,** [2] **Clementino Fraga Filho Hospital, UFRJ, Rio de Janeiro- Brazil,** [3]**Laboratory of Technological Development in Virology, Oswaldo Cruz Institue, FIOCRUZ, Rio de Janeiro Brazil,** [4] **Departamento de Farmácia Bioquímica, UFMS, Campo Grande, MS, Brasil;**

Introduction: Traditionally, the detection of antibodies against Hepatitis C virus (anti-HCV) infection are done in sera samples using enzyme immunoassay (EIA). The use of alternative samples, like as saliva, could facilitate sample collection, especially in remote areas. In view of that, the objective of this study was to determine the applicability of saliva samples for anti-HCV detection using commercial EIA. **Material and Methods:** Paired saliva and sera samples were obtained from 530 individuals including suspected cases of HCV infection referred to Viral Hepatitis Ambulatory (LAHEP/FIOCRUZ), individuals from Pantanal region of Mato Grosso do Sul and from the city of Petrópolis, Rio de Janeiro (Brazil). Sera were obtained by venipuncture while saliva were collected using a commercial device (Salivette, Sarstedt, Germany). After collection, salivette was drowned in 1mL of PBS/BSA 0.5% for sample elution. Both samples were tested for anti-HCV using a commercial EIA (HCV Ab, Radim, Italy) where manufacturer's instructions were followed for sera and for saliva, sample volume was increased 20-fold (final volume 200□L). Anti-HCV reactive sera were also assayed for HCV RNA using Cobas Amplicor® HCV Test, v 2.0 (Roche). **Results:** Population comprised 56.4% of females aging 3-87 years (40.76 years ±15.62). Thirty HCV infected individuals were identified as determined by anti-HCV and HCV RNA among sera, being 25 of them also reactive on paired saliva samples. Otherwise 500 individuals were anti-HCV negative among paired sera and saliva samples. Sensitivity, specificity and kappa values were: 83.3%; 100%; 90.4%, respectively. The mean (±standard deviation) of optical density to cut off value (OD/CO) ratio among negative samples was 0.048 (±0.043) for sera and 0.020 (±0.020) for saliva while among positive samples were 3.00 for sera and 1.181 (±0.945) for saliva. **Main Conclusions:** Saliva samples can be used for anti-HCV dection using commercial EIA in different populations, but increasing of sample volume is necessary in order to obtain efficient results. The use of this sample can be a convenient alternative to sera in order to conduct epidemiological surveys in areas where blood collection is limited. **E-mail:** h.medina@ioc.fiocruz.br

Hepatitis027- **Undetermined RIBA-3 is associated with the absence of hepatitis C viral RNA in blood donors**

Pereira FM[1], Zarife MAS[1], Reis MG[2]
Central Public Health Laboratory of the State od Bahia[1] – Brazil, Oruz Foundation[2], Bahia – Brazil

Introduction: The hepatitis C virus (HCV) infection is usually asymptomatic and has a high rate of chronicity, which may progress to cirrhosis and hepatocellular carcinoma. The hepatitis C diagnosis is realized by antibodies research using ELISA test (Enzyme Linked Immunosorbent Assay) and confirmed by additional serological tests, such as RIBA (Recombinant Immunoblot Assay) and western blot, and confirmatory test, like HCV-RNA research. The objective of this study was to evaluate the RIBA efficacy in the diagnosis of HCV infection in blood donors with anti-HCV reagent. **Materal and Methods**: Were analyzed 102 samples with anti-HCV reagent in HEMOBA using the anti-HCV test Abbott Architect chemiluminescence for detection of anti-HCV antibodies, the RIBA III (Chiron) as a supplemental test for anti-HCV reactive and indeterminate samples and the Polymerase Chain Reaction test (RT-PCR) conventional or real-time (Roche Amplicor) for HCV-RNA detection. Samples with HCV-RNA detectable were genotyped by reverse hybridization (LIPA SIEMENS).**Results:** Of the 102 samples analyzed in LACEN 38.2% (39/102) were positive, 57.8% (59/102) were negative and 3.9% (4 / 102) were indeterminate for anti-HCV. The RIBA results were 58.1% (25/43) positive, 9.3% (4 / 43) negative and 32.6% (14/43) indeterminate. All samples with indeterminate RIBA results had undetectable viral load. The predominant bands in the indeterminate RIBA samples were c33 and c22. Of the RIBA indeterminate

samples, repeated after six months with a new collection, 20% (2 / 10) became negative and 71.4% (10/14) remained indeterminate. Of these, (8 / 10) remained undetermined with the same banding pattern. HCV-RNA was performed in all study samples (102) and was detectable in only 22.5% (23/102). All samples with detectable HCV-RNA were RIBA positive and had more than five in the ratio index S / CO. Only two samples had RIBA positive results with HCV-RNA not detected. The 23 samples with detectable HCV-RNA were genotyped, and 78.3% (18/23) were genotype 1, 17.4% (4 / 23) genotype 3 and 4.3% (1 / 23) genotype 2 . The anti-HCV positivity was associated with intranasal drug use (p<0.001), injectable drugs (p<0.001)) and STDs (p<0.05). **Conclusions**:Given the results, it is noted that the RIBA has a high number of indeterminate results, requiring the HCV-RNA detection for HCV infection confirmation. Individuals with anti-HCV index below five, and indeterminate RIBA results are likely undetectable HCV-RNA and therefore are not infected with HCV, but must be serologically accompanied, according to medical criteria. **E-mail:** felizmp@yahoo.com.br

Hepatitis028- **Myeloperoxidase (MPO) as a potential biological marker for the screening of the hepatocellular carcinoma in patients with chronic hepatitis C**

Maia, T.J.S[1]; do Carmo, R.F[1,2]; Almeida, D.B[1]; Aroucha, D[1]; Vasconcelos, L.R.S[2,3]; Cavalcanti, M.S.M[1,2]; Pereira, L.M.M.B[1,3]; Moura,P[1].
1- Universidade de Pernambuco (UPE), Recife, Brasil; 2- Rede Nordeste de Biotecnologia (RENORBIO), Recife, Brasil; 3- Instituto do Fígado de Pernambuco, Recife, Brasil.

Introduction: Hepatocellular carcinoma (HCC) is the fifth most common malignancy and the third leading cause of cancer death worldwide. The chronic infection by hepatitis C virus (HCV) is a major risk factor for the development of HCC worldwide. The mechanisms by which HCV infected individuals with severe stage of fibrosis develop HCC still unknown. Several studies have verified that generation of reactive oxygen species (ROS) has been associated with HCC. Myeloperoxidase (MPO) is an enzyme stored in large amounts in azurophilic granules of neutrophils and macrophages, and which catalyzes the reaction between chloride (Cl^-) and hydrogen peroxide (H_2O_2) to generate hypochlorous acid (HOCl) and other ROS. In the current study, MPO plasma levels were measured in chronically HCV infected patients with and without HCC. **Materials and Methods:** A total of 158 patients (73 men and 85 women; mean age 57 years, range 21-83 years) from the Gastrohepatology Service of the Oswaldo Cruz University Hospital of the University of Pernambuco (northeastern Brazil), were enrolled if they had HCV-RNA positive test. Presence of hepatitis A, hepatitis B, and immunodeficiency virus (HIV) antibodies was considered as exclusion criteria. Patients were divided in 3 groups: chronic hepatitis (CH= 126 patients) which 58 were classified as severe fibrosis (SF= F3/F4 according METAVIR score) by histological evaluation, and 32 patients were diagnosed with HCC according to the AASLD guidelines. MPO plasma levels were determined in all patients using a commercially ELISA kit. None of the patients had received antiviral therapy previously. Possible confounding variables were included in a multivariate analysis and multinomial logistic regression was performed to evaluate the independent association of MPO plasma levels with HCV-HCC. **Results:** The MPO plasma levels of patients with HCV-HCC were higher in comparison to patients with CH or with those patients with SF (multivariate analysis *p*=0.01 and *p*=0.04, respectively). Age and male sex were also independently associated with HCV-HCC. **Main Conclusions:** The higher levels of MPO in the plasma of patients infected with HCV-HCC denote that MPO could be an appropriate candidate to HCC screening in patients infected by HCV. Therefore, the MPO levels monitoring seem to be a potential biological marker to HCC screening in patients with HCV. However, further studies are necessary to confirm MPO levels in a larger cohort of individuals with HCC and HCV. **E-mail:** carmorodrigof@gmail.com

DISEASES BY ROTAVIRUS AND OTHER ENTEROVIRUS

Enterovirus001- **Detection of rotavirus group C in fecal samples from children less than three years hospitalized for gastroenteritis in Belém, Pará, Brazil**.

Lobo, P.S[1,4]; Kaiano, J.H.L[2,4]; Oliveira, A.S.L.[2,4]; Guerra, S.F.S[2,4]; Gabbay, Y.B[3,4]; Linhares, A.C[3,4], Mascarenhas, J.D[3,4].
[1]Bolsista de apoio técnico/ CNPq,[2]Doutoranda do Programa de Pós-Graduação em Doenças Tropicais da UFPA; [3]Pesquisadores Doutores, [4]Instituto Evandro Chagas, Belém, Pará,Brasil, Secretaria de Vigilância em Saúde, Ministério da Saúde.

Introduction: Acute gastroenteritis is a major cause of morbidity and mortality worldwide, particularly in infants and young children. Rotavirus (RVs) is recognized as the most important single agent of acute severe gastroenteritis in children less than 5 years of age. It is estimated that RVs are responsible for two million hospitalizations and 527,000 deaths per year worldwide. The RVs are classified into seven distinct serological groups (A to G). Group A RVs is the most prevalent, however Group C (RVs-C), which was originally detected in pigs, has gained importance as cause of self-limiting episodes of gastroenteritis, mainly in children. *Rotavirus* genus belongs to the *Reoviridae* family and the viral genome possesses 11 segments of double-stranded RNA (dsRNA). This study aims to identify RVs-C in children less than three years old hospitalized for acute gastroenteritis (AGE) in Belém, Pará, Brazil. **Material and Methods:** From May 2008 to April 2009, an intensive surveillance for AGE was carried in a pediatric hospital from Belém. Fecal samples were collected from children with AGE and sent to Evandro Chagas Institute for testing. The samples were initially tested for the presence of RVs-A, astrovirus and norovirus using serological commercial tests all of which yielding with negative results. RNA was further extracted from fecal suspension by silica method and the being subsequently reverse-transcribed and amplified by polymerase chain reaction (PCR) using the pair of primers G8S and G8A specific for VP7 gene which amplifies a 1063bp fragment. Positive (prototype Cowden) and negative control (water) were used in all tests. **Results:** Of the 225 samples tested, seven (3.1%) were positive for RV-C VP7 gene. **Conclusion:** The prevalence rate of RV-C in our study (3.1%) was lower than that (13%) reported for an earlier (1982-1986) longitudinal study among children living in the outskirts of Belém. Although occurring at low rates, RV-C appears to have a role as a cause of AGE among children in Belém, Brazil; these data warrant further studies including molecular characterization through sequencing analyses. **Keywords:** Group C Rotavirus, RT-PCR, hospitalized children, gastroenteritis. **Financial Supports:** IEC/SVS/MS
E-mail: patricialobo@iec.pa.gov.br

Enterovirus002- "**Safety Monitoring Oral Vaccine Against Rotavirus Used and Marketed in Brazil, in August 2008 to January 2010 - Bahia.**"

Oliveira, ME[1]; Andrade, AM[1]; Xavier MI[1]; Renoiner, EI²
[1] State Health Secretariat of Bahia, ² Ministry of Health

Introduction: The World Health Organization recommends vaccination against rotavirus in all countries as a way to reduce fatal and severe disease caused by this virus. Safety monitoring has become a priority because the first licensed vaccine was withdrawn after identifying an association with intussusception occurring case in every 5,000 to 10,000 children vaccinated. **Objective:** Monitor the risk of intussusception following administration of oral vaccine against rotavirus in children aged 6 weeks to 11 months and 29 days. **Method:** We used the case-control design to evaluate the possible association between the vaccine and the disease in children under one year old in Brazil. For each case, we selected four healthy controls matched for age (30 days from the date of birth of the case), identified in the same neighborhood of residence of the case and included after informed consent of (a) responsible for the child. The vaccination history of cases was obtained by immunization booklet or card mirror in Basic Health Units **Results:** A total of 141 cases identified through active surveillance and retrospective searching in three referral hospitals for pediatric surgery in the state of Bahia, 131 were included in the study, 106/131 children were aged 7 months to complete at the time of intussusception, the average age

of patients was 5.8 months (SD + / - 1.9) presenting a fashion seven months, the males predominated among the cases (58%), 11/131 died, 100% of the cases, the child underwent surgery for the resolution of the disease. No statistically significant association was observed with the first dose of vaccine and intussusception. However, after the second dose, there was an increased risk of disease. The human rotavirus vaccine G1P1 [8] was associated with a short-term risk of intussusception after the second dose in the state of Bahia, of magnitude substantially less than found with the vaccine Rotashield. **Conclusion:** Comparing the absolute numbers of deaths and hospitalizations for diarrhea prevented by vaccination and the benefits in reducing morbidity and mortality from diarrhea caused by rotavirus, the National Coordination of the EPI kept recommending the use of rotavirus vaccine in Brazil. **E-mail:** mariaelisapaula@hotmail.com

Enterovirus003- **Phylogenetic analyses of VP1, VP2, VP3, NSP4 and NSP5 genes of Rotaviruses specie A circulating in the Northern Region Brazil between 1998-2010**

Farias YN[1], Soares LS[2], Mascarenhas JDP[2], Gabbay YB[2], Linhares AC[2], Leite JPG[1]
[1]**Laboratório de Virologia Comparada e Ambiental, Instituto Oswaldo Cruz (LVCA/IOC), Rio de Janeiro-RJ**
[2]**Laboratório de Rotavírus, Instituto Evandro Chagas (IEC) Ananindeua-PA**

Introduction: Rotaviruses specie A (RVA) is members of the *Reoviridae* family and is recognized as a main cause of acute diarrhea in infants and young children. The RVA genome is composed of 11 segments of double-stranded RNA (dsRNA), which encode six structural proteins (VP1-4 and VP6-7) and six nonstructural proteins (NSP1-6). A new classification system was proposed in 2008 based on whole-genome sequence analysis, providing important information about the genomic diversity of the RVA, such as *reassortment* events and interspecies transmission events. This study aimed to characterize RVA genes that encode structural and nonstructural proteins (VP1, VP2, VP3, NSP4 and NSP5) from G1, G2, G3, G4, G5 and G9 RVA genotypes circulating in Northern Region Brazil, before and after Rotarix® vaccine introduction. **Material and methods:** A total of 15 fecal specimens were selected between 1998 and 2010 from children hospitalized due to acute diarrhea, being eight samples from pre vaccine period and 7 in post vaccine period. The viral dsRNA was extracted and reverse transcribed (RT). Subsequently, RVA genes were amplified by polymerase chain reaction (PCR) using consensus primers. The PCR amplicons were sequenced. The sequences obtained were aligned using the *BioEdit* and compared to sequences available in *GenBank*. The phylogenetic analysis was performed using MEGA software. This study has been approved by the Committee in Ethics and Research from the IEC. **Results:** Based on the phylogenetic analyses and new classification system, 87% (13/15) of analyzed strains were classified as R1-C1-M1-E1-H1 genotypes, for the VP1, VP2, VP3, NSP4 and NSP5 genes, respectively, and two strains were related with R2-C2-M2-E2-H2 genotypes, highlighting that was not difference in the frequency of circulating types before and after vaccination. Particularly, with regard to the NSP5 gene, the strains classified as H1 genotype formed a closely related cluster with strains from several Brazilian states separated from the others prototype strains. **Main Conclusions**: The current work is one of the few studies about molecular characterization of RVA in Northern Brazil, based on new classification system. Among the samples analyzed, had predominance of R1-C1-M1-E1-H1 genotypes. The analyzes of others RVA genes will be made later. These results help to increase the knowledge on the genomic diversity of RVA, aiming detect new variants and possible antigenic changes, whose potential effect on vaccine effectiveness should be studied. **E-mail:** yasmin.farias@ioc.fiocruz.br

Enterovirus004- **Production of polyclonal antibodies against proteins from the rotavirus VP4 and VP6 of rotavirus**

Sanches. M.A[1,3]; Soares. L.A[1,2]; Silva-Soares. J[1]; Mariúba. L. A[1]; Orlandi,P.P[1]
1. ILMD/FIOCRUZ 2. UFAM 3. UNICEL-Faculdade Literatus

The diarrheal disease is one of the most common childhood diseases in the world, its importance is related to the impact of disease in the population, translated by damage to health, affecting child development, as well as to society for the costs incurred by the demand for medical services, expenditure on medicines and transport. The rotaviruses are the main viruses that cause enteric infection in the world.

Over two decades, many aspects of infection with these viruses has been aimed at the national study, covering the diagnosis. Numerous tests to detect this virus are currently employed, but are costly. The rapid and effective identification of the pathogen that causes diarrhea is extremely necessary for an effective therapeutic administration. Diagnosis of rotaviral is done by direct detection of particles, antigens or viral RNA in fecal samples, using different techniques. Therefore the development of sensitive and specific enzyme immunoassays made this type of assay method for the diagnosis of Rotavirus in most clinical laboratories. In our study we produced polyclonal anti Rotavirus from the construction of Viral Proteins VP4 and VP6 production of hyperimmune sera of rabbits and mice. In clinical trials conducted with samples of Rotavirus (feces) and solution of purified viral particles of rotavirus, we found satisfactory results in the ELISA test, making these antibodies effective tools for detecting rotavirus. **Keywords:** Polyclonal antibodies, Rotavirus, diagnosis. **E-mail:** misanches.bm@gmail.com

Enterovirus005- **Impact of vaccination in rotavirus diarrhea incidence in Porto Velho, Rondonia (Brazilian Western Amazon)**

Amaral M, S. [1], Estevam, G. K. [1], Penatti M. [2], Soares, A.L. [3], Pereira da Silva L. H. [1], Orlandi, P.P. [3], Benevides-Matos, N. [1]
[1]Instituto de Pesquisa em Medicina Tropical – IPEPATRO (Fiocruz Rondonia), [2] Hospital Infantil Cosme e Damião, SESAU. [3]Centro de Pesquisa Leônidas e Maria Deane (Fiocruz Manaus)

Abstract: Rotaviruses are considered important acute gastroenteritis etiologic agents and an important cause of children disease. In this study, group A rotavirus (RVA) was studied in 591 fecal samples of children from 0 to 6 years old with acute gastroenteritis, attended at the public health system of the Rondonia state, between February 2010 to February 2012. The study showed that 103 (17.4%) samples presented positive results for RVA by the immuno-enzymatic essay (EIA) method. We observed that the highest incidence of 17% of the cases occurred in children from 7 to 24 months of age. Vaccination status was also verified in all 591 subjects, been 302 (51.0%) of these fully vaccinated against rotavirus. From all 302 vaccinated children, 42 (13.9%). The amount of 289 (49.0%) children were not vaccinated, of these, 61 (21.1%) were positive for RVA. Comparing the frequencies of positive for RVA not vaccinated children with the frequency of positive for RVA vaccinated ones, we found the relative risk of 1.09 (95% C.I.: 1.01-1.17; p = 0.022). The comparison of vaccination rates between RVA positive and negative children, suggests that not vaccinated children had an increased risk for RVA diarrhea. From the 103 samples RVA positive, 52 were genotyped. The genotype G9P [8], was detected in 49/52 (94.2%) of the samples, followed by G2P [4] 2/52 (3.8%), and G1P[8] 1/52 (1.9%) genotypes. These data suggests that the G9 genotype is the most frequent genotype in Porto Velho. This is the first study done in Rondonia to evaluate the occurrence of viral gastroenteritis in children after the introduction of Rotarix® by the National immunization program. The presented results shows that Rotarix® immunization did not conferred full protection against RVA. This incomplete immunization might be related to the fact that the G9P[8] genotype is not present in the vaccine, making it necessary to continue to monitor this pathogen's circulation in order to contribute with future vaccination strategies against rotavirus. **E-mail:** sandra.amarall@hotmail.com

Enterovirus006- **Detection of norovirus and astrovirus in samples from neonates and children hospitalized at a public hospital, Belém, Pará, Brazil**

Hernandez, J.M. [1]; Neri, D.L.[1]; Fadul, F.A.[1]; Abreu, B.M.[2]; Barbosa, M.P.O.[2]; Carneiro, I.C.R.S.[2]; Lucena M.S.S.[1]; Siqueira, J.A.M.[1]; Reymão, T.K.A.[1]; Portal, T.M.[1]; Aragão, G.C.[1]; Teixeira, D.M.[1] Mascarenhas, J.D.P.[1]; Gabbay, Y.B.[1]
[1] Instituto Evandro Chagas. Ananindeua, Pará, Brasil.[2] Fundação Santa Casa de Misericórdia do Pará (FSCM-PA)

The acute gastroenteritis (AGE) related to virus are currently one of the largest cause of morbidity and mortality worldwide, affecting mainly children under five years old. The Norovirus (NoVs) and Human Astrovirus (HAstVs) belong to the *Caliciviridae* and *Astroviridae* family, respectively, and are important human pathogens causing AGE. Several routes of transmission and the low viral dose necessary to

cause infection are decisive factors of the high propagation of these viruses in the population. During the whole year of 2011, fecal specimens were collected from neonates and children hospitalized in the "Fundação Santa Casa de Misericórdia do Pará" (FSCM-PA). These samples were initially screened by Enzyme Immunoassay (EIA) RIDASCREEN (3rd generation) kit following the manufacturer's instructions and by reverse transcription-polymerase chain reaction (RT-PCR), using the primers Mon 432/434 and Mon 431/433 to detect NoVs GI and GII, respectively, and the primers Mon 269/270 for HAstV detection. Clinical data of patients were acquired for applied questionnaire to the children's parents. Of the 133 (116 neonates and 17 children) samples tested, 10 (7.5%) were positive for NoVs, being six (60% - 6/10) by RT-PCR, and four (40% - 4/10) by EIA. Three samples (2.2%-3/133) were positive for HAstVs, being one co-infection with NoVs detected by RT-PCR. Among neonates, the positivity for NoVs by both methods was 6.9% (8/116), being 28.5% (2/7) in the symptomatic group and 7.3% (6/109) in the asymptomatic. In the pediatric patients, 8.3% (1/12) of samples from children with diarrhea were positive to NoVs and 20% (1/5) in the asymptomatic group. All the positive samples for HAstVs were detected in the asymptomatic group, with 1.8% (2/109) in the newborns and 20% (1/5) in the children. The monthly distribution for NoVs demonstrated highest prevalence in June and August. Little information about the circulation of these viruses in newborns have been reported. Studies demonstrated the circulation of rotavirus in asymptomatic newborn, similar to the observed with HAstVs in this research, and different of the verified for the NoVs. However, considering the small number of samples available in each group, complementary study is necessary, involving a great number of specimens. However, the results obtained until the moment, demonstrated the circulation of these virus among neonates. **E-mail:** julianamhernandez@gmail.com

Enterovirus007- **Co-infection among norovirus and astrovirus in hospitalized children with gastroenteritis from Belém, Pará, Brazil**

Siqueira, J.A.M.[1]; Carvalho, T.C.N.[1]; Aragão, G.C.[1]; Gonçalves, M.S.[1]; Hernandez, J.M.[1]; Oliveira, D.S.[1]; Mascarenhas, J.D.P.[1]; Linhares, A.C.[1]; Gabbay, Y.B.[1]
[1]Instituto Evandro Chagas. Ananindeua, Pará, Brasil.

Introduction: The norovirus (NoVs) (*Caliciviridae* family) is the leading cause of epidemic non-bacterial outbreaks of gastroenteritis. These viruses have been regarded as the second largest cause of infantile hospitalization by acute diarrhea. The human astroviruses (HAstV) belong to the genus *Mamastrovirus* (*Astroviridae* family) and are classified into 8 types, being the type 1 the most prevalent. They are cosmopolite and the infection occurs mainly among children, elderly persons and immunocompromised individuals. Epidemiological investigations of both virus, demonstrated that person-to-person contacts and contaminated food/water are the most important ways of transmission. The aim of this study was to determine the frequency of co-infection among NoVs and HAstV in hospitalized children with severe gastroenteritis in Belém, Pará. **Material and methods:** From May 2008 to April 2011, a total of 483 fecal specimens were collected from diarrheic children under five years old. These samples were tested by reverse transcription-polymerase chain reaction (RT-PCR) using the primers Mon 432/434 and Mon 431/433 to detects NoVs GI and GII, respectively, and primers Mon 269/270 for HAstV detection. The nucleotide sequence was determined by direct cycle sequencing. The sequences obtained were aligned using the BioEdit software and analyzed in the MEGA 5.05 program. The *neighbor-joining* method and *bootstrap* test with 2000 replicates were applied. **Results:** Of the samples collected, 35.4% (171/483) were positive for NoVs and 3.5% (17/483) for HAstV. Co-infection was observed in three cases (0.6%). Considering the positive cases for NoVs and HastV, the frequency of co-infection was 1.7% (3/171) and 17.6% (3/17), respectively. Of these three samples, one was characterized as NoVs GII.4 and two as HastV-1 and HastV-2. The Co-infections occurred in children with 3, 9 and 44 months of age. The principal symptoms presented by these children were fever, vomit and diarrhea. Co-infection involving NoVs, HastV, rotavirus and/or also adenovirus were observed in outbreaks (Japan and South Africa), outpatients (Egypt) and hospitalized children (Turkey). **Conclusions:** Considering the few cases observed in this study, additional research is necessary to verify if the association of more than one virus influences the severity of the symptoms presented by these patients. These data show that despite the low prevalence, cases of co-infection involving NoVs and HAstV occurred among hospitalized children with acute gastroenteritis in Belém, Pará, Brazil. **E-mail:** jones_siqueira@ymail.com

Enterovirus008- **Probe-based detection with Luminex beads: a valuable screening method for molecular diagnoses of four enteric viruses in Children of a Case Control Study in Northeastern Brazil.**

[1]Prata, M.M.G., [1]Cavalcante, P.A., [1]Quetz, J.S.,[1]Lima, I.F.N., [1]Ribeiro, R.C., [2]Gratz, J.,[2]Liu, J., [2]Taniuchi, M., [1] Lima, A.A.M., [2] Houpt, E.R., [2]Guerrant, R.L., [1]Havt, A.
1 Institute of Biomedicine for Brazilian Semi-Arid (IBISAB) & Clinical Research Unit / Center for Global Health, Federal University of Ceara, Fortaleza, CE, Brazil; 2 University of Virginia, USA

Several viruses are recognized as important causes of diarrheal disease, particularly in children less than 5 years old, leading cause of morbidity and mortality worldwide. Uniplex or Multiplex PCR based-molecular diagnosis imply in time-consuming agarose gel electrophoresis work and, consequently, high probability of false-negative results. We aim to examine a new developed multiplexed assay for simultaneous detection of the four major enteric RNA-viruses in a case control study of diarrheal diseases. The design was a study of 1,200 children (600 cases and 600 age and neighborhood matched controls), age 3-36 months. Cases were defined as diarrhea with more than three liquid stools in the last 24 hours and controls were without history of diarrhea in the last two weeks. Stool RNA was extracted with kit QIAamp RNA stool kit (Qiagen, Valencia, CA). A simple protocol combining a one-step multiplex PCR with microsphere-based fluorescence detection was used for astrovirus (capsid), norovirus GII (ORF1–ORF2), rotavirus (NSP3), sapovirus (RdRp-capsid) and extrinsic control (MS2g1). After the mothers or caregivers signed the consent form, we evaluated the first 206 children, 100 cases and 100 controls. The prevalence of the target viruses among 206 children were as follows: 1,94% astrovirus, 0,48% norovirus, 26,67% rotavirus and 4,8% sapovirus. The viruses detected from cases were as follows: 3% (3/100) astrovirus, 1% (1/100) norovirus, 32% (32/100) rotavirus and 7% (7/100) sapovirus. If we combine all four viruses diagnosed in cases we would find a prevalence of 43% (43/100). The virus detected from controls were as follows: 0,9 % (1/106) *astrovirus*, 0% (0/106) *norovirus*, 23,6% (25/106) *rotavirus* and 2,8 % (3/106) *sapovirus*. If we combine all four viruses diagnosed in controls we would find a total prevalence of 27,35% (29/100). We could not find any association of a single target with cases. However, if we combined all four viruses we could find an association among cases after Fisher Test with a p value of 0.0201. Even though any single diagnosed enteric RNA-virus could be associated with cases, our results showed that enteric viruses are still an important diarrheal causing agent and could be associated among diarrhea cases of Brazilian Northeastern country side children. **E-mail:** ahavt@ufc.br

Enterovirus009- **Detection of sapovirus in fecal specimens of children with acute gastroenteritis, from Manaus, amazonas, Brazil, during January/2010 to March/2011**

Reymão, T.K.A.[1]; Costa, S.T.P.[1]; Lucena, M.S.S.[1], Silva, L.D.[1]; Hernandez, J.M.[1]; Siqueira, J.A.M[1]; Portal, T.M.[1]; Soares, L.S.[1]; Mascarenhas, J.D.P.[1]; Linhares, A.C.[1]; Gabbay, Y.B.[1]
[1]Instituto Evandro Chagas. Ananindeua, Pará, Brazil.

Introduction: Sapovirus (SaV), a member of the genus *Sapovirus* in the family *Caliciviridae*, is an etiologic agent of human gastroenteritis. SaV has a single-stranded positive-sense RNA genome of approximately 7.3 to 7.5 kb, being a non-enveloped virus. SaV strains can be divided into five genogroups (GI, GII, GIII, GIV, and GV), of which GI, GII, GIV, and GV strains infect humans, and can be further divided into genotypes. In general, SaV is associated with sporadic cases of acute gastroenteritis in children and elderly people. This pathogen is also related with outbreaks in day care centers, nursing homes and among hospitalized children. Symptoms include diarrhea with watery stools, vomiting and fever. The transmission occurs primarily by fecal-oral route, by aerosol and consumption of contaminated food or water. Material and methods: Fecal samples were collected from January/2010 to March/2011, of children with acute gastroenteritis. They were initially tested for rotavirus and norovirus with negative results. For the detection of SaV it was used the reverse transcription-polymerase chain reaction (RT-PCR) with the primers p289/ p290 that are specific for human calicivirus. The products obtained were visualized in a 1% agarose gel and all the samples that showing specific amplicons of 331 bp were considered positives. Results: SaVs was detected in 4 (4.8%) of the 82 samples tested. Besides diarrhea,

fever and vomiting were also observed in one of the children positive to SaV. Main conclusions: The positivity rate detected in this study (4.8%) was similar to the ones obtained in researches conducted in Belém-PA (4.9%). However it is higher than the registered in Australia (4.1%) and lower than the registered in India (10.2%). This is the first reports about SaV in Manaus-AM. Considering the few studies conducted in Brazil concerning this virus, there is need for further studies to elucidate the real epidemiological importance of this pathogen. **E-mail:** tammykathlyn@gmail.com

DISEASES BY HANTAVIRUS

Hanta001- **Serological survey for hantavirus in rural workers from State of Alagoas, Brazil: preliminary results**

Medeiros, N.P.T.[1]; Santos Júnior, J.A.[1,;] Barros, P.A.[1]; Feitosa, R.C.S.[1]; Silva, J.M.[1]; Santos, F.M.[1]; Souza, G.M.[1]; Lima, A.R.V.[1]; Lima, M.C.[2]; Figueiredo, L.T.M.[3]; Borges, A.A.[1*]
[1]Research Laboratory of Virology and Immunology (LAPEVI), Institute of Biological and Health Sciences, Federal University of Alagoas, Maceió/AL, Brazil; [2]Central Laboratory of Public Health of Alagoas (LACEN-AL), Maceió/AL, Brazil; [3]Research Center for Virology, Faculty of Medicine of Ribeirão Preto, Universidade de São Paulo, Ribeirão Preto/SP, Brazil.

Introduction: Hantaviruses are rodent-borne enveloped RNA-viruses belonging to *Bunyaviridae* family that have worldwide distribution. Members of the *Hantavirus* genus have been identified as etiologic agents of two severe human diseases: hemorrhagic fever with renal syndrome (HFRS) or hantavirus cardiopulmonary syndrome (HCPS) depending on the species of hantavirus involved. Human infection is acquired by inhalation of aerosols containing excreta of rodents infected by hantavirus. In Brazil, according to reports by Brazilian Ministry of Health, in the State of Alagoas, to date there is no reports of hantavirus infections. This region has an economy based on the sugar cane agroindustry. The region has been almost completely deforested, with important consequences to the environment and this is favorable to colonization by wild rodents. **Objective:** The aim this study it was investigated the presence of memory IgG antibodies to hantavirus in rural workers from Coruripe, Alagoas State, Brazil, by performing a serological survey in Coruripe Plant. **Method:** Sera of 350 volunteers healthy rural workers were collected and used to detect IgG antibodies against N protein of *Araraquara* hantavirus (rN ARAV), by enzyme immunoassay (ELISA). The positive samples were then titrates. **Results:** The IgG anti-rN ARAV antibodies were detected in 29 of 350 (8.29%) samples. Of these, 21 (72.41%) volunteers positive for IgG attested that had never lived or travelled out of state of Alagoas. **Conclusions:** This is the first study to demonstrate serological evidence of past infections with hantavirus in human from the state of Alagoas. Our findings provide new insights into the epidemiology of hantaviruses in the Northeast Region from Brazil. **Financial support:** CNPq, CAPES, FAPEAL. **E-mail:** alessandra.a.borges@gmail.com

Hanta002- **Laguna-Negra like Hantavirus in *Calomys callidus* rodent in Central West of Brazil**

Lopes L.B.[1], Oliveira R.C.[1], Guterres A.[1], Fernandes J.[1], Marques A.[2], Via A.V.[2], Terças A.C.[2], Ducoff G.[2], Bonvicino C.[3], D'Andrea P.S.[3], Lemos E.R.S.[1]
[1]Laboratory of Hantaviruses and Rickettsiosis, Instituto Oswaldo Cruz, Fundação Oswaldo Cruz/FIOCRUZ, Rio de Janeiro, Brazil. [2]State Department of Health, Mato Grosso, Brazil, [3]Laboratory of Biology and Parasitology of Wild Animal Reservoirs, Instituto Oswaldo Cruz - FIOCRUZ, Rio de Janeiro, Brazil

Introduction: Laguna Negra virus (LANV) was first identified as causing an outbreak of Hantavirus Pulmonary Syndrome in the Chaco region, Paraguay in 1995.The same study found the vesper mouse, *Calomys laucha* as a primary reservoir of the virus in Paraguay. Laguna Negra was also described in 12 cases of HPS and wild rodents of the species *Calomys callosus* and *Akodon simulator* in Argentina and was subsequently identified in rodent and human cases in Brazil. The aim of this study was to investigate the circulation of hantavirus in rodents captured in the municipality of Sapezal, Mato Grosso, Brazil, a

state that has shown significant increase in the number of cases of HPS in recent years, worrying local health authorities. **Material and Methods:** Rodent lung samples from Sapezal municipality (Mato Grosso, Brazil) were submitted to cDNA synthesis and PCR amplification of the complete S segment and then sequenced. Multiple sequence alignment and comparison of nucleotide and deduced amino acid sequences were performed using Clustal-W. Phylogenetic relationships among the hantaviruses were estimated by a Bayesian Markov Chain Monte Carlo (MCMC) method implemented in MrBayes v3.1.2. **Results:** S segment PCR amplification was obtained from one of the fifty-two rodents samples analyzed belonged to a male specimen of the specie *Calomys callidus*. Comparison of the viral sequence with other known hantaviruses showed the highest degree of identity (99%) with LANV-like (FJ816031) from a human case of HPS from Mato Grosso state and 86% with LANV (AF005727) identified in *C. laucha* from Paraguay. **Conclusions:** Until the present study, the rodent reservoir of LANV was unknown in Brazil. The identification of *C. laucha* harboring a hantavirus related to LANV-like (FJ816031), which was obtained from a patient with HPS in the same state where this study was conducted, showed the potential of *C. callidus* as a possible reservoir of LANV in Brazil. The identification of, LANV associated with another rodent species of the genus *Calomys*, corroborate with the idea that many hantavirus, including LANV, cannot be strictly associate with only one species of rodent reservoir. The capacity of *C. callidus* to harbor LANV and its role as a reservoir are still unclear and new studies need to be conducted in order to better understand the relationship dynamics involving *C. callidus* and LANV. **E-mail:** liviabl@ioc.fiocruz.br

Hanta003- **Knowledge, attitudes and practices about Hantavirus infection in a rural settlement of Planaltina, Federal District, Brazil**

de Oliveira SV[1], Lassance C[1], Nascimento GL[1], Souza LRO[1], Oliveira PB[1], Gurgel-Gonçalves, R[1,2]
[1]Programa de Pós-graduação em Medicina Tropical, Universidade de Brasília, Brasil. [2] Laboratório de Parasitologia Médica e Biologia de Vetores, Faculdade de Medicina, Universidade de Brasília, Brasil

Introduction: Hantavirus infection (HI) is a zoonosis transmitted to humans by aerosol inhalation containing viral particles eliminated via excreta of wild rodents. In Brazil, the risk of infection is higher among rural residents working with agriculture and livestock. In the Federal District of Brazil (FD), the first cases of HI were reported in 2004; in 2010, 127 suspected cases were detected, mainly in the administrative region of Planaltina. Here, we conducted a KAP survey (knowledge, attitude, and practice) regarding HI in a rural settlement of Planaltina, FD. **Material and methods:** The survey was conducted between October and November 2011 with 158 households. We used a pre-tested questionnaire to assess the prevalence of the knowledge, attitudes and practices regarding HI. **Results:** We managed to interview 135 families representing 85% of households at the time of the survey. The profile of respondents showed that 51.1% were female, and 60.7% were farmers. Most respondents (93%) have heard about HI, mainly by means of television; they said that HI is a disease transmitted by rats (86%). The interviewees highlighted the contagion from the urine of wild rats. According to the respondents, HI is a serious disease (92%) whose main symptom is fever (39%). However, 40% of respondents did not know the symptoms of HI. The cleaning of the yard was the main prevention measure of HI mentioned by respondents who reported taking this action in their homes. However, we observed that 57% of domiciles had poorly packaged garbage. **Main Conclusions:** Most respondents have heard about HI, knows how infection occurs and the severity of the disease. Nevertheless, our results suggest that the practices to prevent infection are not being taken properly. The housing conditions, coupled with the lack of basic care cleaning suggest a potential risk of HI infection at the site. The place where the infection occurs and the mechanisms of prevention of HI should be further explored in educational activities to encourage the community to practice the preventive measures known. **E mail:** rgurgel@unb.br

Hanta004- Hantavirus pulmonary syndrome in the state of Santa CatarANTAina, Brazil, 1999-2011

Oliveira R.C[1], Sant'Ana M.M[2], Guterres A[1], Fernandes J[1], Gomes R[1], Vicente L.H.B[1], Hillesheim N.L.F.K[3], Lucini C[4], Zeccer S[2], Lemos E.R.S [1].

[1]Laboratório de Hantavirose e Rickettsioses, Oswaldo Cruz IOC/FIOCRUZ, Rio de Janeiro, RJ, Brazil. [2]Secretaria Estadual de Saúde de Santa Catarina, Florianopolis, SC. [3]Secretaria Municipal de Saúde de Concordia, SC. [4]Secretaria Municipal de Saúde de Joaçaba, SC, Brazil.

Introduction: The Hantavirus pulmonary syndrome (HPS) is an emerging disease in Brazil. Since 1993, when the first HPS cases were identified, over 1,400 cases have been reported by the Brazilian Ministry of Health (BMH) and the state of Santa Catarina (SC) account for over 16% of HPS cases. HPS surveillance is based on serologic methods, by detection of IgM using an enzyme immunoassay (EIA). The molecular characterization of hantavirus is not performed routinely in Brazil. This observational study reviewed the clinico-epidemiological findings in HPS cases in the SC, from 1999 to 2011, with emphasis on the cases reported on Mid-West region, where six HPS cases were submitted to molecular analysis. **Material and Methods:** The data analysis was executed by means of descriptive statistics, using the software program EpiInfo v3.5.1. Molecular analysis was performed in the blood samples from six HPS cases confirmed by EIA. Specific primers of the S segment were used for amplification and sequencing the partial genomic segment (Oliveira et al. 2012). Multiple sequence alignment and comparison of nucleotide and deduced amino acid sequences were performed using Clustal-W. Phylogenetic relationships among the hantaviruses were estimated by a Bayesian Markov Chain Monte Carlo (MCMC) method implemented in MrBayes v3.1.2. **Results:** From 1999, when the first case was identified in SC, to 2011, 119 (47%) of the 251 HPS cases reported to the BMH, came from localities of the mid-west. The majority of the cases was confirmed by the presence of IgM and only 9 (3,6%) were confirmed by clinical epidemiological criteria. The male/female ratio was 203/48 (81/19%), most of them belonged to rural areas (67%). Cases occurred throughout the year, with a peak incidence between October and December. The largest annual number of HPS cases occurred in 2004 and 2006. Fever (94%), headache (87%), dyspnea (71%), myalgia (73%) were the symptoms most frequently observed in this sample. Comparison of the viral sequences obtained from the six HPS cases reported on Mid-West of SC with other known hantaviruses showed the highest degree of identity (95% to 99%) with Juquitiba like-viruses from Brazilian and Paraguayan human and rodents strains. **Conclusions:** The HPS in SC is characterized by being a rural disease, predominantly in male and agricultural workers in their productive years. The greatest number of cases registered during October, November and December suggests seasonality, probably related to the storage of seeds, especially corns. Although only 6 samples of confirmed cases of HPS have been analyzed, our data indicated a human accidental infection by the virus Juquitiba in Mid-Western region, which reported the highest prevalence of HPS with a lower mortality rate (21%). It's important to better investigate the factors that could be related to the lower fatality rates for HPS in this State, mainly in the Western of the State. **E-mail:** reoliveira@ioc.fiocruz.br

Hanta005- Family outbreak of Hantavirus in children

Persch, Manoela[1]; Souza, Jenifer[1]; Koch, Bruna[1] Machado, Janete Aparecida Alves[2]; Krummenauer, Eliane[2]; Carneiro, Marcelo[2]
[1]Universidade de Santa Cruz do Sul; [2]NHE - Hospital Santa Cruz – Santa Cruz do Sul – RS – Brasil

Introduction: Hantavirus infections are caused by a group of viruses belonging to the *Bunyaviridae* family and are transmitted to humans by inhalation of aerosols containing excreta of rodents, more common in rural or urban areas with poor sanitary conditions. These diseases are emerging in Brazil and worldwide, but there are few cases in the pediatric population. It more frequently affects men of productive age and shows rural environment transmission. **Material and methods:** Case study. **Results:** Male patient, 3 years old, from the rural area of Santa Cruz do Sul - RS, admitted with fever, coughing and malaise for 3 days. He had received antipyretics with little improvement. At physical examination, he had regular general status, dehydrated mucosa (+), tachypnea and axillary temperature was 38.2 °C. Complementary investigations showed leukocytosis with a left shift, urinalysis with mild proteinuria and mucus strands, normal blood gas analysis and transaminase levels. Chest x-ray showed bilateral and

diffuse peribronchial reticular interstitial infiltrate. The initial diagnosis was leptospirosis and antibiotic therapy with penicillin (100.000U/Kg/day) was started. On the 2nd day of hospitalization, the patient's status worsened, with convulsive episode and decrease in O_2 saturation, in addition to tremors and muscle stiffness and he was referred to the Intensive Care Unit. After an evaluation by infectious disease specialist, the antibiotics were withdrawn and serological tests for cytomegalovirus, Hantavirus, leptospirosis and yellow fever were performed. After 13 days, with progressive improvement in clinical symptoms, he was discharged. Hantavirus infection was diagnosed through the presence of IgM antibodies for Hantavirus and the other serological results were negative. According to the 13th Health Coordinating Sector, a female family member of the patient, aged 10 years, residing in the same house, presented clinical manifestations; however, she was treated at another healthcare institution, and due to the epidemiological association, a serological test was requested, which was also positive. According to information, both children had had contact with silage stored in a place to which animals had access and with pond water, which supported the hypothesis of zoonosis. **Conclusion:** Clinical manifestations of Hantavirus infection in children are similar to those found in adults with nonspecific viral picture, rarely occurring in family outbreaks. The compulsory notification of the disease contributed to the diagnosis, confirming the importance of intersectoral work. **E-mail:** janetea@unisc.br

Hanta006- **Evidence of Hantavirus infection in human population from State of Alagoas, Northeast Region, Brazil**

Santos Júnior, J.A.[1]; Barros, P.A.[1]; Feitosa, R.C.[1]; Silva, J.M.[1]; Santos, F.M.[1]; Melo, D.M. [1]; Medeiros, N.P.T[1]; Lima, M.C.[2]; Pacheco, L.M.M.[3]; Figueiredo, L.T.M.[4]; Borges, A.A.[1*]
[1]Research Laboratory of Virology and Immunology (LAPEVI), Institute of Biological and Health Sciences, Federal University of Alagoas, Maceió/AL, Brazil; [2]Central Laboratory of Public Health of Alagoas (LACEN-AL), Maceió/AL, Brazil; [4]Hospital Escola Doutor Hélvio Auto, Maceió/AL; [3]Research Center for Virology, Faculty of Medicine of Ribeirão Preto, Universidade de São Paulo, Ribeirão Preto/SP, Brazil.

Introduction: The genus *Hantavirus*, family *Bunyaviridae*, includes rodent-borne viruses that are transmitted to humans by inhalation of infectious aerosols from infected rodent excreta, and cause hemorrhagic fever with renal syndrome (HFRS) and/or Hantavirus cardiopulmonary syndrome (HCPS). In Brazil, more than 1,500 HCPS cases have been recorded, since 1993. Nevertheless, in the Northeast region data about HCPS is very scanty. It was carried out surveillance for acute cases of hantavirus infection in patients with clinical manifestations of HCPS (n=64). Besides, patients having diseases that are clinically indistinguishable from HCPS were included in study, such as dengue (n=170) and leptospirosis (n=124). All participants were admitted at hospitals or attended at outpatient services from the state of Alagoas. **Methods:** It was investigated the presence of IgM and IgG antibodies to hantavirus in sera samples from patients by enzyme immunoassay (ELISA) in house, using a recombinant N protein of *Araraquara* hantavirus (rN ARAV) as antigen. Samples considered seropositive were tittered from dilutions of 1:100 to 1: 6,400. **Results:** Of the 64 samples analyzed from patients with clinical manifestations of HCPS, none was positive for IgM anti-hantavirus, however, one (1,56%) was reagent for IgG anti-hantavirus, titer 200. In the survey for antibodies to rN ARAV in 124 patients with leptospirosis it was found three (2,42%) samples that were reagent for IgG (titers from 200 to 800) and none of them was reagent for IgM anti-hantavirus. All the 170 samples from patients with clinical suspicion of dengue but non-reagent for NS1 were both IgM and IgG non-reagent to Hantavirus. Overall, among the four individuals seroreagent for IgG anti-hantavirus, two claimed that had never lived or travelled out of state of Alagoas. **Conclusion:** Taken together, our findings suggest the circulation of Hantavirus in the state of Alagoas and its silent occurrence in the region, causing unapparent infections, or even symptomatic, but that remain undiagnosed. This study is pioneer in the surveillance for Hantavirus in the state of Alagoas. **Financial support:** CNPq, CAPES, FAPEAL. **E-mail:** alessandra.a.borges@gmail.com

Hanta007- First genetic characterization of the Juquitiba virus in *Oligoryzomys fornesi* in Brazil

Guterres A. [1], Fernandes J. [1], Oliveira R.C.[1], Scharo C.G. [2], Strecht L.[1], Vicente L.H.B.[1], Lopes L.B. [1], Casado F.[3], Neto S.[3], Bonvicino C.R.[3], D'Andrea,P.S.[3], Lemos E.R.S. [1]

[1]Laboratory of Hantaviruses and Rickettsiosis, Instituto Oswaldo Cruz, Fundação Oswaldo Cruz/FIOCRUZ, Av. Brasil 4365, CEP: 21045-900, Rio de Janeiro, RJ, Brazil. [2]Department of Genetics, Universidade Federal do Rio de Janeiro, Rio de Janeiro, RJ, Brasil. [3]Laboratory of Biology and Parasitology of Wild Animal Reservoirs, Instituto Oswaldo Cruz - FIOCRUZ, Rio de Janeiro, RJ, Brazil

Introduction: Several Hantavirus associated with sigmodontinae rodents generate Hantavirus pulmonary syndrome (HPS), considered an emerging and important public health problem at the American continent. In Brazil, since the first outbreak at the beginning of the 1990s, more than 1440 cases have been documented in 14 of the 27 states, with a mortality of 40 to 70%. The Juquitiba virus (JUQV) is the major causative agent of HPS in Brazil, with the main reservoir species *Oligoryzomys nigripes*. **Material and Methods:** Rodent serum samples were screened by ELISA for IgG antibodies to hantavirus using Araraquara virus as antigen. Rodent lung samples from Cassilândia municipality (Mato Grosso do Sul – Brazil), were submitted to cDNA synthesis and PCR amplification of the complete S segment and then sequenced. For the phylogenetic analyzes performed, the sequences obtained in sequencing and others obtained from databases were aligned by the tool MUSCLE in the program Seaview4. Phylogenetic relationships among the Hantaviruses were estimated by a Bayesian Markov Chain Monte Carlo (MCMC) method implemented in MrBayes v3.1.2. **Results:** Seven specimens of *Oligoryzomys fornesi* presented reactive results in serology. S segment PCR amplification was obtained from two of the seven rodents analyzed. Comparison of the viral sequence with other known hantaviruses showed the highest degree of identity (90%) with Juquitiba virus (AY740624) from a human case of HPS from the State of Paraná. In the phylogenetic analysis was possible to observe the absence of an association host, since the sequences recovered from *O. fornesi* not grouped with sequences found in *O. fornesi* in Paraguay. The sequences obtained in this work formed a strong association with sequences found in *O. nigripes* in Brazil. **Conclusions:** This is the first molecular characterization of the complete S segment of the JUQV in *O. fornesi*. The identification of another rodent specie of the genus *Oligoryzomys*, which can harbor the JUQV, corroborate with the results found in Paraguay where the JUQV was found circulating in *O. fornesi*. Surely, the recent dispersion of Sigmodontineos in South America also reflects a more recent introduction of hantavirus in that continent. Therefore, these viruses have great potential for change and of host adaptation. **E-mail**: guterres@ioc.fiocruz.br

HUMAN INFLUENZA AND RESPIRATORY SINCITIAL VIRUS

Influenza001- Influenza a pandemic and scope of vaccination campaign in the state of Piauí, Brazil, 2010

Silva, T. M. G. V.[1]; Almeida, M. G.[1]; Sales, A. A. C. O. S.[1]; Nunes, A. F.[1]; Pedrosa, J. I. S.[1]; Soares, L. F.[1]
[1]Federal University of Piauí (UFPI), Teresina, Piauí, Brazil

Introduction: With the pandemic caused by H1N1 virus responsible for influenza A, the Brazilian Ministry of Health adopted the vaccination as a preventive measure. According to World Health Organization (WHO), this is the strategy with the best cost-benefit of preventing the disease. Therefore, the National Vaccination Campaign was established, between the months of March and May 2010, strategically divided into five stages according to priority risk groups in order to boost the country's health services and reduce the number of serious cases, hospitalizations and deaths. The aim of this study is to evaluate the compliance of the population and coverage of that campaign in the state of Piaui, Brazil, in 2010. **Material and Methods:** Quantitative retrospective research on databases Information System National Immunization Program and DATASUS focusing on the state of Piaui, Brazil, in 2010. Then, it follows an active search for theoretical bases Scielo and BVS Bireme using the descriptors Influenza A and National

Vaccination Campaign against influenza A. **Results:** In 2010, coverage of the vaccination campaign has reached 59.8% (N = 1,864,788) of the resident population in Piauí. Among the priority groups of the vaccination campaign, the only groups with coverage above the national average were in children under two years, with 139.93% of the target, compared to 127, 52% of national adults aged 20 and to 29 years, covering 94.19% compared to 86.04% nationally. The group of patients with chronic diseases obtained coverage of 106.38%, among which is the group aged over 60 accounted for 202.11% of the coverage. Health workers had coverage of 94.31% and adults 30-39 years had 82.83%. The group with the lowest coverage of the target was a pregnant, with 73.86% of target accomplished, compared to 77.14% of the country. Nevertheless, in 2011 were reported 3852 hospitalizations for suspected Severe Acute Respiratory Syndrome, 117 (30.7%) confirmed for influenza A, of which 14 (11.9%) died. **Conclusion:** The National Vaccination Campaign in Piauí reached about 50% of the state population, with high adhesion of children under 2 years old and suffering from chronic degenerative diseases. Therefore, public policies are necessary for a continued adherence to campaigns in subsequent years, since, although controlled the pandemic situation, is still present in the country. So Influenza H1N1 is still an important epidemiological disease in Brazil, specifically, in Piauí, justifying new strategies and approaches to strengthen their individual and environmental prevention, in spite of the groups prioritized in the vaccination campaign, which is extremely important information and orientation of the population in the fight against Influenza A. **E-mail:** taynamaria@gmail.com

Influenza002- **Monitoring of the strains of influenza virus identified by sentinem network in Bahia, 2011**

Vilaça, Maria Mazarello[1]; Deus, Aline Ferreira[2]; Ferraz, Leandro[3]
1,2. Secretaria da Saúde do Estado da Bahia, 3. LACEN - BA

Introduction: The monitoring of strains of influenza virus is extremely important to guide prevention and control of flu syndrome (GS), Severe Acute Respiratory Syndrome (SARS) and outbreaks caused by this virus. Vaccination is the primary measure of prevention and control. In Bahia, the 5th Health Centre Teacher Clementino Fraga, Salvador is located in the reference collection of nasal and oropharyngeal cases of flu-like illness and sent to the LACEN-BA, where the test is performed using immunofluorescence. Samples positive for Influenza A and B are sent to Fiocruz - where RJ carried out the PCR. A prevention campaign was conducted for influenza in 2011, reaching coverage of 83%. **Materials and methods**: An evaluation of cases of SG by age group, epidemiological week of occurrence and identification of viruses circulating through the system data SIVEP FLU and the results coming from FIOCRUZ - RJ. **Results and Discussion:** It was found that 201 samples were collected secretion naso pharynx and pray these patients, yielding a 77.3% rate of timely collection. Of these samples, 26 were positive, 12 Influenza A, 06Influenza B, 03 Parainfluenza, 01 Adenovirus and 06 Respiratory Syncytial Virus. Among the cases of Influenza A, subtype H3 were 10 and 02 cases positive for Influenza A H1N1, which showed flu-like symptoms without a worsening of clinical symptoms. The age which had the highest incidence of cases treated at the Center was the 5th, 0-4 year olds, followed by 25 to 59 year olds. **Conclusion:** In Bahia, the influenza virus caused flu-like illness throughout 2011, with slight variation between epidemiological weeks. The identification of 02 cases of flu syndrome positive for Influenza A H1N1 without complications, showed a decrease in virulence of this virus. It was shown also to maintain the circulation of Influenza A viruses H3 in Bahia, since 2008. **E-mail:** maria.mazzarello@bol.com.br

Influenza003- **Influenza knowledge of the first semester students from a medical college on northeast of Brazil**

Couto HG, Filho JIPA, Rebouças CP, Veríssimo CR, Souza EPC, Oliveira FR, Pamplona LGC.
Faculdade Christus, Fortaleza, Brazil; Secretaria de Saúde do Ceará, Fortaleza, Brazil.

Introduction: The first case of influenza occurred around the fifth century BC, and today are many etiological agents causing this disease, which on several occasion, cause epidemic outbreaks and even

pandemic. However, despite the wide media dissemination of the disease, many people still have a lack of knowledge about the causes, treatments and effects of influenza. Thus the objective was assessing the degree of student's knowledge of the first semester of the Faculdade de Medicina Christus (Christus Medical College).**Methods:** We conducted a cross-sectional study, descriptive, using semi-structured questionnaires. We interviewed 56 (100%) students who were enrolled and agreed to participate. The interviews were conducted between February and March 2012. We assessed knowledge about the disease, prevention and control mechanisms and sources of information. To analyze the data we used the software EpiInfo version 3.5.1. **Results:** The average age of respondents was 19 years (16-28) and 31 (55.3%) were male. Among these, 98.2% said they had knowledge about Influenza. Everyone knew that the disease was caused by a virus. When asked if Flu and Influenza were the same pathology, 35.7% said it was the same disease, while 58.9% said no and 5.4% said they did not know. Regarding symptoms, 91.1% reported among the main symptoms include fever, cough and headache. It was also found that 55 (98.2%) respondents correctly identified coughing, sneezing and contact with secretions as the main forms of transmission. In relation to transmission time, what to do in suspected cases and the length of vaccine protection, 24 (42.8%), 50 (89.2%) and 34 (60.7%) students answered correctly the information, respectively. **Conclusion:** Despite that it was the students first semester of medical school, many of them showed an important knowledge about influenza. However, there are many questions about the time of transmission of the disease and vaccine protection. It is essential to guide students so that they can still during the academic period contribute to the prevention and control of communicable diseases. **E-mail:** pamplona.luciano@gmail.com

Influenza004- **Impact of Pandemic Influenza A/H1N1 Outbreak and Immunological Parameters of Hospitalized Patients in the Regional Hospital Liberec**

[1,2,3]Stejskal F., [4]Zykova I., [5]Zajic T., [4]Sedlak P., [1]Vitous A.
[1]Department of Infectious Diseases, Regional Hospital Liberec, Czech Republic, [2]1st Department of Infectious Diseases, 2nd Faculty of Medicine, Charles University and Bulovka Hospital, Prague, Czech Republic, [3]Institute of Immunology and Microbiology, 1st Faculty of Medicine, Charles University, Prague, [4]Department of Anesthesia and Intensive Care, Regional Hospital Liberec, [5]Department of Clinical Immunology and Microbiology, Regional Hospital Liberec

Introduction: The outbreak of pandemic influenza A/H1N1 had influenced inpatient medical care including intensive care all over the world. Regional Hospital Liberec is a tertiary care hospital with 800 beds. In a prospective study, during two seasons 2009-2010 and 2010-2011, we analyzed clinical and laboratory parameters in patients hospitalized with pandemic A/H1N1 influenza. **Methods:** The diagnosis of A/H1N1 infection was confirmed in all patients by RT-PCR either from nasopharyngeal smear or bronchoalveolar lavage. Hematological (blood count, protrombin time), biochemical (CRP, PCT, transaminases) were analyzed in all patients. Detailed immunological parameters (CD3, CD19, CD4, CD8, CD 16/56, HLA-DR) were investigated on admission and 3 weeks later during 2010-2011 season. **Results:** In the season 2009/10 there were admitted 13 patients (11 were ventilated, 3 patients died, mortality was 24%) with severe A/H1N1 infection to intensive care units (ICU) and another 33 non-ventilated patients to the infectious diseases unit. In the season 2010/11 there were hospitalized 6 ventilated patients with severe A/H1N1 infection (2 with influenza B) in ICU and 7 patients with A/H1N1 (5 with influenza B) in the infectious diseases unit. No patient with influenza died during 2010-2011 season. Detailed hematological and biochemical parameters will be presented. In summary, in ICU patients with severe A/H1N1 the total leukocyte count was without substantial differences, but there was a prominent lymphopenia at the time of admission (0.05-0.22 %) as has been described in other similar studies. All lymphocyte subpopulations were decreased but a most prominent decrease was in CD4 and CD8. CD19 (B-lymphocytes) and NK cells were less decreased at admission. CD8 count was more decreased than CD4 count and admission immunoregulatory index (IR) was high. 21 days after admission there was an increase of both CD4 and CD8, bud increase of CD8 was higher than the increase of CD4, so IR had a tendency to decrease. **Conclusion:** Our sample of ICU and non-ventilated patients with a confirmed A/H1N1 infection supports the scarce published data about the hematological, biochemical and immunological profile of these patients. **Partially supported by grant**: VR100303 of Scientific Board of Regional Hospital Liberec. **E-mail:** fstej@lf1.cuni.cz

Influenza005- **A/H1N1/2010 vaccines adverse events: comparison between vaccines with and without adjuvants.**

Torres LMZB, Braga RD, Souza Filho SRS, Ribeiro JGL
Faculdade da Saúde e Ecologia Humana, Vespasiano, Minas Gerais, Brazil.

Introduction: The A/H1N1 influenza had their first world level in March 2009. The virus was identified as a new strain of virus known as Influenza A subtype H1N1. The viral DNA contains avian, swine and human components having higher chances of adapting to the environment. In Brazil, on April 25, 2009, the epidemic was declared Public Health Emergency of International Importance. In the state of Minas Gerais, until July 3, 223 people were treated at the Clinicas Hospital, Belo Horizonte city. In meetings with Technical Advisory Committee of the National Immunization Program of the Secretariat of Health Surveillance, Federal Council of Medicine, among others, vaccination strategies in Brazil were traced and groups of individuals to be vaccinated were defined as well. The Ministry of Health has an ongoing system of monitoring of adverse events possibly associated with vaccination. Influenza vaccines with adjuvants in Brazil were used for the first time in 2010. This study aimed to evaluate questions about the safety of the vaccine, compared vaccines with and without adjuvants describing adverse events and calculating the incidence of major events between vaccines with and without adjuvant. **Material and Methods:** This descriptive study was based on the analysis of secondary database evaluating vaccination against influenza A/H1N1 in 2010 in the state of Minas Gerais. We used the EpiInfoTM for statistical analysis and sample calculations. **Results:** We observed that a total of 1571 notifications, 1074 recorded cases have been reported with the use of adjuvant vaccination with an incidence of 14.7 / 100000 doses distributed and 468 notifications reported to the vaccine without adjuvant, with an incidence of 9.91 / 100000 doses distributed with a p-value <0.0000001. Seizures had an incidence of 0.05293/100000 adjuvanted doses distributed and 8 cases in vaccines without adjuvants, with an incidence of 0.1694/100000 doses distributed. Since 389 was the total of local events that the vaccine was adjuvanted, an incidence of this distributed 5.147/100000 doses adjuvanted vaccine and 71 cases with an incidence of non-adjuvanted doses 1.504/100mil distributed without adjuvant. **Main conclusions:** Our study showed that vaccines with adjuvants had higher incidence of reports compared to non-adjuvanted vaccine and that local events that are expected in more adjuvanted vaccine were confirmed. About general events, no differences were noted. The higher incidence of seizures with no adjuvanted vaccines perhaps was caused by the children use of these vaccines. **E-mail:** liviabarud@hotmail.com

Influenza006- **Detection of respiratory syncytial virus and human metapneumovirus by real time PCR (qPCR) during January to November 2011 in Belém city of Pará**.

Ferreira, L.E.A.[2]; Silva, A.K.[2]; Ferreira, D.L.[3]; Barbagelata, L.S.[2]; Nobre, A.F.S.[3]; Santos, M.C.[1]; Medeiros, R.[1],[2]; Mello, W.A.[1]
[1]Virology, Instituto Evandro Chagas, Ananindeua, Pará. [2]Núcleo de Medicina Tropical, Universidade Federal do Pará, Belém, Pará. [3]scientific initiation student, CNPq/IEC, Ananindeua,Pará.

Introduction: Infectious diseases of the respiratory tract are among the most frequent causes of hospital admissions and demand for outpatient medical services around the world, and acute respiratory infections (ARI) the major cause of morbidity and mortality in all ages, but with a primary focus on children under five years of age, elderly and immunocompromised. Studies highlight the important role of viruses as causative agents of ARI. In Brazil, particularly the North and Northeast, respiratory diseases act as a major cause of mortality in children under five years old. Among the various viral agents causing ARI, we highlight the Respiratory Syncytial Virus (RSV) and Human Metapneumovirus (HMPV). This study aims to detect the occurrence of infections by these viruses (RSV and HMPV) and confirm its association with cases of ARI in Belém city. **Methodology:** We analyzed specimens from patients with ARI in the period January to November 2011 in Belém City. For initial analyzes, we used indirect immunofluorescence test (IIF) to detect possible co-infections with other viruses. For detection of HMPV and RSV was employed technique chain reaction-mediated polymerase in real time (qPCR) using the F gene targeting of both viruses. **Results:** Of the 173 samples investigated (100%), 08 samples (4.6%) were positive for HMPV

and 03 samples positive for RSV (1.7%). The age group that concentrated positive cases was 0-3 years for both viruses. Regarding the profile of seasonal peak HMPV activity occurred between February and May, and is mainly associated with the period of higher rainfall in the Belém city, and seasonality for RSV was distributed over the months, having a positive sample in the months of March and April and another in July. In the present study period that there was no sample presenting co-infection. **Conclusion:** The HMPV circulating in months of higher rainfall was more frequent and the VRS must be considered in cases of ARI in the Belém city. **Financial Support:** Fundação de Amparo à Pesquisa do Estado do Pará – FAPESPA e Instituto Evandro Chagas – IEC. **E-mail:** ledilsonaf@gmail.com

RABIES AND OTHER VIRUS INFECTIONS

Rabies001- **The importance of bats for rabies surveillance in Rio Grande do Sul**

[1] Witt, André Alberto Donini, Marco, Predebon, Jairo, Diedrich, Giovani

Introduction: Rabies is a worldwide widely distributed disease, which causes around 5,000 deaths per year, occurring in almost all developing countries, despite not eradicated in developed countries. In Brazil, since 2004 according with Ministry of Health, bats are the principal agent in spreading rabies virus. Changes in the epidemiology of the disease in our country led bats to a main role in the surveillance of rabies. Supported on this information, the State Center of Health Surveillance (CEVS) from State Secretariat of Health of Rio Grande do Sul State enforced a Bat Monitoring Program, aiming to study the importance of bats participating in the urban cycle of rabies. Furthermore, we established a routine in collecting bats and sampling of saliva, blood and brain tissue from individuals in colonies of several regions of the state. Most of bats are banded and released to evaluate the use of routes connecting cities and regions with rabies virus circulation. **Material and Methods:** All bats collected in our routine surveillance for rabies diagnosis are identified to specie level and goes to scientific collections, in order to verify the species occurring in urban areas and which could potentially be involved in the cycle of rabies in the cities. **Results:** In 2011 2,706 samples were sent for testing of rabies virus presence (2,183 dogs; 268 bats; 206 cats; 42 cows; four unidentified wild animals; one horse; one rabbit and one sheep). Around 10% of our samples are from bats, and from all 268 samples, only six were positive for rabies, all of which non-hematophagous bats. It is mandatory to highlight that the origin of bat samples is urban or suburban. **Main Conclusions**: Most samples of bats belong to the families *Molossidae* and *Vespertilionidae*, which are composed of species highly adapted to live in urban areas. Based on our results, State Secretariat of Health of Rio Grande do Sul is discussing and developing guidelines for the management of bats in urban areas, since that Environmental Agencies delegated this issue to the competency of Health agencies. **E-mail:** andre-witt@saude.rs.gov.br

Rabies002- **Report of a case of animal rabies in a municipality of the Northern coast of the state of Ceará**

Maria das Graças Dias Carneiro, José Reginaldo Pinto, Vanessa Silva Farias, Luciana Carvalho de Aguiar, Aleandra Mara Furtado, Ana Maria Porto Viana

The canine rabies is an acute infectious disease caused by an RNA virus of the Rhabdoviridae family, and affects all species of mammals, including humans, through the bite of an infected animal to a susceptible host. Thus, the region of the north coast of Ceará State is considered endemic for human rabies. This experience aims at describing how the work was of a technical team of the 16th Regional Health (CRES) of the municipality of Camocim – Ce. This is a case study, described in the art of narrative, which occurred in 2012, a case of animal rabies that has promoted the involvement of many health professionals to break the chain of viral transmission. On January 9, 2012, a Community Health Agent notified to the epidemiology authorities that there had been an attack dog in child and adult, where animal by biting the victims disappeared. From this episode, the dog came out attacking several other animals and people, spreading the virus and triggering a viral transmission across the municipality.

Tracing the case, the municipal sector Epidemiology, Regional Health and the Center of Disease and Social Mobilization has done extensive training with the primary care team , aiming to block the case of rabies. For these actions were undertaken: vaccination of blocks for all pets and people attacked a total of 221 dogs. Were vaccinated owners and family members of infected animals. Made unrestricted catches of animals, euthanasia of animals suspected the collection of marrow of infected animals for laboratory, educational sessions in schools sponsored by the Family Health Strategy, and agreement with the Agency of Defense Animal. It can be concluded that after the engagement of all municipal technical team and State of Ceara having an effective blockade of the contacts to prevent the spread of viral transmission between the exposed populations. **E-mail:** gracas.dias@saude.ce.gov.br

Rabies003- **Implementation of a tool for monitoring of patients submitted to human rabies prophylaxis in the city of Boa Viagem, Ceará**

[1] Sousa, L.L.F. ; [2] Melo ,C.P.C.
[1] County Department of Health, Boa Viagem -CE, Brazil, [2] Health Secretary of Ceará State - SESA

Introduction: Rabies is an anthropozoonosis occurring worldwide, with a mortality rate of approximately 100% and high-cost preventive care in people at risk of illness and death. It is by immunization with a scheme prophylaxis effective when used in a timely and correct by using immunobiological. Only mammals get sick and transmit the rabies virus. In some cities of Brazil, the dog remains the most important source of infection. **Objectives**: The objective of this study was to evaluate the implementation of a spreadsheet with the records of patients post-exposure treatment anti-rabies in Boa Viagem-CE in the period from May to December 2011, in order to achieve a more precise, the prescription correct treatment, assessment of the animal and check the amount of the doses, as well as treatment. **Materials and Methods**: Started the use of the spreadsheet from the month of May, where the data of the patients reported and referred for treatment, considering the following: patient's initials, date of notification, animal abuser, type of exposure, dose and date of use of five doses of the serum. **Results:** During this period 53 patients were followed, of which 36 were attacks by dogs, 13 cats, two monkeys, a pig and a donkey. Using the worksheet, you can check error in the number of doses prescribed by a health professional, as well as the incorrect indication of observation for production animals (pigs) responsible for the attack. We carried out the rescue of two treatment dropouts, showed errors in the completion of notification forms and low number of layoffs of treatment, based on findings in clinical status of aggressors. . **Conclusion**: The use of the accompanying instrument is shown to be of great value to the monitoring of cases, fault detection and assistance in finding treatment dropouts. There is need for training for health professionals to know and use correctly the schema for prophylaxis of human rabies. Highlighting the importance of clinical evaluation of aggressors to reduce the frequency of vaccinations in humans. **E-mail:** larissaferrer2@gmail.com

Rabies004- **Historical series of human rabies cases in Ceará state**

Duarte, N.F.H; Damasceno, F.K.A. ;Barros, A.S. ; Oliveira, F. B.; Oliveira, R. J; Pinheiro, K.M.A.
Secretaria da Saúde do Estado Ceará, Fortaleza – CE, Brasil

Introduction: Rabies is a zoonotic disease of compulsory notification, which has almost 100% lethality. Worldwide, according to World Health Organization, there are between 50,000 to 70,000 human rabies deaths annually, mainly in the continents of Asia, Africa and Latin America. In Brazil, from 2000 to 2011, were 168 confirmed cases of human rabies and 167 (99.4%) deaths. The Northeast region represents 55% of reported cases between 1980 and 2010, the North, in the same period, 19%, Southeast, 16%, the Midwest, 10%, and the South, less than 1%. Between 1980 and 2008, dogs and cats were responsible for transmitting 79% of cases; bats, 11%, other animals, 10%. In 2010, Brazil recorded three (3) human cases of the disease, two (2) in Ceara and Rio Grande do Norte. In 2011, there were two (2) cases in the state of Maranhao. **Objectives**: To study the epidemiology of rabies in Ceará in the period 2000 to 2011 in order to carry out educational activities and control the risk factors related to disease ', preventing the occurrence of human cases. **Material and Methods:** We performed a descriptive analysis of 14 sheets of Rabies Epidemiology Research SINAN (Information System for Notifiable Diseases) and data from the

statistics of the sector Nucleo Vector Control of the Ministry of Health of Ceara. **Results**: We confirmed, in the period 2000 to 2011, 15 human deaths from rabies, and 12 (80%) caused by attacks of dogs and 03 (20%) by marmosets. The cases were diagnosed in 10 municipalities in Fortaleza, Caucaia Maracanau, Camocim, Pindoretama, Umirim, Tururu, Sao Luis do Curu, Ipu and Chaval. The largest number of confirmed cases in Fortaleza (4 cases, 27%), followed by Caucaia (3 cases, 20%). Other cities reported 1 case (6.66%) each. The largest number of cases per year was confirmed in 2003, 7 (46.6%), all transmitted by dogs. **Conclusion**: The dog in the series analyzed, still represents the main transmitter of rabies to humans, especially by the year 2003. Since 2003, there was intensification of surveillance and control of urban rabies and a change in the Epidemiological Profile, in which the marmoset became the main transmitter, since the four (4) human deaths, from 2005 to 2011, 3 (75%) were from aggression caused by it. However, in 2010 one death was recorded from human aggression by the dog, showing the need to consider shares in developed urban cycle to prevent the occurrence of new cases. **E-mail:** nayle.francelino@saude.ce.gov.br

Rabies005- **Rabies in Bangladesh and new initiatives for prevention and control**

Aung Swi Prue Marma [1], Benzir Ahammad[1], M Salim Uzzaman [2], SM Emran Ali [3], Sohrab Hossain [4], Be-Nazir Ahmed [1]
1. Communicable Disease Control Division, Directorate General of Health Services, Mohakhali, Dhaka-1212, 2. Dhaka Medical College Hospital, Dhaka, 3. Infectious Disease Hospital, Mohakhali, Dhaka, 4. Tongi Municipality, Gazipur, Tropical Medicine & Molecular Epidemiologist

Rabies had been one of the longstanding most neglected tropical diseases in the country. Although, it is a highly dreadful disease but very negligible attention had been giving for its prevention and control. In Bangladesh, there are about two-three hundred thousand animal bites and estimated over two thousand human rabies and deaths annually mainly due to dog. Most of the three to four million dogs in the country are stray and unvaccinated. Superstition, ignorance and lack of proper post exposure management are main reasons for development of human rabies. Until July 2010, the existing activities related to rabies control were namely infrequent inhuman stray dog culling by local government, animal bite management by nerve tissue vaccine (NTV) and very limited use of tissue culture vaccine (TCV) at private sector. Since then Government has taken initiatives to provide standard post exposure management. Initially, rabies prevention and control center was set up at capital Dhaka and then gradually expanded the program to seven divisions and remaining districts. Meanwhile, out of 64, rabies prevention and control center have been functioning in 63 districts, where all animal bites are being managing by trained health personnel. Cost effective updated Thai Red Cross regimen of intra-dermal tissue culture vaccines along with anti-rabies serum (ARS) have been introduced through orientation of concerned physicians and nurses. It is believe that these initiatives were able to cut some of the rabies deaths. Updating of the strategy for prevention and control of rabies is underway. The other activities recently carried out are namely pilot project for dog population management through ABC, dog survey in the capital, school based rabies related health education program, rabies control pilot project at three sites, district level rabies workshop, national rabies survey etc. Government of Bangladesh stopped the production of NTV in October 2011. Ministry of local government has already declared capital Dhaka as no cull city and disseminated the message to all municipalities in the country. Bangladesh is moving with a plan to make rabies free status of the country by the year 2020 with integrated approach of health, livestock and local government by adopting the following strategies: Awareness building, Dog ownership promotion, mass dog vaccination, dog population management and post-exposure management of animal bites. **Key words:** Rabies, animal bite management, intra-dermal regimen, mass dog vaccination, one health. **E-mail:** draungsprue@yahoo.com

YELLOW FEVER

Yfever001- Sylvatic yellow fever in Brazil from 1973 to 2008

[1]Gomes, ALBB [2]Camara, FP
[1] IMS/UERJ, [2] IMPPG/UFRJ

Introduction: Yellow fever is an acute febrile disease, severe; it can quickly lead to death. In Brazil it is present as Sylvester, in large portion of national territory, and mandatory reporting, and therefore in the interest of public health. The objective of this work was to study the SYF from 1973 to 2008 in order to better understand the disease in the country and so provide more data to prevention of epidemics. **Material and Methods:** We use exploratory data analysis for time series, with exploratory data analysis with the calculation of mean, percentage and presentation of data in graphs and histograms. The data are from DATASUS. **Results:** As a result we find a detailed profile of the individual patient by YF in Brazil: male, approximately 30 yards, living in rural areas of the states of Goias and Maranhão, not vaccinated, diagnosed techniques by: MAC-ELISA or histopathology, and in case of death, the fact is between 7 and 10 days after onset symptoms, with mortality of 51%. **Conclusions:** We conclude the need to improve the warning system of the population, and to raise it in relation to SYF, to improve and increase levels of vaccination to search for medical help. We conclude also that the SYF is still a cause of great morbidity among the population of Brazil, should be the focus of increased attention from government and public health. **E-mail:** analuisabacellar@gmail.com

Yfever002- Phylogenetic Analysis of Yellow Fever Virus associated with epidemics in Brazil, 2008-2010

Souza RP[1,2], Maeda AY[1], Silveira VR[1], Petrella SMN[1], Chiaravalloti Neto F[2].
1. Núcleo de Doenças de Transmissão Vetorial, Centro de Virologia, Instituto Adolfo Lutz. Av. Dr. Arnaldo, 355, São Paulo, SP, Brasil. 2. Departamento de Epidemiologia. Faculdade de Saúde Pública da Universidade de São Paulo. Av. Dr. Arnaldo, 715, São Paulo, SP, Brasil

Introduction: Yellow fever is a viral infectious disease, endemic in the tropical regions of Africa and America. The disease has two transmission patterns, a sylvatic cycle and urban cycle, both leading to clinical manifestations ranging from asymptomatic to mild and severe forms. The sylvatic cycle involves mosquitoes and monkeys. Some monkeys are highly susceptible, such as the howler monkey, genus *Alouatta.* Yellow fever virus is the prototype member of the genus *Flavivirus*, family *Flaviviridae*. The genome is a single strand, positive sense RNA. Genetic studies of YFV strains have revealed that strains isolated in South America and Africa are genetically distinct. In Africa five genotypes have been identified: West Africa I, West Africa II, East Africa, Central and East Africa, and Angola. In South America two genotypes have been identified: South America I, which involves strains identified from Brazil, Panama, Colombia, Ecuador, Venezuela and Trinidad, and genotype South America II from Peru. **Material and Methods**: Nucleotide sequences of envelope region of the genomes of 20 yellow fever virus samples isolated from monkeys, humans or mosquitoes in Brazil from 2008 to 2010 were determined with the objective of establishing the genotypes and studying the genetic variation. These fragments were aligned with 60 representative sequences of Yellow Fever, retrieved from GenBank. Bayesian phylogenetic reconstructions were performed using Markov chain Monte Carlo analysis implemented by BEAST version 1.6.2. The internal nodes were inferred under a GTR model with Gamma-distributed rate variation (γ) and a proportion of invariable sites (I), using a relaxed (uncorrelated lognormal) molecular clock. Four independent MCMC runs of four chains each were run for 10 millions generations. **Results**: Bayesian phylogenetic analysis showed that sequences associated with the epidemics formed a monophyletic subclade designated as 1E. Molecular dating analyses suggested that subclade 1E started diversifying from previous subclades about 1975 and that the most recent 2004–2010 isolates arose around 1985. **Main Conclusions**: The epidemics that occurred in South America from 2008 to 2010 are exclusively associated with this subclade and may represent the most recent emergence o Yellow Fever. Viruses belonging to this clade were retrieved from human and non human primates as well mosquitoes,

confirming the circulation of yellow fever and the presence of a complete full sylvatic cycle of Yellow Fever. **E-mail:** renatoefabi@gmail.com

Yfever003- **Nanobodies, antibody-derived therapeutic proteins, as an alternative to treat yellow fever**

Pereira, S.S.[1,2]; Fernandes, C.F.[1,3]; Pereira da Silva, L.H. [1]; Stabeli, R.G.[1,2]
[1]Fiocruz Rondônia, Porto Velho, Rondonia, Brazil; [2]Universidade Federal de Rondônia, Porto Velho, Rondonia, Brazil; [3]Centro de Pesquisa em Medicina Tropical, Porto Velho, Rondonia, Brazil.

Introduction: The problems of treatment of patients with Yellow Fever (YF) or how to avoid adverse vaccine-associated effects still represents a significant gap in disease management. The potentially fatal, hemorrhagic febrile disease is caused by a *flavivirus* and transmitted to humans and primates by infected insects of the *Culicidae* family. The YF is endemic to tropical regions of Americas and Africas and, nowadays, is considered a emerging, or reemerging disease, in which presents about 200.000 cases per year of sylvatic and urban YF worldwide, despite prophylactic treatment through vaccination. Camelids produce, in addition to conventional antibodies, IgGs composed exclusively of heavy chains, in which the antigen binding site is formed only by the single domain, called VHH or nanobody. Besides their small size and high solubility, nanobodies are not affected by variations in temperature and pH, which are important advantages in field treatment. This work proposes the use of camelids nanobodies as an alternative in the treatment or diagnosis of YF. **Materials and methods:** To this end, phage display technology is being employed. So, VHHs regions were isolated by PCR using peripheral lymphocyte cDNA obtained from two camelids previously immunized with the YF antigen. Then, amplicons were cloned into a phagemid using TG1 *E. coli* strain to construct a phage antibody immune library. After infection by M13K07 helper phage, VHHs were displayed fused to phage coat protein III and the selection step was performed on immobilized YF antigens. Therefore, immunocytochemical experiments were carried out in vero cells infected with YF virus, to verify the capacity of selected clones to recognize the antigen. **Results:** After the fourth enrichment round of biopanning, clones shown to be positive for VHH sequence by PCR and recognized YF virus by immunocytochemistry. To confirm the affinity of the selected clones, ELISA immunoassays are being performed. **Conclusion:** These findings support the idea that selected VHHs could be a powerful strategy to the treatment or diagnosis of yellow fever. Further experiments are being carried out with the aim of purifying, and characterizing the highest affinity nanobodies for the yellow fever antigen. **E-mail:** carlaceledonio@fiocruz.br

Yfever004- **Epizootic affecting nonhuman primates , Rio Grande do Sul state, Brazil, 2008-2009: the largest animal yellow fever outbreak recorded**

Almeida, MAB; Santos, E; Cardoso, JC; Fonseca, DF; Lindholz, CG.
Divisão de Vigilância Ambiental em Saúde, Centro Estadual de Vigilância em Saúde, Secretaria da Saúde do Estado do Rio Grande do Sul, Porto Alegre/RS-Brasil.

Introduction: The natural transmission cycle of Yellow Fever (YF) involves tree hole breeding mosquitoes and a wide array of nonhuman primates (NHP), including several species of New World monkeys. Howler monkeys (genus *Alouatta*), the most susceptible New World monkey, develop fatal YF virus (YFV) infections similar to humans, even at low viral doses. Epizootics involving deaths among wild NHP may indicate YFV circulation, making epizootic surveillance an early warning system for YF risk to humans. However, surveillance for YF epizootics confirmed only 35 NHP deaths due to YF in Brazil from 1999 to 2008. A surveillance program for YF and other 18 arboviral infections in *Alouatta* was initiated in the southern Brazilian state of Rio Grande do Sul, in 2001, following an YF epizootic affecting black-and-gold howler monkeys (*Alouatta caraya*) and isolation of YFV from forest dwelling *Haemagogus leucocelaenus* mosquitoes. **Material and Methods:** Surveillance included NHP capture, serologic testing for the presence of YF-specific antibodies (hemmaglutination-inhibition/HI antibody detection and neutralization) or virus isolation, training of municipal surveillance teams and reporting and investigation of dead NHP. Investigation included collection of samples from animal carcasses for immunohistochemistry and/or virus isolation. **Results:** In October 2008, a single howler monkey in a

northwestern RGS municipality was confirmed to have died due to YF. From that moment to June 2009, we received 995 standard forms reporting 2,013 *Alouatta* deaths (830 *A.caraya* and 1,183 *A.guariba clamitans*). Viral isolation or immunohistochemistry identified YFV in 204 (154 *A.g.clamitans* and 50 *A.caraya*) (69%) of 297 dead NHP tested. YFV was isolated from mosquito species including *Aedes serratus*. The number of municipalities with confirmed YFV circulation in howler monkeys increased from two to 67. The velocity of the "epizootic wave" was around 100km/month and the outbreak generated 21 confirmed human YF cases with nine deaths. Confirming the spread of the virus, we captured one NHP with YFV serologic detection after epidemic. **Main conclusions:** We were able in identifying the largest YF outbreak affecting wild NHP ever recorded in the world. Implementation of surveillance for epizootic YF activity in NHP prior to the YF outbreak helped document the extent and speed of YFV circulation in the state. Active surveillance for YF epizootics should be enforced in receptive areas for YFV transmission. The factors that trigger and maintain a wide spreading of wild YF, remains partially unknown. **E-mail:** mabalmeida@gmail.com

Yfever005- **Environmental surveillance of yellow fever: ten years of history in Rio Grande do Sul state, Brasil**

Almeida, MAB; Santos, E; Cardoso, JC; Fonseca, DF; Lindholz, CG.
Divisão de Vigilância Ambiental em Saúde, Centro Estadual de Vigilância em Saúde, Secretaria da Saúde do Estado do Rio Grande do Sul, Porto Alegre/RS-Brasil.

Introduction: Brazil initiated surveillance for Yellow Fever (YF) in nonhuman primates (NHP) in 1999. Rio Grande do Sul (RGS), southern Brazilian state, strengthened an Environmental YF Surveillance since 2001, following YF detection in NHP and mosquitoes, found during a survey conducted by State Secretariat of Health, National and Municipal Heath Agencies and Environmental Agencies. **Material and Methods:** Environmental Surveillance of YF is based on four axes: training of health professionals; report of dead NHP; entomological surveillance and epizootic surveillance (active and passive). Active surveillance includes vector collection and NHP capture followed by blood and sera testing for arboviral infection. Passive surveillance includes reporting of NHP deaths by municipalities, investigation and sample collection from NHP found dead. Health professionals were trained in reporting and investigation of NHP deaths. **Results:** In 2001, after 35 years, YF was confirmed in a howler monkey in the northwestern part of the state (bordering Argentina) and YFV was isolated from forest-dwelling *Haemagogus leucocelaenus* mosquitoes. In 2002, YF was confirmed from NHP carcass in a central part of the state. In the following years, active surveillance captured 224 NHP in 66 municipalities, detected no immunity to YFV although Saint Louis virus was identified in 13 NHP by neutralization test. We collected over then 8,500 mosquitoes (3,406 to virus isolation practices). We trained around 495 health professionals and students, from 122 municipalities and 13 states. In 2008, we detected a rapidly-spreading epidemic: from October 2008 to June 2009, 2,013 NHP deaths were reported. We found YF in 204 samples from 297 NHP and municipalities with confirmed YFV circulating increased from two to 67. YFV was isolated from mosquitoes (first time from *Aedes serratus*). Based on NHP deaths reporting, YF detection and risk evaluation, under International Health Regulation, the vaccination coverage was gradually extended, growing from 52 municipalities and 532,000 inhabitants in 2008 to 462 municipalities and 9,737,775 inhabitants in 2011. Confirming virus spreading, in 2009 we captured one NHP which had YF serologic detection. **Main conclusion:** After ten years of training, partnership with municipalities and increasing reporting of epizootics, the surveillance system was successful in identifying the largest YF outbreak affecting wild NHP ever recorded. The goal of surveillance for deaths among NHP is to provide an early warning of risk of YFV transmission to humans, for rapid implementation of vaccination and prevention strategies. **E-mail:** mabalmeida@gmail.com

HUMAN PAPILOMAVIRUS

HPV001- HPV detection in high-risk women with invasive cervical cancer by the PCR technique, Goiânia, Brazil

Barbaresco, A.A.[1]; Zampronha, R.A.C.[2]; Michelin, M.A.[3]; Murta, E.F.C.[3] e Freitas-Júnior, R.[1,2]
1 - Institute of Tropical Pathology and Public Health / UFG, Goiânia/Brazil, 2 - Service of Gynecology and Breast Araujo Jorge Hospital Association to Fight Cancer in Goiás, Goiânia/Brazil, 3 - Oncology Research Institute, Federal University of Triangulo Mineiro, Uberaba/Brazil

Introduction: Cancer of the cervix is the second most common cancer among women, with approximately 5000 new cases per year worldwide. One of the risk factors required for the development of cervical cancer is the presence of DNA of human papillomavirus (HPV) high risk. This factor is the second most common in women, being detected in more than 90% of cases. **Objective:** The objective of this study was to correlate the molecular detection of HPV high risk with the clinical and pathological diagnoses of women with invasive cervical cancer. **Material and Methods:** For the analysis of the records were obtained and selected clinical and pathological data of 121 women with invasive cervical cancer, who were in clinical stages I and II, undergoing hysterectomy at Araujo Jorge Hospital in Goiania, Goias, from 1992 to 2004. The technique of polymerase chain reaction (PCR) was used for the detection of the viral genome in 121 tissue samples preserved in paraffin. Statistical analysis used the correlation calculation program Statiscal Package for Social Science (SPSS) version 18. The presence of the virus DNA was correlated with the age, clinical stages (I, II), with the histological types (invasive squamous cell carcinoma, adenocarcinoma, adenosquamous, undifferentiated and others) and with the degree of anaplasia (I, II, III and IV). **Results:** Viral DNA of high risk HPV types (16, 18, 31, 33, 35, 39, 45, 51, 52, 56, 58, 59, 68, 73 and 82) was detected in 77.69% (94/121) of the samples. The women's ages varied from 25 to 75 years. Statistical difference between the presence of HPV DNA in high-risk cervical samples from women with clinical stages ($p = 0.026$) and there was no correlation between age ($p = 0.363$), histologic types ($p = 0.199$) and the degree of anaplasia ($p = 0.283$). **Conclusion:** By means of these data was observed correlation between the presences of high-risk HPV with the clinical stages of women with invasive cervical cancer. **E-mail:** alinebiome@gmail.com

HPV002- Prevalence of human papillomavirus in oral cancer

Araújo, M.V.A., Pinheiro, J.J.V., Pinto, D.S., Aarão, T.L.S., Dias, G.A.S., Soares, L.P.M.A. Villanova, F.E., Fuzii, H.T., Quaresma, J.A.S., Sousa, R.C.M.
Tropical Medicine Institute, Federal do Para University. Belém. Brazil.

Introduction: Oral cancer is a significant cause of cancer worldwide. The etiology of oral cancer is multifactorial, alcohol and tobacco consumption are the most common risk factors for oral cancer. However, subsets of patients who do not expose to these risk factors are related to human papillomavirus (HPV) infection. HPV is about 55 nm in diameter. It has a single circular double stranded DNA molecule and belongs to the family papillomaviridae. There are over 150 genotypes of HPV. The potentially oncogenic HPV is divided into high and low-risk types. The present study investigated the prevalence of HPV and the types found in oral cancer. **Material and methods:** Forty-one paraffin-embedded specimens obtained from patients with oral cancer in reference Hospital of Para were analyzed. DNA extraction was accomplished by using the QIAamp kit (Qiagen). HPV detection was realized after the presence and integrity of the DNA in clinic sample was confirmed using β-Globin primers. The sample was submitted to HPV detection by PCR method using the consensus primers MY11/MY09 and GP5+/GP6+. The positive samples for HPV were submitted the PCR in real time for HPV typing utilized specific probes for HPV-06, HPV-11, HPV-16, HPV-18, HPV-31, HPV-33, HPV-35, HPV-52, HPV-58. **Results:** HPV was detected in 82.92% (34 samples). 11.76%, 2.94%, 14.70%, 50% of positives samples HPV were positive for HPV-6, HPV-11, HPV-16 AND HPV-58 respectively. None sample was positive to HPV-18, HPV-31, HPV-33, HPV-35 and HPV-52. **Main conclusions:** In this study, HPV had high prevalence in oral cancer. HPV-58 is considered high-risk HPV of detected in 50% of samples suggesting

that HPV have a important role in development of oral cancer. **Keywords:** human papillomavirus, oral cancer, epidemiology. **E-mail:** marizeli@ufpa.br

HPV003- **Case studies of patients with clinical diagnosis suggestive of Human Papilloma Virus (HPV) in the city of Quixadá**

LIMA, R.K.S.; Paiva, C. N.; Dutra, F.C.S. Case studies of patients with clinical diagnosis suggestive of **Human Papilloma Virus (HPV) in the city of Quixadá. State University of Ceará**

The Human Papillomavirus (HPV) is a non-enveloped DNA virus belonging to the family Papillomaviridae. There are currently about 70 different types of HPV, of which about 40 infect the genital tract. This virus is transmitted sexually. In most cases, there is no progression to symptomatic disease, ie, individuals are carriers of the virus, but this is not manifest or injuries caused by this disease have no symptoms and can progress from a cervical intraepithelial neoplasia (CIN) and progress to cancer. These epithelial changes represent a spectrum of histological abnormalities ranging from CIN I to III, where the first cell is the change that affects the basal layers of stratified epithelium of the cervix (mild neoplasia). CIN II is moderate neoplasia, CIN III and cancer is strong and carcinoma in situ. The main objective of this paper is to determine the sociodemographic profile of patients treated at the Center for Reproductive Health Sexual Quixadá (CSRSQ) with a diagnosis suggestive of HPV infection. As the object of study used data from those patients seen at the Center for Reproductive Health Sexual Quixadá (CSRSQ) with a diagnosis suggestive of HPV infection with a diagnosis suggestive of HPV infection. From the data obtained in CSRSQ came to the following results: In 2009 50 cases were registered, being aged between 25 and 59 years, the most prevalent. In 2010 it was announced a total of 59 cases arising from nearby districts and sent some of Hospital Eudásio Quixadá Barroso, as well as spontaneous, where the patient seeks care on its own initiative after notice any sign or symptom of the disease. Among the 59 cases reported, 42 of these patients treated were women, with no significant difference in the age group of the same. That same year were registered 34 cases of CIN I and II, in the case of women only. Diagnosed with CIN III were 7 cases, of which only one fit the age group below 25 years. From this study it was concluded that invasive carcinoma of the cervix in about 95% of cases, develops from the NIC, however not all CIN progresses to an invasive procedure. However all NICs should be considered significant injuries and as such should be oriented, emphasizing the importance of preventive exams. Based on the data obtained it was concluded that the peak of the disease incidence is between 25-59 years of age, present in both women and in men, and in women is given in more severe. **E-mail:** romeniaklima@gmail.com

HPV004- **Co-infection by human papilomavirus in the cervix of women with HIV / AIDS, genotyping and frequency IN Puebla Mexico**

Pezzat-Said E[1], Ortiz-Gutiérrez F[2], Martínez-Herrera F[1], Sánchez-Porras R[1], Torres-Escobar I[1-3], García-Carrasco M[1], Huerta-Orea M[1], González-García B[1-3], Sánchez-Hernández A[1], Macías Díaz A[1,]
1 Medical School, Benemérita Universidad Autónoma de Puebla; 2 Cs Quimicas BUAP; 3 Centro Ambulatorio de Prevención y Atención en SIDA e ITS, SSA. Puebla.

Background and Aims: Immunocompromised patients usually present higher rates of HPV (human papilloma virus). This has been linked with a persistent infection and an increasing tendency of cervical cancer. There are also higher rates of HPV infection in HIV (human immunodeficiency virus) -infected women than in the seronegative population. However, there is no agreement regarding the influence of HIV infection and its relation to neither various specific types of HPV nor the development of cervical cancer. Some studies had found a high prevalence of HPV high risk types among HIV infected women. The aim of this study was to identify the HPV genotypes in HIV-1 infected women and to correlate those with CD4+ counts. **Methods:** We realized a transversal study with HIV-1 female patients attended in the AIDS clinic in Puebla (CAPASITS). The patients underwent a gynecological examination; samples were taken from endocervix with Cytobrush and processed by PCR. Positive samples were genotyped by sequencing. HPV-HIV co-infection was related with the last count of CD4+ cells. **Results:** Cervical samples from 40 female patients were analyzed. 77.5% (31) were positive for HPV, whereas 22% (9)

were negative. Within the positive cases, 48.4% (15) were positive for high-risk HPV whereas 51.6% (16) were positive for low-risk HPV types. The types of high-risk HPV most commonly identified were type 51 with 22.5% (7) followed by HPV type 16, that only was detected in two patients. The low risk types more commonly identified were 6, 11, 70 and 81. Finally, 48.38% (15) of the patients showed a viral load <50 copies/ml and 51.6% (16) had a CD4+ cell count < 200 cell/ml. **Conclusions:** We found a high frequency of coinfected HIV-HPV women. Regarding prevalence, HPV 51 was identified being the most common high risk type, which is not consistent with other studies that report a high prevalence of types 16, 18 and 58 in seronegative patients. Although the results were concordant with other observations in HIV population. Further investigations are required. **Key words:** HIV infection; HPV infection; polymerase chain reaction. **E-mail:** ebpezz13@yahoo.es

HPV005- **Human Papilomavirus Infection in HIV-Seropositive Women: HPV prevalence and type frequency in the Brazilian Amazon**

Villanova, FE[1]; von Ledebur, E.I.C.F[1]; da Costa Souza J[1]; Cabral Dias, CN[1]; Silva, NC[1]; Barros, RJS[1]; Quaresma, JAS[1]; Serra, HS[2]; Fuzii, HT[1]
[1] **Immunopathology Laboratory - Tropical Medicine Unit- Federal University of Para – UFPA, Belém, Pará, Brazil,** [2] **Regional Hospital of Tucuruí, Tucuruí, Pará, Brazil**

Cervical cancer is a leading cause of cancer-related deaths in developing countries, and the human papillomavirus (HPV) is linked etiologically to this neoplasia. More than two hundred different HPV genotypes have been described to date, and can be grouped in "low risk" that can cause genital warts and "high risk" types which can lead to cervical cancer. In HIV-seropositive women HPV detection in the cervix is increased. In this study we aimed to identify the prevalence and the genotypes of cervical HPV in HIV-infected women and to compare them with risk-matched HIV-negative controls in a population of the Brazilian amazon region. After signed informed consent, cervical swabs were collected from 59 HIV-seropositive women and from 107 controls in Tucuruí city, North of Brazil. Total genomic DNA was extracted with DNeasy Blood and Tissue kit and the presence of DNA in the sample was confirmed using β-Globin primers. Detection of HPV was determined by the nested polymerase chain reaction (PCR) with MY9/11 and GP5/GP6 primers. Determination of HPV types 6-11 (low risk types) and 16-18-31-33-35-52-58 (high risk types) was made using PrimeTime® probes (IDT) in a Real-Time Polymerase Chain Reaction (StepOne Plus, Life Biosciences). We found a prevalence of 73% (43/59) of HPV in the HIV-infected women. This prevalence of HPV is much higher than the 36% (39/107) found in the HIV-negative women from the same population. In the HIV positive women, types 16, 31, 35 and 58 occurred more frequently, with prevalences as follows: type 58 – 25%(11/43); type 16 – 21%(9/43); type 31 – 18% (8/43) and type 35 – 14% (6/43). Type 11 was not detected in any sample. Multiple HPV infections were found in 28% (12/43) of the cases. In those with multiple infections, type 58 was the most frequent, detected in 67% (8/12) of the samples. In the HIV-negative women the most common HPV types detected were types 18, 6,16 and 58, with prevalence as follows: type 18 – 13%(5/39), types 6, 16 and 58 10%(4/39) each. Types 33 and 52 were found once in different samples. Only 10% (4/39) of the HIV negative samples harbored multiple HPV infection, and all of them had both types 58 and 18. This study showed that women infected by the human immunodeficiency virus (HIV) presented a higher prevalence of HPV infection and a greater association with multiple genotypes of HPV compared to those who are HIV-negative. The results suggest that HIV co-infection may have an impact on HPV type frequency. **Financial Support:** CNPq; SEDECT/FAPESPA **E-mail:** estherle@ufpa.br

VIRUS DIVERSES

Virus001- **Brazilian contribution in polio eradication: Angola stop team 38**

Oliveira, Sandra Maria do Valle Leone de Oliveira, Campo Grande-MS, Brazil

Introduction: Since 1994, Brazil has been certified as Polio free by the World Health Organization (WHO) but the disease continues to affect thousands of people throughout the world. In 1998 the Centers for Disease Control and Prevention (CDC) created the Stop the Transmission of Polio Program (STOP) to support the global Polio eradication efforts along with its partners: WHO, UNICEF, The Pan American Health Organization (PAHO), and Ministries of Health around the world, among others. Until now, the STOP program has created 39 STOP teams composed of highly qualified health professionals, trained them and sent them to support global polio eradication efforts in 62 countries. **Objectives:** To describe the activities and difficulties encountered during the STOP assignment in the province of Cunene, Angola, from August to December 2011. **Methodology:** Assignments in the municipalities of the Cunene province consisted primarily in: monitoring suspected cases of acute flaccid paralysis cases (PFA) in children under 15 years in search of new cases of Polio; supporting the appropriate timing of sample collection, laboratory investigations, and the laboratory confirmation of two cases; outbreak investigation; monitoring and evaluating vaccination coverage for vaccine preventable diseases, including polio, measles, neonatal tetanus, human rabies and unusual diseases. The goal is "to find until the last child to vaccinate". **Results:** In the months from October to December of 2011, I visited 5 municipalities of Angola in the province of Cunene, with an estimated population of 804,000. All supervising visits were active searches for: new cases of polio, measles, neonatal tetanus and rabies, yellow fever and influenza. Visiting health services clinics and following up reported cases of poliomyelitis and measles for case confirmation. Some of the activities included trainings that addressed problems in their processes including: immunobiological chain, routine immunization coverage charts, educational materials to define and reinforce Angola's required notification of diseases, and supporting the organization of vaccination campaigns. The main difficulties for the STOP Team were: access to remote areas due to floods and damaged roads; the miscalculation of the existing population for vaccine coverage assessment; and the difficulty to enforce plans due to the existence of local dialects that limit communication and direct access to the population. All these challenges interfering with the program's goals and vaccine coverage plans. **Conclusion:** The African continent serves as a host to diseases eliminated in other continents due to many social elements that hamper the achievement of preventable diseases eradication. It is necessary to maintain strong networks of technical cooperation between countries and continents brothers and sisters for polio, measles, neonatal tetanus and human rabies eradication. **E-mail:** sandrinhaleone@gmail.com

Virus002- **Viral infection of the central nervous system in a tertiary health center from the western Brazilian Amazon (Manaus, Amazonas)**

Bastos MS[1,2]; Lessa N[1]; Alves VR[2]; Monte RL[1]; Macário VM[2]; Gimaque JB[1]; Figueiredo LT[3]; Ramasawmy R[1]; Mourão MP[1,2,4]
[1]Gerência de Virologia/FMT-HVD, Manaus-AM; [2]Universidade do Estado do Amazonas, Manaus-AM; [3]Centro de Pesquisa em Virologia-FMRP/USP, RP-SP; [4]Universidade Nilton Lins, Manaus-AM.

Introduction: Infections of the central nervous system (CNS) affect millions of people annually worldwide and may be caused by RNA or DNA viruses. These are responsible for a large number of neurological diseases. The most frequents are meningitis, encephalitis and meningoencephalitis that can lead to neurological damage and death. In the last four years, the Epidemiological Surveillance Department of the *Fundação de Medicina Tropical Dr. Heitor Vieira Dourado (FMT-HVD)* reported that 21% of all meningitis cases were of probable viral etiology. However, the etiological agent was not identified. Since the implementation of neurovirological disease surveillance at the *FMT-HVD* in January 2010, in 33% of the patient with lymphocytic meningitis the etiological agent was identified. The following viruses were

identified: herpesvirus, oropouche virus, dengue virus and enterovirus. The aim of this study was to search for viral agent in the cerebrospinal fluid (CSF) of patients with lymphocytic meningitis of unknown etiology assisted at the referral hospital of FMT-HVD in Manaus, the capital city of the Amazonas state, from January 2009 to December 2011. **Material and Methods**: During the study period, 155 CSF samples were tested molecularly for *Herpesvirus* (HSV-1, HSV-2, CMV, EBV, and VZV), *Flavivirus* (DENV 1-4, SLEV, BSQV, ILHV, ROCV, YFV); *Enterovirus* and *Oropouche virus*. **Results**: After acid nucleic viral purification, 32.9% (51/155) were viral positive. Of these, 40 (78%) were one of the following herpesviruses: 35% (14/40) VZV, 30% (12/40) CMV, 25% (10/40) EBV and 5% of HSV-1 and 2. Among the flaviviruses investigated, dengue virus was identified in 9.8% (5/51) with the serotype DENV-1 (1 sample), DENV-2 (3 samples) and DENV-4 (one sample). Enteroviruses and orthobunyaviruses (OROV) were detected in 5.9% (3/51) of the samples respectively. **Conclusions**: These data represent the first survey of etiological diagnosis of viral meningoencephalitis in the Western Brazilian Amazon. It highlights the importance of maintaining active laboratory surveillance with sensitive methods that can identify and characterize the agents responsible for infection in the central nervous system. **Financiamento**: FAPEAM/PPSUS. **E-mail:** michele@fmt.am.gov.br

Virus003- **Epidemiological situation of viral meningitis in the state of Bahia – 2002 to 2011**

Rios MZ, Saavedra RC, Prates AB e Dias JP
State Health Secretariat of Bahia / Department of Epidemiological Surveillance

Introduction: Viral meningitis is represented mostly by enterovirus, among which stand out Poliovirus, Echovirus and Coxsackievirus. The clinical is characterized by neurologic disorders, in general evolving for benign form. The main clinical manifestations include fever, headache, neck pain, vomiting, photophobia and signs of meningeal irritation. Cases may occur alone, although the cluster of cases is common. Individuals of all ages are susceptible, but the age of greatest risk is to children under five. The transmission is from person to person by the airways and varies with the etiologic agent. In the case of enteroviruses the transmission is fecal-oral. In Brazil, between 2001 and 2008, the viral etiology was responsible for about 44% of all cases of meningitis reported in SINAN. In Bahia, in the period 2002 to 2011, the viral meningitis accounted for 48.50% of cases of meningitis. **Material and Methods**: It is a descriptive study based on a survey and analysis of secondary data, confirmed cases, available in WINDOWS SINAN NET, and analyzed the annual incidence in the state of Bahia, in the period 2002 to 2011. **Results**: In the analyzed period there were 6,745 cases, concentrating mostly in metropolitan region (77.2%). Of these, 63.4% occurred in Salvador, 4.15% in Lauro de Freitas, 3.7% in Camaçari and 2.8% in Simões Filho. In the first five years (2002-2006), the disease had an average incidence of 2.8 per 100,000 inhabitants, with the exception of 2003, period in which disease outbreak in the state capital, where the incidence was 18.1 per 100,000 inhabitants. In the others five years (2007-2011) there is a new pattern, with increased mean incidence to 5.6 per 100,000 inhabitants, and a new outbreak in 2007, also restricted to the Salvador, even greater and incidence of 36.0 per 100,000 inhabitants. **Conclusion**: The epidemiological situation of viral meningitis in Bahia sets become a major public health problem, especially in crowded areas such as Salvador and its metropolitan area. The change in the behavior of the disease, after the outbreak of 2007, may have been influenced by an improvement in access to health services, the notification and diagnosis. The results may support the epidemiological surveillance of the disease, warning of the possibility of epidemics and the need for early detection, though, so that appropriate actions are implemented in a timely manner, advances are still needed, especially in the identification of viruses. **E-mail:** zm.rios@hotmail.com

Virus004- **Surveillance of the circulation of Arboviruses (*Flavivirus* and *Alphavirus*) during the 2011 dengue epidemic in Manaus**

Alves VCR[1]; Bastos MS[1,2]; Figueiredo RMP[2]; Gimaque JBL[2]; Itapirema EF[2]; Galusso ES[2]; Figueiredo LTM[3]; Ramasawmy R[2,4]; Mourão MPG[1,2,4]
[1]**Universidade do Estado do Amazonas;** [2]**Gerência de Virologia/FMT-HVD;** [3]**Centro de Pesquisa em Virologia-FMRP/USP,** [4]**Universidade Nilton Lins.**

Arboviruses, often linked to outbreaks in humans, are a serious burden to public health. The arboviruses have a broad clinical spectrum that ranges from mild, characterized by acute fever, headache, myalgia, arthralgia, rash, to severe diseases, such as hemorrhagic, hepatitis and encephalitis. The clinical differential diagnosis between arboviruses can be difficult, especially in the acute phase of infection, where symptoms are very similar. Several studies have shown the circulation of arboviruses in several regions of Brazil during epidemics and prompted the need for an efficient surveillance system to monitor the entry and circulation of arboviruses. In Manaus, the capital of the Amazonas state, the Fundação de Medicina Tropical Dr. Heitor Viera Dourado (FMT-HVD) is a pioneer institution in the implementation of surveillance of acute undifferentiated febrile syndrome. Here, we aimed to study the cases of acute undifferentiated febrile illness observed in the hospital of the FMT-HVD in the Brazilian Amazon Basin during the dengue epidemic in Manaus. From January 1 to May 31, 2011, 540 biological samples (serum) of patients with clinical suspicion of dengue were sent to Virology department of the FMT-HVD, for confirming the presence of the virus. All of the samples were processed for RNA purification and RT-PCR for producing cDNA followed by PCR using primers specific for Flavivirus (DENV 1-4, SLEV, BSQV, ILHV) and Alphavirus (MAYV). Flavivirus was present in 39.6% (214/540) of the samples. All were of DENV. Of these, 24(4.4%) were of DENV-1, 104 (19.3%) DENV-2, 24 (4.4%) DENV-3, 58 (10.7%) DENV-4:02 (0.4%). The following co-infections of DENV-1/4, DENV-2/1 and of DENV-2/3 in 2 (0.4%), 1(0.2%) and 1(0.2%) patients respectively were observed. All of the samples were negative for the Alphavirus (MAYV). The increasing incidence of dengue cases and the occurrence of the four serotypes simultaneously indicate the risk of new epidemics of dengue with severe dengue hemorrhagic fever. The monitoring of endemic and emerging diseases causing acute undifferentiated febrile illness can provide the necessary information for implementation of appropriate policy and public health surveillance for the region.**Supported by:** FAPEAM/PPSUS. **E-mail:** alvesvalquiria@yahoo.com.br

Virus005- **Equine serosurvey for flaviviruses in the Brazilian pantanal**

Pauvolid-Corrêa A1,2*; Couto-Lima D1; Schatzmayr HG1; Nogueira RMR1; Komar N2
1Laboratório de Flavivírus, Instituto Oswaldo Cruz, Fundação Oswaldo Cruz, Ministério da Saúde, Rio de Janeiro, RJ, Brazil; 2Arbovirus Diseases Branch, Centers for Disease Control and Prevention, Department of Health and Human Services, Fort Collins, CO, USA, *Fulbright Visiting Researcher in doctorate sandwich program # in memorian.

The Brazilian Pantanal is one of the world's largest wetlands with an extraordinary diversity and abundance of wildlife. Very little is known about the local activity of Brazilian flaviviruses in this region, however. The main objective of present study was to test for the circulation of 11 different flaviviruses in a large area of the Brazilian Pantanal by testing horses for flavivirus-neutralizing antibodies. In 2009 and 2010, serum was collected from 723 horses from 14 beef cattle ranches of the Nhecolândia sub-region of the Brazilian Pantanal. The sera were initially screened for flavivirus-reactive antibodies by using an epitope-blocking enzyme-linked immunosorbent assay (blocking ELISA). Samples that blocked the nonspecific reaction between the 6b6c-1 monoclonal antibody and cell lysate-derived antigen for West Nile virus (WNV) were then titrated by 90% plaque-reduction neutralization test (PRNT90) for 11 flaviviruses previously reported in Brazil. Blocking ELISA detected 368 (50.8%) equine serum samples positive for flavivirus antibodies, of which 79 (10.9%) confirmed seropositive for Ilheus virus (ILHV), 48 (6.6%) for Saint Louis encephalitis virus (SLEV), 24 (3.3%) for WNV and 1 (0.1%) for Rocio virus (ROCV) by PRNT90 employing the criterion of 4-fold greater titer to assign a past infection for a specific virus. This conservative criterion is necessary because of the propensity of vertebrates to mount a strongly cross-reactive humoral immune response following secondary flavivirus infection. The remaining 216 (29.8%) horses that tested positive by blocking ELISA were considered previously infected with undetermined flavivirus (es). We confirm serological evidence for ILHV, SLEV, and WNV activity in the area and report for the first time neutralizing antibodies to ROCV in a local horse. There was no serological evidence in horses of the circulation of Bussuquara virus, Iguape virus, Yellow fever virus and all four Dengue viruses. **Keywords:** Pantanal, horses, PRNT, Blocking ELISA, West Nile virus. **Financial Support:** CDC, CNPq, CAPES, FULBRIGHT, FIOCRUZ. . **E-mail:** pauvolid@ioc.fiocruz.br

Virus006- **Ilheus virus isolation in the Brazilian pantanal**

Pauvolid-Corrêa A1,2*; Couto-Lima D1; Schatzmayr HG1; Nogueira RMR1; Komar N2
1Laboratório de Flavivírus, Instituto Oswaldo Cruz, Fundação Oswaldo Cruz, Ministério da Saúde, Rio de Janeiro, RJ, Brazil; 2Arbovirus Diseases Branch, Centers for Disease Control and Prevention, Department of Health and Human Services, Fort Collins, CO, USA, *Fulbright Visiting Researcher in doctorate sandwich program. # in memorian.

The wetlands of the Brazilian Pantanal host large concentrations of diverse wildlife species and hematophagous arthropods, conditions that favor the evolution of zoonotic arboviruses. A recent study reported serological evidence of various arboviruses, including West Nile virus and Ilheus virus (ILHV). To extend these studies, we captured 3111 adult mosquitoes of 16 species from the Nhecolândia sub-region of Pantanal during 2009 and 2010. Mosquito pool homogenates were assayed for infectious viruses in C6/36 and Vero cell monolayers and also tested for flavivirus RNA by a group-specific Real-Time RT-PCR. One pool containing 50 non-engorged female specimens of Ochlerotatus scapularis collected while landing on human tested positive for ILHV by both culture and RT-PCR, indicating a minimum infection rate of 2.46 per 1000. The nucleotide sequence exhibited a 96% identity to ILHV isolated in 2004 from a human in Ecuador. The present data confirm the circulation of ILHV in the Nhecolândia sub-region of Pantanal, Brazil. Despite the absence of epidemics attributed to ILHV and that a marked number of infections are asymptomatic, mild encephalitic disease has been described. The detection of ILHV infection in mosquitoes while attempting to blood feed on a human should motivate attention to this virus by the Brazilian arbovirus surveillance program and local physicians. **Keywords:** Ochlerotatus scapularis, Ilheus virus, mosquitoes, Pantanal. **Financial Support:** CDC, CNPq, CAPES, FULBRIGHT, FIOCRUZ. **.** **E-mail:** pauvolid@ioc.fiocruz.br

Virus007- **Analysis of cell entry of New and Old World arenaviruses using pseudotyped viruses bearing their envelope proteins**

Hideki Tani, Koichiro Iha, Shuetsu Fukushi, Satoshi Taniguchi, Tomoki Yoshikawa, Masayuki Saijo, and Shigeru Morikawa
Special Pathogens Laboratory, Department of Virology I, National Institute of Infectious Diseases, Tokyo, Japan

Abstract: Arenaviruses are a major cause of hemorrhagic fevers endemic to Sub-Saharan Africa and South America, and thus a major public health and medical concern. Because these viruses are categorized as biosafety level 4 pathogens, which are restricted to their use, biological studies including therapeutic drug or vaccine development have been impeded. Due to the difficulties to handle with live viruses, pseudo type viruses transiently bearing arenavirus envelope proteins based on the vesicular stomatitis virus (VSV) and retrovirus have been developed as surrogate virus systems. Here, we have developed pseudotyped VSV bearing each envelope protein of various species of arenaviruses (AREpv), including recently identified Lujo and Chapare viruses. AREpv generated in several mammalian cell lines such as 293T cells exhibited high infectivity in various mammalian cell lines. The infections of Huh7 or U937 cells with New World AREpv were inhibited by anti-hTfR1 antibody. A pH-dependent endocytosis of AREpv was confirmed by the use of lysosomotropic agents. Cell fusion was induced when the cells expressing arenavirus envelope proteins were transiently exposed at low pH. Exposure of AREpv to low pH abolished the infectivity, while pseudotyped VSV bearing VSV G protein retained its infectivity even after exposure to pH 3. These results indicate that AREpv mimics cellular receptor-dependent entry of live arenaviruses. Further analysis showed that the infection of New World AREpv was inhibited by cathepsin L inhibitors, but not by a cathepsin B inhibitor, suggesting that cathepsin L is important for fusion events in the cell entry of New World AREpv. Thus AREpv developed in this study is thought to be useful to study arenavirus envelope proteins with respect to the biological functions including receptor interaction and fusion events in the entry process. **E-mail:** htani@nih.go.jp

Virus008- Incidence of IGM antibody to Epstein Barr virus (EBV) I the area influenced by the Salobo Project, Carajás, Pará, state

Monteiro, Talita A.F. [1]; Polaro, Alessandra. [1]; Moura Antonio[1]; Sousa, Wellington T[2]
1-Instituto Evandro Chagas, Secretaria de Vigilância em Saúde, Ministério da Saúde. Seção de Virologia. Bolsista do CIEE.

Introduction: Epstein–Barr virus (EBV), also called human herpesvirus 4 (HHV-4) belong to the *Herpesviridae* family and is one of the most common viruses in humans. It the major cause of the infectious mononucleosis. Initial exposure toEBV usually occurs in the first decade of life producing persistent, latent asymptomatic infection. **Objective:** The aim of this study was to detect the Epstein Barr virus antibodies of *IgM* class in the area influenced by the salobo project, Carajás, Pará state. **Methods**: Serum samples with IM-like syndrome subjects analyzed at the Virology Section of Institute Evandro Chagas for the presence of *VCA/IgM* EBV-specific antibody using a commercial enzyme-immunoassay (DRG Diagnostic, Germany). **Results**: A total the 1570 serum samples were tested in the January to June 2010, occurred in 60.9% (956/1570) and 39.1% (614/1570) of male and female, respectively. Recent infections based on presence of *IGM* were confirmed for EBV in 1.6% (25/1570) of whom 36.0% (9/25) were female and 64.0% (16/25) male. The age group most affected was between 21 to 30 years of age (24.0%; 6/25). **Conclusion:** These results indicate the low incidence of IgM-positive samples to Epstein Barr virus suggests that agents other than EBV should be investigated in the area influenced by the Salobo project, Carajás, Pará state. **E-mail:** talitamonteiro@iec.pa.gov.br

Virus009- Varicella hospital in the environment profile cases and control measures

Felipe César Veloso de Oliveira, Larissa Rocha de Rezende de Medeiros; Luciana Nogueira de Almeida Guimarães; Cirlene dos Santos Gonçalves Urias; Fernanda Queiroz de Souza, Mariela Cometki Assis, Graziele Rezende de Medeiros, Sandra Maria do Valle Leone de Oliveira;

Varicella accounts for significant morbidities and remains a public health issue worldwide. Varicella, or chickenpox, is an infectious disease caused by the ubiquitous varicella-zoster virus (VZV). It used to be considered a relatively benign communicable disease of childhood. Hospitalization rates due to chickenpox are considerably high in developed countries, especially among children. The reported chickenpox complication rates range from 40.7% to 83.3% of children hospitalized. There are of a safe and effective varicella vaccine since 1986, there is no recommendation for universal vaccination against varicella in Brazil. **Objective**: Investigate the local epidemiology and seasonal trend of varicella in hospitalized children at University Federal Hospital. **Material and Methods**: A retrospective study was conducted to analyze the clinical information of all who were hospitalized for varicella at University Federal of Hospital between 2005 until 2012. The inclusion criteria were:, age relevant demographic, clinical and admission data were extracted from the hospital discharge records. Relevant demographic data included age and gender of the patients. Relevant clinical data included the presence or absence of associated complications and the type of complications of the patients. **Results**: There were 89 reported cases of chicken pox in University Hospital with the highest incidence in the months September to December. Among the cases, we found that 51.5% occurred in males and 48.5% in females, with an increase in the age group 1-5 years, 49 (55%). Regarding race, 55% of cases are white and 19% brown. The regions most reported were attached to the Southern District in the vicinity of the university hospital, around 30%. The initial site of occurrence of the outbreak, 13% were restricted to a single family cases and 9% in-hospital and 65% were missing this information. Preventive measures used have focused on the contacts in hospital. Among the contacts in-hospital, 20% were health professionals who had contact during hospitalization and where universal precautions were not taken on time. 15 were carried out vaccinations against chickenpox and in 26.6% of the cases were given anti-varicella zoster immunoglobulin. **Conclusion:** The high transmissibility and the damage caused by infection require that cases of chickenpox in a hospital environment are notified immediately, in order to establish surveillance and control measures in hospitals and the community. **E-mail:** sandrinhaleone@gmail.com

Virus010- **Varicella Outbreak in Local Childcare in São Francisco de Itabapoana Municipality, Rio de Janeiro State, Brazil, August 2011.**

Lavocat, M.N.[1]; Resende, E.A.[1]; Wada, M.Y.[1]; França, K.A.[2]; Cabral, K.[2]; Souza, C.L.R.[2]; Linhares, L.M.[2]; Stavola, M.S.[3]; Rosa, F.M.[4]; Melo, F.C.[4]; Marreiros, A.C.[4]; Macario, E.M.[1].
[1]**Field Epidemiology Training Program (EPISUS), Department of Surveillance in Health (SVS), Ministry of Health (MoH), Brasília, Brazil; [2]Municipal Department of Health, São Francisco de Itabapoana, Rio de Janeiro State; [3]Department of Health, of Rio de Janeiro State; [4]Department of Surveillance in Health (SVS), Ministry of Health (MoH), Brasília, Brazil.**

Introduction: Varicella is an acute rash illness caused by varicella-zoster virus. During September 2011, following a reported varicella cases in a local childcare an investigation was conducted to confirm the outbreak, to identify the chain of transmission and to recommend measures of prevention and control. **Material and Methods:** In a descriptive and cohort-design-study, confirmed case was defined as Individual who had rash-looking maculopapular or vesicular, which later evolved into pustules and crusts or informed International Code of Disease – ICD 10 that had varicella. . Analysis was performed by EpiInfo 3.5.3, the measure of association was the relative risk (RR), 95% confidence interval and p-value <0.05. **Results:** Among 58 students, 89.6% were confirmed varicella (attack rate: 91.2%). The median age was three years (3 months-6 years); 63.5% were male. The main signs/symptoms were vesicles (100%), fever (69.2%) and itching (69.2%). Severe cases and complications were not recorded. It was reported contact with previous case of varicella in 88.5% and 60.8% were in childcare. The institution had no physical barriers between classes. It was identified the probable contact of transmission in 73% of the cases. The first case attended childcare one day before the onset symptoms at Epidemiologic Week 28 and the last at 38. There were no statistical associations in prior contact with cases in household (RR:0.93,CI:0,75-1.17,p<0.42) and host someone with varicella (RR:0,52,CI:0,13-1,49,p<0.40). **Conclusions:** An outbreak occurred in the childcare when the first case attended the day before the appearance of vesicles. Immunoprophylaxis was not performed due late reporting and we recommend promptly reporting in outbreaks and isolation of ill to avoid the dissemination of the varicella. **E-mail:** marilia.lavocat@saude.gov.br

Virus011- **Varicella Zoster: A new risk factor for atherosclerosis?**

Oliveira, G. L. C.; Matos, S. B.; Pedroza, K, C.; Couto, R. D.; Moura, D.; Avelar, M. V.; Lima, F. W. M.
Immunology Service of Infectious Diseases – ISID, Faculty of Pharmacy. Federal University of Bahia state, Brazil, Rua Barão de Geremoabo s/n. Campus Universitário de Ondina

Introduction: The correlation between HHV-type 3, or varicella zoster virus, HVZ with atherogenesis, such as a risk factor for heart disease has been investigated through epidemiological and clinical studies. One of the first clues came from the observation of a case of a pseudo-myocardial infarction during an episode of acute herpes zoster. In this study we investigated a possible correlation between plasma lipids and other risk factors for atherosclerosis, with the prevalence of varicella zoster virus antibodies in patients attended at Clinical Chemistry Laboratory of Federal University of Bahia. **Material and Methods:** Conducting a Survey of Patients with 492 copies of the same, which contains questions and other important information about the patient's personal data, and information regarding risk factors for coronary artery disease, such as family history of heart disease, hypercholesterolemia , alcoholism, obesity, sedentary lifestyle, sports practice, diabetes mellitus, or not use any drug daily and renal dysfunction. Serum samples from all individuals, 112 men (22,8%) and 385 women (78,25%), were tested by clinical chemistry and immunology methods between August 2010 - April 2011. Anti-VZV IgG antibodies were determined by ELISA (ALKA®) according to manufacturer's instructions, through ALISEI® semi automated serology instrument. Patients were stratified by anti-VZV IgG titters (seropositive and seronegative groups) and dyslipidemia. Data were analyzed by SPSS® 8.0 for Windows statistical package. **Results and:** There was no statistical correlation between the seroprevalence HVZ and traditional risk factors for atherosclerosis, cigarette smoking (p = 0.857), hypertension (p = 0.322), diabetes mellitus (p = 0.737), alcoholism (p = 0.977), sedentary lifestyle (p = 0.404), family history of dyslipidemia (p = 0.244). There was no statistical correlation with seropositive

and seronegative HZV in relation to the use of daily medication (p = 0.811) and renal dysfunction (p = 0.315).The seropositivity to anti-VZV IgG was 94%. Statistical correlations weren't observed considering seropositive and seronegative groups and total cholesterol (p=0,176), LDL-c (p=0,171), HDL-c (p=0,808), VLDL-c (p=0,768) and triglycerides (p=0,749) means. However, the seropositive group showed higher prevalence of elevated total cholesterol (> 200 mg/dL) than seronegative group, and this higher prevalence was assigned to LDL-c levels. **Main conclusions:** Based on these results, the VZV infection might contribute to dyslipidemia and indirectly for atherogenesis. More extensive studies are warranted. **E-mail:** mlima@ufba.br

Virus012- **Development of real time pcr for quantification of herpes simplex virus type i in vitro assays**

Nestor, B. A.; Oliveira, P.C.; Pereira, T. V.; Oliveira, R. A.; Caldas, S.; Cecílio, A.B.
Fundação Ezequiel Dias, Diretoria de Pesquisa e Desenvolvimento, Divisão de Ciências Biomédicas, Laboratório de Biotecnologia e Saúde, Belo Horizonte, Minas Gerais, Brazil.

Herpes Simplex Virus (HSV) belongs to the *Herpesviridae* family. These viruses may cause a variety of clinical disorders, characterized by the presence of vesicles in the skin or in any other mucous membrane of the body. Although, more severe manifestations could occur, mainly in neonates and immunosupressed individuals. As new techniques of molecular biology appear, in particular Polimerase Chain Reaction (PCR), good results have been obtained concerning the detection and quantification of genetic material of many microorganisms. The objective of this study was the development and standardization of one methodology to quantify HSV-I in assays *in vitro*, using Real Time PCR. The primers were described by *Wilson et al* (2006) and were used for the amplification of a fragment of 82 bp corresponding to the TK gene (tymidine kinase), which was cloned into the *pGEM-T-Easy* plasmid. The standard curve was generated using five serial dilutions (1:10) of the plasmid DNA with 1 x 10^6 copies/mL. The sensibility of the assay was evaluated using 7 *logs* of standard dilutions with 1 x 10^7 copies/mL. In order to evaluate the applied methodology, a test was done using a sample of *Herpes Simplex Virus Type I* (ATCC VR – 733), M.O.I=1,0, treated with concentrations of 0,1; 1; 10 and 100μg/mL of *Acyclovir*, for 48hs. The experimental material was collected, the DNA was extracted and the PCR was executed for quantification analysis. An exogenous control was added for normalization of the results. The dissociation curve presented one unique peak for the specific amplicon (TK gene) with a temperature of melting (Tm) of 81,26ºC, and for the control amplicon, with a Tm of 78,91ºC. The dissociation curve showed an efficiency of 99,18% with a R^2=0,99. The curve of sensibility presented a detection ranging from 10 to 1 x10^7 copies/mL. As we observed the amplification curve we could correlate that the concentration of viruses decreases as the concentration of the acyclovir raises. Applying this methodology the determination of viral load was possible. The results indicate that the methodology developed was adequate to use in quantification of HSV-I samples and may be used in further *in vitro* experiments. The data showed that Real Time PCR offers quick results with excellent sensibility and specificity, being extremely important in the development of strategies concerning the diagnostic and viral load monitoring. **E-mail:** alzira@funed.mg.gov.br

Virus013- **Laboratory diagnosis by PCR of infection caused by *Orthopoxvirus* in Brazilian samples in the period of 1999 to 2011**

Gomes, G.M.; Lancelloti, S.R.; Barreto-Vieira, D.F., Barth, O.M.
Laboratório de Morfologia e Morfogênese Viral, Instituto Oswaldo Cruz, Fundação Oswaldo Cruz, Ministério da Saúde, Rio de Janeiro, RJ.

The Poxviruses are one of the most feared viruses in the history of virology. The Poxviridae family comprises viruses that infect mammals, insects and brids. Among the genus belonging to this family four have the capacity to infect humans. The Orthopoxvirus wich the Smallpoxvirus, the virus Vaccinia (used in vaccine production), Monkeypox, Cowpox, among others, is the most important genus related to diseases in humans and animals (Oliveira, 1994). The Poxviruses are one of the largest viruses already described. The viral particles can reach about 400 nm in length. These viruses have a complex

morphology; the genome comprising a DNA molecule of linear single-stranded helix, and the conserved sequences stored in the central region (in Orthopoxvirus) (Schatzmayr & Barth 2005). This work was carried out with samples from several Brazilian states received by de Laboratório de Morfologia e Morfogênese Viral during a period of 12 years (1999 – 2011). A total of 104 samples (human and bovine) were subjected to the technique of polymerase chain reaction (PCR) for detection of Orthopoxvirus infection, 71% of bovine samples (74 samples) and 29% of human samples (30 samples). Among the bovine samples were obtained 46% of positivity (34 samples) while in human samples while the percentage positive was 77% (23 samples). According to the data analyzed during the entire period of study we concluded that the number of humans and animals infected with poxviruses has become constant. Thus we emphasize the need to use a rapid and accurate method of diagnosis, and that allows the identification and classification of infectious agents reliably, as well as its use as an epidemiological monitoring tool of viral dissipation in our country. **Keywords:** Orthopoxvirus, Brazil, PCR, Cantagalo virus**. E-mail:** gabriellagomes@ioc.fiocruz.br

Virus014- **Serological analysis of humans samples for detection of neutralizing antibodies anti-*orthopoxvirus* from different regions of Brazil**

Lancelloti, SR, Gomes, GM, Barreto - Vieira, DF, Barth, OM.
Laboratório de Morfologia e Morfogênese Viral, Instituto Oswaldo Cruz, Fundação Oswaldo Cruz, Rio de Janeiro, RJ, Brazil.

The genus *Orthopoxvirus,* family *Poxviridae,* includes the smallpox virus, eradicated since 1977, the vaccinia virus used in vaccine production, the monkeypox and cowpox viruses. The genus *Orthopoxvirus* causes acute vesicular disease, with formation of vesicles that evolve into pustules and crusts and are able to infect humans and various species of vertebrates. Infections have been observed in some states of Brazil in recent years (Schatzmayr & Azevedo-Costa, 2005). Several serologically related species of viruses are members of the *Orthopoxvirus* genus. They are of Importance in medical and veterinary researches, as variola virus (VARV) and vaccinia virus (VACV). The latter was used as immunizing agent in extensive vaccination campaigns in the country for the prevention of smallpox in urban and rural areas. Isolates, phylogenetically related to VACV, as the virus Cantagalo (CTGV), were found in skin lesions of humans and animals (cattle). The present study intends to investigate the circulation of Orthopoxviruses in humans. A total of 79 serum samples, were received from different regions of the country. The antibodies were determined using the plaque reduction neutralization test (PRNT[50]), which was used with CTGV as antigen. Neutralizing antibodies anti-*Orthopoxvirus* were detected in 70 samples (89%) of the sera evaluated between 2010 and 2011. Considering the significant positivity of antibodies in the population studied, we conclude that the virus is constantly circulating in the country. **Keywords:** *Orthopoxvirus,* human, PRNT, Cantagalo virus. **E-mail:** sonialancelloti@ioc.fiocruz.br.

VECTORS

Triatomines

Triatom001- **Assessment of housing characteristics and the presence of triatomines at the community Sapé, rural zone of Limoeiro do Norte-CE**

Vasconcelos[1] ASOB, Freitas[1] EC, Andrade[1] MC, Cândido[1] DS, Silva Filho[1] JD, Gomes[1] KCMS, Correia[1] JPR, Pereira[1] LS, Coelho[2] HLL, Oliveira[3] MF.
1 – Research Laboratory in Chagas Disease, Federal University of Ceará (UFC), Fortaleza - CE, Brazil; 2 - Department of Pharmacy, Federal University of Ceará (UFC), Fortaleza - CE, Brazil; 3-Department of Clinical and Toxicological Analysis, Federal University of Ceará (UFC), Fortaleza - CE, Brazil.

Introduction: Brazil has more than 120 known species of triatomines: 60 registered and 48 already identified. According to Oliveira Filho (2000), some studies show that peridomicile is the main factor of infestation in areas that are occupied by *Triatoma brasiliensis* and *Triatoma pseudomaculata*, responding about 80% of cases. So, if peridomicile is kept with low rates of infestation, will decrease the input of triatomines inside the houses. In view of the control activities of triatomines and educational activities promoted by the authorities, we decided to check the domiciliary and the peridomiciliary characteristics from the houses e also the presence of triatomines in the community of Sapé located in rural zone of Limoeiro do Norte-CE. **Methodology:** Our study was realized in the community of Sapé located in rural zone of Limoeiro do Norte-CE; this is a prospective study that used as a research tool a questionnaire containing the following variables: type of wall, presence of pets, peridomiciliary attachments and the presence of triatomines. Our group was accompanied by two agents of the control program for Chagas disease (PCDCh), which were of great importance in the investigation of the study area. We used flashlights to help search for the triatomines, since they have nocturnal habits, fact that can make the capture of hematophagous difficult. **Results:** The present study investigated 15 residences. Of these, 13 have pets (dogs and cats). As regards the type of wall 10 had brick wall with complete plaster, and 3 of brick wall with incomplete plaster and 2 unplastered brick. In every house there was a presence of attachments around the houses, and the most common were henhouses (5), pigpens (10) and pile of tiles and wood (15). As regard to the capture of triatomines, we observed the presence of only a hematophagous (*Rhodnius nasutus*) in one of the residences. A fact that deserves comment, is that this same house for two consecutive years (2009 and 2010) were captured more than 300 triatomines (data provided by PCDCh). **Conclusions:** From these results, we found that education and control of Chagas disease (catch and spraying) had great impact in raising awareness of the local population and consequently in vector control in the region. **E-mail:** vasconcelosarduina@yahoo.com.br

Triatom002- Characterization and geographic distribution of the fauna of triatominae (Hemiptera: Reduviidae) captured in the Pontal do Triângulo Mineiro

Müller, JN[1].; Gómez-Hernández, C[2].; Rezende-Oliveira, K[1].
1. Faculdade de Ciências Integradas do Pontal. Universidade Federal de Uberlândia. 2. Universidade Federal do Triangulo Mineiro.

Introduction: The scheme of Chagas disease's control (PCDCh), notifies insects suspects and possible vectors, with the aim of disrupting the *Trypanosoma cruzi,* etiologic agent's transmission, since the vector engine is the main responsible for the reported cases in Brazil. There aren't any reports of studies in the "Pontal do Triângulo Mineiro" about characterization and distribution of Triatominae. **Objective:** To describe and analyze the Triatominae's distribution in "Pontal do Triangulo Mineiro" through the record activity of PCDCh, supplied by "Centro de Controle de Zoonoses" of Ituiutaba city – MG. **Material and Methods**: Completed forms have been analyzed in the years 2004 to 2009 and 2011 and set up a database in the Excel 2010 program, which included the following items: Entomological survey's characteristic, Triatominae's collection species caught and positivity to the Etiologic Agent. **Results:** The total number of Triatominae captured has been 6648, being in three species: 99.43% accounted for *Triatoma sordida*, *Rhodnius neglectus* 0.48% and 0.09% *Panstrongylus megistus*. The analysis' information made it possible to note that 98.6% of these insects were captured in rural areas and among the houses and checked 82.8% are 1730 masonry with plaster. There was a predominance of catch at peridomicile with 48.8% found in the chicken's habitat, 22.6% in other unidentified locations, 16.3% and 12.2% in the storehouse supplies. In intradomiciliar the prevalence was in the room with 52.3%, followed by 34.4% 8.0% room, kitchen and other 5.3%. With respect to the testing of positivity to the parasite of Triatominae caught in intradomiciliar was found that 68.8% of insects captured were not scanned, 30.9% were negative and 0.3% has the parasite in their feces. 59.6% in peridomicile were negative, 39.9% were not scanned and 0.5% has been positive. **Conclusions:** The information obtained show the significant colonization of Triatominae species of *Triatoma sordida* in rural housing in the Triângulo Mineiro's region and notify depth in case reporting positive insects underscores the importance of controlling shares of the vector by the epidemiological surveillance. **E-mail:** josi_muller05@hotmail.com

Triatom003- Characterization of natural foci of triatomines in the Tapajos River Region, Pará, Brazil

Santos Jr JE[1], Béliveau A[2], Davidson R[2,3], Lucotte MM[2].
[1] **René Rachou Research Center (CPqRR/FIOCRUZ) MG-Brazil,** [2] **Institut des sciences de l'environnement, Université du Québec à Montréal (UQAM),** [3] **Biodôme de Montréal.**

Chagas disease is one of the most important parasitic diseases existing in the American continent, with eight million people infected by the protozoan *Trypanosoma cruzi*. In Brazil, this disease affects about 3 million people, constituting one of the major medical-social problems of the country. Although *T. cruzi* has been found in the 20s in the State of Pará, the Amazonian region was considered a non-endemic area for the disease until 1969, when the 1st acute case was then described. Currently oral infection, mainly associated with the consumption of açai juice, has increased the epidemiological importance of palms as foci of Chagas disease transmission in this region. However, different natural ecotopes can contribute to the maintenance of wild colonies of triatomines, allowing a greater human contact with the transmission cycles of Chagas disease. This study aimed to characterize the main ecotopes (beyond palm trees) of triatomines in varied areas of the Municipality of Aveiro, in the Tapajos River Region, Pará/Brazil. Sampling was conducted in two areas of the Boca Araipá community between 18/01 and 02/02/2012. Searches were performed in two houses as well as in nearby agricultural and forest areas. The fields and forest environments were investigated by dissection of habitats (stumps, dead trees and ground shelters) and use of Noireau traps (for living trees). Captured individuals were analyzed for infection by *T. cruzi* and the parasites characterized by PCR-Multiplex (primers: Diaz7, Diaz8 and TcSat4). No foci of triatomines were found in the assessed households. A total of 82 ecotopes were investigated in natural environment [24 (29.3%) termite mounds, 24 (29.3%) stumps, 8 (9.8%) holes on living trees, 10 (12.2%) under roots and 16 (19.4%) ground shelters], with an average infestation index of 5%. A total of 10 triatomines were collected in three different ecotopes [1 termite mound (4 nymphs - 4th and 5th instar), 2 under roots (5 nymphs of 2nd and 3rd instar) and 1 stump (1 nymph of the second instar). Nymphs of *Panstrongylus* sp. were found in these ecotopes and individuals caught in the termite mounds were identified as *P. geniculatus* (3 infected). All parasites were characterized as *T. cruzi* I. From these data, it was possible to detect the presence of the sylvatic cycle of the parasite in the areas frequently used by local population. Although a domiciliary infestation was not found, the routine of the local dwellers, who use natural areas for fuelwood, timber and especially hunting, enables the insertion of human and domestic animals in the wild cycles of *T. cruzi*. This study emphasizes the importance of inclusion of other natural ecotopes, beyond palm trees, for the assessment of risk areas of Chagas disease transmission in the Brazilian Amazon. **E-mail:** santosjr_je@yahoo.com.br

Triatom004- Climatic and socioeconomic determinants for the occurrence of synanthropic triatomines in the Midwest region of Brazil

Pereira JM[1], de Almeida PS[2], de Sousa AV[3], de Paula AM[4], Machado RB[5], Gurgel-Gonçalves R[6]
[1]**Coordenação Geral de Laboratórios de Saúde Pública, Secretaria de Vigilância em Saúde, Ministério da Saúde, Brasil.** [2]**Laboratório Regional de Entomologia, Núcleo Regional de Saúde, Secretaria de Estado de Saúde do Mato Grosso do Sul, Brasil.** [3] **Núcleo de Apoio ao Controle de Endemias, Secretaria de Saúde do Estado de Goiás, Brasil.** [4]**Laboratório de Entomologia, Secretaria de Saúde do Estado do Mato Grosso, Brasil.** [5]**Departamento de Zoologia, Instituto de Biologia, Universidade de Brasília, Brasil.** [6]**Laboratório de Parasitologia Médica e Biologia de Vetores, Área de Patologia, Faculdade de Medicina, Universidade de Brasília, Brasil.**

Introduction: Acute cases of Chagas disease have been detected in the Midwest Region of Brazil (MRB). The risk of vectorial transmission remains due to the constant presence of infected triatomine bugs in households. The analysis of the geographic distribution of triatomines is crucial for understanding geographic dimensions of risk transmission of the disease. Here, we analyzed the climatic and socioeconomic determinants for the occurrence of synanthropic triatomines in the MBR. **Material and Methods:** We compiled 3396 records of triatomines, which documented occurrence of 27 species in MRB between 2000 and 2010. Ecological niche models based on 13 climatic variables and elevation were produced for eight species occurring in at least 20 municipalities using the method of maximum entropy.

Regression analyzes were performed to test the association between species richness and socioeconomic variables of the municipalities of MRB. **Results:** The genus *Triatoma* showed higher species richness (12), followed by *Panstrongylus* (5), *Rhodnius* (4), *Psammolestes* (2), *Microtriatoma* (2), *Eratyrus* (1), and *Cavernicola* (1). *Triatoma sordida* and *Rhodnius neglectus* showed broad geographic distributions in MRB. Only one record of *T. infestans* was detected in 2000 (State of Goiás). Ecological niche models indicated high climatic suitability for synanthropic triatomines in cerrado areas (savannas) in the state of Goiás; rain forest areas of the northern state of Mato Grosso showed low suitability for synanthropic triatomines. The temperature seasonality was the variable that best explained the models, which also indicated a negative association between species richness and socioeconomic variables in the municipalities of MRB. **Main Conclusions:** The results indicate that virtually the entire territory of the MRB presents climatic conditions for the occurrence of at least one triatomine species and that the occurrence is determined by socioeconomic factors. Thus, it is recommended strengthening the entomological surveillance in MRB, especially in the areas indicated in this study. **E-mail:** rgurgel@unb.br

Triatom005- **Comparative epidemiological evaluation of domicile triatomine infestation in Jaguaruana, Ceará, Brazil**

Sarquis O[1], Carvalho-Costa FA[1], Guedes EO[1], Santos TMR[1], Barbosa CV[1], Batista VSP Fernandes FA[1], Toma HK[2], Lima MM[1].
Instituto Oswaldo Cruz, Fundação Oswaldo Cruz, 2-Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil.

Introduction: Chagas disease (CD) is one of the major parasitic diseases in Latin America, primarily transmitted to man by triatomine vectors. In northeastern Brazil, autochthon triatomine species, such as *Triatoma brasiliensis* and *T. pseudomaculata* can invade and colonize dwellings, nowadays emerging as a challenge to vector control. This study aims to re-investigate four rural villages of Jaguaruana municipality, Ceará. Brazil, in order to evaluate triatomine infestation, colonization and density in the same domiciliary units we surveyed ten years before in 2001. Our objective was to compare the epidemiological scenario one decade later, in 2011. **Materials and methods:** Jaguaruana ($4^0 50'90"$S, $37^0 46'48"$W) is situated in eastern Ceará State, ~180 km from the capital Fortaleza. The same four rural localities were selected for 2001 and 2011: Coberto, Currais do Filipe, Figueiredo do Bruno and Figueiredo, all located 7 to 10 km from the urban area. All dwellings were inspected, identified and georeferenced. A questionnaire for epidemiological data collection was assigned to each domicile. Insects were searched for by exhaustion and manually captured using tweezers. **Results:** As in 2001, most insects collected in this study were *T. brasiliensis* (97.63%), followed by *T. pseudomaculata* (1.81%) and *Rhodnius nasutus* (0.56%). Concerning the 2001 domiciliary unit infestation, out of 158 inspected houses, 59 (37.4%) were infested, while in 2011, only 33 (27.3%) harbored triatomines. From 2001 to 2011, the intradomiciliar infestation reduced from 12% to 10%, the colonization rate decreasing from 15.25 to only 3.03%. In the peridomiciles, the infestation index was reduced by 50%, with high frequency in goat corrals (48.3%), followed by pigsties (31.7%) and wood piles (14.1%). The total number of captured triatomines in each period was significantly different, i.e. 2,666 specimens in 2001 and 1,437 in 2011 ($p < 0.05$). The triatomine infection by *Trypanosoma cruzi* also declined from 16.2% to 3.8%. The factors probably associated with household infestation reduction are housing improvements, a decrease in the number of peridomicile structures and fewer domestic animals. **Conclusion:** Comparing the current data with 2001, although the number of insects caught in the 2011survey was lower, *T. brasiliensis* and *T. pseudomaculata* continue to colonize domiciliary units, especially peridomiciles, despite the vector control effort of the Jaguaruana health authorities through insecticide spraying of the dwellings. Our results indicate that the surveyed villages demand frequent entomological surveillance. **E-mail:** otiliasarquis@ioc.fiocruz.br

Triatom006- **Natural infection of triatomines (Hemiptera: Reduviidae) by trypanosomatids in Ouro Preto do Oeste, Rondônia, Brazil: a multidisciplinary approach**

Dionatas Ulises de Oliveira Meneguetti[1], Helena Meika Uesugui[2], Leandro José Ramos[2], Renato André Zan[3], Luis Marcelo Aranha Camargo[4,5].
1. Department of biology, Faculty of Education and the Environment, Ariquemes, Rondônia, Brazil.2. Department of Health, Faculty of Education and the Environment, Ariquemes, Rondônia, Brazil. 3. Department of chemistry, Faculty of Education and the Environment, Ariquemes, Rondônia, Brazil. 4. Department of Tropical Medicine, Institute of Biomedical Sciences V, University of São Paulo, Monte Negro, RO, Brazil. 5. Department of Medicine, São Lucas Faculty, Porto Velho, RO, Brazil.

Introduction: Triatomines are largely spread insects, found from the south of the United States to the south of Argentina. They are very important because they may convey the South American trypanosomiasis, also called Chagas disease. This study aimed to evaluate the panorama of triatomine infection by trypanosomatids and the presence of this insect in several reservoirs in the region of Ouro Preto do Oeste, Rondônia, in order to create a platform to generate resources for primary health care, as well as to develop new popular education strategies for the prophylaxis of Chagas disease in the region. **Material and Methods:** The research was carried out in two different environments: a primary forest and a grazing area. Two monthly samplings were performed, one in each environment, from February 2009 to January 2010, in a total of 24 samples. For each sampling a specimen of *Orbignya speciosa* was examined to search for triatomines. The sampled triatomines were sorted according to their nymphal stage, packed in thermal boxes, at room temperature, and sent to the microscopy laboratory of the Centro Universitário Luterano of Ji-Paraná. There, we prepared smears of triatomines digestive tube content diluted in saline solution, mounted them in glass slides, and examined them using a microscope equipped with a 16x eyepiece and a 40x objective. The microscopic examination was thorough, covering the whole slide and the result was considered positive when we found flagellated and fully elongated Trypanosoma-like forms. Posteriorly, the smears were fixed in methanol, stained with Giemsa, and observed again using optical microscopy to confirm their positivity regarding the presence of trypanosomatids. **Results:** The highest occurrence of triatomines was observed in the grazing area, in the rainy season, and in nymph-III stage, on the other hand, a 70% contamination index with trypanosomatids was detected the adult stage. We observed that the panorama of triatomine infection with trypanosomatids in Ouro Preto do Oeste, Rondônia, is worrying, because of their high levels of contamination and increasing presence in households. **Conclusions:** This study revealed that a great part of the population and the health authorities of the state are unaware of the existence of triatomines. The research had a great repercussion and several notes were released in newspapers. Due to this diffusion, the State Health Secretariat distributed the guide to identify triatomines in the state of Rondônia, creating the first strategy of popular education for the prophylaxis of Chagas disease in the region. **Key words**: Chagas disease, triatomines and trypanosomatids. **E-mail:** dionatas@icbusp.org

Triatom007- **Guide to the Identification of Triatomines of Rio Grande do Sul**

Mello, F e Figueiredo, MIO
Instituto de Pesquisas Biológicas-Laboratório Central do Estado /FEPPS, SES/RS, Porto Alegre, RS, Brasil.

Introduction: Triatomines are obligatory haematophagous insects belonging to the order Hemiptera, family Reduviidae and subfamily Triatominae. These insects, popularly known as "kissing bugs", are considered of interest in public health due to their involvement in the transmission of the protozoan *Trypanosoma cruzi* (Chagas, 1909), causing agent of Chagas' Disease. The immediate and correct identification of species found in human habitations and peridomestic environments allow for the implementation of better vector control. The elaboration of a Guide for the Identification of Triatominae will contribute to better distinguishing the species of Triatominae in RS and to a better morphological knowledge of them, describing the activities of laboratory-based surveillance and consequently rationalizing the actions of State Program for the Control of Chagas' Disease (PECDCh). **Objectives:** The purpose of this Guide for the Identification of Triatomines is to aid professionals in Public Health of Departments of Health, both municipal and state, in identification species of triatomines present in the

state through a dichotomous key for identifying in adult stage specimens to species level and nymphs to genus level. Also contained are species distribution, screening procedures and storage and shipment of insects. The guides were published and distributed to laboratorists responsible for the identification of vectors. **Materials and methods:** The photographed specimens of triatomines belong to the Entomological Collection of IPB-LACEN/RS, with the exception of *T. oliveirai*, which belongs to LES/DZ/UFRGS. The images were obtained by a digital Sony DSC-W310 camera and were later edited using Adobe Photoshop ®. **Results and conclusion:** RS registered eleven species of Triatominae: *Triatoma infestans, T. rubrovaria, T. sordida, T. oliveirai*, *T. circummaculata*, *T. platensis*, *T. delpontei*, *T. carcavalloi*, *T. klugi, Panstrongylus megistus*, *P. tupynambai*. They are dispersed discontinuously throughout the state, some restricted to the south-central region, others to the northwestern region and others to the northeast. This guide, in printed form, provides the diagnostic features and geographical locations of these species. Also provided is a dichotomous key for the identification of adult stage specimens to species level including *T. carcavalloi* and *T. klugi*, recently described species which are not found in avaliable taxonomic identification keys for Triatominae. Information on Chagas in RS, external morphology, screening procedures, storage and shipment of insects were included in this guide. **E-mail:** resvet@fepps.rs.gov.br

Triatom008- **Natural infection of triatomines per trypanosoma in the state of Pernambuco with verification of the vetorial risk regions in the year 2011**

Silva MBA[1]*, Portela VMC[1], Menezes KR*, Silva S[1], Costa OM[1], Rocha CMN[1], Silva A[1] . **Central Laboratory of Public Health, LACEN – Recife-PE, Brazil [1], University of Pernambuco-UPE, Recife-PE, Brazil *.**

Introduction: The Triatominae are bloodsucking insects that belong to the subfamily Triatominae, known as vectors of Chagas disease caused by the flagellate *Trypanosoma cruzi* (Chagas, 1909), being adapted to colonize human habitations and still is a serious public health problem. The state of Pernambuco is constituted of 185 municipalities, in which the Triatomines can be found in 140 of them, with a mean of 9.340/year positive households. **Objective**: Verify the status of the insects and their natural infection with *Trypanosoma* sp. in the municipalities that make up the state of Pernambuco distributed according to the 11 Regional Health Managers (GERES) in 2011. **Material and Methods**: The database generated in the Excel program (2007) used in this study considered a sample of 11 insects sent by GERES for the Endemic Diseases Central Laboratory of Pernambuco (LABEND / LACEN-EP). The material analyzed consisted in 100% infected and 40% insects negative for *Trypanosoma* sp. after examination in the laboratory GERES. In the Laboratory of Endemic Diseases, was carried a research of the parasite in the feces of triatomines, to confirm the diagnosis. **Results:** 3525 triatomines were examined, of which 73.4% were captured inside houses and 26.6% around the homes. Natural infection by flagellates was detected in 21.8% of the specimens examined in the laboratory. The geographical distribution of triatomines species captured in the 11 GERES demonstrated that the Semi-arid Areas. Region had 71.8%, of the positive results for the presence of the vector, in the totality of state of Pernambuco, corresponding to the health regions: IX (15.5%), X (22.8%), XI (23.5%). However, GERES II had 18.75% of the insects' examined, which is near the city of Recife (State Capital). Among the species examined, stood out: *Triatoma brasiliensis* (32,62%)*, Triatoma pseudomaculata (33,3%) , Panstrongylus lutzi (25,51%)* e *Panstrongylus megistus* (3,09%). **Conclusion:** Knowledge about the geographic distribution and natural infection of these insects is crucial for understanding the ecologic and epidemiological aspects related to the transmission and perpetuation of *T. cruzi*. This survey indicates that the region of the Semi-arid Areas needs more attention in efforts to control and surveillance the *Triatominae* species that represent epidemiological importance for the region. The colonization of vectors in the household is a risk factor for the occurrence of infection, thus, should focus on surveillance and vector control serving to guide the actions of management of Chagas disease. **Key words:** Chagas Disease, Control, Pernambuco, Brazil. **E-mail:** silvamba@yahoo.com.br

Triatom009- **Social knowledge and practices associated to the ecological process of Chagas disease vectors' domestic infestation in Calakmul, Mexico**

Valdez-Tah AR
El Colegio de la Frontera Sur, Centro Regional de Investigación en Salud Pública

Introduction: The primary risk factor associated with *Trypanosoma cruzi* infection is human exposure to its vectors. Social knowledge about domestic environment, rainforest and the health/disease/attention process oriented human behavior associated to the triatomine infestation in dwellings and around them so are therefore important underlying factors to Chagas disease vectors vulnerability. Knowledge, beliefs and perceptions about these environments, the practices that people do in there both in the relation with triatomine ecological process and the perception of health vulnerability was studied in the Calakmul area in Mexico. **Materials and methods:** In Mexico EC is not recognized as a public health problem that results in a lack of a social notion of the disease. In respond we develop a first and exploratory research that aimed to know about the existing knowledge, beliefs, perceptions and practices of three dimensions: 1) domestic environment, 2) rainforest and 3) health, disease and attention process. This was a qualitative study that employed open interviews with 34 family mothers and fathers in a community with triatomine domestic infestation. The open interview data were recorded on audio-tapes and transcribed and were elicited both qualitative narrative and categorical codes subjected to content analysis while the quantitative data were analyzed using descriptive statistics. **Main results:** 1) the female connotation of domestic space can be accountable to women and the poor performance of their role by the presence of triatomine in the house and its surroundings. The long term in the construction of domestic structures could effect on differentiated presence of the vector over time. 2) The perceived change in the rainforest through the change in performance of production activities and resources that are highly valued but the effects on animals, insects and human health is not mentioned. The connotation of certain productive activities illegality are developed could generate new attitudes and practices associated with vector-borne like the secrecy of the people. 3) Social knowledge and perception of dengue as the only vector-borne disease for the development of the concept of a new insect that transmits a disease. **Conclusion:** An educational/communication program tailored to the local social- cultural background of a community is obviously required for Chagas disease vector transmission prevention. Strategies should consider interchange of knowledge and perceptions of at-risk persons regarding the vector´s ecology and its association with daily activities. **E-mail:** albitah83@hotmail.com

Triatom010- **Indicators of entomological surveillance of the Chagas disease in the State of São Paulo. Brazil**

Wanderley DMV, Silva RA, Barbosa GL, Rodrigues VLCC.
Superintendence of Endemic Disease Control-SUCEN - Secretary of Health of São Paulo

In the State of São Paulo the actions of entomological surveillance for Chagas' disease are triggered when notified by the population. The proposal of this study is to evaluate the entomological surveillance instituted, by means of the analysis of secondary data resultants of the activities developed in the period from activities in the period from January 2006 to July 2011. In the time of the receipt a notification of Triatominae, a guided tour is scheduled at the insect house and those located around them, within a period not exceeding 60 days. In these households the results of active surveillance of vectors results in data that allows the feeding of the following indicators: - number of notifications of triatomines / number of reports of insect x 100, - number of municipalities reporting / number of municipalities within x 100, - number of notifications answered / number of notifications received x 100, - number of reports with positive treatment / number of notices served x 100, - number of infected triatomines / number of triatomines examined x 100, - number of intradomiciliar with triatomine nymphs / number intradomiciliar with the triatomines x 100, - number of the insects with ingestion of human blood; - number of samples for serological reagents *Trypanosoma cruzi*. In addition to these indicators, the flow of notification from the collection of insects by the resident to the reporting unit (Health Unit, School or control the service itself), this reporting unit to the service control and service control to meet the notification in the household unit is monitored by counting the days in each step. During that time we received reports of 11,040 insects,

representing 74.7% of triatomines. These notifications came from 485 municipalities, 75.1% of the existing state. We met 91.7% of notifications received triatomine, 25.2% being positive in attendance, that is, with collection of new samples of insects. From the 35,481 copies of triatomines examined, 1.7% was positive for T. cruzi. *Triatoma sordida* was the most collected species (85.1%) with lower rates of natural infection (0.4%), while *Panstrongylus megistus* represented 9.3% of the specimens collected, but with higher rates of natural infection (15.2 %). The colonization of the indoors were 14.9%. Human blood was found in 2.1% of the insects examined. Serology applied for verification of positive individuals in households with triatomines positive for *T. cruzi* was negative in 38 samples examined. The flow of the notification within the entomological surveillance system showed up to 15 days interval between the collection of insects by the resident and receiving the reporting unit (96.7%), up to 15 days between the wounded in the reporting unit and receiving the service control (90.3%) and up to 60 days from arrival in the service control and service in the household (62.4%). It is worth to mention a percentage of 21.4 notifications of triatomines met within a period exceeding 180 days. The sustainability indicators point of entomological surveillance, with good coverage and that percentage is maintained over the years, as positivity service notifications, natural infection rates higher for the species *P. megistus*, a small percentage of food habits of insects in humans and examination of population living in households with the presence of triatomines infected with *Trypanosoma cruzi,* with no evidence of transmission. Attention should be given to meeting notifications in a timely manner in order to maintain and improve the program. **E-mail:** dalva@sucen.sp.gov.br

Triatom011- **Community participation in the Entomological Surveillance of Chagas Disease**

Bedin, C; Mello, F; Wilhems, T

The visitation or invasion of any wild vectors of Chagas disease in human habitations and domestic animals correspond to the majority of the events that are detected bugs. For monitoring of these vectors is important participatory surveillance. Community participation is based on stimulation of the notification of the presence of vectors in homes and an appropriate response can be followed by action. The surveillance with community participation in Rio Grande do Sul advocates the formation of a local network, with S*tations Information Triatominae*-PIT to receive the suspected vector, the *kissing bugs*. The municipal health officer conducts periodic visits to the PITs to ensure the forwarding of the insects in the laboratory, where they will be identified and confirmed as contamination is checked triatomine by *Trypanosoma cruzi. Results and conclusion*: The installation of PITs in Rio Grande do Sul began in 1996, in the west and south, motivated by the Southern Cone Initiative for the Elimination of *Triatoma infestans*. The sites chosen in rural areas are the residences of health workers and residents, and businesses; in urban areas, health facilities and headquarters of public health surveillance. Installation activities and visits to the PITs are under municipal administration since 2005. In 2010, DVAS/CEVS, 2269 recorded the existence of PITs in the state, ranging from 0-38 PITs per municipality, with an average of five PITs, with a total of 184 insects against suspects. The awareness of health of the servers and the community should be permanent and continues through education and communication activities that address the history and epidemiological context of Chagas disease, the surveillance and recognition of the vectors. The effectiveness of surveillance depends on the establishment of administrative flows and skills, agility in sending vectors to the laboratory and rapid response teaser. The positivity of a PIT, in other words, their productivity should be evaluated for their maintenance, closure and / or transfer of address. It would be important to establish parameters based on geographic or population data for the installation of pits in the municipalities, non-existent today. With the interruption of transmission of Chagas disease by *Triatoma infestans* in RS, surveillance with community participation, encouraged by the health promotion reveals itself in the long run, as the most effective strategy for detection of events with greater sensitivity and entomological to initiate preventive actions. **E-mail:** cleonara-bedin@saude.rs.gov.br

Triatom012- **Population structure of triatomines related to the transmission of trypanosomosis in the department of Boqueron, Paraguay**

Britez, N.E., Díaz N.M., López Y.A., Maldonado A.M., Vera N.I.
Instituto de Investigaciones en Ciencias de la Salud, Universidad Nacional de Asuncion, Asuncion, Paraguay

Abstract: The subfamily Triatominae (Hemiptera: Reduviidae) comprises the main and potential vectors of trypanosomosis in various countries of America being *Triatoma infestans* the main domiciliary vector in the Southern Cone countries. *T. sordida* and *T. guasayana* are wild species adapted to the peridomicile that are reported as insects of minor epidemiological importance which are both closely related from a morphologically point of view. This work aimed to confirm the genetic polymorphism among populations of the three species above mentioned from the Department of Boquerón (Paraguayan Chaco), using the RAPD-PCR (Ramdom Amplified Polimorphic DNA) method with ten randomly selected primers. Molecular markers are focused on understanding the organization of the genetic structure of natural populations, determining the intra and inter-similarity in populations. The obtained dendrogram based on Nei's genetic distance showed separate groups that matched the species studied. Within each species, moderate genetic differentiation (Fst 0.05 to 015) and migration rates (Nm> 1) were found revealing gene flow and genetic homogeneity. Among the species studied, the Fst values showed high genetic differentiation (Fst from 0.15 to 0.25) and migration rates insufficient to maintain genetic homogeneity, confirming the absence of gene flow and genetic variability. The information obtained is essential for designing new strategies for vector control, being relevant the knowledge of the potential of *T. sordida* and *T. guasayana* as transmitters of the parasite, as well as for monitoring possible processes of domiciliary colonization of the potential vectors involved in the transmission of trypanosomiasis. **Key words:** Triatominae, *Triatoma sordida, T. guasayana,* RAPD. **E-mail:** gbritez.nilsa@gmail.com

Triatom013- **Molecular characterization of *Panstrongylus megistus* burmeister, 1835 (Hemiptera: Reduviidae: Triatominae) of Paraná, Brazil, through sequencing of nuclear ribosomal DNA markers**

Cavassin, F.B., Klisiowicz, D. do R.[1], Maciel, R. T., Haidamak, J., Ribeiro, B. C. de M.
Laboratory of Medical Entomology – Dept. of Basic Pathology , Universidade Federal do Paraná, Curitiba, Brazil

Introduction: Chagas' disease or American Trypanosomiasis has the protozoan *Trypanosoma cruzi* as the etiologic agent. The disease is present in most Latin American countries and its control relies mainly on the fight against triatomine vectors. Among the triatomine species found in Brazil, *Panstrongylus megistus* shows a high degree of adaptability to the domestic environment and is considered of great epidemiological importance since *Triatoma infestans* elimination. **Material and Methods:** This work had as the main objective, through the sequencing of nuclear ribosomal DNA markers, the molecular characterization of specimens and populations of *Panstrongylus megistus* from Paraná state. Specimens from other states were also included in this study. From all of the 37 specimens submitted to DNA extraction and sequencing, 32 sequences could be analyzed for two selected markers in question - the first and second internal transcribed spacer (ITS-1 and ITS-2) of nuclear ribosomal DNA. **Results:** Overall, 24 different haplotypes were identified among the analyzed specimens of *Panstrongylus megistus*, when studied molecular markers ITS-1 and ITS-2 together. The intergenic region length varied between 1357 and 1366 base pairs, with an average of 1361.1 base pairs. The overall length of the alignment for all haplotypes was described with 1366 bp, including insertions/deletions. ITS-1 showed a greater length in its base pairs, as well a greater diversity of haplotypes mainly due to numerous insertions/deletions. Because of this, ITS-2 fragment landed more information for the haplotypes distribution analysis. It was detected a greater number of haplotypes in insects from the first plateau of Paraná. **Main Conclusions:** This greater diversity supports the origin and dispersion hypothesis of *Panstrongylus megistus* from 'Mata Atlantica' coastal. At the second plateau was observed only 2 haplotypes, which are coincident with the first plateau. At the third plateau was attended of 4 haplotypes, 3 of them different from others, and only 1 haplotype not found in other states. The CH-2 haplotype was found in all studied Paraná regions, as well as the states of Rio Grande do Sul and Sergipe. This can be

appointed, until this moment, as the haplotype that probably began spreading the specie, at Paraná state, from the endemism center. The increase of insects' numbers studied and the use of new molecular markers may get relevant information to reinforce the specie origin and dispersal theory and provide data to assist in epidemiological monitoring of these vectors. **E-mail:** deborak@ufpr.br

Triatom014- Colonization of *Panstrongylus geniculatus* (Latreille, 1811) in an endemic area of Chagas disease in Colombia

Montenegro-López DC[1], Tibaduiza T[2] & Junqueira ACV[3].
[1]Postgraduate Student in Tropical Medicine, FIOCRUZ / RJ – Brazil, [2]Instituto Nacional de Salud (INS) – Colombia, [3]Laboratory of Parasitic Diseases, FIOCRUZ / RJ – Brazil.

Introduction: Colombia has about 10% of its population in risk of contracting Chagas disease in endemic areas, with up to 436,000 infected in 2005. However it has considered that because of the prevalence of the disease and entomological index some states, they enter are the processes of interrupting transmission of *T. cruzi* domestic by vector *R. prolixus*. **Materials and methods:** The municipality of the state of Casanare Tamara, located at 5°49'58.77"N and 72º09'42.05"O, is one of the prioritized in that process and it's need a baseline to define indicators to evaluate during the pre- and post-intervention. During the month of November 2011 to February 2012 has given the following entomological index: Index of Dispersion (ID), Index of Infestation Domestic (IID), Peridomestic Infestation Index (PII), Natural Infestation Index (NII), Colonization Index (CI), based on WHO. The taxonomic identification of adult Triatominae was made by the keys of Lent and Wygodzinsky (1979), nymphs differed among species by the insertion of antennas face and reared to adult. The NII was performed by analysis of gut contents of specimens at the Medical Entomology Laboratory of Casanare (LEM) and was confirmed with the species by the INS. **Results:** Our survey found three species: *R. prolixus*, *P. geniculatus* and *R. pictipe* (only two adults found) with the entomological indices for the first two species: ID=44.65 and 29.79%, IID=2.52 and 2.19%, PII=0.34 and 0.0%, NII=1.8 and 0.0% and CI=19,64 and 31.82%. **Conclusions:** We confirm the domiciliation of *R. prolixus* and its natural infection with *Trypanosoma spp.,* presence of exuviae and nymphs in artificial habitats. Besides the confirmation of the species *R. pictipe* found recently in the state of Casanare and new register for Tamara, attention must be paid to the presence of nymphs in domestic (dorms and beds) indicating colonization by *P. geniculatus*, the latter information of extreme importance because in Ecuador, French Guiana, Venezuela and the Amazon Brazil it has been found in peridomestic attracted by light and blood from pigs and humans at night. The results are related to the findings in the city of Amalfi in Antioquia - Colombia where *P. geniculatus* was found into the dwellings. However, this species have not found naturally infected it's necessary to be considered the surveillance and control, evaluate the food habits, the ability to produce metacyclic parasites, variability genetic, reproductive biology, synanthropic, time of dejection, in order to define its epidemiological importance for the transmission the transmission of disease and possibility of domiciliation. **E-mail:** diegocam2003@yahoo.com

Triatom015- Feeding behavior of Panstrongylus geniculatus Latreille 1811 (Hemiptera, Reduviidae, Triatominae) and relationship to the transmission of T. Cruzi

M., A. Rios Reyes-Lugo.
Medical Entomology Section, Tropical Medicine Institute, Universidad Central de Caracas, Venezuela, Venezuela.

Introduction: The transmission of the parasite *Trypanosoma cruzi* causative Chagas disease to humans primarily depends on the feeding behavior and defecation of vector triatomines. This is unknown in p. geniculatus. Bioassays on these topics were developed with p. geniculatus to establish its relationship to the transmission of T. cruzi. **Materials and methods:** 13 males and 38 females of p. geniculatus, with 2 and 3 weeks of fasting and free of T. cruzi were placed individually with anesthetized hamster in the following bioassays: a) Host-seeking behavior, blood-meal and defecation recorded the sequence of behaviors of the triatomine during the search and finding of the rodent and completion of blood-meal.

Recorded the frequency with which the insect, posed or not on hamster to feed and defecate (POH or NPOH), body and place that bite: cephalic region (BCR: head and neck) or not cephalic (BNCR: rest of the body). With 2 x 2 contingency table and Fisher exact test was determined: position of triatomine during blood intake and the bite place. (b) Time of blood-meal and defecation: The times of taking blood-meal and defecation were measured. We applied to two-tailed t test and paired data to analyze the similarity between the means of both variables. (c) blood-meal Size: Determined as the difference between the weight of triatomine before and after ingestion of blood. Correlated: size blood-meal vs. day fast, size blood-meal vs. time of defecation, time of blood-meal intake vs. days and fasting time of defecation vs. fasting days. **Results**: a) Host-seeking behavior, approach to rodent and blood meal p. geniculatus displays the following behaviors: telotaxis (body and antennae), prepare and cleans antennae and proboscis, emits drop of saliva and bite. NPOH for blood-meal intake (c^2concept 0.44, p 0.95) and 86.3% of triatomines steeplechase in BNCR (c^2concept 0.15 p 0.95), cautiously approaches the rodent and move the triatomine sometimes "plays dead" hamster if also observed. (b) Times of blood-meal intake and defecation. The average feeding times and defecation were: 56 '± 24' SD and 46'36 "± 24' 31" SD, resulting in 51% of insects 0.95 p equal. The amount of blood ingested ranged 0.1 to 0.4 grams. Found positively correlated between the times: fasting - blood meal intake (+ 0.46), defecation - fasting (+ 0.36), defecation - blood meal intake (+ 0.80) and fasting - amount of ingested blood (+ 0.18) and negatively amount of ingested blood - time of defecation (-0.24). The temperature and relative humidity were 26.3 ° C ± 1.07 SD and 73.4% 8.9 ± SD. Luminosity prefixed in 13.3 watts (10 meters candles). **Conclusions:** P. geniculatus may defecate while engorged and therefore could not transmit T. cruzi, but posed on the rodent while bite, then the transmission of the parasite by feces is not verified, so they probably mechanisms of transmission of the parasite are: the ingestion of food contaminated with feces from triatomines and / or infected triatomine. No approaches the rodent cautiously, engorged in the cephalic region and "plays dead" are considered strategies of p. geniculatus to avoid predation by small insectivorous mammals with which coexists in nature. **E-mail:** reyespanstrongylus@gmail.com

Triatom016- Colonization of *Panstrongylus geniculatus* (Latreille, 1811) in an endemic area of Chagas disease in Colombia

Montenegro-López DC[1], Tibaduiza T[2] & Junqueira ACV[3].
[1]Postgraduate Student in Tropical Medicine, FIOCRUZ / RJ – Brazil, [2]Instituto Nacional de Salud (INS) – Colombia, [3]Laboratory of Parasitic Diseases, FIOCRUZ / RJ – Brazil.

Introduction: Colombia has about 10% of its population in risk of contracting Chagas disease in endemic areas, with up to 436,000 infected in 2005. However it has considered that because of the prevalence of the disease and entomological index some states, they enter are the processes of interrupting transmission of *T. cruzi* domestic by vector *R. prolixus*. **Materials and methods:** The municipality of the state of Casanare Tamara, located at 5°49'58.77"N and 72º09'42.05"O, is one of the prioritized in that process and it's need a baseline to define indicators to evaluate during the pre- and post-intervention. During the month of November 2011 to February 2012 has given the following entomological index: Index of Dispersion (ID), Index of Infestation Domestic (IID), Peridomestic Infestation Index (PII), Natural Infestation Index (NII), Colonization Index (CI), based on WHO. The taxonomic identification of adult Triatominae was made by the keys of Lent and Wygodzinsky (1979), nymphs differed among species by the insertion of antennas face and reared to adult. The NII was performed by analysis of gut contents of specimens at the Medical Entomology Laboratory of Casanare (LEM) and was confirmed with the species by the INS. **Results:** Our survey found three species: *R. prolixus*, *P. geniculatus* and *R. pictipe* (only two adults found) with the entomological indices for the first two species: ID=44.65 and 29.79%, IID=2.52 and 2.19%, PII=0.34 and 0.0%, NII=1.8 and 0.0% and CI=19,64 and 31.82%. **Conclusions:** We confirm the domiciliation of *R. prolixus* and its natural infection with *Trypanosoma spp.,* presence of exuviae and nymphs in artificial habitats. Besides the confirmation of the species *R. pictipe* found recently in the state of Casanare and new register for Tamara, attention must be paid to the presence of nymphs in domestic (dorms and beds) indicating colonization by *P. geniculatus*, the latter information of extreme importance because in Ecuador, French Guiana, Venezuela and the Amazon Brazil it has been found in peridomestic attracted by light and blood from pigs and humans at night. The results are related to the findings in the city of Amalfi in Antioquia - Colombia where *P. geniculatus* was found into the dwellings. However, this species have not found naturally infected it's

necessary to be considered the surveillance and control, evaluate the food habits, the ability to produce metacyclic parasites, variability genetic, reproductive biology, synanthropic, time of dejection, in order to define its epidemiological importance for the transmission the transmission of disease and possibility of domiciliation. **E-mail:** diegocam2003@yahoo.com

Triatom017- **A spatial agent based model for the simulation of house infestation by *R. prolixus* the principal vector of Chagas Disease in Colombia**

Erazo D. C.[1], Cordovez J. M.[2]
[1]Civil and Environmental Engineering and [2]Biomedical Engineering Department Universidad de los Andes, Bogotá, Colombia

Introduction: Chagas disease is one of the most relevant neglected tropical diseases in Latin America. It is caused by the parasite *Trypanosoma cruzi* and is transmitted to humans by insects of the family reduviidae. In Colombia, recent estimates suggest from 700.000 to 1.2 million people infected and 8 million at risk of contracting the disease. *Rhodnius prolixus* is the main vector and is characterized by domiciliary habits, high susceptibility of infection with *T. cruzi*, their preference for palms as their sylvatic habitat and high mobility. Control strategies have included exhaustive fumigations of infested houses but reported poor outcomes due to the hypothesized ability of the vectors to move between houses and palms. It has been suggested that contact rates between insects and people is an important factor determining the severity of the disease, thus, understanding the factors that determine the distribution of insects between habitats (palms tress and houses) could be important to design new control strategies. Unfortunately, the eco-epidemiology of the disease is complex. For example, it has been reported that insects like hiding shelters in houses with adobe walls; palm leaves roofs and unfinished floors (this constitutes a typical dwelling in rural areas of Colombia). In addition, people and domestic animals provide meals for vectors in the domicile and become reservoirs for the parasite; therefore, their densities have also been suggested as disease risk factors. Finally, insects seem to flight predominantly in direction to light bulbs, thus making light another risk factor to consider. To better understand the possible contributions of the risk factors to the spatio-temporal distribution of insects, we developed an Agent Based Model (ABM) that includes relevant aspects of insects' population biology. **Materials and Methods:** The model was built in Matlab® and consisted of a raster with 4 meters pixel size that represented a hypothetical village with 49 houses and 194 palms. The model considered for every agent (insects) their gender, age and location. Agents were allowed to move, reproduce and die. We evaluated construction materials, number of people per house, number of domestic species per house and the light as risk factors for house infestation. For this, we constructed a control scenario that had mean values for each one of the risk factors and compared it with eight scenarios that included low and high levels of each one of the risk factors. We calculated the proportion of infested houses (infestation index -II), the average number of insects inside the houses (crowding index - CI) and proportion of insects in houses (PIH) and palms (PIP). We ran 20 simulations for each scenario for a time of 17520 hours (2 years) and compared the results between the scenarios and control statistically. **Results:** Our findings suggest that construction material is the risk factor that contributes the most to an increase in CI (11 insects). Interestingly, the number of people inside the house is most important to predict an increment in II (20%). Presence of light, domestic animals and construction materials produce an increment of 1%, 5% and 7% in II respectively. **E-mail:** dc.erazo170@uniandes.edu.co

Triatom018- **Innate Immuno Response of *Rhodnius prolitus* to *Trypanosoma cruzi***

Ursic, R., Buchhop, J., Joy, J, and Lowenberger, C.
Department of Biological Sciences, Simon Fraser University, Burnaby BC V5A 1S6, Canada

Introduction: We evaluated the innate immune response of *Rhodnius porlixus*, to infection with the human parasite, *Trypanosoma cruzi*, the causal agent of Chagas disease, to identify trypanosome-lethal factors expressed in the body cavity that might be responsible for limiting parasite development to the intestinal tract. **Materials and Methods**: *R. prolixus* was fed upon blood containing, or not. *T. cruzi*. At specific time periods post ingestion tissues were dissected from specific tissues. RNA was extracted and

was used in suppressive subtraction hybridization (SSH) to identify differentially expressed genes in the fat body and intestine of insects in the presence and absence of parasites in the blood meal. Differentially expressed genes were sequenced and identified, full length cDNAs generated, and the proteins encoding these genes were expressed in vitro to evaluate their biological activity against T. cruzi, the bacterial symbiont *R. rhodnii*, and nonpathogenic bacteria. **Results**: Many genes were differentially expressed. One gene, prolixicin, the focus of this paper, was expressed in the fat body of *R. prolixus*. Prolixicin contains motifs found in insect attains and diptericins. We confirmed, using quantitative real time PCR the differential expression, and the tissues that expressed the protein. The expressed protein kills many bacteria, but at concentrations used (3-30 µM) had no effect on the growth of the obligate midgut symbiont, *R. rhodnii*. Prolixicin treatments did not significantly reduce the growth of *T. cruzi* even at the highest concentration of 30µM. **Conclusions**: T. cruzi is killed if it enters the body cavity of *R. prolixus*. We have identified several novel immune peptides in this vector and here we report on the activity of prolixicin. Although active against some bacteria, prolixicin is not lethal to the symbiotic bacteria R. *R. rhodnii* or to the parasite *T. cruzi* at levels tested. Further studies are underway to characterize other peptides to evaluate their synergistic effects on *T. cruzi.* **E-mail:** clowenbe@sfu.ca

Triatom019- **Variables affecting *Rhodnius prolixus* survival when co-infected with *Trypanosoma cruzi* and *Trypanosoma rangeli***

Peterson Garnier JK[1], Triana O[2], Graham AL[1], Peña Garcia VH[2], Dobson, AP[1]
[1]Dept. of Ecology and Evolutionary Biology, Princeton University, Princeton, NJ, USA, [2]Chagas Group, University Center for Investigation, Universidad de Antioquia, Medellin, Colombia

Introduction: Triatomines with mixed infections of *Trypanosoma cruzi* and *Trypanosoma rangeli* have been found in many studies, often at frequencies as high as single *T. cruzi* infections. The objective of this study was to determine variables involved in the maintainance of this co-infection at relatively high frequencies in the wild, in spite of the pathogenic effects seen in single infections of *T. rangeli* in triatomines of the genus *Rhodnius*. We carried out an investigation of the difference in *Rhodnius prolixus* survival rates between different parasite species compositions, different orders of the infection and different *T. rangeli* strains in single and mixed infections. **Materials and methods:** 212 fifth instar *R. prolixus* individuals were fed on human blood infected with equal quantities of either (1)*T. cruzi; (2)T. rangeli;* (3)*T. cruzi* and *T. rangeli*; (4)*T. cruzi* in a first bloodmeal and *T. rangeli* in a second meal; (5)*T. rangeli* in a first meal and *T. cruzi* in a second meal; or (6) blood without parasites as a control. Insects were monitored for three months post-infection and survival was recorded daily. *R. prolixus* individuals were bred in laboratory colonies and parasite strains used were Gal61 (*T. cruzi*), LDG (*T.rangeli,* KP1-genotype) and 444 (*T. rangeli,* KP1+ genotype). Survival was analyzed using a Cox proportional hazard test with conditional inference trees. The effect of number of parasites ingested was tested for correlation with survival. **Results:** Individuals co-infected with *T. cruzi* and *T. rangeli* strain LDG died at significantly higher rates between 10 and 18 days post-infection, coinciding with the time when the insect becomes infectious. Individuals infected first with *T. rangeli* strain 444 and then later *T. cruzi* had significantly reduced survival, but only in this order of infection. Single *T. rangeli* infections reduced survival relative to control groups, but not significantly more than the other parasite treatment groups. Estimated number of parasites ingested was not correlated with survival. **Main Conclusions:** Our results suggest that *T. rangeli* strain and order of infection are two factors that can significantly lower survival when co-infected with *T. cruzi.* They also suggest that not every strain of *T. rangeli* is pathogenic to *Rhodnius* when infecting singly or with *T. cruzi,* suggesting that the pathogenicity decreases with coevolution of triatomines with their local strains (KP1+ for *R. prolixus)* and confirming previous research on the KP1- and KP1+ genotype. **E-mail:** jkpeters@princeton.edu

Triatom020- **High natural infection of *Triatoma brasiliensis* by *Trypanosoma cruzi* was detected in Caicó, Rio Grande do Norte, Brazil.**

Lima ACB, Neiva VL , Araújo CAC, Almeida CE and Costa J.
Laboratório de Biodiversidade Entomológica - Instituto Oswaldo Cruz/FIOCRUZ-RJ-Brasil

Introduction: Chagas disease is one of the main tropical illnesses in Latin America, caused by the

etiological agent, *Trypanosoma cruzi.* The disease has many transmission routes, but the vector-borne infection is still the most important. In nature, many triatomine species are found infected by *T. cruzi.* In the northeastern region of Brazil *Triatoma brasiliensis* deserves attention in light of its capacity to colonize different ecotopes and also because it is known for harboring *T. cruzi.* In this context, the circulation of *T. cruzi* in natural habitats of Caicó, a municipality located Rio Grande do Norte state of Brazil, was studied. **Material and Methods:** The collection of bugs was carried in the wet and dry seasons (April and November 2011, respectively), within a period of 10 days. The insects were placed in glass beakers containing filter paper. For the analysis of *T. cruzi* infection, feces were collected from adult bugs by pressure on the abdomen and subsequent analysis by optical microscopy. **Results:** In total 625 *T. brasiliensis* at different developmental stages were collected in five different localities in Caicó. From 287 examined insects, 197 were positive, resulting in a *T. cruzi* infection rate of 68,6%. It is important to stress that in some of the localities the percentage of natural infection was higher than 80%. **Main conclusions:** Caicó is a semi-arid region with caatinga vegetation under strong environmental pressure due to population growth and agricultural activities. The wild environment in this region supports the development and establishment of different triatomine species, mainly *T. brasiliensis*, because of its behavior of colonizing rock piles, being adapted to dry regions. Based on the high infection percentages and the observed presence of feces of small mammals living in the same rock outcrops of insects, a well-established sylvatic cycle of *T. cruzi* was evidenced. Since anthropization might provide a path to get closer sylvatic and human transition cycles, this area needs to be under continuous epidemiologic surveillance. **E-mail:** acbastos@ioc.fiocruz.br

Triatom021- **Morphometric characterization of *Triatoma brasiliensis* and *Triatoma melanica,* vectors of Chagas disease**

GHC Silva, RN Brito, Coimbra RS, Diotaiuti L, Souza RCM
Centro de Pesquisas René Rachou/FIOCRUZ – Brazil

The *Triatoma brasiliensis* complex (*Tb*) is composed by three species and one subspecies that, among other characteristics, present a large chromatic variability and distinct geographical distribution pattern. From the epidemiological point of view, the *brasiliensis* chromatic pattern is the most important because it presents the largest geographical distribution, highest rate of natural infection by *Trypanosoma cruzi* and occupy a wide variety of ecotopes. Recently, the melanic populations captured in the north of Minas Gerais state (MG) were elevated to species category being called *Triatoma melanica* (*Tm*). The redescription of the taxon was based on morphological, biological, ecological, isoenzymes characters, mDNA sequences and inbreeding with other species of the *Tb* complex. Although, some authors believe that the original denomination as a subspecies of *Tb* better reflects the taxonomic status of these insects. *T. melanica* is predominantly founds in wild environments and its geographical distribution is, until now, restricted to the north of MG and Urandi (southern Bahia). The use of morphometry for triatomines, which identification is problematic, may be a complementary strategy to the classical taxonomy. The geometric morphometry has been successfully employed for inter- and intraspecific comparative studies. Thus, the main objective of this study was to characterize morphologically species *Tb* and *Tm* through geometric morphometry, in order to contribute to the taxonomic knowledge of these vectors. To this purpose, were used the left wings of 18 males and 18 females of *Tb* and *Tm* collected in wild environment from Tauá (CE), and Espinosa (MG) district, respectively. The wings were mounted between microscope slides, photographed and afterwards six landmarks were marked. The Generalized Procrustes Analysis was used to produce the shape variables. The "centroid size" of each wing was used to analyze the presence of sexual dimorphism. The shape components demonstrated a significant difference between species *Tb* and *Tm* (P <0.05). The sexual dimorphism was observed only in *T. brasiliensis*. The loss of sexual dimorphism in bugs is associated to some stress conditions, which usually occurs in the process of domestication. The lack of sexual dimorphism of a wild population had not yet been reported and may be related to specific environmental conditions such as population density, availability and/or variability of food resources. These factors will be better explored in perspective that may be important conditionants for the speciation process, here confirmed by geometric morphometry. **Financial support:** CNPq, FAPEMIG, TDR. **E-mail:** rita@cpqrr.fiocruz.br

Triatom022- Evaluation of ambulatory capacity of *Triatoma brasiliensis* under lab conditions

Almeida, C.E;[1] Oliveira; [1] J. Puertas, C[1]; Pinto, M.C. [1] Rosa, J.A[1]
Universidade Estadual Julio de Mesquita Filho, UNESP, Araraquara, Brazil

Introduction: For triatomines, active dispersion is recognized as one of the most important mechanism for domiciliary infestation and reinfestation after insecticide house treatments. Dispersion by walking may be an adaptive strategy because it allows insects to move with eggs and/or with good blood reserves in the gut, which is not possible when flying. *Triatoma brasiliensis* is the main concern in terms of Chagas disease transmission in semi-arid areas of northeastern Brazil because it is the most widespread and has the highest rates of domiciliary captures and natural infection by *T. cruzi*. Sylvatic foci can keep populations of this species. Therefore, reinfestation by active dispersion is still a challenge for its control. **Material and Methods:** Insects (57 adults - 27 males and 28 females; and 67 nymphs) fed 15 days before were used to estimate the ambulatory capacity of dispersion using an apparatus designed to distinguish "walkers" from "sessile". This apparatus was basically a box made of acrylic (20X20X200cm) with three chambers connected by a small hole (5X5cm) that does not allow insects go back after passing throughout it, falling in the second chamber. This small hole does not also allow triatomines go throughout it by flight. A mouse was put inside the third chamber (20X20X25cm) and an exhaust fan at the end of the apparatus has pulled the odors from the mouse to the triatomines chamber. Insects were released into the first chamber (20X20X150mm), and all triatomines found in the second chamber (20X20X25cm) after 12 hours were considered "walkers". These bugs were marked with acrylic paint for their identification and put back in the first chamber. **Results:** After four tests (two days and two nights), only one nymph (N5) went throughout the hole, while 12 adults (12 females and 07 males) did it. Of these adults, 13% passed once, 40% twice, 27% three times and 20% four times. The proportion of females that dispersed (68%) was much greater than the males (26%). **Conclusions:** Results corroborated the hypothesis that well-fed adults frequently use the ambulatory activity to disperse. On the other hand, the unique event of well-fed nymph dispersing by walking indicated that they do not use this way to disperse if the ecotope exhibits favorable conditions. These informations are important to design adequate vector control measures. **Financial support:** FAPESP. **E-mail:** marap@fcfar.unesp.br

Triatom023- Biological and phenotypic variability of *Triatoma brasiliensis* (Hemiptera, Reduviidae) in different ecotopes of the Brazilian Northeast

Batista VSP, Fernandes FA, Sarquis O and Lima MM
Laboratório de Eco-Epidemiologia da Doença de Chagas, Instituto Oswaldo Cruz, Rio de Janeiro, Brazil

Introduction: *Triatoma brasiliensis,* the main agent of Chagas disease in northeastern Brazil, inhabits wild and peridomestic environments maintaining the *Trypanosoma cruzi* cycle, transporting the parasite from sylvatic to domestic ambient. In some rural areas of Jaguaruana municipality, Ceará state, this triatomine has always been present. The discrimination between populations of sylvatic and peridomestic ecotopes has been proposed as a means to investigate human dwelling reinfestation rates. Considering biological and morphometric traits, this study aims to characterize the *T. brasiliensis* differences between ecotopes, taking into account the sexual dimorphism and seasonality. **Materials and methods**: Triatomines were captured in the two different ecotopes (sylvatic [n= 262] and peridomestic [n= 134]) in one rural locality of Jaguaruana, during both wet and dry seasons. Some biological aspects were evaluated between these groups: longevity, body length, reproductive features (egg viability) and nutritional status, besides infectivity rates. The wings and cephalic capsules were analyzed by geometric morphometrics. **Results:** Considering longevity, no differences were observed in the insects coming from the two ecotopes, but males from the peridomestic environment survived longer than females. The reproductive characteristics exhibited no disparities between ecotopes, taking into account the dry and wet seasons. Considering weight (mg), the analyzed nutritional status generally displayed a significant difference between the ecotopes, since peridomestic bugs always weighed more, regardless of season and gender. Morphometric traits, with respect to cephalic capsule shape and size demonstrated no differences between gender and ecotopes. Concerning wings, we detected dimorphism in females from

one ecotope to the other, the sylvatic females possessing the larger wings. Regarding natural infectivity, all peridomestic specimens were negative, while 6.02% of the sylvatic insects proved positive for *T. cruzi* through direct microscopic observation of feces. **Conclusions:** The quantitative study of reproductive, nutritional and phenotypic traits could be informative regarding population structure and relative vector mobility. The better nutritional status of peridomestic triatomines indicated a low dispersal probability. Our results imply that specimens from both peridomicile and sylvatic ecotopes belong to the same population, since there were important differences neither in biological aspects nor cephalic capsules. Thus, differences in the wings can be explained by the existence of phenotypic plasticity, possibly due to the conditions in each micro-habitat, such as temperature, relative humidity, food supply and density.   **E-mail:** mmlima@ioc.fiocruz.br

Triatom024- **Chemical identification and behavioral of volatiles emitted by** *Triatoma dimidiata*

Irving May-Concha[a], Julio C. Rojas[b], Leopoldo Cruz-López[b], Jocelyn G. Millar[c], and Janine M. Ramsey[a]*
[a]CRISP, Instituto Nacional de Salud Pública, Tapachula, Chiapas, Mexico. [b]Departamento de Entomología Tropical, ECOSUR, Tapachula, Chiapas. [c]Department of Entomology, UC Riverside, CA 92521, USA.

Introduction: Exocrine compounds produced by Triatominae are important to understand population dynamics and hence the development of novel strategies to monitor or control domestic populations. Given the key role of the *Triatoma dimidiata* complex as a primary vector of *Trypanosoma cruzi* and Chagas disease from North to South America, this study was undertaken to investigate the role of olfactory cues during its sexual behavior. **Material and Methods:** Volatile compounds released by mating pairs and MGs were identified using solid-phase microextraction and gas chromatography coupled mass spectrometry. Behavioral responses of *T. dimidiata* to volatile compounds emitted by conspecific females, males, mating pairs, and metasternal gland extracts (MGs) were evaluated in a Y-tube olfactometer. The behavioral responses of both sexes of this species were evaluated for all identified volatiles. **Results:** Females did not show a preference for volatiles emitted by live males, but they did prefer clean air to their own volatiles, or those from mating pairs. In contrast, males were attracted to volatiles emitted by males, females, mating pairs or pairs where males had MG orifices occluded, but they were not attracted to volatiles emitted by pairs where females had MG orifices occluded. Females were not attracted to male or female MG extracts, whereas males were attracted to female or male MG extracts. Isobutyric acid, 3-methyl-2-hexanone, nonanal, decanal, and 6-methyl-5-hepten-2-one were the major components of 15 volatile compounds detected in the headspace of mating pairs. The headspace of MGs contained 14 compounds, principally 3-methyl-2-hexanone, most of which, except isobutyric acid, were also detected in the headspace of mating pairs. Both females and males evaluated for individual compounds were attracted to octanal and 6-methyl-5-hepten-2-one, and males were additionally attracted to 3,5-dimethyl-2-hexanol. Males but not females were attracted to a 7-compound blend, formulated from compounds identified in attractive MG extracts. **Conclusions:** Males of *T. dimidiata* are attracted to females, males and mating pairs. MGs are the source of male and female attractive compounds, although female MGs play the important role during sexual communication of this species. We identified 15 and 14 compounds from the effluvia of mating pairs and MGs, respectively; males, but not females were attracted to 3,5-dimethyl-2-hexanol and a 7-compound blend. Most of the compounds have not been previously reported from other triatomine species. **E-mail:** jramsey@insp.mx

Triatom025- **Evaluation of triatomine infestation rates in localities with historical occurrence of** *Triatoma infestans* **in Bahia, Brazil: lessons for the entomological surveillance**

Gurgel-Gonçalves, R.[1], Souza, N.S. [2], Oliveira, K.C.S. [2], Motta, R.L.R[2], Mendonça, J.[3], Costa Neto, E.M.[2]
[1]Universidade de Brasília, Faculdade de Medicina, Brasil. [2]Universidade Estadual de Feira de Santana, Departamento de Ciências Biológicas, Brasil. [3]Secretaria de Saúde do Estado da Bahia, Brasil.

Introduction: In 2006, Brazil was declared free from Chagas disease transmission by the domestic vector *Triatoma infestans*. However, residual populations of *T. infestans* have yet been detected in

municipalities of the state of Bahia, Northeastern Brazil. The analysis of triatomine infestation rates in these areas is essential to guide surveillance strategies. Our objectives were: determine the level of infestation and natural infection of triatomines in some localities of Bahia, and verify the persistence of *T. infestans*. **Material and methods:** Entomological surveys were conducted in localities of two municipalities: Tremedal (41.41°W, 14.97°S) in February 2011 and Barra (42.75°W, 10.54°S) in January 2012. About 10 houses were sampled in each locality. In each dwelling unit (DU) structural features of the houses and the presence of domestic animals were recorded. Subsequently, vector research was carried out in both intra and peridomicile. Triatomines were separated by stage, identified and examined for infection with trypanosomes. **Results:** We surveyed 58 DUs of 5 localities in the municipality of Tremedal and 79 DUs of 9 localities in the municipality of Barra. In Tremedal, *T. infestans* occurred in 3 DUs (infestation: 5.1%, density: 0.7 specimens/DU, crowding: 13 specimens/DU, colonization: 100%), totaling 40 specimens (95% in intradomicile). Only one adult of *T. pseudomaculata* was detected in intradomiciliar. In Barra, *T. sordida* was the only species detected, occurring in 78% of the localities. The entomological indices for 79 UDs surveyed were: infestation: 21%, density: 3 specimens/DU, crowding: 15 specimens/DU, colonization: 94%, totaling 256 specimens. Most of the insects (97%) were captured in peridomicile, especially in chicken houses (88%). In Tremedal, no triatomine was infected by *Trypanosoma cruzi* and in Barra just one of the 245 triatomines examined was infected. Most infested domiciles had mud or adobe walls (80%) and presence of chickens in peridomicile (95%). **Conclusions:** Results show the persistence of *T. infestans* in Tremedal after insecticide control conducted in recent years, and the virtual elimination of this species in Barra. We suggest that *T. sordida* is not replacing *T. infestans* colonies inside insecticide treated houses. However, *T. sordida* persists in peridomiciles in Barra, and when the colonies grow in this environment the chances of detecting adult bugs in domiciles increase. Therefore, we recommend strengthening entomological surveillance for the elimination of *T. infestans* in Tremedal, and controlling of *T. sordida* in Barra. Management actions in both intra and peridomiciles are necessary to reduce the chances of infestation rates in these municipalities. **E- mail:** rgurgel@unb.br.

Triatom026- **Programs and strategies for surveillance and control of *Triatoma infestans* in the city of Añatuya (Santiago del Estero, Argentina) and its rural area**

Weinberg, D; Abril, M and Cejas, RG
Fundación Mundo Sano – Paraguay 1535 (CP 1061), CABA, Argentina

Introduction: Currently, Chagas disease is one of the main zoonosis in the Americas. According to estimates by the Pan American Health Organization (PAHO), there are approximately 10 million people infected around the world, mostly in the Americas. The *Gran Chaco* eco-region mainly encompasses Santiago del Estero, Chaco and Formosa provinces in Argentina, which PAHO has defined as the main priority area in terms of this disease. Since 2002, Mundo Sano has been present in the city of Añatuya (30,000 inhabitants) with its regional office. There, surveillance, control and operative research actions are being performed on *Triatoma infestans*, the main vector described for the disease in the region. Since 2002, the tasks have covered urban and peri-urban areas under the Program called "Our neighborhoods without vinchucas" and in 2005, the Program *"Sanitation improvement of rural dwellings for the prevention of Chagas disease with community participation"* was started in neighboring rural locations, as a new strategy to help interrupt vector transmission of the disease. **Materials and methods:** *T. infestans* surveillance and control actions have consisted of visiting 100% of the dwellings in the area under intervention at least once a year. Two-member teams inspected the dwelling's domicile and peridomicile during 30 minutes, using 0.2% tetramethrin as expeller. Positive houses are controlled no matter whether the finding has been intra- or peridomicile, spraying indoors and outdoors of houses, corrals, warehouses and henhouses with 5% beta cypermethrin, and all the epidemiologic information is being recorded and georefered in a database. The program of dwelling improvement, apart from surveillance and control actions, also includes a series of building enhancement *and general management of peridomiciles, derived from a strategy of collective construction.* **Results:** During the surveillance and control actions carried out in the urban and periurban areas, around 2,200 dwellings—near 10,000 inhabitants—have been visited per cycle since 2007. Infestation indices below 1% for the urban area and below 2% for the peri-urban area were observed during the 2010-2012 period. A sharp reduction in intra-dwelling

infestation levels was particularly observed. In the rural area, dwelling surveillance, control and improvement actions were carried out in 174 houses in 4 locations (774 inhabitants), with a 3.7% intra-domicile infestation index during the last cycle, the lowest since interventions in the area were started. **Conclusions:** Diminishment in infestation indices through *T. Infestans* in urban and peri-urban areas results from sustained work though time and an adequate stratification of the intervention area that has made it possible to circumscribe the vector's presence to a few dwellings on the city's outskirts. Likewise, even though tasks in the rural area are more complex, diminishment of infestation inside houses was achieved and a need to prolong this type of intervention in time can be observed. **E-mail:** dweinberg@mundosano.org

Triatom027- *Triatoma infestans* Saliva as na enhancer of *T.cruzi* infection

Lima,S.M[1];Brito,A.C[1]; Silva-Neto, M.A.C[1]. and Atella, G.C[1].
[1]Instituto de Bioquímica Medica - CCS – UFRJ-Rio de Janeiro- Brasil.

Triatoma infestans (T. infestans), is a blood sucking bug from subfamily Triatominea. It is widespread in the Soutern Cone countries of South America and it is a vector of Chagas' disease. *Trypanosoma cruzi*, the etiological agent of Chagas' disease, is transmitted by *T. infestans* and while in the triatomine midgut the parasite differentiates from a non-infective epimastigote stage into the pathogenic trypomastigote metacyclic form. An adult *Triatoma* will ingest from two to three times its own weight of blood at a single meal. Blood-sucking insects possess a variety of anti-hemostatic factors in their salivary glands to maintain blood fluidity during feeding. In this work we shows the influence of *T. infestans* saliva in the *T.cruzi* blood parasitaemia in vivo. The BALB/c mice were separated in two groups of ten animals, in the first group received a subcutaneous injection of sterile PBS and in the second group received a subcutaneous injection of *T. infestans* saliva. After 5 minutes both groups received a subcutaneous injection of parasites *T. cruzi* (clone Dm28c) with 5×10^5 in 100µl of saline. The blood parasitaemia was measured once a week after seventh day post infection during the following four weeks. The blood was obtained from a small cut at the end of the tail and diluted fivefold in red blood cell lysis buffer and parasite count was measured in a Neubauer chamber. Our results show that the presence of *T. infestans* saliva increases the infection with *T. cruzi* in BALB/c mice. The effect of bug saliva on *T. cruzi* transmission is under study in our lab and we are searching for eventual role of biomolecules presents in saliva that may enhance parasite transmission. **Supported by** CNPq, Faperj, IFS **E-mail:** mlima@bioqmed.ufrj.br

Triatom028- **Geometric Morphometry of *Triatoma maculata* (Hemiptera, Reduviidae, Triatominae) from endemic areas of Venezuela**

García-Alzate R., [1,2], Lozano-Arias D[1]., Mendoza-León[2,4] , A., Morocoima, A.[3], Herrera, L[1].
(1). Instituto de Zoología y Ecología Tropical (IZET), Fabcultad de Ciencias, Universidad Central de Venezuela (UCV), Caracas (Venezuela) , (2). Postgrado de Biología Celular. Facultad de Ciencias. Universidad Central de Venezuela. Caracas, (3). Instituto de Medicina Tropical (IMT-UDO), Universidad de Oriente, Sede Puerto la Cruz. , (4). Estado Anzoátegui. Laboratorio de Bioquímica y Biología Molecular de Parásitos. Instituto de Biología Experimental. Universidad Central de Venezuela. Caracas

Introduction: Triatomines are strict hematophagous vectors of *Trypanosoma cruzi*, causal agent of Chagas disease (ChD). *Triatoma maculata* is one traditional wild species, adapted to the peridomestic, specially found in palms, dry trees, holes trees, fences and bird nests. Recently, in Venezuela, *T. maculata* was found colonizing human dwellings, with considerable *T. cruzi* infection rate. **Objectives:** to analyze morphometric variation in the architecture wing *of T. maculata* in different ecotopes in Venezuela, as indicative of gene flow. **Materials and method**: the study was performed through the analysis of 10 "landmarks" or reference anatomical points (PAR) in left wing and elliptic Fourier study (AEF) of isometric wing size of 147 *T. maculata* captured in urban, rural or wild areas of the of Miranda, Anzoátegui, Bolívar, Portuguese and Sucre States. **Results**: Multivariate comparisons by discriminator analysis in different ecotopes for each state, demonstrate significant sexual dimorphism in wing conformation (Lamba of Wilks: 0,543, $p < 0.001$) not reported for *T. maculata*. The method revealed segregated groups in relation to ecotopes for each geographical with possible disruption of gene flow according to the ecotope for study

area. **Conclusions:** Sexual dimorphism in size is smaller in domestic exemplars in relation to wild. Only Anzoátegui samples would be adapted to the home with presence of ontogeny instars. These results can be considered a risk factor in the ChD transmission in Venezuela. **Keywords:** Chagas disease, isometric size, ecotopes, domiciliation. **Financial support:** Projects: Proyecto en Red Misión Ciencia Nº 2007001442 and Nº 2008000911-6, Proyecto FONACIT Nº G-2005000827 and Ayudas Menores CDCH-UC-0440-10 y 0450-10 Universidad de Carabobo. **E-mail:** rjgata@msn.com

Triatom029- *Triatoma sordida* and *Triatoma maculata,* wild vectors involved in the transmission cycle of *Trypanosoma cruzi* in endemic areas for Chagas disease

González-Britez N.E.[1], Morocoima A.J.[2], Martínez C.E.[3], Maldonado A.M., Vera N.I.[1], Carrasco H.J.[3]
1. Instituto de Investigaciones en Ciencias de la Salud, Universidad Nacional de Asunción; Asunción, Paraguay, 2. Escuela de Ciencias de la Salud, Universidad de Oriente, Anzoátegui, Venezuela, 3. Instituto de Medicina Tropical, Universidad Central de Venezuela, Caracas, Venezuela.

Abstract: American trypanosomiasis is a zoonosis caused by the hemoflagellated parasite, *Trypanosoma cruzi,* transmitted by Reduviidae insects with ability to colonize anthropogenic environments. Wild species such as *Triatoma sordida* and *T. maculata* invade dwellings and contribute to the transmission and introduction force of the parasite transmission from the wild to the domestic cycle, increasing their epidemiological importance and the risk of re-infestation of dwellings, after eliminating the main vector. This work aimed to determine the rates of *T. cruzi* infection of *T. sordida* and *T. maculata,* and evaluate their relationship with the maintenance of the transmission cycle of Chagas disease. The insects studied by parasitological and molecular methods were captured in five endemic rural areas of Paraguay and four communities in the states of Anzoátegui (eastern region) and Portuguesa (western region) of Venezuela. A total of 398 triatomines; 274 *T. sordida* and 124 *T. maculata* were analyzed. All specimens were subjected to the examination of the intestinal contents by the method of direct observation and a polymerase chain reaction of DNA. Subsequently, we determined the rate of infection with *T. cruzi* by species and geographic origin (departments / villages). We confirmed the involvement of *T. sordida* and *T. maculata* in the transmission of *T. cruzi,* showing rates of infection with values ranging between 10% and 47%, depending on the triatomine species and the method used in the analysis. We conclude that Reduviidae considered has having "low epidemiological importance" in the transmission of *T. cruzi, T. sordida* and *T. maculate,* play an essential role in the maintenance of the transmission cycle from wild area towards domiciles. Therefore, control strategies for wild triatomines should be oriented towards an integrated control of domicile and peridomicile. **Keywords:** *Trypanosoma cruzi*, *Triatoma sordida, T. maculata,* Chagas disease. **E-mail:** gbritez.nilsa@gmail.com

Triatom030- **Evaluation of the opportunity the monitoring system vectors of Chagas disease in area of *Triatoma sordida* in State of São Paulo, Brazil.**

Sirle A.S. Scandar, Rubens A. Silva, Rubens P. Cardoso-Júnior, Marcelo Papa, Nestor C. Silva-Júnior.
Superintendência de Controle de Endemias – Secretaria de Estado da Saúde de São Paulo

Entomological surveillance of Chagas disease in São Paulo has the citizen as a participant in the process, sending the insect to health authorities for the control actions are triggered. Keep people motivated to participate in this surveillance is a challenge, since the notification service performed in a timely manner can help this process. The objective of this study was to evaluate the receiving and attendance timely notifications of triatomines in the area of *Triatoma sordida* in São Paulo. Was conducted a observational, descriptive study and analyze the opportunity of an entomological surveillance system of the disease between the years 2006 to 2011. The study area includes 101 municipalities with greater frequency against the *T. sordida*. The resident at the meeting of an insect in your domicile, headed for a notifying unit that sends control service to perform the search vector and at home spraying insecticides when it was observation. The standard Control Program of Chagas disease in São Paulo recommends attendance a notification within a period not exceeding 60 days. Calculated the range of days between receipt of the insect in the notifying unit and sending the organ of control and receipt by this organ to the attendance the notification at home notifying. The results showed that the period between

notifying unit and control unit is up to 30 days in 96.4% of cases, between 30 and 60 days in 3.0% and greater than 60 days in 0.4%. The time elapsed between the receipts of notification by the organ control in home attendance, according to standard technique, occurs in up to 60 days in 41.1% of cases, between 60 and 90 days in 14.7% and greater than 90 days in 44.2% of cases. The results of this study allowed characterize the system of entomological surveillance for Chagas disease as appropriate with regard to sending the body of the insect control and inappropriate in relation to meeting this notification does not occur according to the standard recommended by the State, being necessary to investigate the causes of this failure. **E-mail:** sscandar@hotmail.com

Triatom031- **Peridomiciliation of *Triatoma sordida* (STAL, 1859) on artificial ecotopes in the municipality Araguaiana - MT**

Moraes, SC[1] and Queiroz, MFM[1]
[1]**Secretaria de Estado de Saúde de Mato Grosso (SESMT), Barra do Garças, Mato Grosso, Brasil.**

Introduction: The domiciliation is a dynamic process that may have accidental character and transform into relationship obligatory. The prevalence and distribution of species tend to be closely related to environmental, socio-cultural and political factors. The entomological survey of vectors, and verification of domiciliation are important activities in making the decision. The causative agent of Chagas disease is the parasite *Trypanosoma cruzi*, is transmitted to humans mainly by triatomine. These are hematophagous insects of the order Heteroptera, family Reduviidae and subfamily Triatominae. Environmental changes have altered the pattern offer of food in wild areas approaches vectors of the intra and peridomiciliary environments. The presence of rudimentary habitations contributed to the domiciliation of triatomine, found a safe shelter and abundant food, represented by the blood of domestic animals. **Methods**: Araguaiana (15º44'02" 51º49'53") is located in region eastern Mato Grosso-MT frontier with Goiás, total population is 3,197, of which 1,008 reside in the rural area. The predominant biome of this region is Cerrado (savanna). The State Health Secretariat Mato Grosso (SES-MT) in partnership with the Municipal Health Araguaiana, through the Program for the Control of Chagas Disease (PCDCH) conducted Entomological survey in the rural areas in intradomiciliar and peridomiciliary environments in year 2011. All the triatomines found were captured and transported to the Entomology Laboratory of Regional or Central for identification and examination. The parasitological search was carried out from abdominal compression and subsequent fecal examination of fresh sample. The information was recorded on form specific (PCDCH). We calculated the following entomological indicators: infestation index, triatomine density, index of natural infection by *T. cruzi*, bulking rate. **Results**: The Entomological survey was carried out in 115 properties of rural area, were captured 359 triatomines all *T. sordida*. The infestation index was 8.7% and triatomine density was of 3.12. Had positive indication to colony established in 70% of properties by having all development phases of the vector. We're not detected individuals infected with *T. cruzi*. The bulking rate was 35.9. All individuals were collected around in peridomiciliary environments, specifically in chicken coops made with wood. **Conclusion:** There is in the region the risk of transmission of Chagas disease by the approximation of *T. sordida* on households, the observation of the colonization of peridomestic shows the remarkable ability of this have to adapt to new ecological situations. The monitoring of vectors populations should be performed periodically; stock health surveillance should be implemented, especially in domiciles adjacent to natural habitat. The health promotion activity need to be improved in particular those involving the community directly. The chicken coops are the refuge main the *T. sordida*, therefore, improvements are needed in your structure, for example replacing wooden by metallic structure thus preventing the displacement of its triatomine sylvatic ecotopes for areas that provide shelter and food plentiful. **E-mail:** sinaramoraes@hotmail.com

Triatom032- **Chagas disease entomological vigilance in area of *Triatoma sordida* in São Paulo state, Brazil**

Sirle A.S. Scandar, Rubens A. Silva, Rubens P. Cardoso-Júnior, Marcelo Papa, Nestor C. Silva-Júnior.
Superintendência de Controle de Endemias – Secretaria de Estado da Saúde de São Paulo

Distributed mainly in the region of São Paulo state plateau, the specie *Triatoma sordida* had represented low transmission risk of Chagas disease to men. Nowadays this specie had not been reported by population in cities with tradition of its presence. This study purpose was to evaluate the situation of Chagas disease epidemiological vigilance in areas of dispersion of this disease. There were worked secondary data from January 2006 to December 2010 referred to control action that was triggered by resident report. Entomological research follows the rules of Chagas disease control program developed in São Paulo state, which directs the work to the vector feeding sources. When models resulted of this research are found, the chemical control is done. The collected insects are examined about the natural infection by *Tripanosoma cruzi*. The positive ones are undergone to antiserum exams so feeding habits can be verified. During this period, 1910 reports of insects were received, from which 91,6% referred to triatomines. The positivity observed in the attending to reports was 25,5%. There were collected 7952 models of triatomines from species *T. sordida* (94,0%), *Rhodnius neglectus* (5,3%), *Panstrongylus megistus* (0,2%) and other species (0,5%). These models were mostly collected in peridomicile (72,7%), and three models were positive to *T. cruzi* (0,04%). The colonization rate of the intradomiciliar was 12,7%. The mapping of reports sent by habits pointed silent areas. Data confirmed low risk represented by this specie in São Paulo state territory. Results allow affirming that vigilance strategy is being conducted on a effective way and although the presence of triatomine focus in peridomicile is noticed, there is no installation of colonies on intradomiciliar. Actions of health education must be intensified with the aim of keeping population motivated to identify this insects presence and send them to adequated areas as eventual infestation focus can be confirmed and controlled. There must be verified the absence of reports in silent cities, with the purpose of full-time entomological research which can be done by sampling directed to locality. High risk locality identification could be done by its vulnerability, considering the population participation in entomological vigilance, population mobility and historical antecedent. **E-mail:** sscandar@hotmail.com

Dengue Vectors

Denvect001- *Aedes aegypti* – Measures of infestation.

Pereira, Mariza[1]; Barbosa, Gerson L[1]; Holcman, Marcia M[1]
1– Superintendência de Controle de Endemias- Sucen. Estado de São Paulo, Brasil.

Introduction: Acknowledge the infestation levels by Aedes aegypti are essential for planning and evaluation of vector control measures and dengue transmission. In control programs, for reasons of operational convenience, they are estimated by larval indices, and the use of adult mosquitoes, usually restricted to specific situations. This study describes larval indices and adults obtained concurrently. **Method:** It was defined indicators based on the presence and quantification of larvae/pupae and adults of Ae. Aegypti detected in eight areas, non-contiguous in Santos and São Vicente, cities of São Paulo State. The larval infestation was estimated in each area using a sample, around 30 blocks selected randomly using the standard methodology proposed by the Superintendência de Controle de Endemias-Sucen. All the premises included in the blocks selected were inspected to estimate the larval infestation and the adult infestation was estimated in a third part of the blocks. **Results:** The presence of the vector, detected by the meeting of containers with immature stages, occurred on average in 33.2% of the blocks and in 5.0% of the properties inspected while adult mosquitoes were collected in 87.0% and 33.2% respectively. In the area where the highest percentage of properties with the presence of containers with immature forms was obtained, a value of 10.7%, the presence of adult mosquitoes was detected in 29.7% of the properties. On the other hand, the area with the highest percentage of properties with the presence of adults, which represents 49.1%, against the immature stages occurred in only 5.2% of the properties. The number of immature forms (L3+L4+pupae) showed a variation between 0.4 and 3.1 per properties inspected while the number of adults ranged from 0.2 to 2.0 per property, despite the presence of adult mosquitoes be most frequent. **Conclusions:** All areas evaluated showed a high percentage of properties with the presence of adult mosquitoes, which are widely distributed. It was not observed correlation between the indicators related to the different stages of the vector. **E-mail:** mariza@sucen.sp.gov.br

Denvect002- *Aedes aegypti* population dynamic at two port cities from Brazil

Spenassatto C.[1], Paduan K. S.[1], Ribolla P. E. M.[1*]
[1] **Parasitology Department, UNESP, Botucatu, São Paulo, Brazil**

Introduction: *Aedes aegypti*, is a diurnal mosquito, originated from Africa and was probably introduced into Brazil during the colonial period through embarkations, and dengue epidemics soon followed. Nowadays, it is globally distributed through the tropics in association with human populations. It is considered of great epidemiological importance for being the main vector of the four serotypes of Dengue and Yellow Fever. One of the first detections of the presence of the mosquito in the State of São Paulo happened in the 80's, in the city of Santos. Currently there is no available vaccine or effective medicine against dengue fever, and disease control is restricted to vector control. An alternative to control and understanding of vector-pathogen-man relationships are based on the development of molecular tools that use PCR-based techniques, which have enabled the genetic study of populations of *Ae. aegypti*. **Material and Methods:** In such studies, several markers were involved, such as SNPs (Single Nucleotide Polymorphisms) and mitochondrial ones. We have developed assays using TaqMan® methodology for population genetic studies of two populations of *Ae. aegypti* from the port cities of São Paulo (Santos and São Sebastião), using nine SNPs markers. **Results:** We found that this methodology is reproducible, fast and efficient for large-scale studies. AMOVA analysis found a low but significant genetic differentiation between the studied populations (F_{ST} = 0.0324, P <0.01), and a high rate of migrants per generation (8.72 among populations), indicating gene flow between populations. The analysis implemented in software Structure, revealed the existence of three clusters based on genotypic similarities, divided into two groups, confirming a population structure. We verified through the analysis of the mitochondrial gene fragments NADH dehydrogenase subunit 4 (ND4) a high genetic differentiation between the two populations (F_{ST} = 0.18034, P <0.01), and a rate of migrants per generation considered high (2.84 among populations). **Main Conclusions:** The present study showed that although populations of Santos and São Sebastião have similar responses to commonly used insecticides, they are genetically different, since we detected significant differences in both molecular markers used. These results are important to assist in the development of strategies for the control and management of the mosquito vector, since the strategy for dengue prevention have been based on vector control, with emphasis on the use of chemical insecticides, however, this practice has generated resistance processes. This way, detailed knowledge about the genetic structure and population dynamics of this species is crucial and are an alternative to the control this vector. **E-mail:** pribolla@ibb.unesp.br

Denvect003- *Aedes aegypti* pupal indices and container productivity in premises and public spaces during wet and dry season in Girardot, Colombia

Alcala, L[1].,Quinones, M[1].,Brochero, H[2].,Quintero, J[3]., Carrasquilla, G[3]., Gonzalez, C[3].
1Facultad de Medicina, Universidad Nacional, Bogotá D.C, Colombia. 2Facultad de Agronomía, Universidad Nacional, Bogotá D.C, Colombia. 3Centro de Estudios e Investigación en Salud-CEIS, Fundación Santa Fe de Bogotá, Bogotá D.C, Colombia.

Introduction: Girardot is a touristic and dengue endemic city in Colombia. We analyzed *Aedes aegypti* pupal indices and the container productivity in premises and public spaces during wet and dry season. **Material and Methods:** From 20 randomly selected clusters, all water containers in 1944 premises and 124 public places were inspected. The number of pupae was estimated using the sweeping method. The pupae per person index (PPI) and the pupae per hectare index (PPH) were calculated and compared between seasons with t-test. **Results:** We don't find significant difference between wet and dry season pupae indices (p>0,1; α=0,05). However, the most productive pupae breeding sites were domestic water containers during both wet (93,6%) and dry (97,6%) seasons, while public spaces provided only 6,4% and 2,4% in each season respectively. At premises level, the most productive containers were low tanks (water containers >20L) used for cloth washing purposes: wet=79% and dry=75% of the total of pupae; in low and high large water tanks used for water storage, an increase in the number of pupae was observed, between the wet (8,7%) and dry season (22,4%). At public space level, tires and vessels produced 3,3%

and 1,8% of the total of pupae respectively during wet disappearing on dry. **Main Conclusions:** *Aedes aegypti* persistent productivity during wet and dry season comes from domestic water container mainly low tanks used for cloth washing purposes, thus, vector control measures should be directed to these containers as well as low and high water containers during dry season, keeping in mind on public spaces the tires and vessel on wet season, as possible breeding sites to displaced mosquitoes.**E-mail:** lucasandres20@yahoo.com

Denvect004- Distribution and diversity of *Wolbachia* (Rickettsiales, Rickettsiaceae) in mosquitoes (Diptera, Culicidae) in Amazonas State and the effect of treatment with tetracycline in populations of *Aedes albopictus* Skuse, 1894 reared in the laboratory.

Passos, R. A. and Tadei, W. P.
Fundação de Vigilância em Saúde – FVS/AM and Instituto Nacional de Pesquisas da Amazônia – INPA.

Introduction: *Wolbachia* is a genus of bacteria which infects arthropod species, including a high proportion of insects (~90% of species), as well as some nematodes. It is one of the world's most common parasitic microbes and is possibly the most common reproductive parasite in the biosphere. Its interactions with its hosts are often complex, and in some cases have evolved to symbiotic rather than parasitic. Several species are so dependent on *Wolbachia* that they are unable to reproduce effectively without the bacteria in their bodies. Only infected females pass the infection on to their offspring. *Wolbachia* strains that distort the sex ratio may alter their host's pattern of sexual selection in nature, and also engender strong selection to prevent their action, leading to some of the fastest examples of natural selection in natural populations. **Objective:** The main objective was to estimate the occurrence of *Wolbachia* in mosquitoes from several places of the Amazonas State, and to analyze the effect of bacteria on the life characteristics of *Aedes albopictus* under laboratory conditions. **Methodology:** The mosquitoes were collected in Manaus, Rio Preto da Eva, São Gabriel da Cachoeira, Presidente Figueiredo cities and along of the Coari-Manaus and Coari-Juruá Pipeline and BR 319 highway areas. Mosquitoes samples were collected using CDC light traps and larvae were collected in urban environment. The analysis of *Wolbachia*-infected mosquitoes was done by Polymerase Chain Reaction (PCR). To confirm infection by bacteria and identification of subgroups positive samples were sequenced. **Results:** A total of 1,056 individuals representing 39 species and 11 genera of mosquitoes were analyzed. *Wolbachia* was found in 25.18% of the individuals and in 61.5% of the species. This is the first record of *Wolbachia* in 22 species of mosquitoes from Brazil. Furthermore, this is the first record of *Anopheles* infected species by *Wolbachia*. The infection rate was 30.4%, varying among species from 1.2% to 100%. *A. albopictus* and *C. quinquefasciatus* showed the highest frequencies of the infected species, 79.1% and 64.6% respectively. **Conclusion:** The classification of *Wolbachia* into major groups A and B showed that 19 of species were infected just with bacteria of group A, six with group B, and one with both groups A and B. Analyzing the effect of treatment with tetracycline in *A. albopictus* there was a reduction in the female ovipositor frequency. The antibiotic-treated females produced fewer eggs than untreated. There were a low percentage of larvae hatching rate. Larval mortality was higher among the untreated females. Pupal development time was similar in all crosses, being slightly higher in crosses between females and males treated. The female and male proportion was similar in all the crosses. The occurrence of cytoplasmic incompatibility in *A. albopictus* populations from Manaus was verified. **E-mail:** ricardo@fvs.am.gov.br

Denvect005- Phosphotyrosine Phosphatases (PTPs) in *Ae. Aegypti* and their role in mosquito immune response

Filho, C. D.[1], Jablonka, W.[1], Cudischevitch C.O.[1], Moretti D.M.[1], Silva-Neto, M. A.[1]
[1]Instituto de Bioquímica Médica, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil

Introduction: *Aedes aegypti* mosquitoes are the main vectors of yellow fever and dengue. During blood feeding, female mosquitoes can be contaminated by different pathogens that infect their hosts and thus act as vectors spreading such diseases in the next blood meal. In order to avoid pathogens, mosquito

immunity relies on different responses. These include physical barriers, production of reactive oxygen species (ROS), melanization and/or phaghocytoses by hemocytes and production of antimicrobial peptides. All of these responses are generated by cell signaling processes that possibly involve phosphorylation or dephosphorylation of tyrosine residues. Our group is mapping phosphotyrosine-mediated pathways that regulate mosquito immunity. **Materials and Methods**: mosquitoes were kept at 26-30 °C and 60-80% humidity with a photoperiod of 12:12 h (light:dark). Larvae were reared in filtered water and fed with commercial dog food. We used mosquitoes between 4 and 7 days after emergence for all experiments. One group was fed on blood and different tissues were collected after 24, 48 and 72 hours post blood feeding for enzyme activity, quantitative RT PCR and western blotting analysis. Another group was fed on 10% sucrose containing, or not, antibiotics and different ligands from bacteria membrane. Midguts were then collected after 5 days of treatment for quantitative RT PCR analysis. **Results:** our results show that blood feeding induces significant changes on phosphotyrosine phosphatase activity in the midgut and the fat body but not in the ovaries and in the head. Gene expression levels of the *Ae. aegypti* ortholog of mammalian PTP1B were also changed by blood feeding in the fat body and ovaries but not in the midgut and in the head. Major changes in phosphotyrosine profiles are seen in the fat body and ovaries after blood feeding. In the head, a 260 kDa tyrosine phosphorylated band is observed 24 hours after blood feeding. Expression of defensing, an antimicrobial peptide, and the *Ae. aegypti* ortholog of mammalian PTPN3 increase after blood feeding. Such effect is also observed when different bacterial membrane ligands are used to stimulate mosquito cells in culture. **Conclusion:** altogether these data support the view that different immune challenges (blood feeding and bacterial ligands) might induce changes in phosphotyrosine signaling pathways on different tissues of the *Ae. aegypti* mosquito. These data might also help to identify posphotyrosine pathways that coordinate the mosquito immune system and to develop new strategies to avoid disease transmission. **Supported by:** Faperj and CNPq. **E-mail:** daumas@bioqmed.ufrj.br, maneto@bioqmed.ufrj.br.

Denvect006- **Presence of *Aedes aegypti* in rural primary schools in two communities in Colombia**

Olano VA[1], Matiz MI[1], Vargas SL[1], Jaramillo JF[1], Sarmiento DM[1], Lenhart A[2], Stenström TA[3,4], Overgaard HJ[4]
[1]Instituto de Salud y Ambiente, Universidad El Bosque (UEB), Bogotá, Colombia.[2]Liverpool School of Tropical Medicine (LSTM), Liverpool, UK , [3]Department of Parasitology, Mycology, Water and Environmental Microbiology, Swedish Institute for Infectious Disease Control, Sweden. [4]Department of Mathematical and Technological Sciences (IMT), Norwegian, University of Life Sciences (UMB), Ås, Norway

Introduction: Schools may be an important location of infection of dengue in children. Dengue transmission risk in individuals may increase three-fold when taking into account potential exposure at non-household locations. The relatively few studies carried out in schools show conflicting evidence regarding their importance as transmission foci. For example, in Thailand, there was not clear evidence of ongoing transmission in schools, whereas in Mexico, DENV-infected mosquitoes were collected in schools and presented a high risk of infection to students, teachers, and other personnel. The present study investigated dengue risk factors in rural schools in Colombia. **Material and Methods:** Mosquito collections were carried out in rural schools in Anapoima and La Mesa municipalities in Cundinamarca department, Colombia in August (dry season) and November (rainy season) of 2011. All containers in all rural schools (17 schools in each municipality) were inspected for immature mosquitoes. Adult mosquitoes were collected in classrooms, toilets, dining rooms, kitchens and bedrooms using Prokopack aspirators. Species identification of collected specimens was done in the laboratory using appropriate keys. **Results:** A total of 3060 adult mosquitoes were collected, of which *Culex quinquefasciatus* was the most abundant species (86%), followed by *Aedes aegypti* (10%). There were more *Ae. aegypti* collected during the rainy season than in the dry season. Adults *Ae. aegypti* were present in 18 schools in the wet season (53%) and in 14 schools during the dry season (41%). The majority of female *Ae. aegypti* was collected from classrooms (51%), toilets (17%) and kitchens (13%). *Aedes aegypti* immatures were collected in 7 schools during the wet season (21%) and in 6 schools during the dry season (18%), corresponding to Breteau indices of 41 and 18, respectively. The most common *Ae. aegypti* breeding sites were storage containers for drinking water and other containers (e.g. jars, bottles, tank lids, and abandoned toilets). The adult *Ae. aegypti* infestation rates were higher in Anapoima (14 of 17 schools)

than in La Mesa (8 of 17 schools), whereas immature rates were the same in both municipalities (5 positive schools in each municipality). **Main conclusions:** High *Ae. aegypti* infestation levels were found in rural schools in Anapoima and La Mesa municipalities. Schools may, therefore, be an important source of transmission of dengue to children in this area. The results further suggest that not only urban, but also rural areas are at risk for dengue infection. Mosquito infestations in schools will be monitored prospectively during an intervention trial over the next 2 years. **E-mail:** hans.overgaard@umb.no

Denvect007- **SNPs for population genetic study and mapping of QTL associated with resistance to insecticides in the mosquito *Aedes aegypti*.**

Macoris [1], M.L.G., Paduan[2], K., Andrighetti[1], M.T.M.. Ribolla, P.E[2]
1Superintendência de Controle de Endemias; 2Universidade Estadual Paulista Júlio de Mesquita Filho.

Introduction: Until today the control of dengue depends controlling its vector, *Ae. aegypti*. Chemical control measures are implemented since 1988 in São Paulo, and susceptibility to insecticides is a prerequisite for effectiveness of this strategy. Since 1996 Sucen has established a Monitoring Program for insecticide susceptibility in populations with annual assessment in sentinel mosquito populations. Over time there has been development of resistance in several populations to larvicidal temephos. This study aimed to characterize these populations and genetic mapping of QTL linked to resistance to temephos larvicide. **Material and methods:** The characterization of populations was done using 9 Single Nucleotide Proteins (SNPs) and genotyped by Taqman ®. From each sentinel population 95 subjects (F1) were analyzed. To study the resistance to temephos it was used population from Salvador (BA), resistant to this product and subjected to pressure to increase resistance in the laboratory. **Results:** Exposure of larvae to the lethal concentration for generations to P5, P6 and P7 selected resistant individuals, and the RR increased from 14.2 to 17.4 and then 19.0. In every generation it was evaluated the susceptibility of the adult forms, to insecticides: deltamethrin (pyrethroid) and Malathion, products available in the National Dengue Control (NPDC). During the biochemical characterization tests mosquitoes showed increase in all metabolic enzymes, especially in the esterases with alpha activity increased after pressure with temephos ($R2 = 0.89$, $p = 0.016$). Individuals from Salvador, originated from this selection, were intercrossed to generate 10 families with Rockefeller strain susceptible to insecticides and, after three generations the offspring underwent biological characterization with temephos. Four of the 10 families (FS5, FS7, and FR7 FR9) were characterized by presented as resistant RR greater than 10. Thirty-three two parental genes were selected for amplification and sequencing aimed at selection of fully informative SNPs. A SNP-gene was used in the step of genotyping by allelic discrimination method using the TaqMan ® or complete sequencing of the DNA fragment. Fourteen SNPs were selected and used in gentotipagem L3 larvae, selected in the bioassays. **Main conclusions:** The analysis indicated the presence of two QTL on chromosome 2 and CCEae2D Chym called, and they represent a first step toward a fine mapping of genes involved in resistance to the insecticide temephos, which aims to elucidate the molecular basis of resistance in this vector. On chromosomes 1 and 3 were not identified possible loci linked to resistance to the markers analyzed. The results of the study with sentinel populations indicated that there was a low gene flow between populations justifying the maintenance of the assessment and management of sentinel regardless of their geographical proximity. **E-mail:** lulamacoris@hotmail.com; macoris@sucen.sp.gov.br

Denvect008- **Larval indices of *Aedes aegypti* and dengue transmission in endemic region of São Paulo State, Brazil**

Domingos MF, Losano NF, Carvalho M, Wanderley DMV.
Superintendence of Endemic Disease Control-SUCEN - Secretary of Health of São Paulo

Larval indices of *Aedes aegypti* infestation have been used as a tool for monitoring and controlling this vector, allowing knowing the density and distribution of the mosquito in periodical evaluations. In order to follow up the seasonality, the trend of infestation and containers prevalent in regions of the State, the monthly survey was conducted in a sample of properties in health region of Baixada Santista, in São Paulo State. The research in this sample of properties, held in a short time, about two weeks, allowed to

estimate the levels of infestation. For the selection of buildings that comprised the sample two clusters have been used: sector and block, setting a minimum number of 1,000 buildings distributed in 50 sectors in the region, by drawing lots. The survey was conducted in all buildings on the block, with inspection of containers with water and collection of larvae. The observation of the historical series from 2006 identified seasonal nature of the infestation, with higher values of Breteau Index in the first months of the year, peaking between the months of March and April. It was also observed that the epidemic years 2007 and 2010 were preceded by higher values of the indicator in the last quarter of the previous years and even during the winter the rate showed a significant value. The analysis of the types of containers which showed higher positivity for larvae pointed tire, water tank not connected to the network and potted plants. As to the frequency of positive containers second type was highlighted outer drain, plate of potted plant and unusable. It is confirmed the detection of higher levels of infestation of *Aedes aegypti* in the warmer months of the year, coinciding with the most favorable period for the transmission of dengue; that the behavior of the indicator in the last quarter of the year may modulate the situation of transmission at the beginning of the next year and that the vector is present throughout the year, indicating the stability of the infestation. The selection of predominant containers allows to subsidize, control and intervention strategies aimed at specific problems, which require intersectoral action (sanitation and garbage collection) and individual ones (cultural habits). **E-mail:** dalva@sucen.sp.gov.br

Denvect009- Geospatial tools applied in mapping *Aedes aegypti* breeding abundance sites in urban areas of Tartagal, Argentina

Abril, M[1]; Espinosa, M[1]: Quaíni, K[1] and Rotela, C[2]
[1]Fundación Mundo Sano - Paraguay 1535 (CP 1061), CABA, Argentina, [2]Instituto Mario Gulich, Centro Espacial Teofilo Tabanera, CONAE, Ruta C45 km8, Falda del cañete, CP 5187 Córdoba, Argentina

Introduction: Tartagal city is situated in Salta province, Argentina, in a dengue endemoepidemic region, presenting outbreaks between December and May. The city has urban, ecological and anthropological characteristics defining a high epidemiological risk scenario for this disease, determined mainly by the presence and abundance of *Aedes aegypti* breeding sites, and the frequent virus circulation in border country cities with strong population and economic relationships. In October 2009, Mundo Sano began the implementation of a surveillance and control of A. aegypti program, with the aim of reducing the disease incidence rates, detection and control of mosquito breeding sites, and maintenance of urban infestation in low-epidemiological risk levels. **Materials and methods:** A Focal Cycle methodology is applied operationally, carrying out systematic inspection of all homes in search of mosquito breeding sites; samples are collected for laboratory taxonomic classification and necessary data for aedic index estimation are recorded. Parallel to program implementation, a Geographic Information System (GIS) for the city of Tartagal was generated, in order to allow the automatic link of data recorded in each inspected home and georeferenced cartographic base. One of generated products, with this platform, is abundance maps of *A. aegypti* breeding sites, which provide information on entomological status before and after focus treatment. **Results:** Between November 2009 and March 2012, eight maps of *A. aegypti* abundance breeding sites were generated, one for each focal cycle performed. Each of them shows the spatial density of residential breeding sites per hectare, reflecting urban distribution of mosquitoes for each monitoring cycle. **Conclusions:** These maps allow us to identify areas with high density and frequency of breeding sites, representing a very useful tool for intervention and control actions planning. Moreover, the generation of quarterly maps allows to analyze the temporal dynamics (seasonal) of hatchery abundance, the identification of breeding focus that remain active during the worst months for vector development, and to analyze the influence of eco-cultural factors that determine vector persistence/abundance. **E-mail:** mabril@mundosano.org

Denvect010- Loss of genetic diversity in *Aedes aegypti* from the Archipelago of Fernando de Noronha, Brazil

Marroquim, BCB; Guedes, DRD; Melo-Santos, MAV; Acioli, RV*; Batista, CAV*; Melo, L*; Souza, MFM*; Araújo, YV*; Regis, L; Ayres, CFJ.

Department of Entomology, Centro de Pesquisas Aggeu Magalhães/FIOCRUZ, Recife-Brazil. *Secretaria de Saúde do Estado de Pernambuco.

Introduction: *Aedes aegypti*, the main dengue vector, is a widespread species with a high potential to migrate and establish large populations in recently colonized areas. Its ability to reproduce quickly and disperse offspring widely ensures rapid adaptation to environmental changes. Therefore, *Aedes aegypti* control has been a challenge for health authorities. In the archipelago of Fernando de Noronha (FN), located 545 Km from Recife, the capital of Pernambuco, Brazil, 231 dengue cases have been reported between 2002 and 2006. In FN, the use of chemical insecticide is not allowed and vector control has been done with the biolarvice *Bacillus thuringiensis israelensis* (Bti) and more recently, through massive removal of *A. aegypti* eggs using ovitraps. This study aimed to evaluate the *A. aegypti* genetic diversity from FN. **Material and Methods**: Mosquito eggs were collected in the dry season in 10 different sites in the main island of Fernando de Noronha. DNA was extracted from individual mosquitoes by using sodium hydroxide method. PCR on the ND4 gene was conducted using PCR mix. PCR products were sequenced in both directions using an ABI 3100 DNA sequencer and DNA sequences were aligned using CodonCode Aligner software. **Results**: A 385 bp region of the mtDNA ND4 gene was amplified in 51 individuals from four sample sites. All individuals analyzed so far displayed the same haplotype, with no nucleotide diversity. The sequence of the haplotype matched haplotypes previously found in Mexico, with 100% of identity, and in Brazil, which differed by a single transition. **Main Conclusions**: The lack of genetic diversity in *A. aegypti* population from Fernando de Noronha might indicate the island was recently colonized by a few number of mosquito founders, causing a founder effect, which reduces genetic diversity and that the mosquito population size is probably small when compared to mainland populations as a consequence of the effective vector control strategies. These findings suggest that *A. aegypti* elimination in Fernando de Noronha may be possible, if efficient vector control strategies are implemented in the island. In addition, it will be possible to track the geographic origin of *A. aegypti* populations invading Fernando de Noronha. **E-mail:** barbara.marroquim@gmail.com

Denvect011- **Main Breeding sites of Aedes aegypti after analysis of the Rapid Assessment of *Aedes aegypti* index in Uberlândia, MG, 2012.**

Souza Amaral Alves, Reis Alessandro Ambrósio, Arruda José Humberto, santos Adriana, Limongi Jean Ezequiel, Pajuaba Neto Adalberto de Albuquerque, Paula Márcia Beatriz Cardoso.
Centro de Controle de Zoonoses "William Henrique Stutz" (CCZ) - Prefeitura Municipal de Uberlândia, MG.

Dengue is the arbovirus that most affects humans and is currently a major public health problems in Brazil. The Rapid Assessment of Aedes aegypti index (RAAa) is a tool developed by the Ministry of Health from 2005 that seeks to guide the actions of dengue control, prioritizing areas where there is greater likelihood of infestation by Aedes aegypti. The survey also identifies the main types of containers that favor the proliferation of larvae and therefore verify the need to redirection the actions of (NPDC) - a national dengue control. Methods: the Center for Zoonosis Control of Uberlândia conducted in period of 04 to 06 january 2012 and 06 to 08 march 2012 the 1st and 2nd RAAa in the municipality in order to verify the presence of mosquito larvae and the main types of deposits used by the vector. 20,676 visits were scheduled in two periods and 20,485 households were surveyed in all districts of the city accounting for 20% of homes and vacant lots. The larvae found were sent to the Entomology Laboratory of the Center for Zoonosis Control for identification and, subsequently, the results were forwarded to the Dengue Control Program where all actions are developed. Results: 29 vacant lots and 463 homes had foci of Aedes aegypti. The main breeding sites were found: Two (0.34%) in water tank high on the public network and / or mechanical feedback system in the mine pit or tank of water: water box of drum and deposit masonry; Twenty-four (4.1%) in deposit at ground level for domestic storage; two hundred thirty-seven (40.5%) in pots, jars, bottles, small containers in general; hundred and ten (18.8%) in fixed deposits, rails, slabs, swimming pools not treated, disused toilets, rainwater boxes; Twenty-four (4.1%) in tires; hundred and seventy-nine (30.6%) in waste, scrap, debris of construction and eight (1.4%) in hollow trees, armpits bromeliads, natural materials. The location of the foci was 90% on the outside of the housing, and fixed focus 67% and 99% at soil level. Conclusion: it is perceived that there is a clear preference of the mosquito deposits resulting from the habit of people to accumulate scrap materials and do not properly allocate the garbage and recyclable materials. Small containers (plant pots, bottles) are

the main breeding site in the city today. Thus, we emphasize that it is still necessary to conduct more public awareness campaigns to help eliminate permanent reservoirs left in backyards these types of focus. **E-mail:** amaral-72@hotmail.com

Denvect012- Developmental variation of larvae of *Aedes aegypti* exposed to differents wavelength of light

Paiva, W.V.M.[1]; Paiva, S.S.L.[2]; Gomes Jr, P.P.*[2]
1,2 – UFRPE/UAST, Serra Talhada, Brazil

Introduction: Dengue is a reemerging infection whose etiologic agent is the dengue virus (DENV). DENV is an arbovirus that belongs to the family Flaviviridae, comprising four antigenically distinct serotypes. And the single known vector in Americas is the mosquito *Aedes aegypti* a holometabolic insect that has four stages of larvae. Which control effectivity has decrease due to factors as: actions of control not supported at long-term, based mainly at chemical control and community participation, well as education in health, but just during outbreaks and epidemies. Aiming to create a new form to control, larvae exposition to different wavelength of light wave were tested and respective development consequences. **Material and Methods:** Expositions were performed in triplicates about 24 larvae to different wave length by lamp of led (blue, white, red, yellow, ultra-violet, and green) at each two minutes and one control group in the dark. The aquariums contained five liters of water with larvae in first stadium, fed and observed daily till emerge to adult stage. Then were counted to get the frequency of development in seven days. **Results:** All larvae trembled at the moment that the light was turned on, showing a stressed behavior. At the end of seven days, 90% of larvae by control group (on dark) and 77% of group exposed to ultra-violet, known for its antimicrobial and mutagenic power, emerged. While the group exposed to blue light (necessary to rhodopsin metabolism) had 57% of larvae reaching the adult stage. **Conclusion:** Although larvae present photophobia, when bred under continuous exposition to artificial light, it fits without big disruption for metamorphosis from pupa to adult. And ultra-violet doesn't show no significative results, while the group exposed to blue light had the highest delay effect on larvae of Aedes aegypti. **E-mail:** ppgjr2005@yahoo.com.br

Denvect013- Entomological situation of the municipality of Oros, Ceará, Brazil, after the introduction of insect growth regulators to control of *Aedes aegypti*

Gomes, R. G. A.1; Carneiro, F. C. F.1; Verdiano, V. A.1; Silva, C. V.2; Barros, F. J.2; Araujo, L. B.2; Sousa, A. Q.1.
1. Núcleo de Controle de Vetores da Secretaria de Saúde do Estado do Ceará, Ceara, Brazil., 2. Coordenadoria Regional de Saúde de Icó, Ceara, Brazil

Introduction: The dengue epidemics are responsible in the world for thousands of cases and deaths annually in Brazil; the endemic level of disease is related to extensive domiciliary infestation by Aedes aegypti and human infections by different serotypes of the virus. Traditionally, the main strategy to control the dengue vector has been the intensive use of insecticides. In control of the larvae, the main larvicide, used for decades in the country, is the organophosphate temephos. The widespread use of insecticide substances, such as the temephos, can lead to the occurrence of mosquitoes resistant to these compounds, making it impossible to control for this action strategy. Alternatives for mosquitoes control in case of temephos resistance currently available are Insect Growth Regulators or IGRs. In the State of Ceara, temephos was used to control *Ae. aegypti* since 1986. This organophosphate was being gradually replaced throughout the state, after 23 years of use, initially in the capital, Fortaleza, and later in other cities. The municipality of Oros is located in south-central region Cearense distant 388 km from Fortaleza, has about 22,000 inhabitants. Currently the larvicide used to control *Ae. aegypti* in the city is the novaluron, a chitin synthesis inhibitor introduced from February 2011. **Objective:** This study aims to describe the entomological situation of the municipality of Orós, Ceara, Brazil after the introduction of insect growth regulators in the control of *Ae. Aegytpi*. **Materials and Methods:** The study was developed from the observation data of infestation rates (IIP) of the municipality of Oros in the years 2009 to 2011 provided by the Regional Health of Ico. **Results:** During 2009, rates of infestation in Orós ranged from

1.4% to 3.1%, with the highest IIP in May of that year and the lowest in February. In 2010, rates continued to keep above what is recommended by the Ministry of Health (1%) ranging from 2.09% (July to September) to 4.02% (October to December). In 2011, the indices showed an apparent decline ranging from 3.98% in April and May to 0.79% from July to September, ending the month of December with a rate of 0.08%. **Conclusion:** It is believed that the replacement of organophosphate temephos, used in Orós for 23 years in Ae aegypti, the IGRs diflubenzuron, novaluron and later, may have contributed to the decline in infestation levels in 2011. More detailed studies should be performed in different municipalities in order to elucidate the effectiveness in the field of IGRs in *Ae. Aegypti*. **E-mail:** ricristhi@gmail.com

Denvect014- **Evaluation of genetic parameters for entomological surveillance of** *Aedes (stegomyia) aegypti* **(Linnaeus, 1762)**

Souza, K. R.[1,2]; Ribeiro, G.[2]; Silva, G.[2]; Freitas, C.[2]; Melo, P. S.[3]; Couto, E.[4]; Reis, M. G.[2]; Blanton, R. E.[5]; Silva, L. K.[1,2].
1. União Metropolitana de Educação e Cultura (UNIME), Salvador-BA, Brazil. 2. Centro de Pesquisas Gonçalo Moniz (FIOCRUZ-BA), Salvador-BA, Brazil; 3. Universidade Estadual de Santa Cruz (UESC), Ilhéus-BA, Brazil; 4. Centro de Controle de Zoonoses, Salvador-BA, Brazil. 5.Center for Global Health and Diseases, Case Western Reserve University, Cleveland-OH, EUA.

Despite repeated attempts to control the mosquito vector of dengue, *Aedes aegypti*, more than 80% of the strata of the city of Salvador-BA showed house infestation index (HI) greater than 3.9%. This condition is defined by the ministry of health as representingrisk of an outbreak of dengue. Since traditional approaches to *A. aegypti* control have not produced the expected results, the current study aimed to evaluate vector genetic parameters such as genetic differentiation measures and the effective population size (N_e) in various geographical levels in order to supportfieldwork decisionsabout strata visits and treatment.The study design had a cross-sectionalcomponent describing genetic parameters from larvaes of *A. aegypti* collected in three municipalities (Salvador, Jacobina and Vitoria da Conquista) in 2009, in addition to larvaes from Rockefeller lab strain. A longitudinal component evaluated larvae collected from four areas of Salvador during four cycles of the LIRAa performed between 2007 and 2009. The DNA of each larvae was isolated and genotyped with five microsatellites markers. Four new microsatellite markers were design and validated in this study and behaved as single locus, multi allelic (3-4 alleles/locus) and independent. All markers were usually in H-W equilibrium for the 2009-10 populations. Allelic, genotypic and the classical genetic differentiation measures (F_{ST}, Φpt, R_{ST} and *Jost´D*) were able to detect population stratification at the municipality level and the lab strain (p <0.05). Allelic and genotypic frequencies showed significant genetic differentiation only between area 4 and areas 1 and 2, which is 9 Km apart from these areas. F_{ST} and its derivations captured significant genetic differentiation for other pairs of populations. N_e was infinite for the *A. aegypti* population from Salvador and ranged from 11.8 to 30.7 in the control populations. ROCK strain had the lowest N_e.Longitudinal analysis showed significant genetic differentiation in the *A. aegypti* population from Salvador between 2008 and 2009. The instability of the *A. aegypti* population may be correlated to the reduction in the HI in this period. N_e measures varied considerably by area and cycle, althoughthey were not correlated to the HI. In conclusion; vector control produces ineffective changes in the *A. aegypti* population structure. The combination of georeferencing technology and the study of population genetics of *A. aegypti* could help in the definition of strata and the management of treatment. **Keywords:** *Aedes aegypti*, microsatellites, entomological surveillance, genetic markers. **E-mail:** kalabric@bahia.fiocruz.br

Denvect015- **Behavior of the infestation of the** *Aedes (Stegomyia) aegypti* **(Linnaeus, 1762) in the first outbreak of dengue in the Amazon frontier (COL-BRA-PERU)**

Carvajal JJ[1]; Alvarado LA[1]; Moncada LI[2]
[1]IMANI Instituto de Investigaciones Amazónicas, Universidad Nacional de Colombia, Leticia, Colombia, [2]Instituto de Salud Pública, Universidad Nacional de Colombia, Bogotá, Colombia

Introduction: *Ae. aegypti* mosquito habits are clearly anthropophilic and domestic, preferably breeding

in the residences or dwellings. Buckets are the water containers most preferred for oviposition, although use other water containers such as discarded tires, bottles, cans, flower vases, water pools, troughs is also observed. In the Tabatinga County (Amazonas, Brazil), this species was first found in the port area during a larval inspection in 2008; and in the Leticia city (Amazonas, Colombia), it was found in September of 2009 in the La Union neighborhood. The objective of this study is to identify the factors that influenced the spread of mosquito and its importance in the first outbreak of dengue in the Amazon frontier. **Materials and methods:** We used data from a survey of Infestation index and environmental sanitation of the county houses inspected since June 2010 to December 2011. Probability maps were made of the distribution of the mosquito and the disease by the RBF method taking into account the key variables using ArcGIS version 9.1. **Results**: The variables that most influenced the spread of mosquito in the border were the lack of vector biology and the disease, poor washing and exposure to water containers, the deficiencies in the water and sewer service, the differences of the border policies and the action plans, the supervision and control reduction at ports and border posts. There was a significant correlation between the spread of mosquito, the climate and the distribution of the disease by 2011. **Main Conclusions**: Improve approaches to community education aimed at proper management of water containers, disposal of ordinary waste and workshops focusing on strengthening the knowledge of vector biology and disease. Joint action plans and control vectors between the three countries. And finally, step up customs inspections at ports and border crossings. **E-mail:** jose.carvajal@ioc.fiocruz.br

Denvect016- **Aspects of the vectorial capacity of different populations *Aedes aegypti* (Diptera: Culicidae), of the state of Sergipe, Brazil.**

Marteis LS[1], Unger LGS[2], Suesdek L[3,] Natal D[1,] Santos RLC[2].
[1]University of São Paulo, [2]Federal University of Sergipe, [3]Instituto Butantan

Introduction: The term vectorial capacity can be defined as the speed at which a population of vector species can spread an etiologic agent of susceptible individuals in a given area. Therefore, analyzes related to infection involves the vector and the susceptibility of hosts. However, in recent approaches, ecological parameters, behavioral and biological species came to be used in determining the vectorial capacity. The objective of this study was to evaluate aspects of the vectorial capacity of different populations of *Aedes aegypti* in Sergipe. **Material and methods:** We evaluated four vector populations from areas with different climatic characterizations: coastal, rural and semi-arid, and the Rockefeller strain. The developmental and reproductive variables evaluated were: duration of the immature stages, number of pupae and adults emerged, sex ratio, survival of adults in different feeding conditions (fasting, diet only with sugar solution and feeding meal and sugar solution blood), female fertility, fertility of eggs under stresses climate, amount of blood ingested, specimens size and the occurrence of wing asymmetry, both in form and size. **Results:** The population from favorable climatic area performed better in the analysis of developmental and reproductive variables evaluated. It survived more, ingested more blood, had higher average of eggs per female and had the largest females among all the populations studied. But this population from favorable climatic area was the one that produced the least fertile eggs when they were submitted to environmental stress. In that condition, the population from semi-arid environment which is characterized by adverse climatic conditions with a long dry period, showed the best performance, although it has shown loss in the other variables. The wings asymmetry was minimal among populations, even in populations exposed to environmental stress. **Conclusion:** It was observed variations in the parameters of vectorial capacity that seemed to be related to climatic conditions of the original environment of the populations, probably due to adaptations developed by individuals. **E-mail:** lmarteis@usp.br

Denvect017- **Analysis of *Aedes aegypti*'s (Diptera: Culicidae) immunity to dengue virus in field populations with differentiated vector competence.**

Carvalho-Leandro D.[1,2*], Magalhães T.[2], Guedes D.R.D[1], Melo-Santos M.A.V.[1], Oliveira C.M.F.[1,2], Suesdek L.[3], Ayres C.F.J.[1,2]
1- Zoology Department, Biological Science Center, Universidade Federal de Pernambuco, Recife-PE, Brazil. 2- Entomology Department, Centro de Pesquisas Aggeu Magalhães, Recife-PE, Brazil. 3- Parasitology Department, Instituto Butantan, São Paulo-SP, Brazil.

Introduction: The identification of molecules involved in mosquito-virus interaction may help to understand mechanisms involved in vector competence, so far poorly understood. Recent studies show the involvement of certain mechanisms in dengue virus (DENV) and *Aedes aegypti* mosquito interaction. However, little is known about the actual role of such molecules in modulating vector competence in mosquito field populations or any relationship among them. Based on that, this study aimed to analyze the expression of three molecules representing different mechanisms of antiviral defense in *A. aegypti* in response to dengue virus serotype 2 (DENV-2) infection: REL1, HOP and Dicer-2, in field (Recife and Petrolina) and laboratory (RecLab) mosquito populations. **Materials and Methods:** Different strains were artificially infected with DENV-2, and tissues like salivary glands, midguts and fat bodies were collected at specific time points after infection (3, 7, 11, 15 and 21 days post infection). RNA extraction was performed using Trizol® reagent. The virus quantification and the expression of selected molecules in the samples were performed by quantitative real time PCR. **Results:** The kinetics of viral infection as well as the expression of molecules varied among *A. aegypti* populations at different time points after DENV-2 infection. Virus genome quantitation in tissues of the three *A. aegypti* populations varied from 7.1×10^6 to 4.5×10^{10} Log_{10} RNA copies/tissue. In the midgut and fat body, viral copies were similar among the three populations, with subtle variations among time-points. In the salivary glands, virus quantitation was also similar among populations. Regarding gene expression profiles, our results showed that in the midgut, the expression of HOP and DCR2 was significantly lower in infected samples when compared to controls in Petrolina population. In the fat body, HOP was significantly less expressed in infected insects from Recife and Petrolina, in comparison to control samples. This was also true for DCR2 expression, which was significantly lower in infected samples from Recife and Petrolina populations compared to non-infected samples. **Main Conclusion:** Analyses of infection rates indicated that the field populations were more susceptible to DENV-2 infection than the lab strain. The transcripts expression, pointed to distinct expression patterns among mosquito populations, in both control and infected insects. Moreover, lower expression of immune molecules in DENV-2-infected insects compared to controls was observed in the two field populations, suggesting the virus may be modulating the antiviral defenses of mosquitoes. Results obtained here may be quite relevant to the research of virus-vector interaction, and thus assist in the development of new strategies to control dengue, as well as in research with transgenic mosquitoes. **E-mail:** danilo@cpqam.fiocruz.br

Denvect018- **Impact of dengue virus 2 infection on feeding behavior, longevity and fecundity of orally challenges *Aedes aegypti***

Sylvestre GR; Maciel-de-Freitas R
Laboratório de Transmissores de Hematozoários, IOC, Fiocruz, Rio de Janeiro, Brazil

Introduction: Dengue virus (DENV) is transmitted in the Americas through the bite of the mosquito *Aedes aegypti*. Despite advances in *Ae. aegypti* vectorial capacity, there are still many gaps on the interaction between *Ae. aegypti* / DENV. For instance, it is still unknown if the infection with DENV-2 has any impact on *Ae. aegypti* feeding behavior but also on other life-history traits such as vector`s survival, longevity, oviposition success and fecundity of infected and control insects. **Material and Methods:** Two *Ae. aegypti* populations were tested: Paea, confined in the laboratory since 1994, and one from the field, collected using ovitraps in Tubiacanga (RJ). Females from both populations were randomly selected to receive blood infected with 2×10^{-8} particles of DENV-2 from strain Halstead 16681, which previously infected 100% of individuals. Mosquitoes from the control group received blood culture supernatant from virus-free cells. After oral infection, those visually engorged females were maintained individually in

netted plastic vials up to the day of their death. Once in a week we addressed the time required for each of the following feeding parameters: (a) start time, time spent in locating the host (anesthetized mice); (b) the number of probes, how many times female inserts and removes the proboscis; (c) probing time, time spent probing; (d) ingestion time, time elapsed ingesting blood and (e) total feeding time, which is the sum of start, probing and ingestion times. Furthermore, mosquito mortality was monitored daily and the number of eggs (fecundity) and oviposition success was accessed once in a week. **Results:** Using a failure-time analysis, we observed that infection with DENV-2 did not change the feeding habits of *Ae. aegypti*, i.e., infected and non-infected had statistically similar start, probing, ingestion and total times, as well as number of probes. Using an ANOVA, we observed the influence of infection on longevity (F=20.75, df=1, P=0.0001). The mortality curve of the infected group was different from the control non-infected group, denoting higher mortality for those females infected with DENV (χ^2=16.5, df=1, P<0.001). Regarding fecundity, any alteration was observed just on the third oviposition cycle. Infected females had lower oviposition success, i.e., they were less likely to lay eggs (χ^2=14.40, df=3, p=0.0024) and their clutch had significantly less eggs than those from the control group. **Main Conclusions:** We showed the significant impact of dengue virus 2 infection in the *Ae. aegypti* fitness, probably in response to an energy trade-off. We did not detect significant changes in feeding behavior parameters but in survival pattern, fecundity and oviposition success. **E-mail:** sylvestre@ioc.fiocruz.br

Denvect019- **Population frequency of *Aedes albopictus* (Skuse, 1894) and *Aedes aegypti* (Linnaeus, 1762) (Diptera: Culicidae) in breeding sites in the city of Caxias, Maranhão**

Aylane Tamara Dos Santos Andrade[1], Joelma Soares da Silva[1,2], Valéria Cristina Soares Pinheiro[1] Wanderli Pedro Tadei[2]
[1]Universidade Estadual do Maranhão, Centro de Estudos Superiores de Caxias, Laboratório de Entomologia Médica. [2]Universidade Federal do Maranhão, Campus VII, [3]Instituto Nacional de Pesquisa da Amazônia Malária, Laboratório de Malária e Dengue

Introduction: Dengue is an acute febrile disease caused by four types of viruses of the genus Flavivirus, and transmitted by mosquitoes of the genus Aedes - Aedes (Stegomyia) aegypti (Linnaeus) and Aedes (Stegomyia) albopictus (Skuse) that infest the tropical and subtropical world. In the state of Maranhao, dengue epidemics occur annually and the two vectors are dispersed throughout the state, so it is proposed In this work the survey of larval indices and frequency of immature stages of A. aegypti and A. albopictus in the city of Caxias, MA. **Materials and Methods:** The study was conducted in the city of Caxias, MA, with home visits and inspections of buildings drawn in peri and indoors five districts. Were examined all artificial containers that show potential for the development of A. aegypti and A. albopictus. Found when immature, these were collected with the assistance of plastic pipette, and then were placed in hemolysis tubes 10 ml ethanol containing 70%, identified with labels containing location data and the type of container. The samples were sent to the Medical Entomology Laboratory for identification. The deposits were classified into groups: vessels, container, tires, building materials and car parts, storage, fixed others. **Results and discussion:** In the five districts were collected 1099 immature, 1082 (98.46%) A. aegypti and 17 (1.54%) *A. albopictus*. From the 3681 recipients analyzed, 53 (7.06%) were positive for at least one species. There were breeding of A. aegypti in the five districts studied, being the predominant peridomicile with 50 (94.34%) containers positive. Indoors were found 3 (5.66%) containers positive. From the seven groups, storage and tires proved to be positive for A. and A. aegypti albopictus, only the storage group. This result may be related to lack of water contained in the district, which favored a higher frequency of immature forms in these deposits, they acquire a great importance as potential breeding due to the need of the population to maintain water supplies for domestic consumption. **Conclusions:** Conclude that two vectors are dispersed around the city of Caxias, MA, breeding groups occupying storage and tires. There was an increased frequency of A. against A. aegypti albopictus, which should be associated with more preferably A. aegypti by artificial containers that are quite frequently in these neighborhoods. **E-mail:** aylaneandrade@hotmail.com

Denvect020- The use of ovitraps in monitoring of *Aedes aegypti* populations in Serra Talhada city, Pernambuco, Brazil

Araújo AL[3]; Gomes Jr PP[1,2]; Aragão NC[1]; Silva LG[1]; Cardoso MV[1]; Batista MVA[1]; Balbino VQ[1*]
1UFPE, Recife, Brazil., 2UFRPE/UAST, Serra Talhada, Brazil, 3SMSST, Serra Talhada, Brazil

Introduction: Dengue is a reemerging infection whose etiologic agent is the dengue virus (DENV). DENV is an arbovirus that belongs to the family Flaviviridae, comprising four antigenically distinct serotypes: DENV-1, DENV-2, DENV-3 and DENV-4. These viruses represent a serious public health problem, especially for world's tropical and subtropical regions. In 2011, the first DENV-4 isolate from Pernambuco state was found in Serra Talhada city. This serotype does not circulate in the country for 20 years, which increases the risk of dengue hemorrhagic fever. The contribution of this study is to provide a simple method to predict the moment of the highest activity of *Aedes aegypti*, which could generate a prediction method for vector population maximum increase over time by means of ovitraps. **Materials and Methods:** The ovitraps are artificial traps made of plastic bottles painted in black with an eucatex palette immersed in water, where preferentially occurs the oviposition of the female mosquito. The continuous collection of eggs was made by using 300 ovitraps, equally divided into six districts of Serra Talhada city, between September and December 2011. Then, the eggs were counted in order to get the total number of eggs, the average per collection/trap, and the variance of the number of positive traps per neighborhood. **Results:** Ovitraps data have been reported to be more sensitive than the traditional *stegomyia* indices to detect vector populations at low density. Moreover, the ovitraps provided useful data on spatial and temporal distribution of *Ae. aegypti* and other mosquito species that live in artificial reservoirs. This could allow us to obtain a better knowledge of the vector activity. In this study, a total of 31,974 eggs were collected over four months, with an average of 695 eggs per sample, and 107 eggs per trap. The number of positive traps per collection/neighborhood ranged from 3 to 26 traps. **Conclusions:** There are significant differences among the amounts of *Ae. aegypti* eggs found in different sampling sites of the study area. The number of eggs found at each site did not follow a single distribution pattern. Entomological indicators obtained from egg collection allowed the characterization of the distribution, infestation intensity and location of critical points in monitored areas, which could direct interventions. The vector distribution monitoring and the assessment of the presence and number of eggs can assist the infection combat. Moreover, studies of population genetic structure are being carried out in order to evaluate the migratory flow within and among districts of Serra Talhada, increasing the power to monitor this vector. **E-mail:** vqbalbino@hotmail.com

Denvect021- Cost effectivity of differents methods to control *Aedes aegypti* (Linneus, 1762)

Fidelis, R. A[1]; Leal-Santos, F. A*[2]; Azevedo, J. B.[2]; Jacobina, A. C. M.[2]; Acel, A.M.[2]; Rodrigues, J. S. V.[2], Ribeiro, A. L. M. [2], Miyazaki, R.D.[2].
1 - Faculty of Economy – Federal University of Mato Grosso – Cuiabá – Mato Grosso – Brasil. 2 -Medical EntomologyLaboratory – Faculty of Medicine – Federal University of Mato Grosso – Cuiabá – Mato Grosso – Brasil

Introduction: There is no doubt about the epidemiological importance of the mosquito *Ae. aegypti*, as well as being the main vector of dengue in Brazil, it can also transmit yellow fever in its urban cycle. Because of the absence of a vaccine for dengue, it is essential that policies are adopted to control this insect. In the past there was a huge amount of publications proposing various methods for this purpose. The objective of this study was to evaluate the cost effectivity of different methods to control the mosquito of dengue, *Ae. Aegypti*. **Materials and Methods:** We performed a systematic literature search of studies aimed to describe the different types of methods used to control the dengue mosquito. Prioritized in this study was the easiness of application and the cost benefit that can be used by the population in general. They were separated: homemade methods (HM) (with homemade materials), chemical control (CC) (using insecticides / chemicals), Plants (PL) (plant / plant use fresh or processed in a home) and biological control (BC) (use of live animals or microorganisms). Then they were categorized between, level of cost and difficulty of use, effectiveness and their advantages and disadvantages to use. **Results**

and discussion: We analyzed 14 different methodologies, two for plants and four for the rest. Note the advantages and disadvantages of each. The only technique that showed the costs of running and maintenance costs were the HM but they are less effective. But we can mention the coffee grounds the most efficient because, it's normally a discarded thing. As for the PL, all have a high cost for its implementation. The CC is those with the best efficiency, but faces the difficulty of application. And finally, the BC has the great advantage of being environmentally friendly and cost-effective and valuable. The biological control with microorganisms is a good idea, but l's is too complicated for the population, another idea is using other animals, like fishes. **Conclusion:** Different methods always have their advantages and disadvantages it is of paramount importance to guide the population in relation to the situation and the most ideal type of strategies to be adopted. **E-mail:** alexandre3025@gmail.com

Denvect022- **Alternative control analysis to the *Aedes aegypti* (Diptera: Culicidae) by dillapiol derivatives**

Domingos, PRC; Pinto, AC; Tadei, WJ; Rafael, MS.
Laboratório de Vetores de Malária e Dengue / CSAS / INPA, Manaus, AM

Aedes aegypti is the main vector of dengue in the world, and has shown cases of the resistance here in Brazil. The dillapiol, obtained from the essential oil of *Piper aduncum* L. (Piperaceae) has been used in mortality experiments and it served as the basis for the synthesis of the dillapiol semi-synthetic derivates, a potential medical insecticides. In this study, the potential genotoxic evaluation was performed on metaphase nuclei, in addition to ovicidal and larvicidal activity. Two dillapiol semi-synthetic derivates, n-butyl ether dillapiol (1KL43-C) and ethyl ether dillapiol (1KL39-B) were used in genotoxicity and mortality tests of *A. aegypti*. Immature forms of *A. aegypti* were collected in Puraquequara, neighborhood of Manaus, Amazonas state, Brazil, and the samples reached their development at INPA's insectary. Colonies (F_1) were established from eggs and larvae on third instar, which were exposed to KL43-C (20, 25 and 30 µg/mL) and 1KL39-B (50, 70 and 80 µg/mL) compounds, for 24 to 48 hours, in order to verify its eggs and larvae effects. Genotoxicity assays in larvae and pupae, using both compounds at the same concentrations were performed during four hours. The control assay was done with tap water. Eggs exposed on 1KL39-B and 1KL43-C in all concentrations have showed 100% of mortality, during 24 hours. Larvae exposed to 80 µg/mL of the 1KL39-B and to 30 and 25 µg/mL of the 1KL43-C have showed 100% mortality during 24 hours. The 1KL39-B at 50 and 70 µg/mL and 1KL43-C at 20 µg/mL showed a mortality of 83.8%, 28.8% and 62.5%, respectively, in 48 hours. There was not mortality of larvae in 4 hours of exposure to any compound concentrations. From this larvae and pupae chromosomes preparations by the spreading assay were performed. Cytological preparation analysis for either of the two compounds (1KL43-C and 1KL39-B) have showed genotoxic effects in chromosomes. Variations in relation to the control were observed as anaphase bridge formation, chromosomal malformations, chromosome breakage, and micronucleus. Significant variation in chromosomal delay in all treatment analyzed were not observed. These preliminary data will be improved since the *A. aegypti* generations get a successful to highlight the perspective of their possible application as an alternative insecticide to *A. aegypti* control. **Financial support:** PIPT (FAPESP/FAPEAM) - Internal Project 014/2010/MCT/INPA, Project PIATAM / Petrobras; Rede Malária/CNPq / FAPEAM. **Keywords:** Bioinsecticide; Dengue; Genotoxicity; Piper aduncum. **E-mail:** pedrorauel@gmail.com

Denvect023- **Temporal variation in some life history traits related to vectorial capacity in four Brazilian populations of *Aedes aegypti* with varying insecticide resistance profiles**

David, M.R.; Garcia, G.A.; Valle, D.; Maciel-de-Freitas, R.
Instituto Oswaldo Cruz, FIOCRUZ, Rio de Janeiro, RJ, Brazil

Introduction: Insecticide resistance is considered to be associated with fitness costs due to the re-allocation of metabolic resources to production and maintenance of mechanisms responsible for resistance. In this context, this study aimed to assess how insecticide resistance is associated with some

life history traits related to vectorial capacity of *A. aegypti* in Brazilian populations from Campo Grande/MS (CG), Duque de Caxias/RJ (DC), Parnamirim/RN (PN) and Santarém/PA (ST). **Material and Methods:** The temporal variation in temephos (organophosphate) and deltamethrin (pyrethroid) resistance as well as the mechanisms involved were monitored every three months, during one year, as well as some mosquito traits. Assays related to insecticide resistance were performed according to standard procedures of the Brazilian *Aedes aegypti* Insecticide Monitoring Network. The development time elapsed between L1 larvae and the adult stage was measured through the observation of 120 individual larvae from each population and for every three months. The gender of resulting adults was identified and their starvation time and wing length were evaluated. Survival and fecundity aspects of 60 individual adult females were also followed. All experiments were performed in parallel with the Rockefeller strain, as a standard control of ambiental conditions. **Results:** The populations and Rockefeller showed significant differences for some of the parameters studied, which probably reflects adaptation to local environmental conditions and to the laboratory, respectively. Females showed shorter starvation time than males. There is evidence that insecticide resistance for both insecticides is negatively correlated with some of the biological traits evaluated, suggesting lower fitness of resistant individuals in the absence of insecticide pressure. Mosquitoes from CG showed lower starvation time (~72h for females and 111h for males), wings size and oviposition success (many females did not lay eggs) associated with increased deltamethrin resistance. DC population seemed to be the most affected by insecticide resistance, since larval development, starvation time (~66h for females and 116h for males), wing size; survival (~ 15 days) and fecundity of adult females were somehow associated with temephos resistance. With respect to PN, female survival varied according to temephos resistance (~23 days) while oviposition success (for the first week of monitoring) and fecundity were apparently associated with deltamethrin resistance. There is evidence that the development time and fecundity of ST were associated with temephos resistance, as well as starvation time (~79h for females and 116h for males) and wings length appeared to vary in accordance to deltamethrin resistance status. **Main Conclusions:** These observations support the hypothesis that insecticide resistance is positively selected during chemical control interventions, for instance. However, in the absence of these compounds, resistance may result in fitness costs on those resistant individuals, reinforcing the hypothesis that insecticide resistance affects mosquito vectorial capacity. **E-mail:** maridavid@ioc.fiocruz.br

Denvect024- **Resistance to chemical insecticides in *Aedes aegypti* populations from Pernambuco State**

Cabral A. M.[1], Araújo A. P.[1], Ayres C. F. J.[1], Melo-Santos M. A. V.[1]
Department of Entomology, Centro de Pesquisas Aggeu Magalhães CPqAM-FIOCRUZ, Recife-Brazil

Introduction: Resistance to chemical insecticides in *Aedes aegypti* populations from Brazil has been monitored by the National Program for Dengue Control (NPDC) since 2000. This study aimed to characterize the profile of susceptibility to the insecticides temephos (an organophosphate larvicide) and cypermethrin (a pyrethroid adulticide), and analyze by biochemical tests the activity of enzymes involved with detoxification of these compounds. **Material and methods**: *A. aegypti* samples from Recife (Metropolitan region), Itaíba and Petrolina (arid regions) were used in this study. *A. aegypti* larvae were exposed to different concentrations of temephos, which caused mortalities that varied from 10% to 100%. LC_{95} was used to quantify resistance ratio (RR), classified as high (>10), moderate, (5< x <10) and low (3< x <5). Bottles assays using 8 μg of cypermethrin defined qualitatively the susceptibility status of populations. Mortality was estimated every 15 minutes, during 2h of continuous exposure, and 24h after finishing exposure. At the end, populations were considered susceptible when mortality was > 98% and resistant if mortality was < 80%. Biochemical assays were performed with adult females to quantify the activity of Glutathiona-S-Transferases (GST), Esterases (α, β and PNPA) and Mixed Function Oxidases (MFO). The percentage of enzymatic activity for each individual was compared to the Rockefeller strain 99th percentile. Activities were classified as unaltered (< 15%), altered (15%< x <50%) or highly altered (> 50%). **Results**: All populations analyzed in the present work are resistant to temephos. Petrolina and Itaíba display a high RR, 38,9 and 120,2, respectively. Recife presented a moderate level of resistance (RR=7,1). The three populations were also resistant to cypermethrin with final mortality < 33%. Biochemical tests showed a high altered and altered profiles for GSTs and PNPA esterases in Petrolina,

respectively. In Itaíba GSTs and esterases (α and PNPA) were altered and in Recife only GSTs showed alteration. The remaining enzymes had no alteration. **Main conclusions**: Alterations in GST activities are frequently related to cypermethrin resistance, while changes in esterases activities are associated to temephos resistance. Our study showed that *Aedes aegypti* populations from Pernambuco are resistant to both insecticides and metabolic resistance seems to be the main mechanism. **E-mail:** amandarossitercabral@hotmail.com

Denvect025- *Aedes aegypti* with different status of temephos resistance are susceptible to *Bacillus thuringiensis israelensis*

Araújo, A.P[1].; Helvecio E.; Diniz, D.F.A.; Souza, A.N.G.; Barros, R.A; Oliveira, C.M.F.; Melo-Santos, M.A.V.; Ayres, C.F.J.; Silva-Filha, M.H.N.L.
Departament of Entomology, Centro de Pesquisas Aggeu Magalhães CPqAM-FIOCRUZ, Recife-Brazil.

Introduction: *Bacillus thuringiensis israelensis* (Bti) is an effective bioinsecticide to control *Aedes aegypti* larvae and its utilization is likely to expand worldwide in order to overcome resistance to chemical insecticides and environmental concerns related to the use of these compounds. Bti produces a crystal containing a set of four insecticidal toxins which have high activity against *Ae. Aegypti* larvae. The major goal of this study was to evaluate the Bti susceptibility of *Ae. aegypti* populations with different status of temephos resistance. **Material and methods**: Field samples composed of eggs collected in eleven Brazilian municipalities and two laboratory colonies, one resistant to temephos (RecR) and the other a susceptible reference colony (Rockefeller), all maintained at the insectarium of the CPqAM/FIOCRUZ, were used in this study. Third instar larvae were submitted to bioassays, according to the reference protocol, in order to determine the LC_{50} and LC_{90} of Bti towards larvae. Status of temephos susceptibility and activity of detoxifying enzymes potentially related to temephos resistance of the samples, were previously characterized. **Results**: All *Ae. aegypti* samples tested were susceptible to Bti, since LC_{50} and LC_{90} were similar to those established for the Rockefeller reference colony. Values of LC_{50} and LC_{90} (mg/L) showed variations in the ranges of 0.008-0.015 and 0.025-0.043, respectively. Temephos resistance ratio as high as 280-fold exhibited by the RecR colony as well highly altered levels of detoxifying enzyme detected in some samples, did not interfere with the pattern of Bti susceptibility found among them. **Main conclusions**: Bti is a suitable larvicide to overcome *Ae. aegypti* resistance to temephos since no cross-resistance was found among these larvicides. It can be a powerful tool to avoid the selection of resistance as well as to manage pre-existing organophosphate resistance among populations. **E-mail:** anaaraujo@cpqam.fiocruz.br

Anophelines

Anoph001- **Ceara Anophelines (Diptera: Culicidae), Brazil**

Caranha, L.[1]; Rodrigues, L.[2], Quirino, A.[2] ,Moura,F.B.[2]
1. State university of Ceará 2. Laboratory of Vectors, Reservoirs and Poisonous Animal Dr. Thomaz Aragão, NUVET/COPROM-SESA.

Introduction: According to World Organization of Health Malaria is recognized as serious problem of public health in the world reaching about 40% of population belonging to more 100 countries, it is a sharp infectious disease of feverish character, caused by protozoa of the gender Plasmodium and transmitted by vectorial insects of the gender Anopheles. In Brazil, it is endemic in the Amazon area responsible for about 99,8% of the cases. The other cases happen in the Amazon extra area whose registrations are sporadic and isolated. About 380 anophelines species are described; however, 60 are only capable to transmit the disease. For the country of Brazil five species have larger involvement in human transmission of malaria: *Anopheles darlingi, Anopheles aquasalis, Anopheles albitarsis, Anopheles (Kerteszia) cruzii, Anopheles (Kerteszia) bellator*. Ceará was already considered as endemic area for malaria in 1930's and

1940's. Ceará territory eliminated the transmission of malaria in 1940, since then happened some few isolated autochthonous cases and occasional ones. The other cases happen in the Amazon extra area whose registrations are sporadic and isolated. **Objective:** The study had an objective to consolidate and to update the information about Anopheles species in order to complete the entomological letter in Ceará State. **Materials and Methods:** It was made entomological inquiry in 137 municipal districts in the period from 2004 to 2008. Each municipal district was divided in nine quadrants in which five were chosen to be worked (extreme quadrants) as well as the central one. In these quadrants were chosen a place that contained own nurseries for anophelines. During 4 consecutive nights were made collections to get adults specimens in shelters of animals and immature ones during day. All collected material was properly registered in specific form and transported for identification. The analysis of the data was done in Microsoft Office Excel 2007 program. **Results:** 137 municipal districts were investigated (74,5%) of the State. Ten identified species and their frequencies for municipal district were: *A. albitarsis (72,8%); A. aquasalis (16,8%); A. argyritarsis (31%); A. Brasiliensis (12%); A. darlingi (18,5%); A. evansae (38,6%); A. noroestensis (23,9%); A. nunestovari (0,5%); A. oswaldoi (19%); A. triannulatus* (38,6%). **Conclusion:** Considering the researched municipal districts, it was identified the presence of important vectors as *Anopheles darlingi and Anopheles albitasis* and there is infected people's circulation coming from endemic areas, it can be considered that the same ones are receptive and vulnerable areas to the malaria. However the knowledge of anophelines entomological fauna from Ceará and its distribution constitutes a strategy for prevention and surveillance, mainly in the municipal districts that registered presence of vectors considered competent. **E-mail:** insect.berg@gmail.com

Anoph002- **Composition and ecological aspects of *Anopheles* species (Diptera: Culicidae) in a malaria area from State of Amapá, Brazil**

[1,2]Barbosa LMC; [1]Ferreira RMA; [1]Souto RNP; [2]Scarpassa VM
[1] Universidade Federal do Amapá (UNIFAP), Macapá, Amapá State, Brazil. [2] Instituto Nacional de Pesquisas da Amazônia (INPA), Manaus, Amazonas State, Brazil.

Knowing the abundance and diversity of *Anopheles* species in natural and under environmental impact areas are keys information to setting targets for malaria control programs. The aim of this study was to analyze the climatic factors and correlate them with the monthly distribution of the predominant species. This study was conducted in the District of the Coração, located in 13 km of highway Duca Serra, Municipality from Macapá city, State of Amapá, Brazil. The collections of specimens were carried out from December 2010 to November 2011. Samples were collected monthly, with three days of uninterrupted catch with protected human bait. Besides these, there were four collections of twelve hours and four collections in two distinct environments anthropophilic and zoophilic. After identification of anophelines we made associations between the most abundant species and the temperature, relative humidity and precipitation. A total of nine species grouped in two subgenera *Anopheles* and *Nyssorhunchus* (1.689 specimens) were sampled in this study. The most frequent species was *Anopheles darlingi* with 725 (42.92%) specimens, followed by *Anopheles braziliensis* with 361 (21.37%) and *Anopheles marajoara* with 196 (11.6%). For monthly collections (four hours), we captured 938 specimens belonging to seven species, and the most frequent species were *A. darlingi*, *A. braziliensis* and *A. marajoara*. In the twelve hours collections, we sampled 292 anophelines grouped into seven species, and *A. darlingi*, *A. peryassui* and *A. braziliensis* were the most abundant. In the two distinct environments anthropophilic and zoophilic, 459 anophelines distributed into eight species were collected, and *Anopheles nuneztovari* s.l. had the highest frequency, followed by *A. darlingi*. There was not significant correlation between the more abundant species and climatic variables. Species richness was from low to moderate and this result is probably due to intense human activities in the area. The density increased to *A. darlingi*, reaching the maximum frequency at the end of the rainy season, suggests that control measures should be intensified in the transition between the more and less rainy periods.**Supported by**: CNPq, CAPES, UNIFAP and MCTI/INPA. **Keywords:** diversity species, malaria vectors, Amazonian Brazil. **E-mail:** barbosalmc@unifap.br

Anoph003- Parity and infectivity rates of *Anopheles* species in a rural area of the state of Amapá, Brazil

[1,2]Barbosa LMC; [1]Ferreira RMA; [1]Souto RNP; [2]Scarpassa VM
[1] Universidade Federal do Amapá (UNIFAP), Macapá, Amapá State, Brazil. [2] Instituto Nacional de Pesquisas da Amazônia (INPA), Manaus, Amazonas State, Brazil.

Longevity and age composition of populations of *Anopheles* malaria vectors are crucial factors to understanding the spatial and temporal malaria transmission patterns and the evaluation of efforts and efficiency to control malaria in a given area. Female age composition plays a key role in malaria dynamics, because older parous females have a higher probability of being infected with malaria parasites. Furthermore, another important parameter analyzed in the monitoring and control of malaria is the detection of *Plasmodium* species circulating in vectors capable of infecting humans. Our main aim was estimated the parity rate and the infectivity rate for *Plasmodium* spp. in *Anopheles* species for better understand the malaria transmission patterns in a rural area close from Macapá city, Amapá, Brazil. The analyses were conducted in the District of Coração, State of Amapá, Brazil. Samples were collected monthly including three uninterrupted days between 06:00 pm and 10:00 pm. The samples were also obtained in captures of twelve hours between 06:00 pm and 06:00 am. For the estimation of parity rate was performed dissection of the ovary of females and for the infectivity rate was estimated using head and thorax in pool of mosquitoes by PCR method. From the nine species captured, *Anopheles darlingi*, *A. braziliensis* and *A. marajoara* were the most abundant and had the highest parity rates. In the collections monthly, *A. darlingi* showed the highest parity rate ranging from 47.36 to 76.42, whereas in the collections of twelve hours the parity rate for this species was until 50.00. More nulliparous *A. darlingi* and *A. braziliensis* females were collected in the first hours (06:00-09:00pm), whereas more parous females both species were collected in the later hours. The infectivity rate was estimated using a total of 397 mosquito pools, including 136 pools for *A. darlingi*, 86 for *A. braziliensis* and 72 for *A. marajoara.* All mosquitos' pool was negative for *Plasmodium* spp. This result can be explained by the low number of autochthonous malaria cases detected in the District of Coração during the study period. Despite the absence of mosquitoes infected, *A. darlingi* was present in all samples. These data combined with the highest level of anthropophilic in this species reveals that the District of Coração is a receptive area for the transmission of malaria, with conditions favorable to increase of outbreak epidemic malaria. Therefore, it can be considered an area of low transmission, but high risk.**Supported by:** CNPq, CAPES, UNIFAP and MCTI/INPA. **Key words:** malaria vectors, age composition, infectivity rate, *Plasmodium* spp. **E-mail:** barbosalmc@unifap.br

Anoph004- Characterization of *Anopheles* spp. (Diptera: Culicidae) man-made breeding sites within Manaus, Amazon – Brazil, urban area

Arcos, A. N. [1]; Ferreira, F. A. S. [2]; Soares, C. C. [3]; Cunha, H. B. [4]; Tadei, W. P. [5]
[1] Universidade do Estado do Amazonas, Mestrado em Biotecnologia e Recursos Naturais – UEA/MBT/CNPq/FAPEAM-RedeMalária/CTPetro; [2,3,4,5] Instituto Nacional de Pesquisas da Amazônia – INPA. Manaus, Amazonas – Brazil.

Introduction: Larval stage of mosquitoes of genus *Anopheles* develops in clear waters remains of organic matter along with shadowed areas. Human presence on Amazonia has created new breeding sites such as brick factory pits, fish breeding ponds and dams. **Material and Methods:** We collected in 10 of these new breeding sites located in Puraquequara, Brasileirinho, Am 010 road and Cacau Pirêra, urban areas around Manaus in 2011. Collected material was forwarded to the dengue and malaria, environmental chemistry, plankton, and Max-Planck laboratories at INPA, for storage, identification and analyses. **Results:** *Anopheles* species most predominant is *A. triannulatus* with 409 individuals and *A. darlingi* with 157 followed by *A. nimbus* 80, *A. nuneztovari* 42, *A. braziliensis* 40, *A. albitarsis* 33, *A. peryassui* 4, *A. deaneorum* 3 and *A. oswaldoi* 2. The larval density ILHH showed to be higher at **P9** ILHH 9.5, **P7** ILHH 5.1, **P6** ILHH 4.4 and **P10** ILHH 3.4 larvae per minute collected. We noted a relation between the presence of macrophytes (*Salvinia* sp., *Pistia* sp., *Utricularia* sp., *Eleocharis* sp., and *Nymphaeae* sp.), and high larval density and diversity found at **P6**, **7**, **9**, **10.** Such substrate provides a

microhabitat for larvae and other macroinvertebrates. The largest phytoplankton division found is Chlorophytas with 70% of prevalence followed by Bacillariophytas 16%, Euglenophytas 6.1%, Cyanophytas 6.1% and Chrysophytas with 1.7 %, totaling 51 genera and 113 species, which with the organic matter furnish a major food source to the larvae. Temperature, turbidity, total suspended solids, nitrate and phosphate, showed to be within CONAMA established standard in resolution #357/2005 for lentic water environments in all breeding sites. However, at some spots the values of pH and O_2, were unusual, but it should stressed that only one measure was taken at each side of the breeding site with no monitoring performed so as to avoid oscillations. **Conclusions:** Breeding sites under the influence of Rio Negro and Solimões, those values will change due to water characteristics present in the region. Man-made breeding sites become adequate for the establishment of anophelines, as they become structured with the appearance of aquatic vegetation, the improvement of water quality, among others. Nevertheless, the presence of these man-made breeding sites nearby the city increases the availability of habitats for anophelines, as well as a possible malaria outbreak in the region. This emphasizes the need for a monitoring system to be conducted on these environments. **E-mail:** adriano.bionobre@gmail.com

Anoph005- **Geometric morphometric analysis of wing variation in natural populations of *Anopheles albimanus* (Diptera: Culicidae) in coastal areas of Colombia**

Gómez GF[1], Rodríguez J[1], Galeano Y[1], Conn JE[2], Correa MM[1]
1. Grupo de Microbiología Molecular, Escuela de Microbiología, Universidad de Antioquia, Medellín, Colombia. 2. Griffin Laboratory, Wadsworth Center, New York State Department of Health, New York, USA; Department of Biomedical Sciences, School of Public Health, State University of New York, Albany, NY, USA.

Introduction: The mosquito *Anopheles* (*Nyssorhynchus*) *albimanus* is distributed along the Caribbean and Pacific coasts and is a major malaria vector in Colombia. Mosquito fitness is strongly affected by flight performance and behavioral activities such as host-seeking, oviposition site detection, courtship and predator avoidance; events that are often highly dependent on an efficient and precise ability to fly. Therefore, the wing architecture is expected to be under strong selection pressure, with wing size and shape defined as a response to specific ecological conditions. In this study, a geometric morphometric analysis was conducted to evaluate the intraspecific wing variability of *An. albimanus* specimens from seven localities with heterogeneous ecological conditions in the Caribbean and Pacific coasts of Colombia. **Materials and methods:** Adult females were collected from 2005-2007 at seven localities in the departments of Antioquia, Córdoba, Valle del Cauca, Bolivar, Magdalena, and Chocó, Nariño, in Colombia. Twelve type I landmarks were digitized on the right wing of each specimen. The overall wing size among different populations was compared using the isometric estimator centroid size (CS), derived from coordinate data, by performing non-parametric analyses. The allometric effect was also examined by a multivariate regression analysis between size and shape. For wing shape analysis, the raw coordinates were subjected to generalized procrustes analyses (GPA) to generate "partial warp" (PW) scores as shape variables that allowed for the examination of differences in wing shape using standard multivariate analysis. **Results:** 294 specimens were evaluated in total. There was a significant difference in wing size among Antioquia specimens and each of the other populations; also, Bolivar showed significant differences with respect to Chocó and Nariño ($p<0.05$). Allometric residues were present in shape variables ($p=0.015$). The hypothesis of a common allometric model could not be rejected ($p=0.09$) and allometric effect was removed for the shape analysis. Significant differences in wing shape among all populations were detected. **Main conclusions:** Overall, the morphometric approach indicates that phenotypic (wing) geographical dependent variations exist among *An. albimanus* populations in these coastal regions of Colombia. **E-mail:** mcorrea@quimbaya.udea.edu.co

Anoph006- Isolation and characterization of twenty-five microsatellite loci in the complex *Anopheles (N.) Albitarsis* (Diptera: Culicidae)

Guimarães-Marques, GM[1]; Batista, JS[2]; Guimarães, HM[3]; Lima, MP[4]; Formiga, KM[2]; Santos, JMM[3]; Tadei, WP[3] and Rafael, MS[3]

[1]**Estudante de Mestrado do Programa de Genética, Conservação e Biologia Evolutiva – PPG-GCBEv / Instituto Nacional de Pesquisas da Amazônia - INPA. [2] Laboratório Temático de Biologia Molecular - LTBM / INPA. [3]Laboratório de Vetores de Malária e Dengue/ CPCS / INPA, [4]Instituto de Ciência e Tecnologia das Águas - ICTA, Universidade Federal do Oeste do Pará - UFOPA. Santarém.**

The complex of species of *Anopheles (Nyssorhynchus) albitarsis* Lynch-Arribálzaga, 1878 includes *A. albitarsis s.s*, *Anopheles deaneorum*, *Anopheles marajoara*, *Anopheles albitarsis F*, *Anopheles oryzalimnetes*, and *Anopheles janconnae. a*re incriminated as malaria vectors: *A. deaneorum* in Rondônia, Brazil; *A. marajoara*, in São Paulo, Pará and Amapá, Brazil and *A. janconnae*, in Roraima, Brazil. DNA identification of the *albitarsis* complex is related in the literature, but genetics structure population studies are requested. The goals were constructing, sequence and characterize a genomic-enriched library with DNA microsatellite (SSR) and develop DNA SSR markers for *A. albitarsis*. ̄ Genomic DNA was extracted from a pool of 12 mosquitos' larvae samples collected in Coari locality, Amazonas state, Brazil. A microsatellite regions library for *A. albitarsis s.l.* was constructed according to Billotte et al (1999).The amplified product was visualized in ABI PRISM 3130xl. A total of 88 positive clones were obtained and sequenced with 95.8% microsatellite DNA enrichment. Most of them were classified as dinucleotide (79,2%), being AC/GT (32,5%) more frequent. The *WEBSAT, PRIMER3, OLIGO CALCULATOR* programs were used to design and synthesize flanker primers for 34 microsatellite loci. These primers showed 52% of GC content, they amplified product with 201 bp (base pairs) length and were also designed from DNA sequences with 506 bp. Twenty-five loci were amplified with annealing temperature ranging between 56 to 65º C. The 25 microsatellite loci were genotyped and characterized, with 24 to 36 individuals. All loci showed polymorphism. The test for Hardy-Weinberg equilibrium (*HWE*) was estimated using the GENEPOP v4 program. A total of 126 alleles were genotyped and the number of alleles per locus ranged from 2 to 10. The observed heterozygosity (H_O) ranged between 0.182 and 0.897, while the expected heterozygosity (H_E) varied from 0.225 to 0.854. Eleven loci showed significant deviation from *HWE* after Bonferroni correction (P: (5%) ≤ 0,002). MICROCHECKER v2.2.3 program suggested the presence of null alleles in twelve loci. Microsatellite marks developed indicate high potential to be used not only in population genetics structure studies, but also to elucidate taxonomic problem of *A. albitarsis* complex. **Financial support:** CAPES/PROCAD Amazônia, PIPT (FAPESP/FAPEAM), MCT/INPA, Project PIATAM / Petrobras e Rede Malária/CNPq/FAPEAM. **Keywords:** Microssatelite DNA; Malaria; SSRs; **E-mail:** moura.giselle@gmail.com

Anoph007- Changes in *Anopheles funestus* biting behavior following universal coverage of long-lasting insecticidal nets in Benin

Moiroux N [1,2§], Gomez M.B. [2,3], Pennetier C. [2,3], Elanga E. [2,3], Djègbé I [2,3], Guis H. [4] and Corbel V. [2,3].
[1] **MIVEGEC (IRD 224-CNRS 5290-UM1-UM2), Institut de Recherche pour le Développement (IRD), Montpellier, France. [2] MIVEGEC (IRD 224-CNRS 5290-UM1-UM2), Institut de Recherche pour le Développement (IRD), Cotonou, Bénin. [3] Cntre de Recherche en Entomologie de Cotonou (CREC), Ministère de la Santé, Cotonou, Bénin. [4] UMR CMAEE, CIRAD, Montpellier, France.**

Background: Behavioral modification of malaria vectors in response to vector control methods is of great concern. We investigated whether full coverage of Long-Lasting Insecticide-treated mosquito Nets (LLIN) may induce a switch in biting behavior in *Anopheles funestus*, a major malaria vector in Africa. **Material and Methods:** Human landing collections were conducted indoor and outdoor in two villages (Lokohouè and Tokoli) in Southern Benin prior, 1 year and 3 years after implementation of universal LLIN coverage. Outdoor Biting Rates (OBR) and Median Catching Times (MCT, the hour for which 50% of *An. funestus* mosquitoes were collected) were compared. The resistance status of *An. funestus* to deltamethrin insecticide was monitored using bioassays. **Results:** MCT of *An. funestus* switched from 02:00 in Lokohoué and 03:00 in Tokoli to 05:00 after 3 years (Mann-Whitney p-value<0.0001). In Tokoli, OBR increased from 45% to 68.1% (OR=2.55;95CI 1.72-3.78;p<0.0001) 1 year after the universal coverage

whereas OBR was unchanged in Lokohoué. In this latter place, however, the proportion of *An. funestus* that bites after dawn (06:00) was 26%. Bioassays showed no resistance to deltamethrin. **Main Conclusions:** This study provides evidence for a switch in malaria vectors biting behavior following the implementation of LLIN at universal coverage. We show first evidence for a diurnal activity of a major malaria vector in Africa. These changes may reflect phenotypic plasticity or selection of genetically inherited traits and may have direct consequences on the burden of malaria in Africa. These findings highlighted the need for alternative strategies for better targeting outdoor malaria vectors. **E-mail :** nicolas.moiroux@ird.fr

Anoph008- **Microsatellite genomic DNA library construction of *Anopheles* (*N.*) *oswaldoi s.l.* (Diptera:Culicidae)**

Guimarães-Marques, Gisele Moura[1]; Batista, Jacqueline da Silva S[2]; Cruz, Paula Figliuolo[3]; Tadei, Wanderli Pedro[3,4]; and Rafael, Miriam Silva [4]; Santos, Joselita Maria Mendes Santos[3,4]
[1]Estudante de Mestrado do Programa de Genética, Conservação e Biologia Evolutiva – PPG-GCBEv / Instituto Nacional de Pesquisas da Amazônia – INPA; [2]Laboratório Temático de Biologia Molecular - LTBM / INPA;[3]Universidade do Estado do Amazonas – UEA. [4]Laboratório de Vetores de Malária e Dengue/ CSAS / INPA

Anopheles (Nyssorhynchus) oswaldoi Peryassú, 1922 is a complex of cryptic species with at least two subspecies: *Anopheles oswaldoi* s.s. and *Anopheles konderi,* differentiated by the morphology of male genitalia. It is widely distributed in all countries of South America east of the Andes to northern Argentina and Uruguay. It is also present in Panama, Costa Rica and Trinidad. Displays outside home habit, but in accordance with environmental conditions have been found inside the home. *Anopheles oswaldoi* was taken as a vector of malaria in eastern Peru, and was also found with natural infection by *Plasmodium* in the Brazilian Amazon. Microsatellite markers are currently considered the most polymorphic, dominant expression displays and high mutation rate. Because they are selectively neutral, this marker provides excellent information about variability, gene flow, dispersion rate, migration and, usefulness in understanding the mechanisms of malaria transmission. Therefore, we constructed a genomic library enriched for microsatellite *Anopheles oswaldoi* using the protocol of Billotte et al. (1999) from a pool of DNA of 10 fed adult individuals from Ji - Paraná city, Rondonia State, Brazil. The total DNA was digested with restriction enzyme RsaI, and the digested product was linked to the adapters using enzyme T4 DNA ligase. The selection of containing microsatellite fragments was performed by two $(CT)_8$ and $(GT)_8$ labeled hybridization probes with biotin and magnetic beads coated with streptavidin. The selected fragments were ligated into pGEM-T plasmid vector (Promega ®), and bacterial transformation was carried out by heat shock, followed by inoculation in LB media containing IPTG and X-GAL. After growing the white colonies were selected and individually inoculated into 96 well plates containing liquid LB medium for cloning. The extraction of plasmid DNA, selection of inserts cloned in order to design of primers, and characterization of microsatellite loci assays are in progress, which will be useful for population studies of the complex *Anopheles oswaldoi*, contributing to a better understanding of the taxonomic status of this complex. **Financial Support**: CAPES/PROCAD Amazônia; PIPT (FAPESP/FAPEAM), MCT/INPA; Rede Malária/CNPq/FAPEAM; CTPETRO. **E-mail:** moura.giselle@gmail.com

Anoph009- **Evidence of season-dependent genetic partitioning of the neotropical malaria vector *Anopheles darlingi* (Diptera: Culicidae)**

Angella[1] AF, Gil[2] LHS, Salgueiro P[3], Pinto J[3], Ribolla[1] PEM
1-Departamento de Parasitologia, Instituto de Biociências, Universidade Estadual Paulista "Júlio de Mesquita Neto", Botucatu SP, Brasil, 2-IPEPATRO- Instituto de Pesquisas em Patologias Tropicais, Porto Velho RO, Brasil, 3-Unidade de Parasitologia Médica/CMDT, Instituto de Higiene e Medicina Tropical, Universidade Nova de Lisboa, Lisbon, Portugal.

Introduction: Malaria is the major human parasitic diseases in the world, causing more than a million deaths and almost 500 million acute cases of disease per year. In Brazil, this disease remains one of the most important in the country with more than 300 000 cases in 2010. The mosquito *Anopheles darlingi* is the principal malaria vector in Brazil due to its importance as a vector of human malaria. **Material and**

Methods: The population genetics structure of this mosquito was examined using ten microsatellites loci in mosquito populations from seven localities along the length of Hydroelectric Jirau and Santo Antônio, on the banks of the Rio Madeira at Porto Velho - RO. These methods were applied in the characterization of samples collected in the rainy and dry seasons of 2007. **Results:** The total occurrence of malarial infection among the 440 individuals examined over that period was 3,6%, detected by real time PCR. *P. falciparum* was found in 3.4% of the infections, *P. vivax* in 0.4%, mixed infection appears in 0.22% of the cases. The incidence of infections was lower in the dry season as compared with the rainy season. The results also showed high gene flow among populations, even 70 km distant. We found significant genetic differences among populations when samples were compared seasonally. The samples collected in the rainy season showed effective population size greater than those collected in the dry season. **Main Conclusions:** These differences may represent differences in adaptability of *Anopheles darlingi*, since the dry season is characterized by lower rainfall and higher temperature. Moreover, this difference may also mean a difference in the breeding of this mosquito, since in the dry season, the artificial breeding should predominate due lack of rain. These results are of great importance for studying the epidemiology of malaria in this region as well as the use of more efficient methods of control, according to the profile of each population. This study could be used in future work to be done in this area in order to evaluate the impact after the flooding of the areas where the dams will be built. **E-mail:** alineangella@yahoo.com.br

Anoph010- De Novo Expression Profiling of *Anopheles darlingi,* Main Vector of Neotropical Malaria, using the Illumina Next-Gene Sequencing

Rafael MS[1], Matiolli C[2], Vicentini R[2], Tadei WP[1]
[1]Laboratório de Vetores da Malária e Dengue/INPA, Manaus, Amazonas, Brazil; [2]Centro de Biologia Molecular e Engenharia Genética / Departamento de Genética e Evolução / Laboratório de Bioinformática e Biologia de Sistemas/CBMEG/ Universidade Estadual de Campinas, São Paulo, Brazil.

Introduction: *Anopheles* (*Nyssorhynchus*) *darlingi* Root, 1926 is the main vector of malaria in the Americas. In the Amazon, economic development models have caused environmental changes affecting the complex relationship between man / parasite / vector. The *A. darlingi* has a high adaptability to the Amazon ecosystem on flood and ebb periods annually, providing the increase of malaria transmission (99,7%). Few studies are available on biology and evolution of *A. darlingi* to optimize the efforts for malaria control. To establish a transcriptome resource that will facilitate future genomic studies in *A. darlingi*, we used the Illumina next-gen sequencing platform and a novel procedure workflow to build the adult females *A. darlingi* transcriptome. **Material and Methods:** *Biological samples and RNA preparation.* Adult female offspring of *A. darlingi* captured in Coari city (Amazonas, AM, Brazil), and were pooled 4, 8, 14, 24 and 36 hour after feeding with blood on *Gallus gallus domesticus* and stored at -80ºC for subsequent analysis. Total RNA extraction was performed with 100 mg of mosquitoes from each point in time-course using the QIAGEN RNeasy kit. *High throughput sequencing.* Total RNA of *A. darlingi* was used by Ambry Genetics Genomic Services (http://www.ambry.com) to libraries construction and subsequent paired-end sequencing using Illumina HiSeq2000, with read size of 100 bp. **Results and Main Conclusions:** De novo transcriptome assembly and analysis workflow. A total of *173,962,132 illumina* reads were assembled with CLC Genomics Workbench. cDNA libraries were used to assemble a database that yielded 116,009 contigs >70 nt (1 kb = 104,131), and more than 1 kb = 10,000 nt. Illumina reads were mapped to the final contig set and resulting alignments were used for expression profiling. Numbers of *A. darlingi* transcripts up-or down-regulated significantly (p-value < 0.01) were calculated by comparison of each samples with its immediate subsequent experimental sample (4, 8, 14, 24, 36 hours) or by comparing each time point with 4 h. The *A. darlingi* transcriptome (116,009 contigs) were compared to 4 dipteran transcriptomes and functional annotation (*Anopheles gambiae, Aedes aegypti, Culex quinquefasciatus*, and *Drosophila melanogaster*), using the blast programs to the nonredundant (NR) protein database of the National Center of Biological Information (NCBI). The comparison with *A. gambiae* resulting in the identification of 3,875 genes with high similarity (90%) with numbers of *A. darlingi* transcripts, that represent ~26% of *A. gambiae* whole gene settranscripts showed too high similarity (90%) for *A. gambiae*. The *A. darlingi* contig set and analytical results provide a valuable resource for future genomic and evolutionary studies in this epidemiologically important malaria vector. **Financial support:** PPP / FAPEAM / CNPq (# 2.680/2009), PROCAD Amazon / CAPES / INPA-UNICAMP-UFRGS (# 023/2006), Malaria net CNPq/FAPEAM. **E-mail:** msrafael@inpa.gov.br

Anoph011- **Landscape Ecology of *Anopheles darlingi* (Diptera: Culicidae) in modified areas by the deployment of the Hydroeletric Power Plant of Porto Primavera, high Paraná river-Brazil.**

Mucci, LF
Laboratório de Culicídeos-SR03/SUCEN-SES-SP

Introduction: The landscape structure affects the population dynamics of different biological groups, especially in survivorship of local populations and in the modulation of dispersal of individuals. Size, shape and habitat connectivity, are defined as landscape metrics. These related to abundance and distribution of a given species of vector can contribute to delineate epidemiological risk areas. *Anopheles darlingi* (Diptera: Culicidae) is the main vector of malaria in Brazil where several studies showed that the disease manifested itself at the edge of woods next to the water courses, most commonly in projects of infrastructure installation, rural settlement programs, irregular periurban occupations, mining and fish farming. **Objectives**: To analyze the association between the abundance of adult forms of *An. darlingi* and the total area occupied by forest fragments of different sizes of landscape, in addition to the lengths of edge of these patches with the flooded areas (breeding sites), as modified environments through the implementation of hydroelectric plant power of Porto Primavera, States of São Paulo and Mato Grosso do Sul- Brazil. **Materials and Methods**: 9 collecting points in the border of reservoir were selected. The collections were monthly between March 2003 and June 2004 in crepuscular periods evening and night (about 3 hours/collection). Collections were carried out by Shannon Trap with luminous bait and two collectors. The Williams average was the estimator of females' abundance in each locality. The areas of forest fragments and its lengths of edge were calculated in Indrisi Killimanjaro® based on LANDSAT 7 +ETM 1-5 images (WRS 223/075; aug 06, 2002) classified by non-supervised clusters and NDVI. The simple linear regression was used to verify the association for Williams's average and areas and lengths of edge in 3 different sizes of landscape (limits of the fragment where the trap was installed, 800 m and 2000 m in radius from the point of installation). The SPSS 12.0® was used to estimate the regression curve and perform the ANOVA for the testing of angular coefficients. **Results**: Of 54064 anophelines of subgenus Nyssorhynchus, 1529 were *An. darlingi* females. The Williams average ranged from 0.31 to 4.74 females/men.month. The areas of the fragments varied from 4.3 to 588.0 ha for the fragment of installation, from 18.2 to 127.9 ha for 800 m and from 49.3 to 561.4 ha for 2000 m in radius. The lengths of edge ranged from 376 to 1781 m for the fragment of installation, from 1376 to 5853 m for 800 m, and from 2249 to 21026 m from 2000 m in radius. Only the regression model for the lengths of the edges of the fragments of installing x breeding sites with an angular coefficient r=0.773 showed statistical significance (α=0.0104). The other models were not statistically significant. **Conclusions**: Despite the wide dispersion capacity, *An. darlingi* females showed a restricted distribution, preferably in forest fragments that present the greatest lengths to edge with water collections, and has little relevance the total size of these fragments or other areas of forest-breeding ecotones in the vicinity of its flight range. **E-mail:** lfmucci@gmail.com

Anoph012- **Insecticidal activity of neonicotinoid derivates on *Anopheles darlingi* Root, 1926 (Diptera: Culicidae), main malaria vector in Amazonia, Brazil**

[1]Mesquita, R.S.; [2]Bastos, A.M.B.; [3]Tadei, W.P.
[1]Universidade do Estado do Amazonas - UEA; [2]Instituto Federal de Educação, Ciência e Tecnologia do Amazonas – IFAM; [3]Instituto Nacional de Pesquisas da Amazônia – INPA, Manaus – AM, Brasil

In Brazil, malaria occurs mostly in the Amazonian region, on account of the tropical weather conditions, which are favorable to populations of mosquitoes, such as *Anopheles darlingi,* the major malaria vector in the region. The need to increase and renovate vector control strategies becomes paramount due to the recurrent use of Chemical insecticides that consequently enhanced mosquitoes resistant, has led to the search for new chemicals that will present insecticidal activity. Thus, neonicotinoid derivates have been standing out for the last few decades, as a new chemical class with great insecticidal potential and different action mechanisms. Analysis was made in alcohol medium, in which equimolar amounts of chloronicotinic acid and thiosemicarbazide were added under constant agitation. Then, the formed

product went through a reducing reaction on the double imine bond generating the compound 2 [(6-chloropyridin-3-yl) methyl] thiosemicarbazide. From this product, a second product was synthesized through a nitration reaction, yielding [2(6-chloropyridin-3ylmethyl pyridine) nitro amino thiosemicarbazide]. Compounds were characterized through melting point, infra-red spectroscopy and, ^{1}H and ^{13}C Nuclear Magnetic Resonance. Screening bio-assays in triplicate were carried out so as to assess insecticidal activity by utilizing *A. darlingi* 3rd instar larvae, with mortality readings performers every 24h and 48h aiming to assess the compounds' toxicity. Dosage assessing bio-assays were conducted for later calculation of median lethal concentration (LC $_{50}$) statistically analyzed by means of linear regression straight-lines, using POLO-PC Software. According to our findings, the synthesized compounds showed satisfactory produced-quantity yields. Even though compound 2[(6-chloropyridin-3-yl) methyl] thiosemicarbazide hadn't presented any larvicidal activity above 50% in the screening bioassays within 24 h, compound [2(6-chloropyridin-3ylmethyl pyridine) nitro amino thiosemicarbazide] presented above 50% mortality in 31.25 to 500 ppm concentrations within 24 h. Dosage bioassays enabled us to determine LC_{50} 296.18 and 104.06 ppm values for 24 and 48 h, respectively. Thus, one ascertains that data adjusts to Probit model with $p < 0.05$, presenting no significant differences for the 24h interval, whereas in the 48h interval data became significant, that is, the program utilized the heterogeneity as correction factor. However, neonicotinoid derivates structural modification contributed significantly for altering their biological activity, thus favoring the molecule nitro group electrostatic interaction with insect receptors. **Financial Support:** CNPq/FAPEAM Rede Malária, CTPETRO. **E-mail :** ochellymesquita@gmail.com

Anoph013- **Characterization of microsatellite loci and analysis of genetic variability of two populations Anopheles (N.) triannulatus sensu latu (Diptera: Culicidae) from Manaus**

Cruz, Paula Figliuolo[1,2]; Batista, Jacqueline da Silva[2]; Formiga, Kyara Martins[2]; Tadei, Wanderli Pedro[1,2]; Rafael, Miriam Silva[2]; Santos, Joselita M. Mendes[1,2]
[1]**Universidade do Estado do Amazonas – UEA.** [2]**Instituto Nacional de Pesquisas da Amazônia – INPA. Manaus, Amazonas – Brasil.**

Anopheles triannulatus is a complex of cryptic species consisting of at least three species: *Anopheles triannulatus ss*, *Anopheles halophylus* and *A. triannulatus* C. Thus there are controversies about the taxonomic status of the *A. triannulatus* Complex. *A. triannulatus* is mostly zoophilic and exophilic species nevertheless has endophagous and anthropophilic abilities too. *A. triannulatus* was found infected with *Plasmodium vivax* and *Plasmodium falciparum* being considered as a possible vector of malaria in Venezuela. Therefore the role of *A. triannulatus* as a transmitter of human malaria is still an issue to be determined. Herein was constructed a genomic library enriched with microsatellites (SSRs) which were employed to analyze two populations of *A. triannulatus* both from Manaus, AM, Brazil. This library generated 96 clones with inserts and 84 nucleotide sequences of good quality. Were obtained 75 contigs and 83 sequences which showed SSRs with only 1.31% of inherent redundancy. Were isolated 51 *primers* pairs and 15 loci microsatellites were characterized in 25 individuals of *A. triannulatus* which were collected in Puraquequara neighborhood in Manaus, AM, Brazil. Were estimated 88 alleles, ranging from 3 to 10 alleles per locus (average 6.0). The observed heterozygosity (H_O) ranged from 0.157 to 0.866, while the expected heterozygosity (H_E) ranged from 0.322 to 0.843. For the cross-species amplification were employed 15 microsatellite loci and four loci amplified in all species (*A. benarrochi*, *A. rangeli, A. oswaldoi* and *A. darlingi*), four loci amplified in at least one species and seven loci didn't amplified. According to the number of individuals that were genotyped and the most polimorphic loci were selected eight of these loci to the analysis of genetic variability in two populations from Puraquequara and Janauari river, Manaus, AM, Brazil. Were obtained 71 alleles with an average of 6.25 and 7.25 alleles per locus in these populations, respectively. Both population have shown observed heterozygosity ranging from respectively 0.318 to 0.937 and from expected 0.455 to 0.838, which indicates high genetic variability. The Wright's F statistics showed high genetic structure among populations (F_{ST} = 0.282) showing a fair indication of interspecific differentiation of the *A. triannulatus* Complex species. This is confirmed by the hight value the genetic distance between the two populations (D = 1.832) and by the results of the implemented Bayesian analysis, which was performed with the computational software STRUCTURE$^®$. Were recorded two clusters (K = 2) thereby these populations are distinct. **Financial**

Anoph014- **Insect aquatic fauna composition found in different malaria vector breeding site kinds present in Manaus, AM urban region**

Ferreira, F. A. da S. [1]; Arcos, A. N. [2]; Sampaio, R. T. de M. [3]; Tadei, W. P.[4]
[1, 3, 4] **Instituto Nacional de Pesquisas da Amazônia - INPA;** [2] **Universidade do Estado do Amazonas – UEA. Manaus, Amazonas – Brasil**

Introduction: Malaria is one of the major diseases affecting public health programs all over the world. The Amazonian region, considered as endemic area, is rich in water collections, and provides countless sites proper for reproduction of several aquatic animal groups. Urban expansion and continuous migration in endemic Amazonian region unbalance the relation between man and aquatic insects, tropical disease vectors, *Anopheles* among them. The great incentive offered to fish breeders, generated a new kind of anopheline breeding site and nowadays surpasses three thousand pool units. other insects inhabit the aquatic environment and play a fundamental role in maintaining these environments contributing in web food, nutrient cycling, also widely utilized in bio-monitoring assays. Disease vector combat is related to elimination of its breeding sites using chemical insecticides or recently, biolarvicides. The present study aims to learn about the aquatic insect fauna inhabiting *Anopheles darlingi* man-made breeding sites. Data obtained will underscore future analyses of environmental impacts due to the large variety of insecticides, whether they be chemical or biological. **Materials and methods:** The aquatic insects were collected with aquatic nets at four different places in the breeding site, sampling each of its sides for a period of 30 seconds. The collected material underwent a screening process consisting in separating the insects and discarding eventually ensnared leaves, sand and twigs. We sampled breeding sites at different localities: fish breeding tanks located in Puraquequara and on AM 010 highways, and in water puddles neighboring brick factories located on AM 070 highways near Iranduba Township. **Results:** Relative Abundance (%) of aquatic insects was calculated and afterwards they were classified according to functional trophic groups. The order Diptera (90%) was the most abundant in all sampled breeding sites, being that on account of individuals of families Chironomidae and Ceratopogonidae. Aquatic bugs (order Hemiptera) were also found in large numbers. Trichoptera was the less abundant order (1%), group having most of its representatives inhabiting oxygen-rich and lowest polluted aquatic environments. Sampled breeding sites presented the highest percentage of Predators followed by Collectors. The lowest percentage was shown by Scrapers. **Conclusion:** The different types of breeding sites sampled had a similar population of aquatic insects found suggesting that there was a pattern of distribution of groups within the sites. **E-mail:** guto.bio@hotmail.com

Anoph015- **Distribution of malaria vectors in areas of Roraima and Pará states**

Sucupira, I.M.C[1]; Ruiz, F.L. [3]; Mckeon, S.N. [2]; Souza, R.T.L. [1]; Primo, D.G. [1]; Conn, J.E. [2]; Povoa,M.M. [1]
1. Instituto Evandro Chagas, Ananindeua, Brasil , 2. Griffin Laboratory, Wadsworth Center, New York State Department of Health, Albany, New York, USA 3. Entomology Branch, Walter Reed Army Institute of Research, Maryland, USA

Introduction: Malaria is transmitted by female mosquitoes of the *Anopheles* genus. In Brazil, the main vector species belong to subgenus *Nyssorhynchus*, highlighting *An. darlingi*. However, it is important to investigate the distribution and importance of other species in the transmission of human malaria in the Brazilian Amazon. Our aim was to determine the distribution of anopheline species in BR 174 (Roraima state) and PA 150 (Para state) roads. **Material and Methods:** For adult forms collection, it was performed 4 hour collection with animal bait and 12 hour with Shannon trap. Mosquitoes species were identified based on Gorham *et al*, 1967. After this, head/thorax were separated from abdomen in order to be tested for parasite infection using ELISA test described on Wirtz et al (1987). Larval collections were done from 6-9 AM using entomological dipper. They were identified by morphological characters and placed in appropriate bottles for transport and DNA study in USA. **Results:** It was performed 2 transects on BR 174 (2009 and 2011) and 01 on PA 150 (2010) roads. In 2009, 949 adult mosquitoes were collected distributed in 8 species, of which 22% (207/949) was *An. albitarsis sl* and 13,5% (129/949) *An. darlingi*

and 12% of other species. In this transect, 1.113 larvae were collected and 71% was not identified because they were between 1st-3rd instars. *An. janconnae* represented 46% of the identified larvae, *An. goeldii* 25% and 13% of other species. In 2011, 309 adult anophelines were collected, 64% (198 *l*309) identified as *An. albitarsis sl*, 4% (13/309) *An. darlingi* and other were 30%. Of the total larvae collected, 33% was identified; *An. janconnae* represented 45% (111/244) and 36% (87/244) *An. darlingi*, 18,5% was other specie. In Para, 1030 adult mosquitoes were captured: 33% (370/1030) *An. albitarsis sl* and 3% (32/1030) *An. darlingi*, 61% was distributed in *An. triannulatus*, *An. nuneztovari*, *An. oswaldoi*, *An. argyritarsis* and *An. strodei.* Concerning to immature forms, 764 larvae were collected and identified and of those, 8% was *An. oryzalimnetes*, 8% *An. goeldii*, 31% *An. marajoara* e 53% of other species. In 2009 the infection test showed 4 positive mosquitoes: 1 *An. albitarsis sl* to PV210 and 3 *An. darlingi* one for each specie PF, PV210 and VK247 and the infectivity index was 0,42. In 2011, 4 mosquitoes were naturally infected, all *An. albitarsis sl*, 2 to PV and 2 to PF, resulting in an infectivity index of 1,3. In 2010, in Para state, 5 mosquitoes were naturally infected, 1 *An. albitarsis sl* and 4 *An. darlingi*, all positive to PV and the infectivity index was 0.48. **Conclusion:** Specie(s) of the complex *An. albitarsis sl* can be the main malaria vector in these regions since they were the most abundant species among those of medical importance, and showed the highest rate of natural infection, 69% (9/13). **Keywords:** malaria transmission, *Anopheles*, Amazon region. **Financial Support:** IEC/SVS/MS; NIH – Grant. **E-mail:** izissucupira@iec.pa.gov.br

Anoph016- **Epidemiological potential of mosquito species (Diptera, Culicidae) in the Rio Grande do Sul state, Brazil**

Cardoso, J. C.[1]; Lindholz, C. G.[1]; Almeida, M. A. B. [1]; Santos, E.[1]; Paula, M. B. [2]; Fernandes, A. [2]; Sallum, M. A. M.[2]
1- Divisão de Vigilância Ambiental em Saúde, Centro Estadual de Vigilância em Saúde, Secretaria da Saúde do Estado do Rio Grande do Sul - Porto Alegre/RS – Brasil, 2- Departamento de Epidemiologia, Faculdade de Saúde Pública, Universidade de São Paulo - São Paulo/SP - Brasil

Introduction: Mosquitoes are among the insects of greater epidemiological importance because several species may be involved in transmission of pathogens. Entomological surveillance plays a major role as strategy for monitoring Culicidae fauna, helping in predicting the risk of exposure to pathogens carried by vector species. This work presents mosquito species occurring in Rio Grande do Sul, south Brazil, and assess epidemiological potential of our finds. **Material and Methods**: Surveillance of mosquitoes was carried out by surveys and monitoring of entomological fauna in different regions of the state. The specimens were collected with CDC light traps, Shannon trap, Nasci vacuum, entomologic net and bottle-type manual vacuums, and sent to the laboratory for identification. We created a database containing environmental information, laboratory results and bibliographic records on pathogens transmitted by collected species. **Results**: From 2001 to 2011 we found 97 Culicidae species included in 16 genuses. Species belonging to the *Aedeomyia*, *Aedes*, *Anopheles*, *Coquillettidia*, *Culex*, *Haemagogus*, *Limatus*, *Mansonia*, *Psorophora*, *Trichoprosopon* and *Wyeomyia* genera are main vectors or have potential to transmit Yellow Fever, Dengue, Chikungunya, Saint Louis, Oropouche, Aura, Trocara, Ilhéus, Rocio, Una, West Nile, Eastern, Western and Venezuelan Equine encephalitis viruses, *Plasmodium* and filariae. **Conclusions**: Our data demonstrate the importance of entomological surveillance as a tool for gathering information about vectors fauna and indicate species should receive more attention in studies of biology, ecology and geographical distribution, fundamental knowledge to promote Surveillance of Health and control possible vector-borne diseases outbreaks. **E-mail:** jader-cardoso@saude.rs.gov.br

Anoph017- **Effect of land use on diversity, composition and abundance of *Anopheles* species in two malaria endemic regions of Colombia**

Marín JC[1], Altamiranda MA[1], Naranjo NJ[1], Luckhart S[2], Conn JE[3], Correa MM[1]
[1]Grupo de Microbiología Molecular, Escuela de Microbiología, Universidad de Antioquia, Medellín, Colombia.
[2]Department of Medical Microbiology and Immunology, University of California at Davis, California, USA
[3]Griffin Laboratory, Wadsworth Center, New York State Department of Health, Albany, New York, USA; Department of Biomedical Sciences, School of Public Health, State University of New York, Albany, NY, USA

Introduction: Landscape epidemiology is the study of the geographical, physical, and climatological features of the environment in which a disease agent is transmitted. A better understanding of the landscape epidemiology that influences anopheline communities in endemic regions of Colombia will help to define the dynamics of malaria transmission. **Material and Methods:** In this study, the influence of landscape structure on the composition and diversity of anthropophilic anophelines was evaluated in six localities of two Colombian malaria endemic areas, the Urabá-Bajo Cauca-Alto Sinu (UCS) and Pacific (PAC) regions, between November 2008 and June 2010. For each site, the abundance, composition and diversity of anthropophilic anophelines were evaluated. In addition, supervised classification of the types of land use was performed by applying the land use diversity index (SHDI) with satellite imagery Landsat7-TM and ground-truthed data. **Results:** 9,839 specimens were collected that corresponded to 10 species. *Anopheles darlingi* and *Anopheles nuneztovari* s.l. were the most abundant species, comprising 47.21% and 40.47% of the collection, respectively. There was a significant negative relationship between anopheline species diversity and the diversity of land uses. In particular, our analyses identified localities with high anopheline diversity and low SHDI (Juan Jose, La Capilla, San Antonio de Padua) that were distinct from localities with reduced anopheline diversity and high SHDI (El Loro, La Balastrera and Pindalé). The presence of *An. nuneztovari* s.l. was correlated with grass cover and bare soils, while the presence of *An. darlingi* was correlated with forested cover. **Main Conclusions:** These results indicated that the diversity in land use and climatic variables contributes to observed variation in anopheline community structure. Some components of landscape structure were significantly related to the abundance, composition and diversity of malaria vectors. In particular, land use diversity, type of coverage and pluviosity strongly influenced the distribution of anopheline communities. This information can be used for territorial planning and vector control strategies in malaria endemic regions of our country. **E-mail:** mcorrea@quimbaya.udea.edu.co

Anoph018- **Comparative transcriptomic analysis of *Anopheles gambiae* by RNA sequencing**

da Silva RF[a], Alves AC[a], Antunes S[a], do Rosário, VE[a], Domingos A[a*], de la Fuente J[b]
Centro de Malária e Outras Doenças Tropicais, Instituto de Higiene e Medicina Tropical, Rua da Junqueira 100, 1349-008 Lisboa, Portugal. , (b) Instituto de Investigación en Recursos Cinegéticos IREC-CSIC-UCLM-JCCM, Ronda de Toledo s/n, 13071 Ciudad Real, Spain

Introduction: Caused by five species of parasites of the genus *Plasmodium* that affect humans, malaria is transmitted by the bite of infected female mosquitoes of more than 30 anopheline species. An estimated 3.3 billion people were at risk of malaria in 2010 with children under five years of age and pregnant women being most severely affected. Several studies have shown that parasite blockage can occur during passage through the salivary glands (SG) leading to the possibility of designing new strategies for malaria control. Most of the reports published so far on *Anopheles* sp. sialomics used hybridization-or sequence-based approaches. In this work we performed a comparative transcriptomic analysis of *P. berghei*-infected and *P. berghei*-free SG from Anopheles sp. using RNA sequencing technology (RNA-seq). **Material Methods:** This new generation of sequencing technology provides unprecedented opportunities for high-throughput functional genomic research. Paired reads from 75 to 150 nucleotides were obtained and the reference based assembly strategy was used since the *An. gambiae* genome is annotated. Alignment was performed using TopHat, and then the assembly of transcripts, their abundance and differential expression were assessed using Cufflinks. Real time RT PCR was used to confirm differential expression. **Results:** Using this approach we obtained a large number of genes differentially expressed in the infected population contributing this way to add valuable information to previous reports on this subject. Within these data, some genes were selected based on different criteria such as (a) up regulated in response to infection, (b) high expression levels. Silencing studies using RNA interference for each of the genes chosen will be performed allowing to better understand their function and to evaluate its importance on mosquito ability for infection/transmission. This work allowed to provide a catalogue of *Anopheles gambiae* mosquito genes differentially expressed in response to *Plasmodium berghei* infection and, after silencing experiments, data will advance our understating of vector-pathogen interactions and (c) suggest targets for new pharmaceuticals and candidates for mosquito protective antigens that could be used to develop dual target vaccines for the control of vector

infestations and parasite infection/transmission. To the best of our knowledge, this is the first study based on high throughput technologies such as RNA-seq and RNAi for the functional characterization of *Anopheles gambiae* mosquito. **E-mail:** adomingos@ihmt.unl.pt

Anoph019- **A checklist of anopheline distribution in Spain**

Delacour-Estrella, S., Melero-Alcibar, R., Ruiz-Arrondo, I. Pinal, R., Alarcón-Elbal, P.M. & Lucientes J

Introduction: Spain was for years a country with endemic malaria. Due to the work and effort of health services both as researchers and mosquito control systems, they finally succeeded with the eradication of the disease in the middle of last century. However, a new case of malaria was diagnosed in 2010 and put the public health on alert. From the epidemiological point of view regarding the transmission of the disease, is essential to know which mosquitoes (specifically *Anopheles*) develop their life cycles in the specified area. From this perspective, the first step is to review the most up-to-date literature on all the cases of Anopheles mosquitoes referred in our country in order to have an idea of which would be the areas with a priori higher risk of "epidemic" if new cases of infected people appear. This is the beginning of the subsequent field studies which permit to keep track of what is the real status of anopheline populations that currently appear in Spanish soil. **Material and Methods:** This paper aims to update previous studies showing by maps species of genus Anopheles occurred on Spanish soil, including Spanish islands too. Also to detail those places which were mentioned by the authors from the first field studies. For this purpose we used the computer program Google Earth to determine the whole geographical coordinates in every location also the IDRISI Kilimanjaro version 14.02, Clarklabs. 1987-2004 program to make the specific maps. **Results:** We present the 15 species anopheline distribution maps cited in the Spanish territory: *Anopheles algeriensis, An atroparvus, An claviger, An hyrcanus, An labranchiae, An maculipennis ss, An Marteri, An melanoon, messeae W, W Petragnani, An plumbeus, An hispaniola cinereus, An multicolour, An sergentii, An.superpictus.***Main conclusions:** Knowledge of the insect fauna found in each country is one of the best tools available to make risk maps to assess the certain spread disease vectors. It is therefore most important to perform any work that allows to obtain information about the real situation of insects involved in the transmission of emerging diseases in order to implement control strategies to limit diseases outbreaks. **E-mail: .**delacour@unizar.es

Anoph020- **Larval habitat characteristics of the malaria vectors (Diptera: Culicidae) in North of Kruzes Province, Southwest Iran**

Keyhani A Moosa-Kazemi S.H , Nejati J , Bigdeli SH
1MSPH of Medical Parasitology , Tehran University of Medical Sciences,Tehran, Iran, 2Assistant Professor of Medical Entomology & Vector Control Dep, School of Health , Tehran University of Medical Sciences, Tehran ,Iran, 3MSPH of Medical entomology , Tehran University of Medical Sciences,Tehran, Iran, 4Malaria vector control manager , Ahwaz University of Medical Sciences, Ahwaz, Iran

Aim: Malaria is one of the most important health problems in many countries as well as Iran, especially in southern Iran. Considering the role of Anopheles in transmission chain of the disease, ecological data are important in the vector control management of mosquitoes. There is scattered published data about the larval habitat characteristics and ecology of the genus Anopheles (Diptera: Culicidae) in Iran and most of available data is in relation to malaria vectors in southern Iran. **Methods:** This cross sectional investigation was carried out to study the mosquito fauna and ecology in North of Khuzestan Province, Southwest Iran, during April–December 2010. Larvae were collected using the standard dipping technique. Larval habitat characteristics were recorded according to water situation (clear or turbid), water temperature, habitat situation (transient or permanent, running or stagnant), habitat type (natural or artificial), substrate type, vegetation, and sunlight situation. **Results:** In total, 885 third- and fourth-instar larvae of Anopheles from 80 habitats were collected and morphologi¬cally identified. Four species; An.superpictus, An. Stephensi, An. dthali, An.culicifacies were identified and respectively comprised 54.4%, 6.4%, 35.6%, and 3.6% of the samples. The mean and range temperatures of the larval habitat water were 24.4°C (n=16) (19–30°C), 26.6°C (n=49) (18–38°C), 26.2°C (n=54) (20–38°C), and 24.5°C (n=22) (22–32°C), respectively. There was a signifi¬cant difference in the mean water temperatures

(18.5–44.5°C) of the larval habitats of different species (P=0.000). Most of the genus larvae were collected from natural habitats (82.5%) such as river bed pools (79.9%) and rain pools (28%) with transient (93.8%), stagnant (85.5.5%) and clear (91%) water, with vegetation (79.9%), mud (24%) or gravel (39.7%) substrate in full sunlight (49.6%) or shaded (18.7%) area. **Conclusion:** The main larval habitats of the most abundant species, An.superpictus and An. dthali found as river bed pools and rain pools in northern Khuzestan province. **Keyword:** Larvae, Malaria, Vector , Khuzestan , Iran. **E-mail:** amir.keyhani59@yahoo.com

Sandflies

Sandf001- **Effects of climate change on the potential distribution of sandflies (Diptera: Phlebotomine) in North America**

[a]Moo-Llanes, DA., [b]CN. Ibarra-Cerdeña, [a*]JM. Ramsey, [c]S. Ibáñez-Bernal, [d]C. González, and [e]E. Rebollar-Téllez
[a]CRISP, Instituto Nacional de Salud Pública, Chiapas, México. [b]Instituto de Biología, UNAM. [c]Instituto Nacional de Ecología A.C., Veracruz, México. [d]CIMPAT, Universidad de los Andes, Bogotá, Colombia. Departamento de Zoología de Invertebrados/FCB, Universidad Autónoma de Nuevo León, Monterrey, México.

Introduction: Ecological niche models (ENMs) are tools currently used to infer spatial changes in species distributions and the epidemiology of diseases such as cutaneous and visceral leishmaniasis, re-emerging diseases transmitted by female sandflies in North America (NA). We analyzed potential changes of niche amplitude and centroid of sandfly distributions in the context of global climate change in NA using ENMs, and analyzed their potential impact for epidemiological relevant species in Mexico. **Materials and Methods:** A database was constructed from collections reported in scientific publications, entomological collections housed in academic institutions (UADY, ECOSUR, UANL) and from healthcare programs (InDRE). ENM models based on occurrence data and environmental and topographic WorldClim layers were constructed using GARP from the Open Modeller desktop software platform. CSIRO and HADLEY models were projected to 2020, 2050 and 2080 using extreme (A2) and conservative (B2) future climate scenarios. At-risk population for *Leishmania* transmission was calculated for each period and scenario for México. **Results:** A total of 62 phlebotomine species have been reported for the NA region, although only 29 have more than 10 collection records. These latter species were classified into 3 categories based on eco region affinities: tropical (23), temperate (4) and broad-range (2). Temperate species significantly increased niche amplitude (6%) as compared to tropical (3%) and broad-range (2%) species. Only one temperate and one broad-range species are predicted to reduce niche. Distribution centroids for temperate species did not shift over time/space, while that for tropical species consistently shifted north. Niche amplitude and at-risk populations for 9 epidemiologically relevant species in Mexico increased over time only for the 7 tropical species: 1.11%, 1.72% and 5.32% for niche and 0.42%, 0.33% and 0.52% increases in at-risk population, for present day-2020, 2020-2050 and 2050-2080 periods. **Conclusions:** Potential niche for *Lutzomyia – Brumptomyia* species broadens consistently in CC scenarios in NA with a greater projected expansion specifically in temperate areas. Epidemiologically relevant tropical *Lutzomyia* species in Mexico increase niche and distribution for at-risk human populations consistently over time, a shift which predicts a modification in the spatial epidemiology of leishmaniasis in the country**. E-mail:** jramsey@insp.mx

Sandf002- **Natural breeding sites of phlebotomine sandflies**

Reinhold-Castro KR, Venazzi MS, Gasparotto JC, Teodoro U
Universidade Estadual de Maringá, Paraná, Brazil

Introduction: Despite the importance of phlebotomine sandflies as vectors of Leishmania, the information about the ecology of immature stages of these insects is scanty. The difficulties in finding sandfly larvae and pupae, which develop in wet soils with available organic matter, lead to this lack. The

objective of the present study was to investigate natural breeding sites of sandflies in soils with characteristics suitable for its development. **Material and Methods:** The study was conducted in the Recanto Marista, located in the municipality of Doutor Camargo, Paraná state. Therefore, we collected 84 soil samples taken from hen houses, tree bases, between tree roots, and under fallen logs. The samples were collected from May 2010 to December 2011, placed in non-toxic plastic pots (polypropylene), covered with nylon mesh and kept in a BOD incubator during 46-60 days, between 25.5 and 26.5°C, with relative humidity between 70-90%. Distilled water was added to samples, to keep soil moisture, and small amounts of rabbit chow, finely chopped, were added to feed the larvae. Temperature and humidity were verified daily, removing fungi and insects that could embarrass the larvae and pupae development. The sandflies that emerged were sucked with a vacuum Castro type, killed with chloroform, and identified in the Basic Parasitology Laboratory of the Universidade Estadual de Maringá. **Result:** Between 16 and 49 incubation days, two male specimens of *Nyssomyia whitmani*, three female specimens of *Nyssomyia whitmani*, two males of *Nyssomyia neivai*, one female of *Nyssomyia neivai*, two female of *Nyssomyia* sp., one male of *Migonemyia bursiformis*, one female of *Migonemyia migonei*, one male of *Brumptomyia brumpti*, and five unidentified specimens were emerged. The totality of emerged sandflies proceeded from soil samples taken from tree bases, situated in a wooded place, with damp soil and fallen leaves. This is the second finding of *Mi. bursiformis* in the Paraná state. **Main Conclusions:** The finding of natural breeding sites of sandflies can allow possible applications to control the insects' density, in endemic leishmaniasis areas. **Support:** CAPES. **E-mail:** matheus_ve@hotmail.com

Sandf003- **Habitat use by sandflies (Diptera: Psychodidae) in the Federal District, Brazil**

Ferreira, JBC[1]; Abad-Franch, F[2]; Andrade Filho, JD[3]; Gurgel-Gonçalves, R[1]
[1]Laboratório de Parasitologia Médica e Biologia de Vetores, Faculdade de Medicina, Universidade de Brasília, Brasil. [2]Instituto Leônidas e Maria Deane, Fiocruz Amazônia, Manaus, Brasil. [3]Grupo de estudos em Leishmanioses, Centro de Pesquisas René Rachou, Fiocruz, Belo Horizonte, Brasil.

Introduction: The leishmaniasis is endemic in the Federal District of Brazil (FD), where records of autochthonous human and canine cases have increased in recent years. Most cases have been reported from Sobradinho, but local vector ecology remains poorly characterized. Here, we use a robust modeling approach to estimate sandfly occurrence probabilities in three different habitats of the FD. **Material and methods:** The frequency of habitat use by sandflies was modeled using occurrence data (rainy season, January 2012) at 60 sampling sites in the Contagem Biological Reserve (Sobradinho, FD) and two adjacent residential areas. Twenty sites/habitat were sampled in gallery forest (GF), Cerrado (CE) and households (HO). In each site, two HP traps were placed 30m apart and operated from 17:00h to 07:00h over three nights; total sampling effort was 360 HP trap-nights. We use hierarchical logistic regression models to analyze habitat use patterns taking detection failures into account. Parameters are estimated via maximum-likelihood using the program PRESENCE 4.0; models examine habitat (GF/CE/HO) and weather (rainfall) covariates, and are compared with Akaike's information criterion (sample size-corrected, AICc). **Results:** We collected 81 specimens of three *Lutzomyia* species (42% females): *Lu. flaviscutellata* (93.8%), *Lu. longipalpis* (3.7%), and *Lu. runoides* (2.5%). Overall capture success rate was 5.8%, reaching 25.8% in GF, where 97% of the sandflies were captured. The best model (AICc=130.40) reveals that sandflies use GF with much higher frequency (ψ_{GF}=0.47, SE=0.14) than CE or HO, in which vector occurrence probabilities are indistinguishable ($\psi_{CE/DO}$=0.04, SE=0.03). This model estimates a large positive effect of GF on sandfly occurrence (β_{GF}=3.17, SE=0.86), and shows that the sensitivity of HP traps is low (p=0.32, SE=0.10); the second-ranking model (AICc=131.30) suggests that trap performance worsens with rain, but uncertainty about this estimate is large (β_{Rain}=–0.62, SE=0.56). **Main Conclusions:** This is one of the few vector ecology studies explicitly taking detection failures into account. It shows that, at least during the rainy season, local sandfly populations occupy GF much more frequently than CE or HO. We also present the first statistical estimate of HP trap sensitivity for sandfly sampling; despite its low value, we sampled *L. flaviscutellata*, which is rarely captured in this type of trap. Finally, we present the first record of *L. runoides* in the FD. **E mail:** jonatasbcf@gmail.com

Sandf004- **Sandflies (Diptera: Psychodidae) and the Leishmaniasis in an Indigenous Reserve in Minas Gerais state, Brazil.**

Rêgo FD[1], Quaresma PF[1], Shimabukuro PHF[1],; Botelho HA[1]; Rugani JMN[1]; Silva KMS[1]; Barata RA[2]; Dias ES[1]; Gontijo CMF[1]
[1] René Rachou Research Center/Fiocruz Minas - Belo Horizonte, Minas Gerais, Brazil, [2] Universidade Federal dos Vales do Jequitinhonha e Mucuri - Diamantina, Minas Gerais, Brazil

Autochthonous cases of American Cutaneous Leishmaniasis (ACL) are reported since 2001 in Xakriabá Indigenous Reserve located at São João das Missões's city, north of Minas Gerais state, characterizing this area as endemic for this disease. Aiming to contribute to the understanding the epidemiology of ACL, a study of sand flies fauna is being developed in two villages (Imbaúbas I and II). This study intends to investigate the association between the species collected and the transmission of leishmaniasis in the area. Through studies of natural infection by *Leishmania* spp. and the food source identification in captured females. Six campaigns were carried out during the period of July 2008 to July 2009 using 24 HP light traps, placed in peridomicile of 24 households randomly selected in order to sample the entire area of the two villages. New campaigns are being conducted in previously selected tracks where small mammals were captured, in order to sample the different ecotopes present in the villages. Five light traps were exposed on each track for three consecutive days. The *Leishmania* detection of sand flies is performed through ITS1 PCR. To identify the Leishmania species involved, PCR-RFLP is carried out using the restriction enzyme HaeIII. The food source's study is accomplished by amplification and sequencing of a fragment 359pb from Cytochrome B gene. At time, a total of 3059 sand flies were captured and is important to note the presence of *Nyssomyia intermedia* (11,80%) and *Lu. longipalpis* (9,41%), furthermore, *Ny. whitmani* and *Migonemyia migonei* may also represent vector's significance in leishmaniasis's transmission. The occurrence of these species in areas where are often diagnosed human cases of ACL associated with the finding of wild and synanthropic hosts as *Trychomys apereoides* infected with *Leishmania braziliensis, Leishmania guyanensis and Leishmania infantum*, and *Didelphis albiventris* infected by *L. braziliensis* (Quaresma *et al.*, 2011) reinforces the need to know the sandfly fauna, the food source and natural infection of the vectors. Furthermore, these results certainly will contribute for understanding the Leishmaniasis's cycle of transmission in the Xakriabá Indigenous Reserve. **E-mail:** felipedutra@cpqrr.fiocruz.br

Sandf005- **Study of sandflies fauna (Diptera: Psychodidae:Phlebotominae) of Parque Estadual da Serra da Tiririca, Rio de Janeiro, Brazil**

Andressa A. Fuzari Rodrigues[1], Vanessa De Araújo Barbosa[1], José Dilermando Andrade Filho[2], Reginaldo Peçanha Brazil[1].
1.Laboratório de Bioquímica, Fisiologia e Imunologia de Insetos – Instituto Oswaldo Cruz, Fiocruz – Rio de Janeiro, RJ, Brazil, 2. Centro de Referência Nacional e Internacional para Flebotomíneos - Instituto René Rachou – Fiocruz, Belo Horizonte, MG,,Brazil

Sand flies are small insects and they are natural vectors of etiological agents of human and animal diseases. The main disease transmitted by sand flies to man is leishmaniasis, a disease with diverse clinical manifestations, caused by flagellate protozoa of the genus *Leishmania*. Cutaneous leishmaniasis in the state of Rio de Janeiro is sporadic and of peridomestic transmission, due mainly by the adaptation of some species of the sand fly vector to modified natural environments. The municipalities of Niterói and Marica (RJ) have suffered an intense process of urbanization, by the fragmentation of the remaining forested areas, changing its spatial structure and transforming them in municipalities with large modified areas. This work aimed to study the fauna and ecological aspects of sand flies in an environmentally protected area of an Atlantic Forest (Serra da Tiririca) and its relation to leishmaniasis and the urban nearby area. We collected samples at eight different points, both in the sylvatic environments and in areas surrounding homes near the park. The insects were caught using light traps HP (CDC type), located approximately one meter above the ground, always in the same locations for a minimum of 17 hours each trap. Once in the laboratory the captured sand flies were screened, mounted on slide and identified. The total number of flies captured was 1037 of which 552(53,2%) were males and 485 females

(46,8%) belonging to 9 genera and 12 species: *Evandromyia tupynambai* (34,1%), *Migonemyia migonei* (20,6%), *Brumptomyia cunhai* (13,8%), *Micropygomyia schreiberi* (9,7%), *Psathyromyia lanei* (6,5%), *Br. nitzulescui* (5,7%), *Ev. edwardsi* (5,4%), *Nyssomyia intermedia* (2,8%), *Ev. cortelezzii* (0,6%), *Pintomyia bianchigalatiae* (0,5%), *Lutzomyia longipalpis* (0,2%), *Sciopemyia microps* (0,1%). Three out of these (*Mi. migonei, Ny. intermedia and Lu. longipalpis)* are considered vectors of leishmaniasis. Our findings show the greater abundance of *Migonemyia migonei* followed by *Ny. intermedia* suggesting the possibility of both being dividing the role in the transmission of the disease, and also the first record of *Lu. Longipalpis* vector visceral leishmaniasis in the study area. **E-mail:** afuzari@ioc.fiocruz.br

Sandf006- **Study of sandflies fauna (Diptera: Psychodidae) in Sumidouro State Park, Minas Gerais, Brazil - ecological and epidemiological aspects - preliminary results**

Saraiva, L.[1]*, Nascimento, B. W. L.[1], Serra e Meira, P. C. L.[1]; Abreu, B. L.[1]; Carvalho, G. M. L.[1]; Sanguinette, C. C.[1]; Zenóbio A. P. L.[1], Gontijo C.M.F.[1], Andrade Filho, J. D.[1]
¹ Grupo de estudo em Leishmanioses, Centro de Pesquisas René Rachou / Fundação Oswaldo Cruz, Belo Horizonte, Minas Gerais, Brazil

Sumidouro State Park is an area of cerrado biome (Brazilian Savannah) located on Minas Gerais state, Brazil. There are reported cases of visceral leishmaniasis (VL) and cutaneous leishmaniasis (CL) in the municipalities around the park. Several researchers utilize specimens of *Lutzomyia longipalpis* collected from Lapinha Cave, situated near the studied area. Nevertheless there is no detailed study on sand flies fauna in the area. Considering those aspects, the aims of this work are: to study the seasonal variation of sand flies fauna and to describe the patterns of diversity of sand flies species in different vegetation formations. The study began in September 2011. Sand flies collections are carried out using HP light traps, monthly in two consecutive days. Collections will be conducted over two years. Twelve traps are being used: two traps in the savannah with dense forest, two in the savannah with sparse vegetation, two in the area of rupicolous vegetation, four near the entrance of a cave and two traps in residences around the park. Results presented are related to the first four months of study. A total of 769 specimens were collected belonging to nine genera and 21 species. *Micropigomyia quinquefer* accounted for 56.31% of the total followed by *Pintomyia pessoai* (11.57%), *Evandromyia sallesi* (6.11%), *Pintomyia brumpti* (3.64%), *Evandromyia cortelezzii* (2.47%) and *Pintomyia christenseni* (2.47%). Other 15 species accounted for 17.46% of the total. Important vector species were collected in low abundance for instance: *Lu. longipalpis* accounted for 0.78%, and *Nyssomyia whitmani* and *Nyssomyia neivai* accounted for 1.30% and 0.52% respectively. Regarding the abundance of specimens collected in each environment the area of rupicolous vegetation had the highest abundance with 57.87% of the total, followed by savannah with sparse vegetation (17.56%), savannah with dense forest (16.38%), surrounding area (4.68%) and cave entrance (3.51%). Despite the greater abundance, rupicolous vegetation area has had the lowest diversity and evenness index (H: 0.1765, J: 0.1296). The areas that had intermediary abundances rates presented higher diversity and evenness index: savannah with dense forest (H: 0.9485, J: 0.6965) and savannah sparse vegetation (H: 0.9308, J: 0.6835). The surrounding areas (H: 0.5545, J: 0.4026) and cave entrance (H: 0.1957, J: 0.4026) had low diversity and evenness index. The results point out to the necessity of entomological surveillance in the park area and its surroundings due to the presence of important vector species and the possibility of outbreaks of CL and VL. Furthermore the results show that different vegetation formations of the park have populations of sand flies with different ecological structure. This fact demonstrates the ecological diversity of the sand flies fauna in the area. **E-mail:** lara@cpqrr.fiocruz.br

Sandf007- Study of sandflies (Diptera: Psychodidae) collected in ferruginous caves of the Parque das Mangabeiras (Mangabeiras Park), Belo Horizonte, Minas Gerais, Brazil - Preliminary Data

Serra e Meira, P. C. L.[1] *; Abreu, B. L.[1]; Carvalho, G. M. L.[1]; Saraiva, L.[1]; Sanguinette, C. C.[1]; Nascimento, B. W. L.[1]; Andrade Filho, J. D.[1]
[1] Centro de Referência Nacional e Internacional para Flebotomíneos, Centro de Pesquisas René Rachou / Fundação Oswaldo Cruz, Belo Horizonte, Minas Gerais, Brazil

Sand flies are vectors of diseases caused by *Leishmania*, *Bartonella* and numerous arboviruses. These insects can be found in caves and its surrounding environments. Despite the large number of Brazilian speleological provinces, there are few studies of their phlebotomine fauna. There is a need to study the cave environment, since many caves, even before being studied, are open to visitors or work practices. The loss of biological, ecological and geological information is great, as well as risks to public health. Therefore, this study aimed to identify the phlebotomine fauna in caves environment of the Parque das Mangabeiras (Mangabeiras Park), located in Belo Horizonte, Minas Gerais, Brazil. Belo Horizonte, in the southeast of Brazil, has one of the highest prevalence of human visceral leishmaniasis in the country. Sand fly collections are being held monthly, from November 2011 until October 2012.The collections are carried out in three caves and its surrounding environments, using one automatic light trap, model HP, inside each cave and respective surroundings, totaling six traps. The traps are being exposed for two consecutive days, with 48 hours of sampling effort per trap. Thus far in the study, five collections were carried out and 406 sand flies were captured, 292 females (71.9%) and 114 males (28.1%), belonging to ten species. The sand flies were identified according to the Galati classification system. The following species were collected inside the caves: *Evandromyia edwardsi* (91.3%), *Brumptomyia nitzulescui* (4.3%), *Evandromyia sallesi* (1.6%), *Evandromyia cortelezzii* (1.1%), *Psathyromyia* sp. (0.8%), *Lutzomyia longipalpis* (0.3%), *Migonemyia migonei* (0.3%) and *Sciopemyia sordellii* (0.3%). At the caves' surroundings, the following species were collected: *Ev. edwardsi* (61.4%), *Br. nitzulescui* (17.9%), *Pintomyia monticola* (7.7%), *Lu. longipalpis* (2.6%), *Ev. sallesi* (2.6%), *Ev. cortelezzii* (2.6%), *Ps. brasiliensis* (2.6%) and *Ps.* sp. (2.6%). Of these insects, 367 (90.4%) were collected inside the caves, while 39 (9.6%) were collected in the adjacent environments. *Evandromyia edwardsi*, the most abundant species, has already been found naturally infected by *Leishmania braziliensis* in the metropolitan region of São Paulo, in a focus of visceral canine leishmaniasis and human cutaneous leishmaniasis. Other species with reports of natural infection by *Leishmania* sp. were found, but in low densities at the moment, such as *Mi. migonei*, *Ev. sallesi* and *Ev. cortelezzii*. *Lutzomyia longipalpis*, the main vector of visceral leishmaniasis in Brazil, was also captured. The continuity of the faunal study added to other bioecological aspects such as verification of natural infection and feeding habits of the species caught in this place will be of great epidemiological importance, helping to understand the behavior of sand flies in this environment and consequently assisting in decisions regarding control and prevention measures of leishmaniasis at the park. **E-mail:** paulameira@cpqrr.fiocruz.br

Sandf008- Sandfly fauna in an endemic area of American and fly fauna in an andemic area Ocutaneous leishmaniasis in Southern Bahia

Cova, B. O.*; Fonseca, E. O. L.
Entomology Group of the Central Public Health Laboratory: Salvador, Bahia, Brazil.

The knowledge of the sandfly fauna in a given area is a fundamental step in the study of Leishmaniasis. Ituberá city was selected for composing the endemic area of American Cutaneous Leishmaniasis (ACL) in Southern Bahia. This study was aimed to survey the species of phlebotomine sandflies in rural and peri-urban Ituberá in order to substantiate measures to reduce the transmission of this disease in the region. Catches were made between October 17 and November 13, 2010 in wild and anthropogenic environments, being assisted by CDC traps and Vacuum Castro. 11.381 specimens were captured, 19 species identified: 1 of the genera *Brumptomyia*, *Migonemyia*, *Pintomyia*, *Trichophoromyia* and *Trichopygomya*; 2 of the genera and *Evandromyia* and *Micropygomyia*; 3 of the genera *Nyssomyia* and *Psychodopygus*; and 4 of the genus *Psathyromyia*. We believe that the dominance of synanthropic

species *Nyssomyia intermedia* and *Nyssomyia whitmani* in those collections is due to the man's interference in the rural environment of Ituberá. We suggest that these species are the main vectors of the ACL to the local population, taking into consideration their abundance, the high anthropophilic and their occurrence in all points of collection. We also highlight the high wild transmission of this disease, because of the rural workers' daily exposure to the vector inside the forest. The domestic and peridomestic transmission must be considered due to the large number of sandflies in houses; the existence of patients of all ages, and physical proximity of the dwellings and forest. The assessment of environmental factors propitious for the establishment of the ACL, as well as the perception of this disease by the local population is crucial for the implementation of effective control measures. **E-mail:** bruno_cova@yahoo.com.br

Sandf009- Monitoring species of sadflies (Diptera: Pshychodidae) in Caiana – Ceará-Mirim, RN, Brazil

Medeiros, A.S.; Nascimento, E.M.D.; Alves, W.F.; Lima, M.S.P.; Silva, K.C.A.; Silva, J.M.F.
Núcleo de Entomologia - Secretaria Estadual da Saúde Pública do Rio Grande do Norte -SESAP/RN

Introduction: In Brazil, *Lutzomyia longipalpis* has been incriminated as the main vector of visceral leishmaniasis (VL) in virtually all areas of occurrence of this protozoan. **Objective:** This study aimed to monitor populations of sand flies in a locality of Ceará-Mirim/RN. Methods: The survey was conducted from August 2007 to August 2009 in 10 residences in the locality called Caiana. We used one of CDC light traps around the homes of each residence for four consecutive nights per month. **Results:** 3.204 specimens were captured with a predominance of *Lu. Longipalpis* (2064 to 71.7% males, from 813 to 28.3% females) and the presence of *Lu. Evandroi* (92 - 56.8% males, 70 to 43.2% females). The largest numbers of sand flies captured happened in the months of December 2007 and February 2008 and 2009. According to the Mann-Whitney test, significant difference between the population of males and females of *Lu. Longipalpis* (p = 0.000034), which did not occur with the species *Lu. Evandroi* (p = 0.862608). **Conclusion:** The prevalence of *Lu. Longipalpis*, combined with their degree of anthropophilic are important to direct efforts to control vector associated with canine surveillance in the monitored area. **E-mail:** arlinetek@yahoo.com.br

Sandf010- Lifting of species of sandflies (Diptera: Psychodidae) in old site Faras, Barbalha Municipality, south of Ceará State, Brazil. March 2010 February 2012.

Sousa, A. Q.[1], Santos, A. P Santos [123], Esmeraldo, A. T[123], Magalhães, F. R[23], Silva, U. M[23], Bezerra, V. F[23], Gomes, V. S[1], Bezerra, N. S[2], Freitas, F. S.S[5].
1 – Center for Vector Control NUVET/COPROM/SESA/CE, 2- Medical Entomology Laboratory of the Region Cariri Zolide Mota Ribeiro /SESA/CE, 3 – 21° Regional Coordination of health SESA-CE, 4 - Department of Health of the City of Juazeiro-EC 5-9 º CRES / SESA-CE.

Introduction: The leishmaniasis is zoonoses of major public health impact. In Ceará, covers virtually the entire state. Municipalities Cariri, southern state, are the ones who notify cases of leishmaniasis. The Barbalha Municipality, located in the south of Ceará, has shown a high abundance of sand flies, Lutzomyia especially intermediate and L. longipalpis, and high incidence of canine infection. Additionally in many rural areas of the city precarious sanitary conditions, associated with high densities of sand flies and the presence of domestic animals in peridomestic environments has been providing optimal conditions for the establishment and maintenance of the cycle of disease transmission. The work has the objective to carry out the survey on sand flies and identify the species present in the area. Materials & Methods: The area selected for this study was the old location Farias (site) from the criterion of the presence of dogs and / or livestock in backyards and a history of occurrence of human and canine disease. Sandfly collections were performed from March/2010 to fevereiro/2012 with CDC light traps, one week per month, three consecutive nights, from 18h to 6h, a total of 72 CDC light traps, and 72 in the intradomiciliar peridomicile with 864 hours each. Another CDC was installed 800 meters from the residence and a trap Shannon at 1300 meters, both in extra domicile one night per month, totaling 24 traps to capture 288 hours each. Results: We identified 5,953 sand flies captured and divided into 14

species, of which: 48.6% intermediate Lutzomyia, *L. evandroi* 11:35%, 11:17% L. lenti, L. 10.34% longipalpis, L. migonei 8.13%, 7.91% *L.whitmani, L. walkeri L.quinquefer* and 1.51%, *L. trinidadensis, L. sordelli, L. osvaldoi, L. brasiliensis, L. Goias, L. cortelezzii* below 1% between the March/2010 fevereiro/2012. Conclusion: The constant presence and high abundance of *L. intermedia, L. longipalpis* and other important species in the transmission of leishmaniasis is a matter of warning for the possibility of outbreaks of leishmaniasis in the municipality of Barbalha, for both there is a need to conduct a greater amount of catches, to know the real association between the variables climate and the overall density of sandflies, through monitoring. **E-mail:** asevedo.quirino@gmail.com

Sandf011- **Records of the phlebotominae sandfly (Diptera: Psychodidae) fauna in the central public health laboratory of the Bahia, Brazil**

Cova, B. O.*; Brandão, H, R.; Santos, R. F.; Fonseca, E. O. L.
Entomology Group of the Central Public Health Laboratory (LACEN-BA), Salvador, Bahia, Brazil

Leishmaniasis is infectious and parasitic diseases whose main mode of transmission of its etiologic agent to humans occurs through the bite of the subfamily Phlebotominae females. In Bahia, a northeast state of Brazil, they represent a public health problem since the 1950s, when the first eco-epidemiological studies of this disease were developed. However, recent studies on the regional fauna are scarce, which makes imperative a systematic analysis of faunal composition of the group in that state. This study was aimed to examine the records of the species of Phlebotominae in Entomology Group of the LACEN-BA, relating them to the geographical distribution of vegetation types, emphasizing the endemic species, as well as the areas of occurrence of the Leishmaniasis clinical forms in Bahia. For this purpose, we used secondary data obtained from the database of biological identifications and revisions made by the LACEN-BA in the period from Jan/2005 to Dez/2011. The Leishmaniasis endemic areas of occurrence were determined by the analysis of the records of autochthonous cases (2000-2009) reported by the Information System for Notifiable Diseases (SINAN), Ministry of Health of Brazil. The biomes and vegetation types of 417 cities in the state were identified by the letter of vegetation available on the website of The Department of Economic and Social Studies of Bahia (SEI-BA). To analyze the geographical distribution of sandflies, maps were made through the program TabWin. Records of 46 sandflies species were found in the state of Bahia, among them, 9 were of *Evandromyia* and *Psathyromyia* genera; 6 of them were of genus *Micropygomyia*; 3 of the genera *Brumptomyia*, *Nyssomyia*, *Pintomyia*, *Pressatia* and *Psychodopygus*; 2 of the genus *Lutzomyia*; and 1 of the genera *Bichromomyia*, *Migonemyia*, *Trichophoromyia*, *Trichopygomya* and *Sciopemyia*. We observed the occurrence of the species *Evandromyia bahiensis*, *Psathyromyia digitata* and *Trichophoromyia viannamartinsi*, which are endemic in Bahia, and also the first record of *Pressatia trispinosa* in that state. It is evident that the high spatial aggregation of species of medical interest is in the endemic areas of Leishmaniasis in Bahia. We noted the high ecological plasticity of *Nyssomyia whitmani*, the main vector of American Cutaneous Leishmaniasis in that state, occurring in different vegetation types, especially those related to biomes Savanna (Cerrado), Northeastearn Savanna (Caatinga) and Atlantic Forest. A similar pattern was observed in the vector of Visceral Leishmaniasis in Bahia, *Lutzomyia longipalpis*, which has been adapting to the different vegetation types of their natural environment (Cerrado and Caatinga). Including, it has being observed in coastal areas of the state too. We also highlight the rediscovery of *Bichromomyia flaviscutellata*, vector of *Leishmania amazonensis*, in a forest fragment which is in the urban area of the state capital, Salvador. The discontinuity in the geographical distribution of many species analyzed may be associated with sampling problems. Therefore, we are seeking to access large zoological collections in the country, as well as the personal files of the researcher Italo Sherlock (*in memorian*), product of more than 30 years of hard work about the sandflies in Bahia. **E-mail:** bruno_cova@yahoo.com.br

Sandf012- Phlebotomine sandflies fauna (Diptera, Psychodidae, Phlebotominae) in the municipality of Presidente Figueiredo, Manaus, AM, BR: an epidemiological study

Oliveira, A.F.J.O., Freitas, R. A., Santos, F.L., Silva, A.C., Castro, L.M., Farias, R.D., Franco, A.M.R.
Laboratory of leishmaniasis and Chagas disease, CSAS, National Institute of Amazonian Research, Av. André Araújo, 2936, Manaus, Brazil.

Introduction: Sandflies are small insects and due to the haematophagic habit of females, several species are incriminated as vectors of various etiologic agents of medical and veterinary importance. The aim of this study was to survey the fauna of phlebotomine sandflies and analyze the epidemiological profile of leishmaniasis in the municipality of Presidente Figueiredo. **Materials and Methods:** Specimens were collected in the municipality of Presidente Figueiredo to 107 km from Manaus, in the years 2009 and 2010. In the survey of the sandflies fauna was used CDC light traps and hand catch at the base of trees. Was installed a total of 18 traps from 17:00 until 08:00h and the collection on the base of trees were held in the morning. The sandflies were preserved in 70% alcohol, mounted in Berlese fluid and identified following the key of Young and Duncan (1994). **Results:** Were collected 3830 specimens distributed in 54 specie of the genus *Lutzomyia* in 11 subgenera (*Nyssomyia*, *Psychodopygus*, *Evandromyia*, *Lutzomyia*, *Pintomyia*, *Psathyromyia*, *Pressatia*, *Sciopemyia*, *Trichophoromyia*, *Trichopygomyia* and *Viannamyia*) and six groups (*Aragaoi*, *Dreisbachi*, *Migonei*, *Oswaldoi*, *Pilosa* and *Saulensis*). **Conclusions:** Of the species collected, incriminated as vectors of American Cutaneous Leishmaniasis (ACL) in the Central Amazonia are: *L. umbratilis*, *L. anduzei*, *L. flaviscutellata*, *L. olmeca nociva*, *L. ayrozai*, *L. davisi*, *L. paraenses* e *L. squamiventris.* The overall diversity was α=6.4, with 54 species (data not included), show a higher rate than the current. The abundance of the species of the subgenus *Nyssomyia* (77.5%) with vectors of ACL, show a higher risk of people acquiring leishmaniasis in this area, by the presence of the main vector *L. umbratils* with 74.6% of the species collected. A total of 911 (661/base of trees and 250/CDC light traps) females were dissected. Natural infection with trypanosomatids was detected in *L. umbratilis* (24 specimens), *L. dendrophyla* (6), *L. shannoni* (2), *L. sericea* (1), *L. anduzei* (1) and *L. servulolimai* (1). In Presidente Figueiredo between the years 2005 to 2009, were registered 918 cases of ACL. The largest number of cases occurred in the rainy season (December / May, 655 cases), and the dry season (June / November, 263 cases). The highest incidences were observed during December (185 cases) and January (143 cases), and in November (72 cases). The data indicate entomological and epidemiological surveillance actions to control the leishmaniasis in this municipality. Financial support: INPA/PPI; **E-mail:** soubioo@hotmail.com.

Sandf013- Phlebotomine sandfly fauna of a tegumentary leishmaniasis transmission area in Santarém, Brazil

Gonçalves R [1,2], Sousa GCR[1], Costa MDP[3], Nascimento RB[1], Barreiros GVN[1], Santo WS[1], Guimarães RJPS[1], Veiga N[1,2], Garcez LM[1,2]
[1] Instituto Evandro Chagas/SVS/MS, Ananindeua-PA, Brazil, [2] Universidade do Estado do Pará, Belém-PA, Brazil, [3] Secretaria de Estado de Saúde Pública, Belém-PA, Brazil

Introduction: The species diversity of *Leishmania* in Santarém was recently demonstrated by our group among a sample of only 21 individuals with leishmaniasis, four different species being identified using molecular techniques (PCR-RFLPs ITS1, *hsp*70-234 and G6PD): *Le. (Viannia) braziliensis* (20%)*, Le. (V.) lainsoni* (5%), *Le. (V.) naiffi* (3%) and *Le. (Le.) amazonensis* (6%)*. The objective of this study was to catalogue the phlebotomine fauna in an area of tegumentary leishmaniasis (TL) transmission in Santarém, characterized by its diversity of circulating etiological agents. **Material and Methods:** The area selection criteria were: 1 - recent occurrence of human TL; 2 - locality showing clustering of cases (*kernel* analysis), based on probable infection site of 28 patients (2010 - 2011); 3 - circulation of different *Leishmania* species. Jatobá (-2,569 -54,861 Datum SAD-69) was selected based on records of TL cases due to *Le. (Le.) amazonensis* (1), *Le. (V.) naiffi* (1) and *Le. (V.) sp.* (3), between November 2010 and July 2011. Six CDC traps were hung inside three houses and three henhouses in the peridomicile for three nights (18:00-06:00) and a Shannon trap in an adjacent forest area for one night (18:00-21:00). Sand flies

were identified and environmental characteristics of the capture sites described. **Results:** Jatobá is situated in a valley in which houses were constructed among forest, predominantly secondary with primary fragments. In all 127 sand flies were captured, belonging to 12 *Lutzomyia* species. Inside houses, *Lu. longipalpis* and *Lu. castanheirai* presented the same frequency (46.2%), while *Lu. pilosa* and *Lu.* sp. together comprised 7.6%. Of eight species collected in the peridomicle *Lu. longipalpis* was most abundant (63.8%) with *Lu. flaviscutellata* (1.2%) collected in henhouses as well as *Lu. castanheirai* (23.7%) and five other species (*Lu. carmelinoi*, *Lu. gomezi*, *Lu. monstruosa*, *Lu. sordelli* and *Lu.* sp.) comprising 11.3% of the total. The most abundant species in adjacent forest were *Lu. wellcomei* (85.7%), *Lu. davisi* (9.5%) and *Lu. sherlocki* (4.8%). **Conclusion:** Entomological surveys in localities showing clusters of new cases with known etiology could reveal predominance of vector species in samples and allow more effective planning of control measures. The precarious conditions of the dwellings and their proximity to forest increase human exposure to *Leishmania* vectors. Jatobá is a transmission area of *Le. (Le.) amazonensis* and *Le. (V.)* sp. so that the presence of *Lu. flaviscutellata* in the peridomicile and *Lu. wellcomei* in adjacent forest (at high frequency), should be considered in planning TL control measures. The high frequency of *Lu. longipalpis*, especially indoors, also indicates the need for preventative measures against visceral leishmaniasis. **E-mail:** raquelgoncalves@iec.pa.gov.br

Sandf014- Vectors of cutaneous leishmaniasis from two border areas to North of Brazil

Pinheiro, FG; Veloso, FV; Gomes, LHM; Freitas, RA; Franco, AMR.
Laboratory of Leishmaniasis and Chagas Disease, National Institute of Amazonian Research,Manaus-AM, Brasil.

Introduction: The movement of crossing borders is a fundamental risk factor that contributes to the urbanization of leishmaniasis. The migration process in South America, especially Brazil, Colombia and Venezuela have contributed to the emergence of leishmaniasis as a public health problem. **Materials and Methods:** Studies were conducted in two districts of the State of Amazon (São Gabriel da Cachoeira and Tabatinga), where the first is located in the northwest (the border with Colombia and Venezuela) and the second to the southwest (the border with Colombia and Peru). The samples were held in San Gabriel da Cachoeira along the BR 307 (Cucuí Road) and Mill Road Miuá. In Tabatinga, along the road from INCRA was used a total of 16 CDC light traps in each district of the Amazonas State. The sand flies were identified using the taxonomic key of Young & Duncan. **Results:** A total of 7789 specimens of phlebotomine sand flies was collected, distributed in 17 species of the genus Lutzomyia, incriminated in the transmission of Leishmania and others trypanosomatids. Was collected a total of 7,789 specimens of sand flies captured in the areas of São Gabriel da Cachoeira (3187) and Tabatinga (4602), distributed in 17 species of the genus Lutzomyia incriminated as vectors of Leishmania and other trypanosomatids. Of the collected species, 14 are involved in the transmission of Leishmania to man, and nine species common to both areas: Lutzomyia umbratilis/Leishmania guyanensis, L. dendrophyla/L. guyanensis, L. davisi/L. naiffi, L. braziliensis, L. shannoni /L. mexicana, L. panamensis, L. yuilli /L. panamensis, L. tuberculata /L. guyanensis, L. ayrozai /L. naiffi, L. braziliensis, L. paraensis/L. naiffi, L. braziliensis and L. amazonensis/L. braziliensis. Distinct of this only one species was captured in Tabatinga (L. antunesi/L. lindenbergi) and four captured only in San Gabriel da Cachoeira (L. flaviscutellata/L. amazonensis, L. olmeca nociva/L. amazonensis, L. anduzei/L. guyanensis, L. gomezi/L. panamensis, L. colombiensis). **Conclusion:** The finding of nine vector species incriminated in the transmission of leishmaniasis to humans, common to both municipality deserve the attention of health authorities, because knowledge of insect vectors of this endemic disease is extremely important for epidemiological study and prophylaxis of this disease, especially in it comes from Amazon, where there are several types of ecosystems and climatic variations and may be important for the incidence of Leishmania species have not yet registered in Brazil and bordering countries (as Colombia, Venezuela and Peru).Studies on the phlebotomine fauna composition at these locations allow understanding of the local transmission cycles, determining the areas of risk, enabling the formulation of strategies for reducing human exposure to the vectors in these municipalities. **Keywords:** Lutzomyia, Vectors, Leishmania, Tabatinga, São Gabriel da Cachoeira. **Financial Support:** CAPES/UFAM/INPA. **E-mail:** meireg@inpa.gov.br

Sandf015- **Preliminary phlebotomine survey (Diptera, Psychodidae, Phlebotominae) in** *Sustainable Development Reserve* **of Amanã, Amazonas, Brazil**

Oliveira, A.F.J.O.[1], Pessoa, F.A.C.[2], Freitas, R. A.[3], Aguiar, N. O.[1]
[1]**Universidade Federal do Amazonas, Av. General Rodrigo Octávio Jordão Ramos, 3000, Manaus, Amazonas, Brasil;** [2]**Instituto Leônidas e Maria Deane ILMD – FIOCRUZ AM, Rua Terezina, 476. Adrianópolis – Manaus, Amazonas, Brasil;** [3]**Instituto Nacional de Pesquisas da Amazônia, Av. André Araújo, 2936, Manaus, Brasil**

Introduction: The phlebotomine sand flies are small diptera with medical and veterinary importance. There are around 400 species recorded in Brazil and 120 of them have been found in Amazonas State. However, there are just a few studies about sand flies faunistic diversity in the state, especially in isolated or reserves of the area. This survey was done in Sustainable Development Reserve of Amanã (SDR Amanã), area of ecological preservation, with high value in biodiversity. The area has two different types of forests flooded and not flooded forests (várzea and terra –firme). The local population activities are agriculture, hunting and fishery and wood exploitation, act ivies that may cause environmental modifications. There are cases of human cutaneous leishmaniasis but none entomological surveillance was done until now. The objective of this work is to know the phlebotomine fauna of the SDR Amanã area. **Material and Methods:** Phlebotomine collections were done in SDR Amanã , area located in the middle of Solimões river, located near of Japurá river, 650 kilometers from Manaus city, capital of the state, during three days of 2011, using CDC light traps. The traps were switched on over night. The collected flies were kept in alcohol and them, identified, at the moment, just the males. **Results:** We collected 440 individuals belonging the species: *Lutzomyia (Trichophoromyia) lopesi, L. (T.) flochi*; *L. (Psychodopygus) davisi*; *Lutzomyia (T.) ubiquitalis, Lutzomyia saulensis, L. (P.) carrerai, L. (Viannamyia) caprina, L. (Sciopemyia) sp.* **Main conclusions:** This is the first survey of phlebotomine sand flies in the area. We found to the first time, *L. flochi* to the Amazonas state and *L. caprina* to Brazil We collected at least two vectors species of leishmaniasis (*L. davisi* and *L. ubiquitalis*). Due to the diversity of sand fly species and the ignorance of the vector of cutaneous leishmaniasis, we emphasize the importance of improving and further extending the entomological vigilance of the phlebotomine fauna in the region. **E-mail:** soubioo@hotmail.com

Sandf016- **American Tegumentary Leishmaniasis (ATL) and Visceral Leishmaniasis (VL) vectors Phlebotomus in the Regional Health District of Sinop, Mato Grosso, in 2011**

Thies, S.F.[1,2], Ribeiro, A.L.M.[1,4], Miyazaki, A.D.[3], Rodrigues, J.S.V.[1,4], Pereira, D.T.[1,3], Dias, E. S.[5]
[1]**Laboratory Medical Entomology, Faculty of Medicine, UFMT, Cuiabá, MT.** [2]**Laboratório of Entomology, State Department of Health of Mato Grosso (SES), Cuiabá, MT.** [3]**Department of Biology and Zoology, Institute of Biosciences, UFMT, Cuiabá, MT.** [4]**University Hospital Júlio Müller, UFMT, Cuiabá, MT.** [5]**Laboratory of Leishmaniasis, Research Center René Rachou, Fiocruz.**

The State of Mato Grosso records of autochthonous cases of ATL in 100% of its municipalities. The Regional Health of Sinop is one of the sixteen Regional Health of the State of Mato Grosso, is located in the middle-North and covers 14 towns: Vera, Itanhangá, União do Sul, Nova Ubiratã, Sorriso, Feliz Natal, Sinop, Lucas do Rio Verde, Santa Rita do Trivelato, Cláudia, Nova Mutum, Ipiranga do Norte, Santa Carmem and Tapurah. This study aimed to list the species of sandflies found in entomological research carried out in 14 counties included in this Health Region during the year 2011. Data were obtained from the reports of entomological reseaches conducted during 2011 in these towns. As a result, it has been identified the development of research in 11 (78.57%) of the Regional Municipalities, namely: Vera, Itanhangá, União do Sul, Nova Ubiratã, Sorriso, Feliz Natal, Sinop, Lucas do Rio Verde, Santa Rita do Trivelato, Cláudia and Nova Mutum. In six towns (42.86%) the capture methodology adopted was to ATL and five (35.7%) was for VL, as proposed by the Ministery of Health. In these towns there were captured 1.917 phlebotomineus, distributed in 28 species. *Lutzomyia whitmani* was the most prevalent with 786 specimens (41,0%), followed by *Lutzomyia longipalpis* with 558 (29,11%), *Lutzomyia migonei* 185 (9,66%), *Lutzomyia lenti* 113 (5,89%), *Lutzomyia carmelinoi* 79 (4,12%) and *Lutzomyia evandroi* 71 (3,70%). The 22 remaining species totaled 125 phlebotomineus (6,52%). *Lutzomyia longipalpis* and

Lutzomyia cruzi, vector of VL were found in six towns and *Lutzomyia whitmani, Lutzomyia migonei, Lutzomyia umbratilis*, vectors of ATL were found in eight towns. In six towns, the vector species for the two conditions were found concomitantly. Of the total of phlebotomineus captured 29.16% belonged to the LV vector species and 50,91% to ATL. We stress the necessity of epidemiological and entomological monitoring in municipalities with presence of vectors of medical importance particularly in those with autochthonous human cases in order to minimize the contact man/vector and the reduction in the number of cases. **Financial Support:** State Department of Health of Mato Grosso, Foundation of Research in Mato Grosso (FAPEMAT). **E-mail:** sfthies@hotmail.com

Sandf017- **Phlebotomineus entomofauna in the city of Nova Mutum, an endemic area for cutaneous leishmaniasis, Mato Grosso, Brazil**

Thies, S.F.[1,2], Ribeiro, A.L.M.[1,6], Miyazaki, A.D.[3], Rodrigues, J.S.V.[1,6], Dias, E.S.[4], Fontes, C.J.F.[5,6]
[1]**Laboratory Medical Entomology, Faculty of Medicine, UFMT, Cuiabá, MT.** [2]**Laboratory of Entomology, State Department of Health of Mato Grosso (SES), Cuiabá, MT.** [3]**Department of Biology and Zoology, Institute of Biosciences, UFMT, Cuiabá, MT.** [4]**Laboratory of Leishmaniasis, Research Center René Rachou/Fiocruz.** [5]**Department of Clinical Medicine, Faculty of Medicine, UFMT, Cuiabá, MT.** [6]**University Hospital Júlio Müller, UFMT, Cuiabá, MT.**

Leishmaniasis are zoonotic diseases which affects humans, transmitted by insects belonging to the genus *Lutzomyia*, called sand flies, popularly known as white wing/hard, birigui, or mosquito palha. This study aimed to identify the species of phlebotomineus in urban and rural (primary forest) areas in the municipality of Nova Mutum/MT, seeking promotion, prevention and control of Leishmaniasis. Between October 17 to 19th 2011, entomological collections were done with the help of CDC light traps, installed at 18:00 hours and collected at 7:00 hours in the following day. In the urban area ten households were installing in the peri-home areas. In rural areas also ten traps were installed in the forest near the Rio Arinos, border with the municipality of São José do Rio Claro, distant about 40 km from the city, a place with confirmed cases of American Tegumentary Leishmaniasis (ATL). The insects captured were sent to the Entomology Laboratory of the State Secretariat of Health of Mato Grosso, where they were prepared and identified. As a result it was identified the presence of 44 phlebotomineus, from ten species, from which 23 (52.27%) females and 21 (47.73%) male specimens. The presence of *Lutzomyia longipalpis* and *Lutzomyia whitmani*, species incriminated vectors of Visceral Leishmaniasis (VL) and LTA, respectively, were identified. In rural areas 962 phlebotomineus were captured, divided into seventeen species, 805 (83.68%) female and 157 (16.32%) males' specimens. The presence of three vector species of the LTA was diagnosed, as follows: *Lutzomyia yuilli yuilli, Lutzomyia ubiquitalis* and *Lutzomyia flaviscutallata*. In total 1006 phlebotomineus were captured, being 828 (82.31%) females and 178 (17.69%) males, distributed in 23 different species, five of them medically important in the transmission of leishmaniasis. The diagnosis of such vector species presence leads us to recommend measures ranging from management (sanitation), environmental, to activities of health promotion and prevention. Those actions should be developed with the community's effort to minimize human contact with the vector. **Financial Support:** Federal University of Mato Grosso, Foundation of Research in Mato Grosso (FAPEMAT). **E-mail:** sfthies@hotmail.com.

Sandf018- **Larval chaetotaxy of Phlebotominae (Psychodidae) as a tool for evolutionary relationships and systematic**

[1] Alencar RB; [1]Barrett TV; [1]Scarpassa VM
[1] **Instituto Nacional de Pesquisas da Amazônia (INPA), Manaus, Amazonas, Brazil.**

The Phlebotominae subfamily included species that are vectors of protozoa of the genus *Leishmania*, etiological agents that cause to Leishmaniasis. Despite its importance, the classification of sandflies was always a matter of great controversy and disagreement in the scientific community due to several proposed classifications. These incongruence demonstrate that additional studies are need for provide information that should contribute for a well-supported phylogeny in this subfamily. In parallel, the old and current classifications consider only adult morphological data. In the present study we presented a new proposal of chaetotaxy with hypothesis of homology between the setae of the fourth instar larvae of

sandflies. This chaetotaxy was developed based on the examinations of fourth instar larvae of the 39 species from sandflies (*Phlebotomus*=10, *Sergentomyia*=9, *Lutzomyia*=19 and *Brumptomyia*=1), including those original descriptions of the literature. The specimens (generation F_1) were obtained from wild females feed with blood and the offspring were reared in the laboratory until the fourth larval instars. Following, they were killed in hot water, cleared and mounted on permanent slides with Canada balsam in the positions dorsal, lateral and ventral. We used the criterion of relative position to establish the hypothesis of homology between the setae on the body of the larvae. With the exception of intersegmentary setae (IS) and internal (IC) and external (EC) caudal setae, the remaining was numbered in sequence from mid-dorsal line to mid-ventral line. The setae were classified as simple, bifurcated, trifurcated, apex in brush and brush-like. We detected larvae with 130, 131 and 134 pairs of setae. The differences in the number of setae consisted in the absence of the pair of setae 2 of anterior pro-thorax and pairs of setae 7 of posterior pro-thorax, meso-thorax and meta-thorax in some species. The number of setae was distributed as follows: head with 9 pair, anterior pro-thorax with 5 or 6 pair, posterior pro-thorax, meso and metathorax with 12 or 13 in each; first to eighth abdominal segment with 9 pair, each; and ninth segment with 8 pairs. There were differences in form between homologous setae of different species, different patterns of lengths and different degrees of spinosity of some brush-like setae. This new chaetotaxy showed to be functional for phylogenetic studies because all species that shared the absence of setae 7 on the thorax, seta 3 of head poorly spinous and setae 1 and 2 decreasing gradually in length from first to seventh abdominal segment, are included in Psychodopygina subtribe (*sensu* Galati, 1995), which was based on the morphological characters of adults.**Supported by:** CNPq, FAPEAM, MCT/INPA and Pro-Equipamento/CAPES. **Key words**: phylogenetic relationships, larval stage, homology. **E-mail:** ronildo@inpa.gov.br

Sandf019- **Epidemiological importance in border line between Brazil and Paraguay: Phlebotomine fauna on the Ponta Porã city** - **Phlebotomine fauna on Brazil-Paraguay border**

Andrade AROI; Dorval MEMCI; Andrade SMOI; Marques AlissonII; Silva BAKIII; Andreotti RI,IV
IPost Graduate Program in Infectious and Parasitary Diseases. Federal University of Mato Grosso do Sul., IIZoonosis Control Center. Municipal Secretaria Health of Ponta Porã, MS, Brazil., IIIPost Graduate Program in Health and Development of the Central West Region. Federal University of Mato Grosso do Sul. Federal University of Piaui., IV Embrapa Beef Cattle, Campo Grande.

Introduction: The State of Mato Grosso do Sul (MS) has been presenting high rates of infection of Leishmania (Leishmania) chagasi, the agent of visceral leishmaniasis, in humans and dogs, other human infections by Leishmania spp, agents of cutaneous leishmaniasis, and also a great number of Leishmania sp. vectors. Ponta Porã was considered a silent area or a region without transmission of visceral leishmaniasis (VL) until the appearance of the first human case in 2007. **Aim:** The study sought to identify the urban phlebotomine sandfly fauna in Ponta Porã, Mato Grosso do Sul State, on the Brazil-Paraguay border. **Methods:** The captures were undertaken from April 2009 to March 2010 with CDC light traps in 14 ecotopes (intra and peridomicile) in different areas of the city, Shannon traps being used in areas with abundant vegetation. **Results:** A total of 707 specimens were captured with CDC light traps (565 males and 142 females) and 155 specimens (112 males and 43 females) with Shannon traps, a total of 862 phlebotomines. The specimens captured belonged to eight species: Lutzomyia longipalpis (Lutz & Neiva, 1912), Evandromyia cortelezzii (Brethes, 1923), Sciopemyia sordelli (Shannon & Del Ponte, 1927), Pintomyia pessoai (Coutinho & Barretto, 1940); Pintomyia monticola (Costa Lima, 1932); Brumptomyia brumpti (Larousse, 1920); Nyssomyia whitmani (Antunes & Coutinho, 1939) and Psathyromyia shannoni (Dyar, 1929). Lutzomyia longipalpis, the main vector of Leishmania (Leishmania) chagasi, was the species most frequently captured (97.03%) and also the most abundant according to the standardized abundance index (SAI) = 0.86. **Conclusion:** The highest species richness was captured, with CDC light traps, inside the domiciles and the species diversity and evenness in the peridomicile, clearly indicating a preference for anthropic environments. Due to the geographical location of the area studied and considering its epidemiologic importance as a city of LV transmission, it is essential to be aware of the vector's dispersal and the need to conduct entomological studies and sample surveys for canine information so that the data may serve as a basis for the design of strategies for prevention and control before the disease spreads further, as has already been occurring in many cities of Mato Grosso do Sul.

Sandf020- *Lutzomyia longipalpis* (DIPTERA: PSYCHODIDAE) in the urban area of the municipal district of Sobral, Ceara, Brazil

Rodrigues, L[l]. Caranha, L[l]. Quirino, A[l]. Elder, F[2]. Linhares, E[2]. Alves, F[2]. Moura, F'
1 Entomology Medical Laboratory DR. THOIVIAZ CORREIA ARAGAO -NUVET/SESA-CE, Brazil. 2.11ST Regional Cell of Health of Sobral, CE - Brazil;

Introduction: Visceral Leishmaniasis (VL) is considered as a problem of public health. The World Organization of Health positions it as one of the six endemic diseases of larger relevance in the world. The municipal district of Sobral has important epidemic report for VL because it is considered as area of intense transmission. It was in this municipal district that the first epidemic outbreak was observed in the country which woke up for the importance of VL and caused the studies in that area. In Brazil, the transmission of the Leishmania chagasi (Cunha and Wounds, 1937), main etiologic agent of VL, happens through the bite of females insects belonging to the Psychodidae family, represented as principal vectorial Lutzomyia longipalpis (Lutz & Neiva, 1912) and Luztomyia cruzi (Mangabeira, 1938) **Objective:** It is concerned studying the seasonal variation of the Lutzomyia longipalpis in the urban area of Sobral city - Ceara. **Material and method:** The collections were accomplished in 10 neighborhoods of the Sobral city from January 2008 to December 2009. The neighborhoods were: downtown, Padre Palhano, Alto do Cristo, Vila Uniao, Dr. José Euclides, Parque Silvana, Recanto farm, Habitational Living Cesario Barreto, Cohab ll and Cidao. In each neighborhood a collection point was set up. CDC luminous traps were installed around the buildings during four consecutive nights a month, beginning in the sunset and retreats up to 6:00 of the following day. The studied parameters were: absolute and relative abundance, proportion males/females and seasonal variation**. Result:** 36742 sandflies belonging to 06 species of Lutzomyia gender were captured: LUTZOMYIA LONGIPALPIS (LUTZ & NEIVA,1912), 36445 (99,19%); *L. LENTI* (MANGABEIRA, 1938) 118 (O,32%),; *L. sallesi* (Galvao & Coutinho, 1939), 88 (0,22%), *L. goiana* 66(O,18%), *L. evandroi* (Costa Lima, 1932) 22 (0,06%) and *L. whitmani* (Antunes & Coutinho, 1939) 6 (0,02%). The males/females proportion was (2,45:1) for Lu longipalpis. Observations related to seasonal time demonstrate *that L. Longipalpis* was present in every month of the year with larger densities soon after the rainiest period. **Conclusion:** Lutzomyia longipalpis was the most frequent specie (99,19%). Considering its seasonal variation demonstrated in this study, it is suggested that VL can happen during every year in the urban area of the city of Sobral.

Sandf021- **Phlebotomine sandfly fauna and seasonality of *Lutzomyia longipalpis* in foci of human visceral leishmaniasis in Juruti, Brazil**

Chagas AP[1], Rodrigues GC[1], Nascimento RB[1], Garcez LM[1,2]
[1]Instituto Evandro Chagas/SVS/MS, Ananindeua, Pará, Brazil, [2]Universidade do Estado do Pará, Belém, Pará, Brazil.

Introduction: Juruti, a mining town in the Brazilian state of Pará, reported a mean of 2.4 new cases of human visceral leishmaniasis (VL) per 100 000 inhabitants from 2007 - 2011. Most of these occurred at the urban-rural interface rather than the rural area, where human VL cases were sporadic. Disorganized occupation of the territory has intensified during the last five years. This study was undertaken to catalogue the sand fly fauna and determine *Lu. longipalpis* seasonality in two sentinel localities of the urban-rural interface in Juruti from 2009 - 2011. **Material and Methods:** Two VL transmission areas, each with at least one human VL case during the last five years, were selected: Santa Maria (02°09'14,7''S; 056°00'29,6''W) and Paraense (02°11'17,5''S; 056°00'42,7''W), situated about 7 km apart. Two CDC traps (one each in the intra- and peridomicile) were hung in each of five houses at each locality. Sampling was carried out on three consecutive nights (18:00 – 06:00) per month, from July 2009 to June 2011. Species were identified based on morphology and natural *Leishmania* infections sought in 16% of females captured. Correlation between sand fly frequency and rainfall was investigated and

results between the two localities compared (Pearson & Kruskal-Wallis; = 0.05). **Results:** In all 36 418 sand flies were captured in two years, 70% of them in Paraense. The sample contained 32 *Lutzomyia* species, predominantly *Lu. longipalpis* (76.8%) as well as *Lu. walkeri* (19%), *Lu. antunesi* (1.6%) and *Lu. williamsi* (0.4%). The other 28 species comprised only 1.4% of the total. In Paraense, *Lu. longipalpis* made up 85% of the sample, seasonal abundance being correlated to rainfall over two years (r = 0.82; r = 0.78; $p < 0.05$). In Santa Maria, the smaller proportion (14%) of *Lu. longipalpis* could not be correlated with rainfall. In Paraense, 1/820 (0.1%) *Lu. longipalpis* and 2/173 (1.2%) *Lu. antunesi* were found infected with *Leishmania*. **Main conclusions:** Despite high species diversity in the urban-rural interface of Juruti, *Lu. longipalpis* predominated in samples and natural infection with *Leishmania* was confirmed. *Lu. antunesi*, also found infected, is the probable vector of *Le. (Viannia) lindenbergi* so the risk of peridomiciliary transmission of cutaneous leishmaniasis should also be considered. Although favored by the Amazonian wet season, a high frequency of *Lu. longipalpis* was not seen in Santa Maria, suggesting influence of some other environmental variable on abundance. Integrated environmental health measures in the area should be continuous and intensified from September to November, the months preceding the rainy season. **E-mail:** anadeivachagas@iec.pa.gov.br

Sandf022- Behavior of the infestation of the *Aedes (Stegomyia) aegypti* (Linnaeus, 1762) in the first outbreak of dengue in the Amazon frontier (COL-BRA-PERU)

Carvajal JJ[1]; Alvarado LA[1]; Moncada LI[2]
[1]**IMANI Instituto de Investigaciones Amazónicas, Universidad Nacional de Colombia, Leticia, Colombia,** [2]**Instituto de Salud Pública, Universidad Nacional de Colombia, Bogotá, Colombia**

Introduction: *Ae. aegypti* mosquito habits are clearly anthropophilic and domestic, preferably breeding in the residences or dwellings. Buckets are the water containers most preferred for oviposition, although use other water containers such as discarded tires, bottles, cans, flower vases, water pools, troughs is also observed. In the Tabatinga County (Amazonas, Brazil), this species was first found in the port area during a larval inspection in 2008; and in the Leticia city (Amazonas, Colombia), it was found in September of 2009 in the La Union neighborhood. The objective of this study is to identify the factors that influenced the spread of mosquito and its importance in the first outbreak of dengue in the Amazon frontier. **Materials and methods:** We used data from a survey of Infestation index and environmental sanitation of the county houses inspected since June 2010 to December 2011. Probability maps were made of the distribution of the mosquito and the disease by the RBF method taking into account the key variables using ArcGIS version 9.1. **Results**: The variables that most influenced the spread of mosquito in the border were the lack of vector biology and the disease, poor washing and exposure to water containers, the deficiencies in the water and sewer service, the differences of the border policies and the action plans, the supervision and control reduction at ports and border posts. There was a significant correlation between the spread of mosquito, the climate and the distribution of the disease by 2011. **Main Conclusions**: Improve approaches to community education aimed at proper management of water containers, disposal of ordinary waste and workshops focusing on strengthening the knowledge of vector biology and disease. Joint action plans and control vectors between the three countries. And finally, step up customs inspections at ports and border crossings. **E-mail:** jose.carvajal@ioc.fiocruz.br

Sandf023- Population genetics of *Lutzomyia longipalpis* (Diptera: Psychodidae) from Caririaçu, Ceará

Freitas MTS[1]; Aragão NC[1]; Costa-Júnior CRL[1]; Silva LG[1]; Marcondes CB[2]; Balbino VQ[1]
1. UFPE, Recife, Brasil 2. UFSC, Florianópolis, Brasil

Introduction: Taxonomic status of *Lutzomyia longipalpis*, major vector of *Leishmania infatum chagasi*, has been discussed, and a consensus of a species complex, including an undefined number of species, has been attained. Analyses of nuclear genes fragments, courtship songs and male pheromones suggest the occurrence of at least four cryptic species in Brazil. At least in Sobral (Ceará state), all observed characters match phenotypic characters previously defined (males with one of two abdominal spots –

respectively 1S and 2S), and it was inferred the occurrence of two sympatric cryptic species. Present study aims to evaluate, by the analysis of a fragment of *period* gene, if divergence between sympatric species at Caririaçu, situated at 500km from Sobral, are similar to those of the last municipality. **Material and methods:** Specimens were identified according to YOUNG & DUNCAN (1994) and males were separated by number of abdominal spots, totalizing 59 insects (28 1S and 31 2S). DNA from these insects was extracted by Chelex®100 (Bio Rad) a 5%. A 525 *bp* fragment of *period* gene was amplified utilizing primers described by Mazzoni et al. (2002) and amplicons were sequenced. Consensus sequences were assembled with values of *Phred* 30, aligned by CrustalW software, included in MEGA 5.1, generating a Minimum Evolution tree corrected by Kimura-2 parameters. Test of genetic attribution was developed by Structure 2.3 software. **Results:** Sixty-five informative sites for parsimony were presented, where a one-base polymorphism at 124 site (transition T/C), permitting complete separation of both phenotypes (1S and 2S). Minimum evolution tree, like attribution test, also separated both morphotypes with high support indices. **Conclusion:** Sympatric 1S and 2S populations of *L. longipalpis* from Caririaçu presented patterns of phenotypic and genetic divergence equal to those observed in Sobral, even being both localities separated by 500km and situated in different biotopes. We consider the level of divergence of 1S and 2S in Ceará enough to attribution of status of cryptic species. **Keywords:** Phlebotominae; *Lutzomyia longipalpis* species complex – cryptic species **E-mail:** vqbalbino@pq.cnpq.br

Sandf024- **Spatial distribution of canine visceral leishmaniasis is correlated to the presence of *Lutzomyia longipalpis* in an endemic area of Bahia – Brazil**

Bordoni, M.[1] Sousa, O. M. F.[1] Merelles, S. L.[1] Solca, M. S.[1] Silva, M. M. N.[2] Pereira, G. C.[2] Passos, S.[2] Resende, A. A.[2] Conrado dos Santos, W. L.[1] Veras, P. S. T.[1] Bavia, M. E.[3] Fraga, D. B. M.[1,2]
1 Centro de Pesquisas Gonçalo Moniz - FIOCRUZ; Salvador, Brasil, 2 Centro de Controle de Zoonoses; Camaçari, Brasil, 3 Escola de Medicina Veterinária - UFBA; Salvador, Brasil

During the 20th century, the geographical distribution of visceral leishmaniasis (VL) in Brazil was limited to rural areas. The growth of urban centers, leading to environmental and population problems, allowed the disease expansion, as well as Canine Visceral Leishmaniasis (CVL) establishment in some urban areas. In urban areas, dog is considered the main reservoir of *Leishmania* and is reputed as the source of parasite infection to *Lutzomyia longipalpis*, the vector of CVL in Brazil. The present study aimed to identify the prevalence of CVL, map and analyze the distribution of infected dogs, as well as correlating CVL prevalence with the population density of captured *L. longipalpis* in the municipality of Camaçari, an endemic area of VL in Bahia, Brazil. In order to determine CVL prevalence, a cross-sectional study was conducted in 8 neighborhoods of Camaçari. The dog sampling of each location was defined along with the Center of Zoonosis Control (CZC) of Camaçari, using the census of vaccination campaign against rabies. The dogs were clinically evaluated. Blood samples and splenic aspirates were collected for serological and parasitological diagnosis of CVL, respectively. In the same areas, sandflies were captured, using CDC light traps. The collection sites were chosen based on previously vector detection or reported cases of canine or human leishmaniasis in the area. Evaluation of spatial distribution was performed georeferencing the cases' addresses. Data were plotted on a digitalized base map of the municipality, using the program ArcGIS 9.3. Seventy-six dogs were evaluated in the urban area, showing a positivity rate of 18.42%, 214 dogs were examined in the coast area with a positivity rate of 40.65%. A total of 174 sandflies were captured in the urban area and 4321 in the coast area. In all 8 neighborhoods evaluated, a correlation between a higher prevalence of positive dogs and a greater density of sandflies was found. These findings support the notion that spatial distribution of CVL is correlated with the highest density of *L. longipalpis* in Camaçari. Furthermore, these data highlight the need for identification of areas with a large concentration of reservoirs and vectors. These findings can help to prioritize governmental actions to favor control of CVL spreading. **Support by** FAPESB, INCT-CNPq, PDTIS, PST Veras' grant (CNPq:306672/2008-1). **E-mail:** dmfraga@hotmail.com

Sandf025- **Sazonality study of *L. longipalpis* in the central region of city of Caxias-MA**

Bezerra, G. F. B.**; Filho, W. R. J. *; Nascimento, M. D. S. B.**; Silva, A. L. M. **; Silva, M. A. C. N. **.
* State University of Maranhao, Caxias, Brazil, **Federal University of Maranhao, Sao Luis, Brazil

Introduction: Visceral leishmaniasis (VL) is a anthropozoonosis considered one of the seven major epidemics in the world whose etiological agent is *Leishmania chagasi* and the vector is the female of phlebotomine *Lutzomyia longipalpis*, which has been found both in natural ecotopes as in rural and urban. Climatic factors, such as temperature and rainfall, affect the phlebotomine population and the knowledge of seasonality of local species important it´s in planning prevention strategies. To investigate the seasonality of *L. longipalpis* and the relationship between rainfall and its frequency in a central area of the city of Caxias-MA considering the relevance of this knowledge in endemia´s control. **Material and Methods:** We performed monthly catches, with CDC light traps in three homes at central area of Caxias - Maranhão from September 2007 to June 2009. We used traps inside and outside the houses, exposed from eighteen to six hours. The specimens were identified according to the proposal of Young and Duncan. We used the Spearman test to assess possible correlations between rainfall and frequency of sand flies. **Results:** We found four species of phlebotomine all from the gender *Lutzomyia* in a total of 521 insects. The species found were *L. lenti, L. evandroi, L. whitmani* and *L. longipalpis*. This last one was the most abundant, occurring predominantly male (94.2%) and more frequently in areas surrounding homes (63.9%) throughout the study period. *L. longipalpis* was found in all months, except in 2007 (the first month of collection), with a higher frequency in months of rainy season or next to it. There was statistically significant with moderate positive correlations between the events studied, rainfall and monthly number of phlebotomine. **Main Conclusions**: The species *L. longipalpis* was the most frequent and rainfall in the study seems to be a contributing factor to the increase of its population. **E-mail:** wilson-jardim@hotmail.com

Sandf026- **Predominance of *Lutzomyia longipalpis* in the municipality of Governador Valadares, an area of intense transmission for visceral leishmaniasis in Minas Gerais**

Peixoto JC[1], Tanure A[1], Apolinário EC[1], Pinheiro AC[2], Ribeiro JJO[2], Oliveira EA[2], Araújo HS[3], Dias ES[4] & Barata RA[1]
1. Universidade Federal do Vales do Jequitinhonha e Mucuri, Diamantina/MG, 2. Secretaria Municipal de Saúde, Governador Valadares/MG, 3. HSA Projeto e Gestão Ambiental Ltda, Belo Horizonte/MG 4. Centro de Pesquisas René Rachou, Belo Horizonte/MG

Introduction: In the municipality of Governador Valadares/MG at the beginning of 2008, there were no records of human cases of visceral leishmaniasis (VL). However, at the end of this year, 14 human cases of VL were confirmed in the city, and from them, three led to death. **Objectives:** To help us understand how the VL transmission may be occurring in the area, this study aimed to know the sand flies fauna and some aspects of the behavior of the species to explain the epidemiology of the disease. **Material and Methods:** Entomological captures were performed using 16 HP light traps during the months of May, July, September and November 2011 and January 2012. The traps were exposed in four neighborhoods (Altinópolis, Mãe de Deus, Nossa Senhora das Graças and Santa Helena), side by side inside and outside the houses during three consecutive nights of each month. **Results:** Were captured 2517 specimens, which 427 were females and 2090 were males, with a proportion of 15.6% inside the house and 84.4% outside the house. The sandflies fauna was composed of four species: *Lutzomyia cortelezzii* (7%), *L. intermedia* (0.4%), *L. longipalpis* (90.4%), *L. whitmani* (0.2%) and *Lutzomyia* spp. (2%). The neighborhoods Mãe de Deus and Nossa Senhora das Graças, had the highest occurrence of specimens captured, with 38% and 29.5% of the total specimens captured, respectively. **Conclusions:** The results showed the presence of species of epidemiological interest like *L. intermedia* and *L. whitmani*, incriminated as vectors of ATL, besides the large quantity found of *L. longipalpis*, main vector of VL. The high number of vector species, especially *L. longipalpis* is worrying and deserves special attention for

rigorous entomological surveillance in the city. **Support:** FAPEMIG, UFVJM, FIOCRUZ. **E-mail:** ricbarata@hotmail.com

Sandf027- **Density of *Lutzomyia longipalpis* in the city of Corrientes, Argentina**

Mierez ML, Rea MJF, Borda CE, Mosqueda Luis A
Centro Nacional de Parasitología y Enfermedades Tropicales (Cenpetrop), Facultad de Medicina, Universidad Nacional del Nordeste, Corrientes, Argentina

Introduction: The geographical distribution of *Lutzomyia longipalpis* is expanding rapidly in the last years. Actually, cases of canine visceral leishmaniasis were reported in urban areas of the city of Corrientes, but not human cases of the disease. The geographical distribution and development of insect vectors are strongly related to the climate factors, such as temperature, rainfall and humidity and in peridomiciliary conditions it is often associated with the presence of domestic animals.Very little information is available on the biology of local *L. longipalpis* populations. This investigation aims at determining the density of *L. longipalpis* in correlation with weather data and its occurrence in peridomiciliary environment of Corrientes city. **Material and Methods:** Corrientes city (27°28′16″ S, 58°50′25″W) is located in the province of the same name, in the northeastern region of Argentina. From January to December 2011, four automatic light traps (CDC type) were placed (at about 1 m high) in two collection sites: two traps in a hen-house with one climber plant (*Podronea ricasiolana*) and the others two in the yard with pigeon and rabbits with one leafy tree (*Ficus auriculate*). The collections had been weekly, during three consecutive nights and the light traps were installed at dusk and were operated about 12 consecutive hours with a total sampling time of 1,860 hours. Sand flies were identified morphologically in accordance with Galati (2003). **Results:** A total of 5,358 sand flies were collected. Only *L. longipalpis* was identified. The higher density was observed in the yard with pigeon and rabbits 87.3% (4,677). The sex ratio showed a larger number of males than females 4.3:1. The greatest numbers of flies were collected in March 1,610 (30%), 1,286 males and 306 females, with 54.5 mm cumulative rainfall, 24 ºC average temperature and 78 % relative humidity. The smallest numbers of phlebotomines were collected in October, only three in the hen-house with 251.2 mm cumulative rainfall (the month with the highest precipitation), 19.5 ºC average temperature and 79.5 % relative humidity. With 10ºC, two males and one female were collected in August and a male in September. *Lu. longipalpis* was not captured in July, with a monthly temperature of 13º C, relative humidity of 80.5 % and 4,5mm of rainfall. **Conclusions:** These findings confirm sand flies are well adapted to and somewhat dependent on human-modified environments in the studied area, where they find suitable conditions in terms of microclimate and host availability for their perpetuation. Vector control methods have failed and vector populations continue at high levels, especially in some urban areas. **E-mail:** cenpetrop@hotmail.com

Sandf028- **Lutzomyia complexa naturally infected by Leishmania spp. outside Amazonian region: a report from Pernambuco State, Northeast of Brazil**

Vanessa Cristina Fitipaldi Veloso Guimarães, Pietra Lemos Costa, Fernando José da Silva, Kyldman Thaís da Silva, Kamila Gaudêncio da Silva, Fábio Lopes de Melo, Maria Almerice Lopes da Silva, Rafael Acioli Medeiros, Eduardo Henrique Gomes Rodrigues, Sinval Pinto Brandão Filho.
Center of Research Aggeu Magalhães, FIOCRUZ, Recife - PE

Lutzomyia complexa is considered one of the main species that are involved in the transmission cycle of Leishmania (V) braziliensis in the Amazonian region, being recorded as naturally infected and parasite isolation in four specimens in the Paragominas region, Pará State. In this sense, the aim of this study is evaluate the natural infection of L. complexa in an endemic area to American cutaneous leishmaniasis (ACL) in Pernambuco State, Brazil. Captures were carried out in forest remnants areas of São Vicente Férrer municipality between September/2009 and September/2010, with light traps (CDC), from 6:00pm to 6:00am, during four consecutive nights in each month. The samples were submitted to the system 5Llcac GTGGCCGAACATAATGTTAG-5-5-3 and 3Llcac CCACGAACAAGTTCAACATC-3 (Lins et al., 2002) to detect gene cacophony (constitutive gene of the genus Lutzomyia sandflies), such as quality control sampling and DNA extraction procedure. For the parasite detection, it was used the primers

LITSR/L5.8S which amplifies the internal transcription spacer 1 (ITS-1), a noncoding region placed at SSUrRNA, bounded by the gens 18S and 5.8S, which produce a 320pb band specific to the Leishmania genus. It was analyzed 370 females – a total of 37 groups. All of them showed a 220pb band, specific to the Lutzomyia genus and just nine were positive to the Leishmania genus. These results agree with studies desenvolved by Brandão-Filho et al. (2001) and Andrade et al. (2005) in Paudalho municipality, Northeast Forest rain area of Pernambuco State, who observed natural infection of L. complexa by Leishmania. The results suggest a possible involvement of L. complexa in the ACL enzootic cycle in Sao Vicente Férrer municipality, being necessary the specie of Leishmania identification which is involved. **Financial support:** CNPq and FACEPE. **E-mail:** vanessa@cpqam.fiocruz.br

Sandf029- First registration of *Lutzomyia (Psychodopigus) ayrozai* (Barreto & Coutinho, 1940) (Diptera: Psychodidae: Flebotominae) in the State of Ceará, Brazil

Cavalcante, R.C.[1]; Caranha, L.[2]; Nascimento, F.C.[1]; Souza, A.Q.[2]; Furtado, F.H.S.[3]; Silveira, J.G. [1]; Gomes, V.S[3] ; Moura, F.B.P.[2]
Laboratory of Vectors, Reservoirs and Poisonous Animals - 4th CRES/SESA/CE 2.Entomology Medical Laboratory Dr. Thomaz Corrêa Aragão - NUVET/SESA/CE 3. Clam Laboratory - 4th CRES/SESA/CE.

Introduction: The leishmaniasis is infect-parasite diseases that attack the man, caused by several species of protozoa of the gender Leishmania. They come at different clinic forms, depending on the Leishmania species involved and of the relationship with its host. Endemic in more than 82 countries; OMS esteemed the occurrence of approximately 400 thousand new cases annually. In Brazil six species of responsible Leishmania exist for the human disease and more than 200 sandflies species involved in its transmission. The knowledge about the geographical distribution of sandflies is fundamental to understand factors related to the transmission as well as it constitutes a way to do strategies addressed to the control and combats those vectors. **Material and Methods:** Guaramiranga municipal district located in the Northeast area of Ceará, S4º 15 ' 48 " and W38º 55 ' 59 ", altitude of 865.24m embraces an area of 59.47 km2 and a population of 5.714 inhabitants. The rainy period takes from January to May with rainy annual index of 1.737mm and medium temperature from 24th to 26ºC. Sandflies were captured by occasion of an entomologic inquiry using CDC luminous traps inside, outside and around the building (forest) in February from 21st to 24th, 2011. The collections took 12 hours, beginning at 6:00 pm to 6:00 am in the following day. **Results:** They were collected 156 sandflies belonging to *Lutzomyia* gender, *Lu. wellcomei* 85 (54%), *Lu. migonei* 45 (29%), *Lu. evandroi* 1 (0,6%), *Lu. Whitmani* 2 (1,2%), *Lu. goiana* 1 (0,6%), *Lu. sericea* 6 (4%), *Lu. fischeri* 4 (2,5%), *Lu. Oswaldoi* 1 (0,6%), *Lu. shannoni* 1 (0,6%) and *Lu. ayrozai* 10 (6,4%) .Concerning to collection places were 17 (10,9%) inside the buildings, 23 (14,7%) around and 116 (74,4%) in the forest. **Conclusion:** The predominant species were *Lu. wellcomei* and *Lu. migonei*. The captures in the forest presented larger diversity of species and larger number of captured ones which directs worries for the constant presence of people in ecological trails provided by the increase tourism events. In this work it registers Lu ayrozai for the first time In Ceará State. *Lutzomyia ayrozai* is incriminated together with *Lu. paraensis and Lu. squamiventris* to transmit *L. (Viannia) naiffi* in Brazil for the states of Amazonas and Pará and in French Guiana. **E-mail:** robsonccavalcante@yahoo.com.br

Sandf030- First report of *Lutzomyia cruzi* (Manguabeira, 1938) in the urban area in Novo São Joaquim, state of Mato Grosso, Brazil

Queiroz, MFM [1] and Moraes SC [1]
[1]Secretaria de Estado de Saúde de Mato Grosso (SESMT), Barra do Garças, Mato Grosso, Brasil.

Introduction: The leishmaniasis configures as an important public health problem represented by a complex of diseases carried by sandflies (Diptera: Psychodidae, Phlebotominae). The sandflies can be hosts of *Leishmania* spp and have species involved in the transmission of American Tegumentary Leishmaniasis (ATL) and Visceral Leishmaniasis (VL). In Brazil, the *Leishmania (Leishmania) chagasi infantum* is the etiologic agent responsible etiological responsible for VL, for ATL *Leishmania (Viannia)*

braziliensis is considered the major etiologic agent. The species of sandfly responsible for transmitting the LV are: *Lutzomyia longipalpis* and *L. cruzi*, for ATL: *L. whitmani*, *L. flaviscutellata*, *L. wellcomei*, *L. intermedia*, *L. umbratilis* and *L. migonei*. **Methods**: Entomological surveys are performed in Novo São Joaquim, State of Mato Grosso, since 2005 to raise the species the sandflies. The population of the municipality is 6,043 inhabitants, land area of 5,035 km^2 and the predominant vegetation is the savanna. The Entomological survey occurred in August 2008. The homes were chosen for present environmental characteristics favorable the maintain life cycle of sandflies: organic matter in soil, abundant vegetation and livestock (dogs and chickens). The sandflies were collected with CDC light traps installed in peridomestic habitats for three consecutive nights (17:00-07:00). The insects identified in specific level, using phase contrast optical microscopy in the laboratory of Entomology Central Level reference of SES/MT. **Results ans discussion:** The fauna of the sandflies was composed of 5 individuals of 4 different species: *Lutzomyia cruzi* (20%), *Lutzomyia whitmani* (20%), *Lutzomyia lenti* (20%), *Lutzomyia sallesi* (40%). Despite the low density of vectors, the present study report the first meeting of *L. cruzi* in Novo São Joaquim-MT with the following geographic coordinates: S $14^0$55'11,3" W $53^0$01'12,1". At first, believed that the distribution of L. cruzi would be restricted to Mato Grosso do Sul (MS), after it have been found in MT had record in twenty-five municipalities, thus the distribution spatial of L. cruzi was expanding in the State of Mato Grosso, Brazil. The presence of *L. longipalpis* has not been detected yet in Novo São Joaquim. In 2009 there was a autochthonous human case of VL and also occurred 4 dogs positives of VL demonstrating that there is movement of *L. (L.) infantum chagasi* in the municipality. *L. cruzi* was incriminated with vector of *L. (L.) infantum chagasi* in MS and recently in MT. **Conclusion:** The meeting of *L. cruzi* in urban area of Novo São Joaquim-MT demonstrates the need to intensify of entomological surveillance and epidemiological monitoring in this municipality. It is important to constantly monitor the vector species and to undertake research for detection of sandflies naturally infected by *L. (L.) infantum chagasi* responsible for transmitting VL in Novo São Joaquim, State of Mato Grosso. The identification of naturally infected sandflies and determination of the species involved in the transmission of the disease will allow the design of strategies for action and prevention *in loco*, since the pattern of transmission of leishmaniasis may present distinct from one geographic region to another. **E-mail:** mirianfmartins@uol.com.br

Sandf031- **Phylogeography of *Leishmania infantum chagasi* and *Lutzomyia longipalpis* in Brazil**

Alonso, D.P. [1]; Gushi, L. T [2] ;Cruz, M.D.S.P.E. [3] ; Júnior, M.S.C.L [4] ; Oliveira, A.G.[5]; Fortaleza, C.M.C.B [6] ; C.H.N. Costa [7] , P.E.M. Ribolla [8]
1,2,6,8.UNESP - Botucatu, Botucatu - SP - Brasil 3,7.Universidade Federal do Piauí, Teresina - PI - Brasil 4,5.Instituto Federal do Mato Grosso do Sul, Campo Grande - MS - Brasil

Introduction: In Brazil, *Leishmania infantum chagasi is* considered the main etiological agent of visceral leishmaniasis (VL). Dogs are the major domestic reservoir of the parasite and, together with some foxes and marsupials in the wild; they play an important role in disease transmission trough the major vector *Lutzomyia longipalpis.* Although VL typically occurred in rural settings in Brazil, the pattern of incidence has been changing in the past two decades to widespread urban epidemics. In order to evaluate genetic differences on vector and parasite populations in an epidemiologic approach, we genotyped *L. infantum chagasi* strains and also Phlebotomine specimens (*Lu. Longipalpis* and *Lutzomyia cruzi*) from three VL major endemic areas (Piauí , Mato Grosso do Sul and São Paulo) in Brazil. **Material and Methods:** For *L. infantum chagasi* genotyping, material from 165 different sources was analyzed. From Teresina, Piauí State (PI), 42 samples were isolated directly from dog bone marrow aspirates, 44 were sampled from parasite cultures initially isolated from human blood marrow aspirates, and two from *Lutzomyia longipalpis* previously fed on an infected dog. From Campo Grande, Mato Grosso do sul State(MS), 54 samples were obtained from parasite cultures initially isolated from human blood marrow aspirates and 8 samples from wild canids blood marrow aspirates. From Bauru, São Paulo State (SP), 15 samples were analyzed after DNA extraction of blood smear slides. PCR reactions amplified a 720 bp minicircle sequence. kDNA-RFLP profiles were generated by digesting the PCR products with *Rsa*I and *Hpa*II. Phlebotomine 12S mitochondrial sequencing was performed in 134 *Lu. longipalpis* specimens (30 from Andradina-SP, 30 from Araçatuba, 30 from Birigui-SP, 30 from Teresina –PI and 14 from Campo Grande-MS) and 7 *Lu.*

cruzi specimens from Corumbá-MS. **Results:** Data from parasite typing clearly shows the distinction between Teresina and Campo Grande /Bauru samples; presenting evidence for genetic distance and geographic origin relation. Only two Teresina samples clustered with Campo Grande /Bauru sample, and only three Bauru/Campo Grande samples clustered with Teresina. 12S rDNA sequencing revealed 14 different haplotypes for the 141 phebotomine specimens. Interestingly, we could not differentiate *Lu. longipalpis* from *Lu. cruzi* by mitochondrial DNA sequencing, conversely, there was a clear distinction between most of Teresina haplotypes from all other obtained in the study, supporting the data acquired from parasite genotyping. **Main Conclusions:** This genetic structure could represent at least two different *L. infantum chagasi* strains with independent introductions into Brazil. Moreover, parasites isolated from wild canids in Campo Grande showed completely different genotypes compared to human isolates. Furthermore, the congruence of vector and parasite genotyping data suggests a "selection" role for the vectors on parasites genetic background. **E-mail:** alonso@ibb.unesp.br

Sandf032- Octanol: a better attractant to the sand fly *Nyssomyia neivai* than 1-octen-3-ol

Carvalheira, H.P[1].; Silva, F.B.R.[1]; Correa, A.G.[2]; Pinto, M.C.[1]
[1]**Universidade Estadual Paulista Julio de mesquita Filho, UNESP, Araraquara /Brazil,** [2] **Universidade Federal de São Carlos, UFSCAR, São Carlos / Brazil**

Introduction: Phlebotomine sand flies, vectors of leishmaniasis, are extensively collected in the field with light traps. However, the search for volatile attractants, without the presence of light, is a very desirable target. Moreover, the development of other baits that attract females in different physiological states is an important tool for monitoring or evaluating control measures. The potential attraction of 1-octen-3-ol has been documented for different species of hematophagous insects such as mosquitoes, tsetse flies, and stable flies and recently for sand flies in the field. The present work aimed to compare in wind tunnel the attractiveness of 1-octen-3-ol and 1-octanol to *Nyssomyia neivai*, vector of the cutaneous leishmaniasis. **Material and Methods:** The wind tunnel is a box made of acrylic glass (20cm X 20cm) with an air flow at 500mL/h carrying the odors. Groups of three females were introduced into the holding chamber positioned 50cm apart from the volatile source and during 2 min the insects were exposed to the treatments. A total of 30 flies were exposed to each treatment: hexane (control), 1-octen-3-ol and 1-octanol, in three different concentrations: neat (100%) and diluted in hexane (10% and 50%). The sand flies behaviors during the experiments were: to keep inside the cage; to leave the cage (Activation) and to reach the odor source (Attraction). **Results:** The results for the control were 13% of flies activated and 7% attracted. The results for 1-octen-3-ol in 10% solution in hexane: were 13% activated and 10% attracted; for 50% in hexane were 73% activated and 47% attracted and for neat 1-octen-3-ol, were 80% activated and attracted. The results for 1-octanol in 10% solution in hexane were 80% activated and 70% attracted; for 50% in hexane were 83% activated and 70% attracted and for neat 1-octanol were 97% activated and 73% attracted. **Main conclusions:** For 1-octen-3-ol there was a clear concentration dependent response with the better responses starting after 10% but for 1-octanol there was not such response as the lowest concentration evaluated (10%) has already triggered high activation and attraction responses. 1-Octanol on the lowest concentration was more attractive than 1-octen-3-ol for *N. neivai* in wind tunnel. Field experiments are necessary to confirm the biological activity of 1-octanol. **E-mail:** marap@fcfar.unesp.br

Sandf033- Mitochondrial DNA reveals deep genetic split for the leishmaniasis vector *Lutzomyia umbratilis* from the central Amazonian region, Brazil

Scarpassa VM[1] and Alencar RB[2]
[1.]**Laboratório de Genética de Populações e Evolução de Mosquitos Vetores, INPA, Manaus, Amazonas, Brazil;** [2.]**Laboratório de Flebotomíneos e Triatomíneos, INPA, Manaus, Amazonas, Brazil.**

Lutzomyia umbratilis is an important *Leishmania guyanensis* vector in northern South America. Previous studies have suggested differences in the vector competence between populations of this species separated on opposite banks of the Amazonas and Negro Rivers in the central Amazonian region in

Brazil, likely indicating a species complex. In this study, the phylogeography structure was estimated for six *L. umbratilis* samples from the central Amazonian region in Brazil by analyzing mtDNA using 1181 base-pair of the *COI* gene to assess whether the populations on opposite banks consisted of incipient or distinct species. The genetic diversity was fairly high with 52 haplotypes, most of which were singletons and private to their localities. The results revealed two distinct clades (=lineages) with 1% sequence divergence. Clade I consisted of four samples from the eastern side of the Amazonas and Negro Rivers, whereas clade II comprised two samples from the western side of these rivers. No haplotypes were shared between populations of two clades. Samples within clades exhibited low to moderate genetic differentiation (F_{ST} = -0.0390-0.1841), whereas samples between clades exhibited significant and high differentiation (F_{ST} = 0.7100-0.8497) and presence of fixed differences. Estimate of divergence time indicated that populations of these clades separated approximately 0.22 Mya in middle Pleistocene. Neutrality tests and the mismatch distribution illustrated demographic expansion for both clades in the late Pleistocene. The two clades detected in this study may represent an advanced speciation stage suggestive of incipient or distinct species. These findings suggest that the Amazonas and Negro Rivers may be acting as strong barriers, preventing gene flow between populations on opposite sides. Such findings have important implications for epidemiological studies, particularly related to vector competence, anthropophily, and vector control strategies. In addition, *L. umbratilis* represents an interesting example for speciation studies. **Supported by:** CNPq/CT-Amazônia, Pro-Equipamentos/CAPES, MCTI/INPA **E-mail:** vera@inpa.gov.br

Sandf034- Patterns of habitat use by *Nyssomyia umbratilis*, the main vector of cutaneous leishmaniasis in northern Amazonia

Abad-Franch F[1*], Ramos WR[1,2], Medeiros JF[2,3], Luz SBL[1], Pessoa FAC[1]
[1]Instituto Leônidas e Maria Deane, Fiocruz, Manaus, Brazil; [2]Instituto Nacional de Pesquisas da Amazônia, Manaus, Brazil; [3]Universidade do Estado do Amazonas, Manaus, Brazil

Introduction: *Nyssomyia umbratilis* is the main vector of *Leishmania guyanensis*, the etiological agent of cutaneous leishmaniasis (CL) in the northern Amazon. *N. umbratilis* females feed at night in the forest canopy and rest on large tree bases during the day. Hence, CL transmission usually involves forest-related activities such as agriculture in forest-clearing crop-plots ('roças'), logging, hunting, or military training. Yet, reports of periurban CL cases have prompted the suspicion that some vector populations can adapt to disturbed environments. We tested this hypothesis by examining the patterns of habitat use by *N. umbratilis* in a settlement of the Amazon agricultural frontier (14°7'S/60°16'W) where CL is endemic. **Material and Methods:** Using a hierarchical modeling approach that accounts for detection failures and spatial autocorrelation, we analyzed vector presence/absence data from 120 (rainy season) and 115 (dry season) collection sites surveyed 1-3 times each (610 CDC trap-nights). Sampling encompassed 5 habitat types along a disturbance gradient: pristine forest (PF), forest edge (FE), second-growth forest (SF), crop-plot (CP), and peridomestic area (PA). Models were fit via maximum-likelihood using the program PRESENCE 4.0 and compared with Akaike's Information Criterion. **Results:** Overall, 77 traps captured *N. umbratilis* at 59 sites (18.3% in the rainy and 32.2% in the dry season). As expected, this vector used PF more frequently than any other habitat type in both the rainy (average occurrence probability [$\Psi \pm SE$]: $\Psi_{PF-rainy}$=0.51±0.17) and, especially, the dry season (Ψ_{PF-dry}=0.82±0.19); the patterns were similar in FE, although occupancy was lower in the wet season ($\Psi_{FE-rainy}$=0.25±0.09). *N. umbratilis* consistently avoided SF (Ψ_{SF}≈0.06-0.07), and used CP and PA habitats with similar frequency ($\Psi_{CP/PA-rainy}$=0.27±0.10; $\Psi_{CP/PA-dry}$=0.52±0.15). **Main Conclusions:** *N. umbratilis* frequently occurs around households and in crop-plots in our study area, particularly during the dry season. Combined with the fact that SF is overtly avoided, this suggests that *N. umbratilis* uses degraded habitats only when abundant blood sources are available. Attraction to artificial light could also be driving the vectors towards households; however, the overall low sensitivity (~30%) of CDC light-traps for detecting *N. umbratilis* in sites where the vector actually occurs lends little support to this hypothesis. Regardless of the underlying mechanism, our results reveal a substantial risk of peridomestic CL transmission, which may be more important than previously thought in rural Amazonia.**Funding:** MCT/CNPq (575681/2008-0), Fiocruz-Fapeam agreement. **E-mail:**fernando@amazonia.fiocruz.br

Sandf035- **Description of immatures of *Lutzomyia migonei* (Migonei group) and *Lutzomyia (Nyssomyia) umbratilis,* vectors of American Cutaneous Leishmaniasis, under light and scanning electron microscopy**

Marialva EF[1], Araújo, HR[2], Secundino NF[2], Pimenta PFP[2], Ríos-Velásquez CM[1], Pessoa FAC[1]
[1]**Instituto Leônidas & Maria Deane, Manaus, Brazil,** [2]**. Instituto René Rachou**

Lutzomyia migonei and *L. umbratilis* are respectively, vectors of *Leishmania (Viannia) braziliensis* and *L. (V.) guyanensis*. Although several information about ecology, epidemiology and bionomics data about these two vectors are available, very few are known about their immature stages. In this work we describe the eggs, larvae and pupae of of these two species. Scanning electron microscopy (SEM) and light microscopy (LM) were used to describe morphological details of both species. Material and methods: Immature stages of *L. migonei* (from Ceará) and *L. umbratilis* (from Amazonas) were obtained by laboratory colonies. Some specimens were slide mounted and observed and photographed using a LM and some specimens were dehydrated and metalized for SEM and photographed. Results: Ornaments of the eggs, mouth-parts, spiracles, and bristles of all instars larvae and pupae were observed. Several structures were observed and the chaetotaxy of both species were also presented. The main differences are: eggs: the ornamentations of *L. migonei* appear as single, parallel, connected ridges with polygonal reticulation, some discontinuous, in *L. umbratilis*, the ornamentations consist of parallel unconnected ridges covering the entire exochorion; Larvae: size of body (e.g.- L_4) L. *migonei* larvae (3,6 mm) are larger than L. umbratilis (2,6 mm), caudal bristles, larger in *L. umbratilis* (internal bristles: 1,8 mm), *L. migonei* (1,3 mm); the position of mouth-part, prognathous in *L. migonei*, hypognathous in *L. umbratilis*, shape of body, cylindrical in *L. migonei*, flattened in *L. umbratilis*, the antenna; in *L. migonei* this structure has a basal tubercle, a small and cylindrical segment fused at a second ovoid distal segment; In *L. umbratilis*, the antenna bears a tubercle with the shape of a truncate cone, a short basal segment, and a prominent digitiform distal segment. The chaetotaxy of both species reveals some differences, as the presence and absence of some bristles and shape and size of them. The main differences between the pupae of both species are the general size; *L. migonei* is larger than L. *umbratilis*, the size of spiniform bristles of the abdominal segments, larger in *L. umbratilis*, smaller in *L. migonei*. The pupae of *L. umbratilis*, one large papule in each side of the sternites of the abdomen is observed, and there are in the tergite of the 8th segment of the abdomen, near of the spiracles, four flattened rounded structures. Main conclusion: There are in immature stages from different subgenera, many structures valuable that should be used for phylogenetic and systematic studies for phlebotomine sand fly. **E-mail:** facpessoa@amazonia.fiocruz.br

Sandf036- **Phenotypic variation among three Brazilian populations of *Lutzomyia (Nyssomyia) umbratilis* (Diptera: Psychodidae)**

Pessoa FAC[1], Ríos-Velásquez CM[1], Balbino VQ[2]
Instituto Leônidas & Maria Deane[1], Universidade Federal de Pernanbuco[2]

Lutzomyia umbratilis is the main vector of cutaneous leishmaniasis due to *Leishmania guyanensis* in northern South America. It has been found naturally infected with this species of *Leishmania* only north of the Amazonas river system. However, populations of this sand fly species are also present in areas south of the Amazon River system, which may act as a geographical barrier to the *Leishmania guyanensis* cycle. There is, also an isolated population in Pernambuco State, Notheast Brazil, in an Atlantic forest fragment. With the aim of looking for possible evidences of a phenotypic variation among these three populations of *L. umbratilis*, this study explores whether there are statistically important changes in the morphology of the wings among these populations by using geometric morphometric methods. **Material and Methods:** Samples of female *L.umbratilis* were collected in Manacupru municipality, located in the South of south of the Negro/ Amazon River system (3°12'41"S / 60°26'20", in Manaus municipality, north of Negro/ Amazon River system (2°50'50"S / 59°56'28"W) and Recife (8°03'14"S 34°52'52"W). The right wing of 27 females from Manacupuru, 19 of Manaus and 27 of Recife were dissected, slide mounted with Berlese fluid and photographed and analyzed to depict the results graphically. The data were collected in the form of 2-D coordinates of the nine landmarks and the photographs were first entered using TPSDIG program. (Rohlf 2009) The centroid size of each matrix date was obtained using the TPSREGR p

program. The variations of the wing-shape were calculated using the TPSRELW program. MANOVA and permutation tests were performed on the landmark Procrustes distances. The wing-shape deformations from the reference were shown along the first two axes on a PCA graph performed by tps-RELW to determine if the geographical separated populations have differences in the wing shape. All the statistical analysis was done using the PAST program 1.57 versions. **Results:** We observed a significative difference in the wing-shape between the three populations (*Wilk's lambda*: 0,3598, F: 2,119, p<0,01) (Fig. 4). However Hotelling's pairwise comparison shown that the wing shape conformation of the Manacupru and Recife populations are significantly differents, but the Manaus population shares it conformation between the other two studied population **Main conclusions:** We found a clear speciation process, with at least two separated populations (Recife and Manacapuru). The environment of *L. umbratilis* of Recife, a fragment of Atlantic forest, with a shrubby phenology isvery different from the other two populations that are found in a luxurious amazon rain forest may serve as ecological factors of these differences. It is expected that further investigations on molecular markers will help reveal whether or not *L. umbratilis* has genetically diverged into two or more reproductively isolated populations of vectors or non-vectors of *Leishmania guyanensis*. **E-mail:** facpessoa@amazonia.fiocruz.br

Sandf037- **The molecular identification and evolution of Psaroniocompsa vectors of *Onchocerca volvulus* and *Mansonella ozzardi***

Crainey JL1, Almeida TAP1, Shelley AJ2, Hamada N3, Luz, SLB1
1Instituto Leônidas e Maria Deane- FIOCRUZ/Amazônia, Manaus, AM, Brasil, 2Natural History Museum – Department of Entomology, UK, 3Instituto Nacional de Pesquisas da Amazônia – INPA - Coordenação de Pesquisas em Entomologia, Manaus, AM, Brasil.

Introduction: Psaroniocompsa is a species-rich subgenus of simuliids containing multiple vectors of the medically important parasites *Onchocerca volvulus* and *Mansonella ozzardi*. A good understanding of the evolution of Psaroniocompsa and the role its members have in South American disease epidemiology has historically been hindered by unreliable identifications and controversies concerning the subgenera's systematics. This is, largely, explained by the fact Psaroniocompsa systematics have hitherto been focused on morphological characters, the reliable identification of which can often require expert training and the weighting of which can be prone to subjectivity. Molecular systematics and identifications, by contrast, are far less prone to subjective weighting and require only basic laboratory skills, which can be purchased as a commercial service. In the work presented here we have targeted the mitochondrial cytochrome oxidase I (COI) gene in an attempt to resolve historical taxonomic disputes and to develop a low-skill tool for the reliable identification of Psaroniocompsa Simuliid disease vectors. **Methods:** Psaroniocompsa Simuliids were field-caught from a variety of sites across Brazil and were morphologically identified using standard morphological keys. PCR amplification and Sanger sequencing were used to sequence COI genes from 94 specimens, representing a diverse range of Psaroniocompsa species. Phylogenetic analysis with the obtained sequences was then used to evaluate the utility of the targeted COI gene for molecular identifications and to try to resolve the subgenus's taxonomy. **Results:** A total of 94 COI sequences were obtained from 19 species of Psaroniocompsa specimens from a variety of localities across Brazil. Phylogenetic analysis with all the obtained sequences in the background of >800 COI (obtained from a diverse range of Simuliid species) showed these sequences to be reliable species-identifiers and placed all the obtained sequences within a single Psaroniocompsa-exclusive bootstrap supported monophyletic group. **Main conclusions**: PCR and sequencing of COI genes can be used to reliably identify both Psaroniocompsa disease vectors and non-vectors alike. Phylogenetic analysis of the obtained COI data: supports the monophly of the Psaroniocompsa subgenus; shows the group to be genetically diverse and suggests the subgenus has an ancient origin. **E-mail:** sergioluz@amazonia.fiocruz.br

Sandf038- Predicted altitudinal shifts and local extinction of *Leishmania infantum* vectors in Colombia under climate change

[a]González C and [b]Ferro C
[a]CIMPAT, Departamento de Ciencias Biológicas, Universidad de los Andes, Bogotá, Colombia. [b]Laboratorio de Entomología, Instituto Nacional de Salud, Bogotá, Colombia.

Introduction: Visceral leishmaniasis (VL) is caused by the trypanosomatid parasite *Leishmania infantum (=Leishmania chagasi)*, and is epidemiologically relevant due to its wide geographic distribution, the number of annual cases reported and the increase in its co-infection with HIV. Two vector species have been incriminated in the Americas: *Lutzomyia longipalpis* and *Lutzomyia evansi.* These species alternate in playing the role of the primary vector depending on the location and season in which they are occurring. *L. longipalpis* is a species complex distributed from Mexico to Argentina while *L. evansi* is found from México to Colombia and Venezuela. In Colombia, *L. longipalpis* is distributed along the Magdalena river valley while *L. evansi* shows new distribution patterns with new records in the Orinoquian region. Regarding the epidemiology of the disease, in Colombia the incidence of VL has decreased over the last few years without any intervention being implemented. Additionally, changes in transmission cycles have been reported with urban transmission occurring in the Caribbean coast. In Europe and North America climate change seems to be driving a latitudinal shift of leishmaniasis transmission. Here, we explored the spatial distribution of the two known vector species of *Leishmania infantum* in Colombia and projected its future distribution into climate change scenarios to establish the expansion potential of the disease. Since entomological surveillance and insecticide treatment are the principal means of management during epidemics of visceral leishmaniasis, knowledge of the vectors' distributions will allow the determination of priority control areas. **Materials and Methods:** An updated database including *Lutzomyia longipalpis* and *L. evansi* collection records from Colombia was compiled. Ecological niche models were performed for each species using the Maxent software and 19 Worldclim bioclimatic coverages. Projections were made for the pessimistic CSIRO A2 scenario, which predicts the higher increase in temperature due to non-emission reduction, and the optimistic Hadley B2 Scenario predicting the minimum increase in temperature. **Results:** The database contained 35 records for *L. evansi* and 48 records for *L. longipalpis*, distributed along the Magdalena river valley and the Caribbean coast, where the potential distribution areas of both species were also predicted by Maxent. Climate change projections showed a general overall reduction in the spatial distribution of the two vector species, promoting a shift in altitudinal distribution for *L. longipalpis* and confining *L. evansi* to certain regions in the Caribbean coast. **Conclusions:** Altitudinal shifts have been reported for cutaneous leishmaniasis vectors in Colombia and Perú. Here, we predict the same outcome for VL vectors in Colombia. Changes in spatial distribution patterns could be affecting local abundances due to climatic pressures on vector populations thus reducing the incidence of human cases. **E-mail:** c.gonzalez2592@uniandes.edu.co

Sandf039- Study of abundance of species Phlebotomus (Larroussius) incriminated for Leishmania infantum transmitting in the El Haouz area, Morocco

K. Kahime, F. Ouanaimi, S. Boussaa, A. Boumezzough
Laboratory of Ecology and Environment, Faculty of Sciences Semlalia, Cadi Ayyad University, Marrakesh, Morocco

In Morocco, leishmaniasis is a parasitic disease, known since the years 1900s (Foley *et al.,* 1914). Transmitted by phlebotomine sand flies *(Diptera: Psychodidae)*, it still presents a real public health problem. The aim of the current study is to evaluate the leishmania risk to *Leishmania infantum* in the region of El Haouz, declared as a focus of cutaneous leishmaniasis to *Leishmania tropica* (Boussaa *et al.*, 2009). For this, an entomological survey was carried out between 2006 and 2008, by using sticky traps, at three localities.Three species of the subgenus *Larroussius* are incriminated for *L. infantum* transmitting. There are *Phlebotomus perniciosus* and *P. ariasi* proven vectors of *L. infantum* and *P. longicuspis* suspected one. Our investigations showed the presence, of *Phlebotomus (Larroussius) perniciosus* (59,5 %), the most prevalent species, followed in decreasing order of prevalence by *P. (L.) longicuspis* (36,5%) and *P. (L.) ariasi* (4%). The sex ratio was in favor of males for all species. All *Larroussius* collected on the

three stations and for 3 years is 689 sand flies (20,66%), so the percentage of each species relative to the total is 12,32% (*P. (L.) pernicious*), 8% *P. (L.) longicuspis*, 0,32% *P. (L.) ariasi*. No morphological anomalies were observed in the sandflies collected but all specimens of *P. perniciosus* examined showed single-pointed aedeagi curved at their apices, indistinguishable from the atypical morph of *P. perniciosus* (Pesson *et al.*, 2004). The statistical analysis, using ANOVA test, showed significant differences in species distribution according to localities, months and study years. **E-mail:** kahimkholoud@gmail.com

Diverse Vectors

Vecdiver001- **Carboxylesterase organization and classification in disease vector Arthropods**

Torres AQ [1], Mesquita RD [2], Valle D [1], Schama R [1]
[1] **Laboratório de Fisiologia e Controle de Artrópodes Vetores - IOC/FIOCRUZ**, [2] **Laboratório de Bioinformática - UFRJ**

Introduction: Dengue, yellow fever, malaria and Chagas disease, neglected tropical diseases with serious economic importance, are transmitted by Arthropod vectors. Extensive use of chemical insecticides induces insecticide resistance in many vector populations. Two main resistance mechanisms have been described: insecticide target site insensibility and increased detoxification of insecticide molecules often attributed to three enzyme families generally involved in xenobiotic metabolism. In this study we analyzed one of these families, the Carboxylesterase (CCE) gene family, in the genomes of five known disease vectors. **Material and Methods:** To analyze CCE gene diversity in all Arthropod genomes available, we searched for CCE peptide sequences with the Pfam domain PF00135 using the software FAT in 30 Arthropod and one Nematode genome. A phylogenetic analysis was performed for the predicted peptide sequences found for *Aedes aegypti* (66), *Anopheles gambiae* (50), *Culex quinquefasciatus* (82), *Ixodes scapularis* (103) *and Rhodnius prolixus* (71). The fly species *Drosophila melanogaster* (58) and the Nematode *Caenorhabditis elegans* (58) were used as references. Multiple sequence alignment was performed using the PRALINE software server and ML and NJ phylogenetic trees were reconstructed using the programs RAxML and Mega 4. Tree topology accuracy was assessed with bootstrap analysis with 500 replicates. **Results:** Apart from *A. gambiae*, insect vectors exhibited more predicted CCEs in their genomes when compared to other insects. The number of non-catalytic (without the canonical catalytic triad) predicted peptides varied within each vector genome, with mosquitoes showing the highest numbers (70% of the predicted genes) of potentially catalytic active enzymes (as predicted by CDD batch search server). Most of the catalytic active peptides observed (44%) presented the canonical catalytic triad with the amino acid Serine as nucleophile, Glutamic Acid as the acidic residue and the conserved Histidine. Nevertheless, in 2% of the cases the Glutamic Acid was substituted by Aspartic Acid. According to the TargetP 1.1 Server for the seven species analyzed, 9% of the peptides have a mitochondrial targeting peptide, 52% have a secretory pathway signal peptide and 40% have none, indicating they are cytoplasmatic. All species have more than one copy of the Acetylcholinesterase gene, except for *D. melanogaster and I. scapularis* that have only one. Phylogenetic analysis shows that the Diptera have orthologues present in most clades, except for the lack of Lepidoptera related JHE in the fly genome and no *A. gambiae* sequence in the tegumentary clade. The absence of mitochondrial and cytoplasmatic Alfa- and beta-esterase orthologues in *R. prolixus* and *I. scapularis* is intriguing. In addition, the absence of JHE orthologues was observed in *I. scapularis* predicted peptide sequences. Nevertheless, several small sequences were found for these two species, indicating that better predictions might be needed for these genomes. **Main conclusions:** The large number of CCEs found in the vectors studied and their complexity and general importance in vector physiology explain why they are likely candidates to promote resistant phenotypes. **E-mail:** andretorresrj@gmail.com

Vecdiver002- **Epidemiological importance of urban forest fragments in the maintence of insect vectors of human pathogens in Manaus, Amazonas: perspectives of apartment buildings**.

Santana, R.A.G. [1]; Prestes, S.R. [1]; Magalhães, L.K.C. [1]; FÉ, N.F.[2]; FÉ, F.A.A. [2]; Rodriguez, I.C. [2]; Guerra, J.A.O. [2]; Barbosa, M.G.V. [1,2].
1. Universidade do Estado do Amazonas; 2. Fundação de Medicina Tropical – Heitor Vieira Dourado

Introduction: In the last years the city landscape of Manaus has suffered an important change. New high apartment buildings are being constructed. The new buildings stand close to forest fragments, which provide insects with the right conditions to generate adaptive processes. Part of the insects living in the forest fragments is known vectors of human diseases. Therefore, alterations of these areas could lead to the reappearance of tropical disease. From this perspective, entomological and epidemiological surveillance are needed. **Objective:** Attain a record of insect vectors of human disease in forest fragments within urban areas. **Methodology**: Five forest fragments in the urban area of Manaus were elected. During 36 months CDC light traps and Shannon traps were used to capture insects. **Results:** We collected 18,559 specimens of insects (7119 Psychodidae: Phlebotominae and 11,440 Culicidae). 6 (20%) of the 39 species of Phlebotominae identified are incriminated as vectors of cutaneous leishmaniasis: *Bichromomyia flaviscutellata* and *Bichromomyia olmeca nociva* - vectors of *Leishmania amazonensis*; *Nyssomyia umbratilis* and *Nyssomyia anduzei* - vectors of *L. guyanensis*, *Psychodopygus davisi* - vector *L. naiffi* and *Trichophoromyia ubiquitalis* - vector *L. lainsoni*. 16 (18%) of the 75 species of Culicidae identified are known as vectors of human diseases. The most important species among Culididae are: *Anopheles nuñeztvari* (secondary vector of malaria), *Aedes aegypti* and Ae. albopictus (dengue and yellow fever), *Culex nigripalpus, Cx declarator, Cx quinquefasciatus, Cx coronator, Mansonia titillans, Psorophora ferox, Coquillettidia venezuelensis* - vectors of arboviruses. Culex nigripalpus, Cx declarator, and Cx coronator Psorophora ferox were found in 90% of the examined areas. **Conclusion**: Forest fragments areas close to new apartments building contain insect vectors of human pathogens, suggesting the possibility of vector-borne disease for the population living in these building. Periodic entomological surveillance should, therefore, be extremely advisable in order to prevent outbreak of tropical diseases. **E-mail:** gvbarbosa@fmt.am.gov.br

Vecdiver003- **Entomological identification of dipteras in a surgical center of a public hospital in Rio de Janeiro, Brazil**

Coelho, Cassio Aguiar [1,2], Lessa, Cláudia Soares Santos [2], Damasco, Paulo Vieira[3], Aguiar, Valéria Magalhães [2]
1 **Universidade Gama Filho, Escola de Medicina, Rio de Janeiro, Brasil, 2 Universidade Federal do Estado do Rio de Janeiro (UNIRIO), Instituto Biomédico, Rio de Janeiro, Brasil, 3 Comissão de Controle de Infecção Hospitalar -HUPE-UERJ e Escola de Medicina e Cirurgia (UNIRIO)**

Diptera can work as disseminators of pathogenic agents in hospital environments such as virus, bacteria, fungi, helminthes and protozoa and can generate infection or worsen diseases. As food source, the insects can use organic material such as blood, urine, body fluids, feces and organic matter found in the trash. Some fly species lay eggs or larvae on skin tissue lesions or in the natural cavities of the body causing myiasis, a disease popularly known as fly strike or blowfly strike. We report the result of an investigation to verify the cause of a fly infestation in the operating room of a public hospital in Rio de Janeiro and identify entomologically identify the flies. As method it was endeavored to identify possible breeding grounds and probable access of the insects from the outside area to the inside area, and to the operating room, where about ten flies were recorded. For the etiological identification of the flies, traps described by Mello et al. (2007) were placed on the roof to capture insects using fish as bait. The captured insects were taken to the Fly Study Laboratory at UNIRIO and euthanized by chilling in a freezer. Two species were identified from the Sarcophagidae: *Sarcophaga (Liopygia) ruficornis* (Fabricius, 1794) and *Oxysarcodexia* sp. (probably *O. fluminensis*). These flies are common in urban environments and lay larvae and develop on decaying organic material of animal origin. *S. ruficornis* was recently recorded associated to human myiasis and has been frequently reported in mice and rat

carcasses in experimental and field studies. It is suggested that the dead rats found on the roof (three rodents), results of rat control in the hospital, probably served as substrate for the fly larva lying, that in spite of drug presence in the animal tissue, can serve as substrate for larvae development. It has been proved that certain chemical substances can alter the insect development rate, accelerating or delaying, but it is suggested that even drug impregnated tissues can serve as food for the larvae, consequently increasing the adult insect population in this environment. The diptera reported are potentially dangerous for human beings, because they are relevant as pathogen vectors, and one the species recorded is a proven cause of secondary myiasis. Recommendations include the need for health education of the hospital community for continuous observation to detect and remove possible focuses for the diptera to prevent the presence of flies in the hospital environment. **E-mail:** valerialed@yahoo.com.br

Vecdiver004- **Culicidae (Diptera) Fauna captured in automatic traps with various attractions, in Iguape, São Paulo, Brazil**

Sant'Ana DC, natal D, Sallum MAM
Departamento de Epidemiologia, Faculdade de Saúde Pública, Universidade de São Paulo, Financially support by the Fundação de Amparo à Pesquisa do Estado de São Paulo, FAPESP (Grant 2011/20397-7)

Introduction: Mosquitoes are Diptera insects of the Family Culicidae. The adults of some species are hematophagous, and considered vectors because they are related to the transmission of infectious agents. Therefore, many species of Culicidae are considered of epidemiological interest. Although mosquitoes are generally more studied than other groups of insects, the distribution of most species is poorly known and limited to some areas that were more studied. Thus, it is interesting to public health to know the Culicidae fauna in altered areas characterize the potential vectors of infectious agents and control them, even before an outbreak occurs in a certain location. **Objectives:** To define the Culicidae fauna in Iguape, in Ribeira Valley, São Paulo, using the automatic traps Mosquito Magnet Independence+Lurex3[®], CDC+ CO_2+ Lurex3[®] and CDC-LT. Material and methods. The traps were installed from January to March 2012. Mosquitoes collections were carried out over a 12 h period, from 06:00 p.m. to 06:00 a.m. or from 07:00 p.m. to 07:00 a.m. (summer daylight saving), alternating three points chosen so that each occupies a position, according to a 3x3 Latin square design. The analyzes of the mosquitoes diversity were made using the Simpson and Margalef indexes. Similarity was calculated using the Sorensen index, and species dominance, the Berger-Parker index. **Results:** There were collected XXXX Culicidae specimens. We estimated indexes of diversity, richness, dominance and similarity of species in each trap, comparing them. **Conclusions:** Many studies have been conducted in the region; however it is extremely important to carry out new surveys of mosquitoes fauna in this region where in the past, was the scene of major epidemics of infectious diseases. **Keywords:** Culicidae; Automatics traps; Diversity. CAPES - Coordenação de Aperfeiçoamento de Pessoal de Nível Superior. **E-mail:** denisecs@usp.br

Vecdiver005- **Sampling mosquitoes with the use of automatic traps in the agricultural area of Pariquera-Açu, Vale do Ribeira, São Paulo, Brazil**

Sá IL[1], Menezes RMT[2], Sallum MAM[1].
[1] **Departamento de Epidemiologia, Faculdade de Saúde Pública, Universidade de São Paulo, Av. Dr. Arnaldo 715, CEP 01246-904, São Paulo, Brasil,** [2] **SUCEN, Rua Paula Souza, 166, CEP 01027-000, São Paulo, Brasil.**

Introduction: CDC light trap is the most used for entomological research. With the same purpose, the trap Mosquito Magnet Independence[®] has been used in different countries as a substitute for the CDC light trap. However, no records of its use in the investigation of mosquito species belonging to the Atlantic Forest. Information on distribution of vector species can be obtained by estimates on the abundance and species composition. This information is obtained with the use of traps capable of capturing significant samples of mosquito populations. Thus, there is need to seek traps that may be more effective in sampling and to estimate these parameters properly. **Objective:** To evaluate the effectiveness of traps and Mosquito Magnet Independence[®] (MMI), CDC+CO_2 +Lurex3[®] against CDC light trap (CDC-LT) for capturing adult mosquitoes in the agricultural area in the Atlantic Forest in the Vale do Ribeira. **Methods:**

Traps were installed in December 2010 to November 2011 at three points at the Fazenda Experimental, from 15:00 p.m. to 21:00 p.m. and alternating three points chosen so that each occupies a position, according to the 3x3 Latin square design. Indexes of richness, diversity, dominance, evenness and similarity were calculated in each trap to compare them. **Results:** 6,055 specimens of mosquitoes were identified in 72 species belonging 12 genera. The CDC-LT captured 16.35% (42 species/10 genera), CDC+ CO_2+lurex3[®] 31.61% (41 species/ 11 genera) and MMI 52.04% (48 species/11 genera). CDC-LT values were for richness, dominance and diversity were 1.66, 0.73 and 1.13 respectively, the dominant species was *Culex ribeirensis*. For CDC+CO_2+lurex3[®] values were 1.99, 0.33, 1.54 respectively for the same indexes *Aedes scapularis* was dominant. The MMI obtained 2.37 for richness, 0,27 dominance and of 1,70 diversity, *Limatus durhami* as the dominant. According to the Kruskal-Wallis test with significance p = 0.05, nonparametric data, trap MMI has a higher ability to estimate richness (p = 0.022), dominance (p = 0.002), diversity (p = 0.006) species than CDC-LT. Equitability values showed no significant difference compared to control. For CDC+CO_2+lurex3[®] only the value of the dominance index (p = 0.01) was significant compared to control. For similarity, the CDC+CO_2+lurex3 ($I_{S\ qualitative}$ = 0.60 and $I_{S\ quantitative}$ 0.27) shares more species with the control of the trap MMI ($I_{S\ qualitative}$ = 0.47 and $I_{S\ quantitative}$ 0.26). **Conclusions**: Mosquito Magnet Independence[®] has become more effective in capturing adult Culicidae altered areas of Atlantic Forest in relation to CDC-LT and CDC+CO_2 .**Financially support by** the Fundação de Amparo à Pesquisa do Estado de São Paulo - FAPESP (Process 2010/14268-7)+lurex3[®]. However, further studies to determine the cost- benefit of the product should be performed. **Keywords:** Mosquito Magnet[®], Diversity, Fazenda Experimenta. **E-mail:** ivyluizi@usp.br

Vecdiver006- **Susceptibility status of *Culex quinquefasciatus* (Diptera: Culicidae) populations to the chemical insecticide temephos in Pernambuco – Brazil.**

Liliane Barbosa Amorim[1, 2], Elisama Helvecio[2], Cláudia Maria Fontes de Oliveira[2], Constância Flávia Junqueira Ayres[2].
[1]Programa de Pós-Graduação em Biologia Animal – UFPE. [2]Department of Entomology, Centro de Pesquisas Aggeu Magalhães/FIOCRUZ, Recife-PE 50670-420, Brazil.

Culex quinquefasciatus is the vector of many etiologic agents of human diseases and its high density in urban areas may cause secondary problems that have an impact on health and quality of life of exposed people; ergo the control of this species is important. This study aimed to evaluate the status of susceptibility to the organophosphate temephos in *C. quinquefasciatus* populations from areas with intense use of this compound targeting *Aedes aegypti* larvae. Bioassays were performed to detect temephos resistance in six *Cx. quinquefasciatus* populations from Pernambuco state, northeast Brazil (Água Fria, Alto da Conquista, Jaboatão dos Guararapes, Ipojuca, Glória do Goitá and Santa Cruz do Capibaribe). The activity of detoxifying enzymes in these populations was measured by biochemical assays. In addition, screening of the G119S mutation in the acetylcholinesterase gene, associated with temephos resistance, was carried out by PCR and sequencing. The results showed that only Santa Cruz do Capibaribe showed an alteration in its susceptibility status (RR = 5.8 fold), while the other populations were all susceptible to the insecticide. Biochemical assays showed an increased activity for all esterases analyzed in Santa Cruz population and also showed evidence of acetylcholinesterase insensitivity. The G119S mutation was detected in this population, with a frequency of 0.102, but it was not found in the remaining populations. These data show that although there is no national program to control *Cx. quinquefasciatus* in Brazil, there are mechanisms of temephos resistance that have been maintained in natural populations probably as a result of incidental exposure to this insecticide, which could undermine control actions that may be deployed in the future. **E-mail:** lilianeba@gmail.com

Vecdiver007- **New molecular identifiers for the South American Onchocerciasis vectors *Simulium limbatum* and *Simulium incrustatum* reveal hidden diversity and a novel *S. limbatum* savannah ecotype**

Conceição PA[1], Crainey JL[1], Almeida TAP[1], Shelley AJ[2], Luz, SLB[1]
[1]**Instituto Leônidas e Maria Deane- FIOCRUZ/Amazônia, Manaus, AM, Brasil,** [2]**Natural History Museum – Department of Entomology, UK**

The wide diversity of vectors involved in the transmission of South American Onchocerciasis makes understanding its epidemiology a far more complex challenge than the challenge posed by African Onchocerciasis epidemiology. Accurate vector identifications provide key fundamental primary data for all reliable vector-borne disease models and effective disease control programmes, but often rely on very specialist expert knowledge (training for which is becoming increasingly difficult to find). Molecular identification of species using DNA barcodes (PCR and DNA sequencing of targeted taxonomic identifier genes), by contrast, requires only basic laboratory skill that are practised in thousands of laboratories around the world and which can be purchased as a commercial service. Although many DNA markers have been used for DNA barcoding, the mitochondrial cytochrome oxidase I (COI) gene has emerged as among the most reliable for insect species' identifications. In the work described here, we report 15 *Simulium incrustatum* COI sequences and 20 *Simulium limbatum* from field-caught adult females from two different ecological settings in Roraima state: the forest and the savannah. As well as assessing the utility of COI barcoding as a simple epidemiological tool for the rapid and reliable identification of these two neglected Onchocerciasis vectors, the collection of blackflies from two different ecological environments allowed us to address an important epidemiological question: Is the ecological range of *Simulium limbatum* limited to the savannah and thus outside the Roraima state main focus? Phylogenetic analysis with the sequences generated in this study, confirms the utility of the COI gene for identifying both these species, which are not easily distinguished at all life-stages by their morphology, and also shed light on this important question. Whilst relatively little genetic diversity was detected among *Simulium incrustatum* blackflies and *Simulium limbatum* collected from the savannah, comparatively high levels were found among the *Simulium limbatum* collected from the forest area. These data thus suggest that a *Simulium limbatum* savannah ecotype has recently evolved from a forest ancestor and that contemporary forest ecotypes may also be competent, and because of their ecology, active Onchocerciasis vectors. **E-mail:** sergioluz@amazonia.fiocruz.br

Vecdiver008- **Kdr mutation in *Culex quinquefasciatus* populations from Brazil**

Steinhagem, F.M., Lima, J.B.P., Valle, D., Martins, A.J.
Laboratório de Fisiologia e Controle de Artrópodes Vetores, Instituto Oswaldo Cruz, Fiocruz, RJ, Brazil

Pyrethroids insecticides target the voltage gated sodium channel (Na_V) of insect nervous cells, triggering repetitive convulsions followed by paralysis and death (knockdown effect). Exacerbated use of these compounds has been selecting resistance in various species of agricultural and health importance. A punctual mutation in the Na_V gene is related to pyrethroid resistance in insects of several orders (Leu1014Phe), being commonly referred to as kdr mutation (knockdown resistance). In Brazil, *Culex quinquefasciatus* is the vector of lymphatic filariasis in some regions and despite awareness of resistance to pyrethroids, the molecular Na_V gene diversity in this species ($CqNa_V$) has never been explored in the country. Here we show a study of the molecular diversity of the $CqNa_V$ from Brazilian populations, searching for association with pyrethroid resistance. We cloned and sequenced this genomic region from pools of individuals for a first sequence panorama. Following, we developed primers for allele specific PCR able to discriminate both alleles by electrophoresis gel or melting curve analysis under real time thermocycler. We identified the Leu1014Phe mutation in one out of five populations until now, with frequency of around 7% of the allele. Additionally, we are evaluating a Restriction Fragment Length Polymorphism-like assay in order to identify another mutation in the same site (Leu1014Ser). Not only are these tools important to access the mutation frequency in a natural populations but also to infer its actual profile of resistance, since kdr mutation has a recessive trait, meaning that only homozygous are

resistant. We are now extending our analyzes to a larger number of populations and selecting individuals with distinct genotypes in order to better correlate them with pyrethroid resistance. **E-mail:** felipe.steinhagem@ioc.fiocruz.br

Vecdiver009- **Molecular tools to detect *Bacillus sphaericus* resistance in field populations of the filariasis vector *Culex quinquefasciatus***

Chalegre, K. D. M. [1]; Romão, T. P.[1]; Tavares, D. A.[1]; Santos, E. M. [1]; Oliveira, C. M. F. [1]; de-Melo-Neto, O. P.[2]; Silva-Filha, M. H. N. L.[1]
[1]Departamento of Entomology, Centro de Pesquisas Aggeu Magalhães/FIOCRUZ, Recife-Brazil.
[2]Departamento of Microbiology, Centro de Pesquisas Aggeu Magalhães/FIOCRUZ, Recife-Brazil.

Introduction: Bin toxin from *Bacillus sphaericus* acts on *Culex quinquefasciatus* larvae through binding to Cqm1 midgut-bound receptors belonging to the alpha-glucosidases family and mutations on *cqm1* gene sequence coding for these molecules can lead to resistance to the biolarvicide. To data, four resistance alleles have been characterized in the *Culex* complex, which three originate truncated proteins, unable to anchor on the midgut epithelium preventing its binding to the Bin toxin. The goal of this work was to screen for two resistance alleles, $cqm1_{REC}$ and $cqm1_{REC-D16}$, in field populations of *C. quinquefasciatus*. **Material and Methods**: Larvae or egg rafts were collected in four different localities from Pernambuco State, three of which belonging to the Metropolitan Area of Recife which remains as an endemic area for filariasis. Larvae were maintained under controlled conditions at the insectarium of the CPqAM/FIOCRUZ and 4th instar larvae batches were stored at -70ºC. The allele-specific PCR (AS-PCR) was carried out after DNA extraction using DNAzol® reagent and using primers flanking the region harboring two deletion events that occur in natural populations and can cause resistance to *B. sphaericus*. **Results**: The $cqm1_{REC}$ was detected in four non-treated populations surveyed at frequencies between 0.001 and 0.003 in three of them, while a higher frequency of 0.017 was found in one area. The $cqm1_{REC-D16}$ allele was detected in samples from two populations in a frequency of 0.003 and 0.006. The frequency of each $cqm1_{REC}$ or $cqm1_{REC-D16}$ allele in 1480 larvae sample from all non-treated populations was 0.004 and 0.002, while the frequency of both was 0.006. **Main Conclusions**: Frequencies of resistance alleles can vary even in populations that have not been exposed to *B. sphaericus* and both resistance events are located in a specific region of the *cqm1* gene which allowed screening of them with a single AS-PCR. The variable frequency of resistance alleles found in this study indicates that the AS-PCR is an important tool to identify these alleles before and during the application of *B. sphaericus* to control populations of the vector *C. quinquefasciatus* contributing to rational use of this biolarvicide. **E-mail**: kdiogo@cpqam.fiocruz.br

Vecdiver010- **Vector ecology and *Loa loa* endemicity in the Congo River system in Central Africa**

Kelly-Hope LA*, Bockarie MJ, Molyneux DH
Centre for Neglected Tropical Diseases, Liverpool School of Tropical Medicine, Liverpool, UK. *

Introduction: *Loa loa* filariasis is a parasitic disease confined to tropical forests of Africa where it is transmitted by Tabanid flies of the genus *Chrysops*. Recent disease prevalence maps developed from extensive RAPLOA (Rapid Assessment Procedure for Loiasis) surveys across Central Africa highlight an unusual geographical distribution, which may be related to distinct ecological, environmental, edaphic or topographical features of the region. **Material and Methods:** To better understand the broad geographical and ecological parameters of *L.loa* in this Central African region, we used geographical information systems (GIS) and remotely sensed satellite data to examine the distribution of the dense tropical forests, extent of the Congo River system, elevation parameters and soil type, together with specific climate variables in defined high and low risk *L. loa* areas, to determine if there were identifiable variables which could affect the distribution of *Chrysops* vectors and the potential for transmission. **Results:** We found clear geographical and ecological correlations with high *L. loa* prevalence which revealed that the extensive Congo River system overlapped significantly with areas of low *L. loa* prevalence suggesting that it may act as a natural barrier with environmental characteristics that are

unfavourable to *Chrysops spp.* **Main Conclusions:** Collectively, the maps and data provide an important large-scale perspective on the geographical and ecological drivers of *L. loa* transmission. This information may help planning appropriate and targeted interventions using alternative or integrated vector control strategies. **E-mail:** L.Kelly-Hope@liverpool.ac.uk

Vecdiver011- **Hourly activity of Black flies (Diptera: Simuliidae) and transmission of Onchocerciasis in the Imo River Basin, Nigeria**

Uttah, E.C.[1], and Usip, L.P.[2]
[1] Department of Biological Sciences, Faculty of Science, Cross River University of Technology, Calabar, Nigeria [2]Department of Zoology, University of Uyo, Uyo, Nigeria

Introduction: The study, carried out in the Okigwe endemic area in Nigeria, elucidated the longitudinal indices of onchocerciasis transmission. **Materials and Methods**: Human landing catches were carried out by a catching team of four alternated pair-wise between collecting and resting. Collections started at 6.00 hours, continuing until 18.00 hours, while pairing of collectors and working hours were shifted systematically on each catching day to eliminate any possible bias that might arise from differences in each individual's attraction and catching prowess. **Results**: In all, 6,517 female *S. damnosum s.l.* were caught between September, 2005 and August, 2006. The abundance was more in the dry season, during higher temperatures, when windy, when many people worked on the farm at the same time, when there were on-going activities that disturbed the vegetation including clearing of bushes. The annual biting rate (ABR) was 23,204 bites per person per year. The monthly biting rates ranged from 47 to 5,677 bites per person per month in August 2006 and January 2006 respectively. The circadian biting activity showed a primary peak at between 10.00 and 11.00 hours and a secondary peak between 15.00 and 17.00 hours. There was a bimodal peak Infective biting; the first between 8.00 and 11.00 hours, and the second between 15.00 and 18.00 hours. The annual biting rate (ABR) was 23,504 bites per person per year. The annual transmission potential (ATP) was 663 infective bites per person per year. **Main Conclusions**: There was intense and sustained on-going transmission of onchocerciasis in the Upper Imo River Basin. These results inform the need for renewed definite action towards its mitigation. **E-mail:** drecuttah@yahoo.com

Vecdiver012- **Fauna and abundance of medically important flies of Muscidae and Fanniidae (Diptera) in Tehran, Iran**

[1]Davari B, [2]Khoobdel M
[1]Environmental Health Research Center, Kurdistan University of Medical Sciences, Sanandaj, Iran [2]Health Research Center, Baqiyatallah University of Medical Sciences, Tehran, Iran

Introduction: Species of the *Aspergillus flavus* produce secondary metabolites called aflatoxin that has powerful teratogenic, mutagenic and hepato-carcinogenic effects. The aim of this study was to evaluate the *Aspergillus flavus* of pistachio and peanuts from Sanandaj, Iran. **Materials and methods:** Pistachio and peanut nuts samples were obtained from dried fruit retail shops of Sanandaj, 2011. One hundred grams from each sample were sterilized in a 0.4% sodium hypochlorite solution for 2 minutes. Subsequently, the sample was rinsed once in distilled water and followed to dry. Each sample was grinded into powder by vortex and then 1g was poured into 100ml of sterile distilled water and stirred. Following, 1 mL of supernatant was inoculated into Petri dishes containing Sabouraud dextrose agar then incubated at 25°C for five days. The grown fungi were identified by standard mycological techniques based macroscopic and microscopic morphology. **Results:** A total of 132 peanut (n=81) and pistachio (n=51) samples, fungi were detected in almost 72% of the samples. The *Aspergillus flavus* was the most predominant isolate from peanut (19%) and pistachio (22%) samples. There was a significant relationship between *A. flavus* contaminations in the peanuts and pistachio with high humidity. **Conclusion:** Because of the isolation of high percentage of *A. flavus* as the main aflatoxins producer in nature we recommend also the need of good storage practices in order to prevent the occurrence of aflatoxins in peanuts and pistachio. **Keywords:** *Aspergillus flavus*, pistachio, peanut, Sanandaj. **E-mail:** davaribehroz@yahoo.com

Vecdiver013- *Cimex hemipterus* (Hemiptera, Cimicidae) a silent occurrence: How long?

Bastos AQ[1], Lopes CM[1], Santos-Mallet JR[1], Giordano-Dias CM[2], Correa J[3], Gonçalves TCM[1,*]
1Laboratório de Transmissores de Leishmanioses – Setor de Entomologia Médica e Forense, Instituto Oswaldo Cruz – FIOCRUZ, Rio de Janeiro, Brazil, 2Secretaria de Estado de Saúde do Rio de Janeiro/LACEN RJ/Centro de Estudos e Pesquisa em Antropozoonoses, Rio de Janeiro, Brazil 3Associação Brasileira da Indústria de Hotéis Rio de Janeiro (ABIH), Rio de Janeiro, Brazil

Cimicides known as bed bugs are blood sucking insects, with the majority of species associated with poultry and/or bats and a minority on other mammals. Dispersion occurs by passive way because it does not fly. About 90 species are know in this group, however only three parasitize man, *Cimex hemipterus*, *Cimex lectularius* and *Leptocimex boueti*. Cimicides infestation, common in the 40s, was reduced with DDT and BHC application, coupled with improvements in hygiene and housing. Thus, temperate zone countries showed a decrease in the rate of infestation unlike the tropical and subtropical areas, where it remained high. However, since 1995, infestation was recorded in developed countries, regardless of the conditions of hygiene and housing, causing economic losses to the tourism sector in these countries. In Brazil, although *C. hemipterus* is found more often, even in densely populated areas, the records are rare. Notified in São Paulo and southern states, *C. lectularius* has expanded its area of distribution throughout the 90s, where it was reported to occur at home from different socioeconomic levels in the metropolitan region of Belo Horizonte. The passive dispersion is directly related to the flow of people who bring in their belongings. These hemipterans are of public health importance because of the hematophagic habit, which cause discomfort during sleep and, depending on the level of infestation, insomnia, stress, anemia and allergic reactions.This work aims to disseminate knowledge about cimicides through awareness courses and training for professional staff working in the hotels in the pursuit of prevention and, in parallel, to know the prevalence and distribution of these insects in the state of Rio de Janeiro. A partnership was established with the Associação Brasileira das Indústrias de Hotéis (ABIHRJ) to develop the job training. The material collected or brought by the community was identified and the data included in the survey study of the distribution range of this insect in both in the city of Rio de Janeiro, and in the state. Until now the cimicides were registered in the neighborhoods of Pavuna, Penha, Centro and Botafogo, municipality of Rio de Janeiro and in the municipalities of Nova Iguaçu and São Gonçalo, State of Rio de Janeiro. These records suggest that cases of infestation may be occurring, but not reported due to unfamiliarity on the part of the community. In the coming years Brazil will host the Rio + 20 in 2012, the World Cup in 2014 and the 2016 Olympic Games, events that promote a flow of national and international human migration favoring dispersion and/or the introduction of these insects in a healthy environment.**Supported by:** IOC/FIOCRUZ. **E-mail:** tcmonte@ioc.fiocruz.br

Vecdiver014- **Occurrence of ticks in domestic and wild mammals in a rural and peri-urban area of Manaus**

Prestes, S.R[1]; Oliveira, J.C[2]; Magalhães, L.K.C[1]; Santana, R.A.G[1]; Rodrigues, J.L[2]; Barbosa, MGV[1,2]
1Universidade do Estado do Amazonas, Amazon/Brazil, 2Fundação de Medicina Tropical Dr Heitor Vieira Dourado, Amazon/Brazil

Introduction: Ticks belonging to the *Amblyomma* e *Ixodes* are associated with the transmission of human and animal pathogens. They are highly spread in the American continent. Among human disease transmitted by ticks are: Ehrlichiosis, Lyme disease (borreliosis), spotted fever, and viral diseases. The larvae of the ticks can be found in any domestic or wild mammal, birds and humans. Humans at risk of acquire a tick-borne disease are those involved in deforestation activities and those we set their house in the middle of the forest. Pathogens transmission is favored due to the low relation between parasite and host, the low host specificity, and the long fasting period of the ticks. **Objective:** the aim of this study is to detect the occurrence and describe the tick diversity in wild mammals and domestic dogs in a rural and peri-urban area of Manaus (AM). **Methods and materials:** Ticks were collected from wild mammals and domestic dogs using direct examination of the animal body. Wild animals were collected from forest areas near dwelling areas, 40 Tomahawk traps of different sizes were used. **Results:** 122 ticks were collected from wild animals, 121 (99%) were collected from *Didelphis sp.* (gambás) and 1 (1%) from *Philander* sp.

(cuíca). The ticks identified belonged to 4 species: *Amblyomma humerale* (8 nymphs), A. *latepunctatum* (15 nymphs), *A. pacae (*1 nymphs), *A. varium (*1 male), *A. parvum (*1 nymph), *A. oblongoguttatum* (1 nymph), *Ixodes fuscipes (*9 adult females), *I. luciae* (2 nymphs), *Ixodes* sp. (15 larvae). 7 out of 39 domestic dogs were infected with *Amblyomma latepunctatum* (2 nymphs), *Rhipicephalus sanguineus* (4 males, 7 females and 1 nymph) and *Ixodes luciae* (1 female). **Discussion:** In our study domestic dogs were recorded to have immature and adult form of Rhipicephalus sanguineus, which is an ectoparasite tick of wild animals. Based on our results, monitoring natural tick infection with pathogenic agents should be taken into account, as these could lead to tick-borne infections in the human residents within the area. Preventive measures should be implemented in order to avoid this situation, particularly when there is a daily human flow between wild and domestic areas. **E-mail:** gvbarbosa@fmt.am.gov.br

Vecdiver015- A study on hard ticks (Acarina: Ixodidae) in the natural habitat of domestic ruminants in Kermanshah suburb, Iran

Sohrabi Sh.[1], Yakhchali M.*[2], Ghashgai O.[1]
[1] **Department of Pathobiology, Parasitology division, Faculty of Veterinary Medicine, Urmia University, Urmia,Iran.** [2] **Department of Pathobiology, Parasitology division, Faculty of Veterinary Medicine, Urmia University, Urmia, Iran**

Abstract: Ticks (Acarina: Ixodidae) have been recognized as important ectoparasites of livestock in worldwide and Iran. This study reports ticks frequency and diversity in all age groups of both sex in the natural habitat of domestic ruminants in Kermanshah province, Iran. A total number of 600 ruminants (203 cattle, 215 sheep, and 182 goats) were randomly selected and examined. Of all animals, 24.63% cattle, 25.12% sheep, and 25.27% goats were infested with a total numbers of 1031 unfed ixodid ticks. The highest numbers of the hard ticks were collected from 3-4 years old female cattle and 1-2 years old female sheep and goats in the region. There was significant difference between age groups of infested animals and tick's prevalence. The ixodid tick indices were 4.6, 7.9, and 7.1 for cattle, sheep, and goats, respectively. There was significant difference between predilection body sites of collected hard ticks. Of all examined ticks, a number of three genera including *Hyalomma, Rhipicephalus,* and *Boophilus* with eight, nine, and seven species in cattle, sheep, and goats were respectively identified. The predominant infesting ticks were *R. sanguinus* (26.2% in cattle) and *R. turanicus* (53.1% in sheep and 40.55% in goats). The results of current study showed that ixodid ticks abundance was wide and evident in this part of Iran, and further studies should be undertaken to reveal the role of these species in transmission of blood protozoa parasites and their economic importance in the region. **Email:** m.yakhchali@urmia.ac.ir

Vecdiver016- Malacofauna characterization of the city of Water in Black Pernambuco – Brazil after floods 2010

Chaves , ER; Wanderlei ,TNG;Tavares,VB;Neto,PLS;Silva, A; Jesus TT;Oliveira, VC; Freitas, AMA.
Central Laboratory of Public Health, LACEN – Recife-PE, Brazil [1]

Introduction: The molluscs are among the best known invertebrate animals of our fauna, with species in abundance forms and the arthropods the largest phylum of invertebrates known. The knowledge of the fauna of a region is essential considering that some are of medical importance. Research about the intermediate hosts of schistosomiasis and other parasitic diseases (including its taxonomy, genetics, distribution and ecology) is important so that we can correctly interpret the role play in disease transmission and can guide the intervention and control measures, appropriate to each locality, addressed to snails. During the year 2011 was conducted at Black Water, Pernambuco, Brazil, one study of malacofauna for schistosomiasis and other parasitic diseases after the floods of 2010 existing at that location. During the fieldwork there was still the intervention of other people's actions, which could allow the introduction of exotic molluscs, since some studies report that in Brazil the introduction of exotic animals took place through the trade of fish, aquatic plants and ornamental. **Material and Methods:** We used the technique of dissection to identify the species caught and the infectivity techniques: light, dark and crushing. Results: Four samples were taken at three different locations on a quarterly basis. Were identified five different species totaling 378 molluscs, 89 (24%) B. straminea, 18 (5%) Physea marmorata,

148 (39%) Melanoides tuberculata, 114 (30%) Depanotrema cimex: and 09 (2%) Pomacea. **Conclusion:** Of the three species with percentages above 20% only Biomphalaria straminea requires more attention because it is the major intermediate host of schistosomiasis transmitter. The infectivity was all negative. The findings showed not only the presence of Biomphalaria straminea, as well as other species never before reported in the city, enabling the introduction of exotic mollusks. This study may contribute to the survey of the species in the state of Pernambuco planorbídicas and direct the surveillance and Control. **Keywords:** Schistosoma mansoni; Flood; malacofauna. **E-mail:** ednarchaves@terra.com.br

Vecdiver017- **Identification and parasitological examination of mollusks in the counties of south of Minas Gerais**

Rovina, M. L., Pimenta, D. P., Vieira, R. S.,Guimarães, T. P.,Borelli, N. C., Aniceto, T. J.Siqueira, R. V., Martins-Souza, R. L.
Universidade Federal de Alfenas – Brazil (Afenas Federal University – Brazil)

In Brazilian territory different mollusks species are found, and some of them are of great epidemiological importance in the transmission of diseases to humans. The intermediate hosts of the parasite mollusks are emphasized, among which are highlighted the ones from the *Biomphalaria* gender, transmitters of the *Schitosoma mansoni* and the *Achatina fulica* specie, considered one of the main intermediate hosts of nematodes Angiostrongylus cantonensis and *A*. costaricensis responsible for, respectively, meningoencephalitis angiostrongyliasis and abdominal angiostrongyliasis. The aim of this study was to identify winkle species transmitters or not of human diseases and to search the presence of parasites in these mollusks. The study is part of an Extension Project of the Alfenas Federal University UNIFAL-MG, in partnership with the Health Regional Superintendency (SRS). The activities started in 2006 and continue being executed until the present date. The mollusks were collected in the counties under the jurisdiction of SRS and were sent to the laboratory of clinic parasitology of UNIFAL-MG to identification, by means of the shell morphology and internal anatomy, and parasitological exam. The winkle from the *Biomphalaria* gender were submitted by light and shell crushing to verify the elimination of cercariae and the ones from the *Pomacea* and *Achatina* gender were subjected to Baermann-Moraes technique to testify the presence of grubs of nematodes**.** From 2006 to 2011 were received 1485 mollusks samples from the counties of Paraguaçu, Arceburgo, Areado, Muzambinho, Alfenas, Botelhos, Campo do Meio, Guaranésia and Fama. Between them, 688 *Achatina fulica* winkles, 86 *Pomacea*, 18 *Bradybaena*, 462 *Biomphalaria*, 25 *Lymnaea*, 150 *Melanoides sp*, 7 *Physidae*, 24 *Physa* and 25 Thiaridae. In the analysis of 12 samples of *A. fulica* originating from Areado county and 9 from Alfenas county nematodes grubs were found, however it was not possible to determinate the specie. These data indicate the need of an epidemiological investigation, which includes the accomplishment of malacological inquiries and the evaluation of the possibility of the establishment of focus in the transmission of diseases. **E-mail:** marilialeao_8@hotmail.com

Vecdiver018- **Human intestinal myiasis by *Eristalis tenax* (Linnaeus) (Diptera: Syrphidae) in Rio de Janeiro, Brazil**

Coelho, Cassio Aguiar [1,2], Lessa, Cláudia Soares Santos [2], Damasco, Paulo Vieira[3], Aguiar, Valéria Magalhães [2]
[1] Universidade Gama Filho, Escola de Medicina, Rio de Janeiro, Brasil; [2] Universidade Federal do Estado do Rio de Janeiro (UNIRIO), Instituto Biomédico, Rio de Janeiro, Brasil; [3] Comissão de Controle de Infecção Hospitalar -HUPE-UERJ e Escola de Medicina e Cirurgia (UNIRIO)

Intestinal myiasis in humans is an accidental myiasis (pseudo- myiasis) related to ingestion of contaminated water or raw foods containing fly larvae. Most of the larvae are destroyed by the gastric juice, but some can live in the gut and produce discomfort. Furthermore, larvae can occasionally reach the intestine through the anus (rectal myiasis). Intestinal myiasis by *Eristalis tenax* larvae has been reported sporadically in various countries with non-specific symptoms and its clinical aspects vary according to the number of eggs or larvae ingested by the individual. The objective of the present study was to report a case of pseudo-myiasis caused by E*. tenax* in Rio de Janeiro. E.V.S., 42 years old, male,

married, a health agent in Mangaratiba, Rio de Janeiro, resident in a neighborhood in the western region of the city, native of Minas Gerais, presented the habit of eating fruits and vegetables. The patient went to the Fly Study Laboratory at UNIRIO reporting progressive weight loss of about 20 kilos, abdominal pain and the elimination of four larvae during evacuations over a period of approximately three months. At the clinical examination he was debilitated, emaciated, pale and the abdomen did not alter on palpation. He reported self- medication with `Xavier cocoa liquor´, a product based on piperazine. The microscopic examination of the material collected by the patient from his feces showed the presence of two 2.0±0.5 cm long cylindrical larvae with a tail with a long respiratory syphon that gives the larvae the name `rat´s tail´. This species of diptera belongs to the Syrphidae family, Eristalinae subfamily, and has been reported associated to gastrointestinal myiasis in Denmark, Chile, Venezuela, Iran and Brazil in Goiás state. It was suggested that the patient had ingested insect eggs or larvae in contaminated water or food that led to his infection. The abdominal symptoms are probably related to this parasitosis; therefore the weight loss did not seem to be related to it and can be attributed to a depressive process, as reported by the patient. This clinical finding with parasitological diagnosis in Rio de Janeiro is relevant as a warning to professionals in the health services and the public of the diseases caused by ingesting fly larvae or eggs. **Email:** valerialed@yahoo.com.br

Vector Control

Veccont001- **The importance of participation in LACEN-PE deployment of network monitoring resistance to insecticides used in triatomine vector control of Chagas disease**

[1] Oliveira, S.C; [1]Tavares, V. B; [1] Silva, A; [1,2] Silva, M. B.
Central Laboratory of Public Health, LACEN – Recife-PE, Brazil [1], University of Pernambuco-UPE, Recife-PE, Brazil [1,2].

Introduction: about a century after its discovery of Chagas disease still represents one of the most important parasitic diseases that affect the man in Latin America. In the Pernambuco state is the triatomine found in 140 municipalities. In 2010 the Ministry of Health organized a meeting with States which had insectaries deployed in its physical structure to plan the monitoring of triatomine of epidemiological importance to Brazil. **Objective:** activities entomological laboratory and field, in order to evaluate the applications of insecticides in vector control programs. **Methods:** The LACEN-PE is structuring the physical area of the insectary according to the criteria established by the Ministry of Health, signed with the colony of the species of triatomine and participation in a meeting with the national laboratories will join the network to start planning activities. **Expected Results:** Check the resistance of the triatomine to insecticides used to control program of Chagas disease **Conclusion:** The control of triatomine vectors of Chagas disease has been held in Latin America, mainly through the use of insecticides. Thus, it is essential to carry out the monitoring of these vectors to define the frequency with which the mechanisms of resistance have occurred in different regions and different species of triatomines. **Key words:** Chagas Disease, Resistance, Triatominae. **E-mail:** sueniacb@hotmail.com

Veccont002- **Vector control program as a link between the sectoral health surveillance and municipal management: the case of Bom Jesus, Rio Grande do Sul**

Mardini, Lucia Beatriz ; Azambuja, Tânia Maria Martins de ; Wilhelms, Tânia Marli; Dias, Vilson Oliveira
SES - Porto Alegre – Brasil

Introduction: Blackflies (Diptera, Simuliidae) have public health significance in Rio Grande do Sul, where his intense attack causes health problems resulting in serious social problem. The State Health Secretariat (SES) coordinates a State Program for Control of Simuliidae due to the magnitude of the

attack and the injuries caused by the bites of these insects to human populations. Currently advises 209 of the 496 municipalities of Rio Grande do Sul. **Material and Methods**: While answering the request for advice of Bom Jesus, for the implementation of entomological control of blackfly biolarvicide with the SES team found some situations that contribute to the increase of the problem, as the deposition of sewage directly into streams even in the urban area. It was also building on the banks of streams and on hillsides in areas of risk posed sewage directly into streams. Although the town has garbage collection, the population plays disposable material in the stream and around the houses. Through epidemiological forms applied to the population found that 81% of respondents had developed allergic reactions to insect stings. The entomological collections resulted in the identification of species considered anthropophilic. DATASUS In the situation of hospitalization of children 1-4 years by infectious and parasitic diseases are severe and the Gini index indicates an important social inequality in the city, as high poverty. From these data started a series of technical meetings between the Health Surveillance and central coordination of the Family Health Strategy, aiming to define ways to support the municipality. **Results:** Through the blackfly control program was conducted by SES integration between the Health Surveillance and Primary Care. This integration resulted in a report presented to council during a workshop that aimed to develop short-and medium-term to help the city solve its problems. Actions involving low cost and all the local institutions were designed as educational projects and public engagement. In the workshop it was agreed the development of transversal projects involving health, environment, education and people with technical support from SES. Precursor was passed as action methodology to develop the biological control of blackflies in the streams of the county. As a first result, residents have come to acknowledge the role of city government to control black flies in programs on local radio, which paves the way for engaging the population in other projects necessary for resumption of citizenship in Bom Jesus. **Conclusion:** Most of the diseases are transmitted through contact with contaminated water and open sewers. Sanitation enhances the quality of life, reducing the incidence of disease, hospitalizations, and pollution of natural waters available in the region. **E-mail:** tania-azambuja@saude.rs.gov.br

Veccont003- **Physical Durability and Replacement Rates for Long Lasting Insecticide treated Bednets in Honduras**

Banegas, E[1]; Montalvan W[1]; García A[1]; Burgos, E[1]; Singh, P[2] & Mancero, T[2]
[1] Secretaría de Salud, Tegucigalpa, Honduras, [2] Pan-American Health Organisation, Tegucigalpa, Honduras

Introduction: In Central America, Honduras is the country with the highest malaria burden, however unlike other countries in the subregion long lasting insecticide treated bednets (LLIN) were introduced late in the country. Although LLINs are effective up to 3 to 5 years, a major limiting factor to its prolonged use is the physical durability of the LLIN which depends on a number of human and cultural factors. Physical durability has to be accounted for maintaining a continuous high coverage rate of LLINs in malaria endemic areas. No data is available for physical durability of LLINs in field conditions in Central American countries which this study explores. **Material and Methods:** As part of a larger study, LLINs were directly installed and not distributed, with planned coverage of all sleeping places in all homes of all localities of the municipality Wampusirpi, Honduras in 2010. On completion of one year of the LLIN installation campaign, a representative sample population from three localities of the municipality, namely Yapuwas, Pimienta and Wampusirpi were selected for evaluation. Data was collected from 201 homes in Wampusirpi, 33 in Yapuwas and 51 in Pimienta as part of a KAP, adherence to LLIN study in which physical integrity of bednets was simultaneously analysed. Analysis was done using R and Epi-Info 3.5. **Main Conclusions:** Of the 282 homes included in the final analysis, 92.91% (95% CI 89.91-95.90) had one or more LLINs in 2011, with most houses without bednets being ones that were closed during the campaign the previous year or were newly built. In these 282 houses, 926 bednets were installed in the previous year but 907 could be accounted for. Although a majority (65.05%, 59.48-70.61) of the bednets had no holes or had holes of one finger breadth (9.48%, 6.06-12.90), 25.36% (20.28-30.44) were either lost, completely destroyed or with holes of more than 5 finger width and thus required replacement. Statistically insignificant differences were observed for LLINs requiring replacement by locality: Yapuwas 22.58% (7.86-37.30), Wampusirpi 23.69% (17.8-29.58) and Pimienta 32.43% (19.58-45.28). The high proportion of LLINs requiring replacement increases the number of LLINs needed for maintaining an optimum coverage. This has significant programmatic and policy impacts as more funds are required than

previously planned and campaigns for replacement of LLINs have to be included in annual operational plans. Education campaigns for better use and maintenance of these LLIN is vital. Still to define is what to do with the old replaced bed nets in the communities. **E-mail:** drprabhjot@gmail.com

Veccont004- **Feasibility and acceptability of insecticide treated plastic sheeting (ITPS) for vector control in Papua New Guinea**

Pulford J[1, 2], Tandrapah A[1], Kaupa B[1], Bilam E[1], Atkinson J[2], Russell T[3] & Hetzel MW[1, 2].
1. Papua New Guinea Institute of Medical Research (PNGIMR), Goroka, Papua New Guinea; 2. School of Population Health, University of Queensland, Brisbane, Australia; 3. James Cook University, Townsville, Australia

Introduction: Insecticide treated plastic sheeting (ITPS) is a wall covering that acts against indoor resting mosquitoes for a period of 3-5 years. ITPS has been proposed as a complementary malaria control tool. Previous studies with ITPS have shown good acceptability; however, they have focused on African and Asian settings. Accordingly, this study investigates the feasibility and acceptability of introducing ITPS across different settings in Papua New Guinea (PNG). The findings will inform whether research funding could usefully be directed into (considerably more expensive) local ITPS effectiveness studies. **Methods:** A research team installed ITPS in 40 homes (10 per site) in 4 distinct settings across PNG. The 40 homes ranged from modern low cost housing to various styles of traditional dwelling. Structured questionnaires and focus group discussions (FGD) were completed with participating householders immediately following installation and at four weeks post installation. **Results:** At the time of drafting this abstract, the ITPS installation and the initial questionnaires and FGDs had been completed in all 4 study sites. It is anticipated that all data will be collected and analysed by May 31st 2012. **Main Conclusions:** Analysis of available data suggests ITPS installation is feasible in a range of different housing styles across PNG and acceptable to householders. However, the research team identified a range of unique installation challenges and the high degree of acceptability may have been influenced by the novelty value inherent in receiving a new commercially unavailable product. These findings should be considered tentative until analysis of the full data set has been completed. **Email:** justin.pulford@pngimr.org.pg

Veccont005- **Triatomicide activity of Cerrado plant extracts on Triatomines**

Sousa Neta, M. D.[1]; Costa, J. C[1]; Macedo, M. A.[1]; Abreu, M. D. S.[1]; Carvalho, F. A. A.[2]; Barros, V. C.[1*]
1Departament of Parasitology and Microbiology, CCS, UFPI, Teresina (PI) Brazil; 2Departament of Biochemistry and Pharmacology, CCS, UFPI, Teresina (PI) Brazil

The triatomines, as *Triatoma brasiliensis* (Tb) and *Panstrongylus megistus* (Pm), have parasitological importance because they are considered natural vectors of Chagas' disease, showing a wide geographical distribution in Brazil. In the absence of effective treatment of the disease, the main control strategy is based on eliminating domestic vector, using synthetic insecticides. However, the continuous and indiscriminate use of insecticides has resulted the development of resistance mechanisms in triatomines. Plants are rich source of bioactive molecules that may have insecticidal effect, may become an alternative for the control of the insects. In extracts of different plant species have been identified activities insecticides. This way, this study evaluated the triatomicide action of the extract of *Cenostigma macrophylium* (CMA-01), *Jatropha curcas* (JCU-01), *Combretum leprosum* (Cle-01) and *Terminalia brasiliensis* (TBR-01) on *P. megistus* and extract of *Anacardium occidentale* (Aoc-01) on *T. brasiliensis* and *P. megistus*. These species were chosen because their epidemiological importance in the transmission of Chagas' disease. *T. brasiliensis* is currently considered the main native vector of the disease as well as being a species highly adapted intradomicile area, while *P. megistus*, secondary epidemiological importance, is found peridomicile and wild environments. It was added on the tergites of 4th stage nymphs of both species, divided into groups according to the concentration of the studied extracts: Group 1 (Control-DMSO), Group 2 (80mg/ml), Group 3 (40mg/ml) and Group 4 (20mg/ml), evaluated at 24, 48 and 72 hours. Preliminary results showed the triatomicide effect in 86.7% of the nymphs in group 2, 53.3% of the nymphs of group 3 and 20% of the nymphs of Tb in group 4 with 72 hours after contact of Aoc-01. However, there was no triatomicide action of the same extract on the

nymphs of Pm, as well as extracts of the CMA-01, Cle-01 and TBR-01, none of the evaluated times. Only the extract of JCU-01 showed triatomicide action in 20% of nymphs Pm with 24 hours after contact. Thus, we conclude that the extract of *A. occidentale* had a triatomicide effect only on *T. brasiliensis* and extract of *J. curcas* showed triatomicide action on *P. megistus*. Although the two species belong to the subfamily Triatominae, it is possible that the morphological and physiological differences explain the results, requiring further studies to better understand these differences. **Support:** CNPq e UFPI **E-mail:** vcbbio@hotmail.com

Veccont006- **Ivermectin validation HPLC assay in *Triatoma infestans* (Chagas disease vector)**

Dade M.; Daniele M.; Mestorino N.; Errecalde J.O.
Pharmacology Department, Medicine School, Universidad Nacional de La Plata. CC 296, 1900 La Plata, Buenos Aires, Argentina.

For Chagas disease (American trypanosomiasis) vector control, residual spraying of formulations of pyrethroids insecticides has proved highly effective in eliminating domestic triatomine populations, but is less effective against peridomestic vector populations. An alternative approach currently under discussion would involve application of insecticides directly to domestic and peridomestic animals, either as pour-on or spray-on formulations or as insecticidal dusts, or by means of systemic products such as ivermectin. A study was undertaken in order to validate a precise and reliable analytical method for the detection of ivermectin's (IVM) *Triatoma infestans* concentrations, and to know the patterns of the drug concentrations depletion in its exoskeleton and content. Drug free vectors (*Triatoma infestans*) samples were fortified with increasing concentrations of IVM (1 to 40 ng IVM/g) and then were subjected to solid phase extraction and analyzed by high performance liquid chromatography (HPLC). The following parameters were evaluated for the analysis of each matrix: linearity (concentrations of ivermectin ranging between 1 and 40 µg/g), precision and accuracy, limit of quantification, limit of detection and selectivity. This assay exhibited a linear dynamic range between 1 and 40 ng/mL. A linear relationship was obtained across one dynamic range (r values ranged from 0.9973 to 0.9988). The precision of the system was evaluated after the placement of twenty (20) injections in the chromatographic system. In this manner the efficiency of the column and of the system was evaluated. After twenty injections a coefficient of variation (CV) of 5.75 % was determined. The limit of detection (LOD) was estimated through the analysis of 20 aliquots of control vector (free of ivermectin). The noise of the base-line was measured; the average and the standard deviation were calculated. The LOD corresponds to three of those SD, in this case permitting the detection of levels of 0.5 ng/g for ivermectin in exoskeleton and 0.26 ng/g in the content of vector. To assess the inter-day (over 6 days) assay accuracy (recovery) and precision, 2 sets of tissue vector samples were prepared containing ivermectin at 1, 2, 5, 10, 20 and 40 ng/g. The mean accuracy (recovery) was within the range 80-115 % and the variation in precision was $\leq$ 20%. Since precision normally decrease with very low concentrations, a variation in this parameter of 30% was accepted in the case of the lowest concentrations (1ng/g). To determine the intra-day accuracy and precision, 2 replicates of each 6 concentrations were analysed along with duplicate standard calibration curves prepared from 2 separate stock solutions. The specificity of the method was demonstrated by the absence of interferences and the adequate symmetry of chromatograms. The limit of quantification of the method was established for body skeleton and vector content in 1 ng/g with an accuracy of 79.7% with a CV of 8.28%. The validated analytical methodology showed satisfactory results of sensitivity, precision and accuracy that allows its use for the detection and quantification of effective concentrations of IVM in Chagas disease vector control. **E-mail:** nmestorino@yahoo.com

Veccont007- **Triatomicide activity of *Anacardium occidentale* on *Triatoma brasiliensis***

Sousa Neta, M. D.1; Costa, J. C1; Macedo, M. A.1; Abreu, M. D. S.1; Carvalho, F. A. A.2; Barros, V. C.1*
1Departament of Parasitology and Microbiology, CCS, UFPI, Teresina (PI) Brazil; 2Departament of Biochemistry and Pharmacology, CCS, UFPI, Teresina (PI) Brazil

The triatomines have parasitological importance because they are the natural vectors of Chagas' disease. They are hematophagous insects during all their life. With the indiscriminate use of insecticides, many studies have reported the presence of resistance mechanisms developed by different species of triatomines, reducing thus the effectiveness of strategies to control the disease. Plants are rich source of bioactive molecules that can affect the feeding behavior and regulation of insect growth, becoming an alternative for the control of the insects. Extracts of *Anacardium occidentale*, native species of great economic and social importance in the northeast, has had insecticidal activity against *Spodoptera frugiperda* and larvae of *Aedes aegypti*, and molluscicidal activity. This study proposed to evaluate the triatomicide activity of extract of *A. occidentale* on *Triatoma brasiliensis* as most importance epidemiological vector in Brazil. To this was added on tergites 4th stage nymph of *T. brasiliensis*, divided into groups according to the concentration of the extracts studied: Group 1 (Control-DMSO), Group 2 (80mg/ml), Group 3 (40mg/ml) and Group 4 (20mg/ml extract Aoc-01 *A. occidentale* in DMSO). The triatomicide action was observed at 30, 60, 90 and 120 minutes; 24, 48 and 72 hours. The surviving nymphs were submitted to Blood meal in chickens, weekly. Daily observations were performed to evaluate the effect of the extract over time of changes from the fourth to fifth stage as well as the influence of the extract for the food processing. Preliminary results showed that 5% of the nymphs in group 2 were killed in the first thirty minutes, nothing happening in other concentrations. The triatomicide effect was observed in 86.7% of the nymphs in group 2, 53.3% of the nymphs of group 3 and 20% of the nymphs of group 4, 72 hours after contact with the extract studied. The nymphs of the studied groups had difficulties during the blood meal, requiring twice the meal for the nymphs suffer changes to the later stage (average of 5 Blood meal/groups 2, 3 and 4; an average of 2.55 Blood meal/control group). There was no significant change in the time taken to reach the fifth nymphal stage when compared to the change time of the nymphs in the control group (average 30 days/groups 2, 3 and 4; an average of 28.1 days/control group). In this study triatomicide effect was observed and physiological changes of the extract of *Anacardium occidentale* on *T. brasiliensis*, these observations open up new prospects of study, based on the identification and action of the bioactive molecules involved. **Supported by** Pq e UFPI **E-mail:** vcbbio@hotmail.com

Veccont008- **Shares of healths surveillance in the prevention and control of dengue vector: the case of Franca city state of São Paulo**

Ribeiro MD[1], Colugnati PP[1], Almeida MM[1], Almeida LB[1], Ferreira AA[2], Netto JCD[2] e Andrade-Morraye M[1]
[1] **University of Franca, Franca (SP), Brazil.** [2] **Department of Health of Franca, Franca (SP), Brazil.**

The services of the Health Surveillance, through the Epidemiological Surveillance and also the Environmental Surveillance, have a key role in combating and controlling epidemics, because dengue presents a complex cycle, and their conditioning and determinants factors do not act in isolation, working at different levels and interrelated. Franca is located in southeastern Brazil with at about 320,000 inhabitants and has the mesothermal humid climate of altitude, which is characterized by dry winter from June to September and abundant rainfall in the summer from October to March. The aim of this study was to report the activities of environmental surveillance for dengue and correlate them with the number of dengue cases in the city of Franca (SP) in the period from January 2008 to July 2011. Combat actions and prevention of dengue in the city are focused on two aspects: activity of house-to-house, consisting of education and vector control and blocking of breeding. The data for these activities and number of cases were obtained in the Environmental Surveillance of the Municipal Health Department of Franca and were correlated using Spearman correlation coefficient. During the study period, there were a total of 982 autochthonous cases, being 23 in 2008, 4 in 2009, 50 in 2010 and 888 in 2011. In the same period the activity of house-to-house consisted of 160,872 households visited in 2008, 88,311 in 2009, 74,489 in 2010 and 3226 until June 2011, while the blockade of breeding in 2008 was 29,853, 28,956 in 2009, 92,671 in 2010 and 96,939 by June 2011. Correlation analysis indicated a strong correlation between the activity of house-to-house visits and the number of cases (r = -0.6009, p = 0.0299), well as the blockade of breeding of *Aedes aegypti* (r = 0.7994, p =0.0025). In 2008, activities were initiated before the rainy season and continued during this period, which was not repeated for the rainy season the following year, where there was an increase in the number of dengue cases. The house-to-house activity seems to have been effective in reducing the number of cases in 2009 and also by its action concentrated on the period

from September to December 2008, with 68,506 visits. The study emphasizes the importance of health surveillance activities to combat and control dengue, with emphasis on preventive activity of visiting house to house as opposed to remediation activity, blocking of breeding, but these activities must be conducted in the months before the rainy season so that the results are more effective. **E-mail:** mateusdribeiro@gmail.com

Veccont009- Evaluation of the larvicidal activity of extract from leaves of *Poincianella bracteosa* (Tul.) L. (Caesalpinaceae) on *Aedes aegypti* (Diptera: Culicidae)

Amorim, QS[1]; Silva, SLC[1] and Gualberto, SA[2]
[1]Research Laboratory of Natural Insecticides - State University of Southwest Bahia / Campus Itapetinga / Brazil; [2] Research Center of Applied Chemistry-UESB-Itapetinga / Brazil

Dengue is an arboviral disease affecting humans and represents a serious public health problem in Brazil and worldwide. Currently, the fight against dengue virus is restricted to the elimination of its main vector, *Aedes aegypti*, and actions to control this mosquito are based on the use of chemical insecticides, which can cause damage to human health and the environment. Thus, the use of plants for this purpose is very promising since they synthesize chemical constituents that make natural sources of potentially insecticides. Within this context, the objective of this study was to evaluate the larvicidal activity of the hexanic extract, obtained by fractionation of the ethanolic extract of leaves *Poincianella bracteosa*. To perform the biological assays used to *Aedes aegypti* larvae of third instar. The solvent used to obtain the stock solution and the control group was dimethylsulfoxide. There were five concentrations of the extract (13.3 mg/ml, 6.7 mg/ml, 4.0 mg/ml, 2.0 mg/mL and 0.7 mg/mL) obtained from a stock solution 400 mg/mL, with 30 larvae per replicate, resulting in four replicates per treatment. The observation of the mortality of larvae were conducted in the range of 1h, 2h, 4h, 8h, 16h and 24h after the start of the experiment. The data on the percentage mortality of larvae were submitted to Tukey test at 5% probability and lethal concentration 50 (LC50) was determined by Probit analysis. After the 24 hour experiment, it was observed that the concentration of 13.3 mg/mL (85.0%) was significantly more effective than the other concentrations and the control group in which no deaths occurred. No significant difference was observed between the concentrations of 6.7 mg/mL (55.0%), 4.0 mg/mL (42.5%) and 2.0 mg/mL (32.5%), but these were significantly more active than the control group, and there not is also a significant difference between the concentration of 0.7 mg/mL (16.6%) and the control group. The LC 50 was 0.235 mg/mL. These results demonstrate the potential insecticide activity of extract obtained from leaves of *Poincianella bracteosa* on larvae of *Aedes aegypti*, which highlights the need for further studies aimed at identifying the chemical constituents responsible for such activity. **E-mail:** cunhasls@uesb.edu.br

Veccont010- Biological control of *Anopheles* spp. and *Aedes aegypti* using extracts of endophytic fungi isolated from *Palicourea anisoloba* (Rubiaceae) collected in Urucu, Base Operations Pedro de Moura, Coari, AM

Tiago, M. R. M. (1); Tadei, W. P. (2)
(1) CTPETRO Scholarship / CNPq - National Institute for Amazonian Research - INPA, (2) Researcher at the National Institute of Amazonian Research - INPA, Manaus, Amazonas, Brazil.

Introduction: Bioprospecting is pointing to alternative solutions aimed at the biotechnological production of new insecticides biolarvicides being less polluting, mentioning among these fungi with entomopathogenic action. This study aims to evaluate the toxicity of extracts from endophytic fungi extracted from *Palicourea anisoloba* (Rubiaceae) in larvae of *Aedes aegypti* and *Anopheles* spp. **Materials:** The leaves were washed with mild soap, and immersion in sodium hypochlorite and 70% ethanol. For the isolation of endophytic fungi methods were used for fragmentation and maceration, the medium used were (PDA - Potato Dextrose Agar) and Saboroud liquid. The output of the extracts was measured with the colonies identified in inoculated petri dishes containing PDA medium after growth for the entire plate surface was removed ¼ and seeded in 100 ml of Sabouraud liquid for the production of metabolic extracts. After the incubation period was performed filtering with filter paper and filtering

strainer Milex GP cellulose membrane having 0.22 mm in 33mm of diameter and porosity for sterilization. Bioassays were performed with selective plastic cup containing 30 ml of distilled water, and larvae of stage 2. Was administered 1.0 ml fungal extract produced, readings were taken at 24, 48 and 78 hours. **Results:** Were isolated a total of 183 colonies filamentous endophytic fungi. The predominant genus was *Xilaria* showing with frequency (14.8%) followed by gender *Collethotricum* with frequency (6.6%) were identified in all eight genera. In selective bioassays with *Anopheles* spp. samples MR-18 (P1 EPE / *Penicillium* sp.) and MR-77 (E Suc / Xilaria sp.) showed effectiveness against the larvae. For *Aedes aegypti* the sample that showed effectiveness against the larvae were MR-45 (P2 EPE B / *Paecilomyces* sp.) And MR-26 (EPE P2 A / *Xilaria* sp.). **Conclusion:** *Xilaria* and *Penicillium* genera are considered as producers of secondary metabolites produce bioactive substances and therefore should be carefully evaluated. Were 22 extracts produced and tested in crude form, but it became apparent the need for an improvement in the composition of the extract so that the efficiency of bioactive compounds produced are maintained during the assay, so further concentration need to be tested. **Financial Support:** CNPq/FAPEAM/Rede Malária/CTPETRO/PIATAM. **E-mail:** michaelrubem@gmail.com

Veccont011- Eficiency of essential oil and plant extract of clove, *Eugenia caryophyllata* Thuberg (Myrtaceae), for larval control of *Aedes aegypti* Linnaeus, 1762 and *Anopheles darlingi* Root (Diptera, Culicidae)

Medeiros E. S.[1]; Rodrigues, I. B.[2]; Litaiff E. C.[3]; Tadei, W. P.[4]
[1]Universidade do Estado do Amazonas-UEA/PPGBiotec-MBT/CAPES, [2, 3, 4] Instituto Nacional de Pesquisas da Amazônia - INPA / LMD, Manaus-AM

Introduction: The present study evaluated the larvicidal activity of aqueous and methanol extracts as well as essential oil (Eugenol) of clove, *Eugenia caryophyllata* so as to control great social impact disease vector mosquitoes, such as malaria and dengue, in Amazonia. **Materials and Methods**: Under laboratory conditions, bioassays were conducted to test the efficiency of aqueous, methanol and essential oil eugenol extracts on *A. darlingi*, *A. nuznestovari, A. albitarsis* and *A. aegypti* larvae. Field bioassays were conducted with the application of clove aqueous extract held in containers easily colonized by *A. aegypti*. **Results**: Relative to *A. darlingi*, the aqueous extract (LC_{50} 99.18 ppm) showed higher toxicity than methanol extract (LC_{50} 530.12 ppm). The larvicidal effect with the aqueous extract for *A. aegypti* (LC_{50} 6381.67 ppm) was much lower than that obtained with *A. darlingi*. Bioassays with the essential oil of *E. caryophyllata* (Eugenol) showed high toxicity with a very low value of 3.56 ppm LC_{50}. . In field bioassays, the flowerpots set up at INPA *campus I* and *II*, for seven days in the rainy season, as well as in other Manaus neighborhoods in the summer were colonized by 16 days in an average. Following 24 h the application of the aqueous extract on the containers in the field, obtained a total mortality of the larvae of *A. Aegypti*, showing it to be an effective method for controlling *A. aegypti* in the field, demonstrating it can be recommended as a simple and low cost method, which may be complementary to traditional methods for controlling this mosquito species. **Conclusion**: A solution with the clove is proposed to prevent the infestation of vessels by A. aegypti. A weekly applied clove extract solution was used so as to prevent flowerpot infestation by *A. aegypti*. **Financial Support:** CNPq/FAPEAM Rede Malária, CTPETRO. **E-mail:** medeiros.nice@gmail.com

Veccont012- Evaluation of the insecticidal activity of extracts from the stems of *Croton linearifolius* Mull Arg. (Euphorbiaceae) on larvae of *Aedes aegypti* (Diptera: Culicidae)

Carvalho, KS[1]; Silva, SLC[1] and Gualberto, SA[2]
[1]Research Laboratory of Natural Insecticides - State University of Southwest Bahia / Campus Itapetinga / Brazil; [2] Research Center of Applied Chemistry-UESB-Itapetinga / Brazil

The *Aedes aegypti*, vector of dengue virus, have a great epidemiological importance, because in recent decades, has developed resistance to synthetic insecticides used to tackle them, causing an increase in the occurrence of dengue worldwide, including Brazil. These agents do not exhibit selectivity and its indiscriminate use has led to the emergence of resistant populations and more aggressive. Thus, the

need to look at alternatives that vector control and, among them, the natural products synthesized by plants in order to protect them against attack by herbivores, are strong candidates for the development of botanical insecticides. Therefore, the aim of this study was to evaluate the larvicidal activity of extracts obtained from stems of *Croton linearifolius* on third instar larvae of *Aedes aegypti*. Initially, different concentrations of ethanolic extract, dissolved in ethanol and distilled water were evaluated, being active against the larvae. Then, the ethanolic extract was fractionated to obtain the up hexanic, dichloromethanic, ethyl acetate and hydroalcoholic, which were solubilized in dimethylsulphoxide and distilled water to thereafter be tested in differents concentrations. The concentrations of the extracts used for the tests were 13.3 mg/ml, 6.7 mg/ml, 4.0 mg/ml, 2.0 mg/mL and 0.7 mg/ mL, obtained from a solution stock of 400 mg/mL, with 30 larvae per replicate, resulting in four replicates per treatment. Larval mortality was observed at intervals of 1h, 2h, 4h, 8h, 16h and 24h after the start of the experiment. After 24 hours of the experiment, it was observed that the two most active extracts were dichloromethane and hexane. With respect to the dichloromethanic extract was no significant difference between the concentrations of 13.3 mg/mL (99.1%) and 6.7 mg/mL (95.0%), however, the first was significantly more effective than the other concentrations and the control group. The lethal concentration 50 of the extract was 3.68 mg/mL. As regards the hexanic extract, the concentration of 13.3 mg/ L was significantly more active (69.1%) than the other concentrations and the control group, with a lethal concentration 50 of 8.52 mg/mL. The results demonstrate that the stem of *Croton linearifolius* is very promising for the development of an alternative control larvicidal to the *Aedes aegypti*. **E-mail:** cunhasls@uesb.edu.br

Veccont013- **Evaluation of the potential of isolated from larvicide *Bacillus thuringiensis* berliner, 1911 the state of Maranhão in *Aedes aegypti* (LINNAEUS, 1762) (Diptera, Culicidae)**

Lobo, K.S.[1]; Soares-da-Silva, J.[1]; Pinheiro, V.C.S.[1]; Tadei, W.P.[2], Andrade, A.T.S. .[2]
[1] Universidade Estadual do Maranhão/Centro de Estudos Superiores de Caxias – CESC/UEMA, Caxias, Maranhão, Brasil; [2] Instituto Nacional de Pesquisas da Amazônia – INPA, Manaus, Amazonas, Brasil.

Currently dengue is a serious public health problem, especially in Maranhão, where there is increase in the number of dengue cases each year and the circulation of various viral serotypes. The control of the dengue requires multiple actions, ranging from the early diagnosis of the illness, the appropriate treatment to the patients and mainly the control of the mosquito vector. In this last aspect, we sought to investigate the biological control of *Aedes aegypti*, with the use of *Bacillus thuringiensis* of Maranhão. From 13 soil sample that were collected in five localities in two cities of Maranhão. We obtained 493 bacterial colonies being 29(5,88%) *B. thuringiensis*. The rounded shape of the crystal was the most frequent, being seen in more than 98.5% of the isolated ones. Regarding the amount of single crystal for all the strains showed only an intracellular crystal. Only one line showed larvicidal activity to *A. aegypti* (BTMA 25). The frequency of *B. thuringiensis* with action Diptera is relatively low, when compared with the action of the bacillus in other insect orders. The insecticidal predominance of this bacillus is for Lepidoptera and Coleoptera larvaes. Although some strains show toxic effects to other insects' orders such as Hymenoptera and Diptera, therefore, few strains of Bt. show specific action to insects of importance in Public Health. Thus, we conclude that BTMA 25 can be a tool for the biotechnological production of biological larvicides and other isolates constitute a collection for future studies aimed at selecting strains with action by other insects. **Keywords:** Dengue, Vector, Mosquito, Biological Control, Bacterium. **E-mail:** katianecx@hotmail.com; katianecx@gamil.com

Veccont014- **Reduced oviposition of *Aedes aegypti* gravid females in domestic containers with predatory fish *Betta splendens***

Paiva CN, Lima CF, Camelo SS, Pamplona LGC.
Secretaria Municipal de Saúde de Quixadá, Quixadá, Brazil; Universidade Federal do Ceará, Fortaleza, Brazil; Secretaria de Saúde do Ceará, Fortaleza, Brazil; Faculdade Christus, Fortaleza, Brazil.

Introduction: Dengue remains a major public health concern in Northeastern Brazil. In natural reservoirs there is evidence that the presence of some fish reduced oviposition by gravid *Aedes taeniorhynchus*

females. There is also evidence that in small reservoirs larvivorous fish *Betta splendens* repel the pregnant females' posture of *Aedes aegypti.* Whereas in Northeastern Brazil, the main reservoirs infested are those of high-volume, the purpose of this work was to assess whether the presence of these fish in these reservoirs used to store water inhibits the egg-laying by females of *Aedes aegypti.* **Methods:** To assess the pattern of oviposition of *Aedes aegypti* females a cage with area 6m^2 (simulating field conditions) was used. In this cage, there were placed nine PVC barrels (60 liters of water) and paper filter for the laying of the eggs. The nine barrels were divided into three groups: three with a specimen of larvivorous fish, three with the larvicide tested and the other three just with water (control). The species of the fish that were tested were: *Poecilia Reticulata* and *Betta splendens* and Temefós larvicide. A different combination of fish and larvicide was used for each kind of fish at each experiment. In one cage, 200 pupae were placed and the experiment lasted for 7 days, being repeated five times for each combination (fish and larvicide). The mosquitoes were fed daily and eggs were counted at the end of 7 days with an Entomological Magnifier lens. The average number of eggs was compared by using the Kruskal-Wallis test. This experiment was approved by the Animal Ethics Committee, under number 11223820-359. **Results:** During the experiments 49,629 eggs were laid. Among these, 20,343 in the testing with the fish *B. splendens* and 29,286 in tests with the *P. Reticulata.* In the experiments with the *B. splendens*, eggs were laid in 15.9% reservoirs with the presence of the fish. In temefós deposits and in the controls there were 45.2% and 38.9% of the eggs, respectively ($p<0.05$). In experiments with *P. Reticulata*, 29.7%, 36.9% and deposit eggs 33.4% with fish, temefós and control; respectively, with no significant difference ($p>0,05$). **Conclusions:** Gravid females of *Aedes aegypti* do not alter oviposition behavior in reservoirs containing the fish *Poecilia Reticulata*, even under conditions in which they are placed in reservoirs with the larvicida Temefós or water without chlorine. The same did not occur with the larvivorous fish *Betta splendens.* This species of fish seems to repel the egg laying by pregnant females of *Aedes aegypti* in field simulated conditions. It can be seen that, in addition to being a great larvae predator, the *Betta splendens* can reduce the number of eggs laid in deposits of large volume (barrels) used for storing water. **E-mail:** pamplona.luciano@gmail.com

Veccont015- **Survival of the larvivorous fish *Betta splendens* (Regan, 1910) to Larvicides used in the control of *Aedes aegypti*: a proposal for use in association.**

Camelo SS, Lima CF, Paiva CC, Pamplona LGC.
Universidade Federal do Ceará, Fortaleza, Brazil; Secretaria Municipal de Saúde de Quixadá, Quixadá, Brazil; Secretaria de Saúde do Ceará, Fortaleza, Brazil; Faculdade Christus, Fortaleza, Brazil.

Introduction: The use of larvivorous fish, as an alternative to chemical control, has been carried out for several decades in the world mainly in the control of malaria vectors mosquitoes. Since 2001, in the State of Ceará, the fish *Betta splendens* are used in household containers for high-volume control of *Aedes aegypti* larvae. However, in some of these reservoirs, the survival of the fish seems to be limited. On the other hand, according to the manufacturers of these products, they are not lethal larvicides to non-target species. Therefore, the aim of this work was to evaluate the survival of fish *Betta splendens* to larvicides as used in a national program for control of Dengue in Brazil (PNCD) for use in associations, as an alternative to the control of the larvae of *Aedes aegypti.* **Methods:** The experiments took place outside the Medical Entomology lab, in the Department of Health Community at the Federal University of Ceará. The average temperature in that area was of 28 ± 3° C, humidity and photoperiod of 80 ± 5 12:0. The larvicides used were the Temephos Fersol 1G, in granular formulation; the formulating Novaluron Bayer CE emulsion pushers (2%) and the *Baccillus thuringiensis israelensis* (Bti), in granular formulation (a gram to 50 liters). These concentrations are as recommended by PNCD. For each evaluated larvicide 15 home water tank with 250 liters of water. Of these, 10 were used as tests and the other five, as controls. In each water tank test the larvicide was used in a concentration as recommended by PNCD and a specimen of *Betta.* In the water tank used as control, only the fish (one in each) with water, without the larvicide (control). The fish were observed daily for seven consecutive days, and their survival was attested. For each larvicide this procedure was replicated four times. During the experiments all fish had been fed with mosquito larvae from the laboratory of Entomology. This experiment was approved by the Animal Ethics Committee, under number 11223820-359. **Results:** When the fish were exposed to temephos larvicide survival was 39/40 (97.5%). During testing with the Novaluron survival was 36/40

(90%) and with the *Baccillus thuringiensis israelensis*, survival was of 40/40 (100%). The specimens used as control showed a survival of 100%, 95% and 95%, respectively, in these three experiments. **Conclusions:** Even with a small sample of fish tested, it is believed that the *Betta splendens* can be used in association with larvicides, as recommended for the control of *Aedes aegypti* in large household water tanks. This possibility can increase the efficiency in the control of *Aedes aegypti* within the type of reservoirs which are widely used in the Northeast of Brazil. **E-mail:** pamplona.luciano@gmail.com

Veccont016- **Profile of temephos susceptibility of *Aedes aegypti* (Diptera: Culicidae) in the state of Sergipe, Brazil**

Marteis LS[1], Queiroz JG[2], Steffler LM[2], Natal D[1], Santos RLC[2].
[1]Universidade de São Paulo. [2]Universidade Federal de Sergipe.

Introduction: Dengue remains a major public health problem in the world and in the absence of specific vaccine and antiviral drugs; the best alternative for disease control is investing in stocks control vector, the *Aedes aegypti* mosquito, vulnerable link in the chain of disease transmission. Chemical control is accomplished through the use of insecticides for the elimination of larval and adult forms of the mosquito. Thus, it is essential to develop analyzes to evaluate the efficacy of the compounds, since the continued use of a particular pesticide may cause selection of resistant populations and compromise the quality of vector control actions. **Materials and Methods:** We studied seven populations of *Ae. aegypti* in the state of Sergipe. We evaluated the susceptibility of larvae to organophosphate temephos through experiments Diagnostic Dose (DD), to diagnose, and Dose Response (DR), to quantify the resistance of the population. For each population, the experiments were repeated three times on different days, and control was performed with the Rockefeller strain pattern of susceptibility to insecticides. **Results:** In qualitative experiments DD, mortality ranged between 0% and 10%, classifying all populations resistant to organophosphate. High resistance was found in all populations through quantitative DR experiment, with values of resistance ratio (RR) ranging from 22.2 to 297.8 between the populations analyzed. The replacement of the second temephos larvicide is recommended by the Ministry of Health in DD when mortality is less than 70% or when the RR is greater than three. **Conclusion:** The high values of the resistance ratio attest to the uncontrolled application of insecticide, which is still used as part of the Dengue Control Program in the state of Sergipe. The data are considered worrisome, since it indicates the commitment of the larvicidal action, thus interfering with the efficiency of vector control, which may partly explain the failures in relation to vector control in the state and highlights the urgent need either replacement of the product by another with different mechanism of action and training for proper use of the new compound to prevent the rapid selection of resistant populations. Furthermore, the different status of resistance to temephos showed that the species *Ae. aegypti* is exposed to different selective pressures in the municipalities of the state of Sergipe. **E-mail:** lmarteis@usp.br

Veccont017- **Selection of isolated from the Amazon com *Bacillus thuringiensis* larvicide activity for *Aedes aegypti***

Joelma Soares da Silva[1],[2] , Valéria Cristina Soares Pinheiro[1] , Wanderli Pedro Tadei[2]
[1]Universidade Estadual do Maranhão, Centro de Estudos Superiores de Caxias, Laboratório de Entomologia Médica, [2]Universidade Federal do Maranhão, Campus VII, [3]Instituto Nacional de Pesquisa da Amazônia Malária, Laboratório de Malária e Dengue.

Introduction: Currently, dengue is a serious public health problem, especially in Amazon, where you face the high number of infected and confirmed deaths from the disease are being accentuated as an epidemic. The control of dengue requires multiple actions, ranging from the early diagnosis, appropriate treatment of the sick to the mosquito vector control. On this latter point, we search to investigate the biological control of *Aedes aegypti*, with the use of *Bacillus thuringiensis* isolated in Amazon. **Material and Methods:** Isolation was performed *B. thuringiensis* from 25 soil samples from nine cities in the state of Amazonas. The isolates were tested selectively against larvae of *A. aegypti*, the isolations that exhibited the mortality rate of less than 50% were selected for molecular characterization. The isolates selected, were analysis for the presence of genes cry4Ba, cry10Aa, and cry11Aa cry11Ba - Associated to

toxicity to *A. aegypti*, which was done by PCR and subjected to SDS-PAGE technique to verify the expression of these proteins having toxic activity. Subsequently, the isolates were tested for their toxic activity, which was performed by bioassay dose. **RESULTS:** There was obtained a percentage of 11.77% *B. thuringiensis*. This total, six showed larvicidal activity (IBt-03, IBt-06, IBt-07, IBt-28, and BtAM IBt-30-27), submitted the molecular characterization. The results showed that the five genes tested were detected only in isolated BtAM-27, are absent in other strains of the Amazon. As for the protein profile, BtAM-27 showed bands of 125, 130, 58, 70 and 72 kDa, similar to that observed for *Bti* IPS-82. With other strains was obtained different profiles. It is recommended expansion of characterization gene / protein for isolates with IBt-03, IBt-06, IBt-07, and IBt IBt-28-30 to other toxins and genes *cry* already described or new, and other factors associated with toxicity: β-exotoxins, α-exotoxins, hemolysins, enterotoxins, phospholipases and chitinases. Parallel to the molecular characterization was carried out to evaluate the larvicidal activity. The isolated BtAM-27 (8.80 x108 CFU / mL) showed higher levels of sporulation to that obtained with the standard strain *Bti* IPS-82 (6.71×10^7 CFU/mL). The Isolates IBt-03, IBt-06, IBt-07, IBt-28 and IBt-30 showed lower levels sporulation were compared to the standard. Bioassays conducted with third instar larvae of *A. aegypti* allowed to observe that the lowest LC_{50} values were obtained with *Bti* IPS-82 (LC_{50} 0.00007 DCT) and BtAM-27 (LC50 0.00026 DCT). **Conclusions:** Even isolates of *B. thuringiensis* of Amazon with displayed toxicity lower the standard; it is stands that the spores quantity of these isolated were lower. Therefore, studies should be search with alternative culture media that increase sporulation. Thus, we conclude that the six isolates of *B. thuringiensis* Amazon showed potential for biological control of *A. aegypti*. **E-mail:** joelmasoares12@gmail.com

Veccont018- Evaluation under laboratorial conditions the efficacy of insecticide paints (INESFLY ®) against mosquito *Aedes albopictus*

Pinal R[1]*, Oropeza V[1]*, Mateo P[2], Delacour-Estrella S[1], Ruiz-Arrondo I[13], Alarcón-Elbal PM[1], Munoz A[13] & Lucientes J[1].
[1]Departamento de Patología Animal, Facultad de Veterinaria, Universidad de Zaragoza, Spain. [2]INESFLY S.L. Ingeniería de Salud, [3]QUIMERA BIOLOGICAL SYSTEMS S.L

Introduction: The *Aedes albopictus*, also known as the Asian tiger mosquito, abandoned their Asian origins to colonize the world. In Spain it was discovered in 2004, making the fight against this insect a necessity motivated not only by the voracity of the bites, but also for its important role as a vector, particulary in the transmission of diseases. Current efforts to control mosquito-borne disease rely heavily on insecticides, the mainstream vector control strategy in many countries, the application of insecticides paintings are the primary strategies for combating mosquito-borne diseases. The aim of this study was evaluate under laboratorial conditions the efficacy of insecticide paints (inesfly®) against mosquito *Aedes albopictus.* **Material and Methods:** We testing three painting treatments: Inesfly 5A IGR NG (Alfa-cypermetrina 0.7%, D-aletrina 1% and Piriproxifen 0.063%); Inesfly 5A IGR (Diazinon 1.5%, Clorpyrifos 1.5% and Piriproxifen 0.063%); and Inesfly 5D IGR (Diazinón 3% and Piriproxifen 0.063%). All paints tested including insect growth regulator (IGR). Mosquitoes used were laboratory strain of *Ae. albopictus*, unfed 3-5 day old females bred at the University of Zaragoza insectariums. It was placed in forced contact with two different surfaces: porous and no-porous. These surfaces were painted at two doses (1 kg/6 m² and 1 kg/12 m²), and a control (without insecticide and IGR) for each surface. Insecticide efficacy was analyzed in terms of delayed mortality using 30-minute WHO bioassay cones. The number of mosquitos' knockdown was counted after ten minutes and the number of dead ones after 24, 48 and 72 hour. **Results:** After treatment, delayed mortality was high (90-100%) even against resistant on all surfaces, therefore *Ae. albopictus* adults exposed to insecticide paint were susceptible to all treatment evaluated, but this susceptibility was more pronounced in the Inesfly 5A IGR NG (100%) one year after treatment delayed mortality was Inesfly 5A IGR NG 100 % (low doses) and 100% (high doses), while inesfly 5A IGR 90% (low doses) and 93,3% (high doses), and Inesfly 5D IGR 30% (low doses) and 50% (high doses) of mortality on all surfaces. **Main conclusions:** High mortality rates were observed against laboratory strains of *Ae. albopictus* susceptible and resistant to insecticides. Long-term killing remained equally important on nonporous surfaces regardless the resistance status for over 12 months. The paint is easily applied, a future field study be done performed following other phase for evaluation of efficacy

Inesfly technology include performing a large-scale entomological for control *Ae. aegipty* populations in Bolivia suggest the product´s promising goals. **E-mail:** pinalr@unizar.es, vladimir_ov@hotmail.com

Veccont019- **Larvicidal action of ten Local Saudi plant extracts against mosquito (*Culex pipiens*)**

Aljabr, A.M
Arid Land Agriculture Department, College of Agriculture and Food Sciences, King Faisal University, Al-Ahssa, Saudi Arabia

Abstract: Plant extracts of *Piper nigrum, Elletaria cardamomum, Concarpus exectus, Ziziphus nummularia, Zingiber officinale, Cinnamomum camphora, Capsicum annuum, Pimpinella anisum, Rhazya stricta and Boswellia carterii* were tested in the laboratory for their larvicidal activity against 3rd instar mosquito (*Culex pipiens*). Bioassays were carried out according to the recommendations of the World Health Organization. Extracts were tested at doses ranging from 200 to 1000ul/l for 2, 24 and 48 hours. Results indicated that most of the extracts were effective against *C. pipiens* larvae at higher concentration (1000 ul/l). Larval mortality increased with time of exposure. *P. nigrum* extract was exceptional in achieving 100% mortality even at lower concentration and exposure time (24 h). Most of the plant extracts achieved 100% mortality at higher concentration and 24 h exposure time. There was no difference in the mortality rate between 24 h and 48 h exposure time. *P. nigrum, C. exectus, E. cardamomum* and *C. camphora* plant extracts hold promise as potential bio control agents against *C. pipiens* larvae. **Keywords:** Mosquito, Plant extract, Exposure time, *Culex pipiens*, Mortality. **E-mail:** aljabr@kfu.edu.sa

Veccont020- **Effect of Zinc oxide nanoparticles on *Culex pipiens* larvae in aqueous solution**

Davari B*, Maleki A
Environmental Health Research Center, Kurdistan University of Medical Sciences, Sanandaj, Iran

Introduction: Metal oxide nanoparticles (NPs) are known to possess strong insecticide activity. The aim of this study was to determine the effect of Effect of Zinc oxide nanoparticles larvae *Culex pipiens* in aqueous solution. **Material and Methods:** The average size of Zno-NPs was 20 nm, as determined through scanning electron microscopy. All the larvae *Culex pipiens were collected around the river and exposed to different concentration of* Zinc oxide nanoparticles. Photocatalytic experiment was carried out in a laboratory-scale batch reactor with low pressure ultraviolet irradiation (380 nm). Different experimental parameters such as amount of Zno-NPs, contact time, inorganic and organic substances and pH on photocatalytic effect of Zinc Nano particles on the larvae *Culex pipiens* have been studied. An initial larvae *culex pipiens* (100 larvae/L) was added to use for all experiments. **Results:** Result showed that, about 70 % of larvae were dead after two hours in the presence of 4 g/l ZnO-NPs. The amount of photocatalyst also plays an important role in photocatalytic mortality rate. As the result showed increasing the photocatalyst amount provided more rapid inactivation. **Conclusion:** Since the sensitivity of *larvae* to photocatalytic treatment was fairly good, it is therefore, recommended to use this nano-particle for mosquito larvae. **Keywords:** ZnO nanoparticles, mortality, larvae *Culex pipiens.* **E-mail:** davaribehroz@yahoo.com

Veccont021- **Basic "good housekeeping" in a rural settlement can eliminate the exposure to mosquito borne infections.**

Basson, E
South Africa

Introduction: Mosquito borne infections have hounded the human species for centuries, and still represents one of the most important infectious disease threats. The life cycle of the mosquito necessitates a blood meal to produce eggs. As with the *Anopheles* mosquito, *Culex* and *Aedes* mosquito prefer to feed on humans. This study proved that by basic elimination of stagnant water in a rural

settlement, mosquito borne infections can potentially be reduced by half. **Method:** During a study conducted from August 2009 to May 2011, on a farm in the Free State, South Africa, the behaviour of *Aedes* and *Culex* mosquitoes were monitored. This farm was chosen due to its low annual rainfall, isolated setting and inhabitants of 10 adults and 15 children. 5 Houses were in a radius of 30 meters. This simulates the layout of a rural settlement. Water containers were placed in a radius of 10m, 50m, 100m and 500m around the residing dwellings. Other permanent sources, 800 m and further, were part of the study to determine the larvae load. The same methodology was applied during all 6 monitoring cycles. The larvae load in 22 radiates water sources were determined to a distance of 3 km away from the host site. Bellamy and Reeves mosquito traps were use to establish the mosquito population before and after the removal of stagnant water. **Results:** Water containers up to 500m away from the hosts had a similar larvae load. In containers 800m and further, larvae load were on average 45% less. By eliminating the larvae in containers up to 100 meters away from the dwellings, the mosquito population decreased by *circa* 55%. With Bellamy and Reeves mosquito traps, less than 42 % mosquitoes were caught. **Conclusion:** Vast amounts of energy and money are spent on pesticides. This study results proved that basis stagnant water control can eliminate mosquito exposure by 47.5%. **E-mail:** eldrian@vodamail.co.za

Veccont022- Analysis of the larvicidal efficiency through entomological indices in an area of Cuiabá, Mato Grosso / Brazil, 2012

Cruz LCTA[1], Atanaka-Santos M[2]. Analysis of larvicide's efficiency through entomological indexes in an area of Cuiabá, Mato Grosso/Brazil, 2012
[1]1Postgraduate Health – UFMT, [2]2Institute of Public Health – UFMT

Abstract: an investigation to detect a chemical agent's efficacy is relevant in all aspects, since many are the implications of its usage. A suitable monitoring may delay the insects' resistance to these products, lowering the turnover and the number of applications. Once there are few options for insecticides and larvicides, this monitoring becomes determining for epidemy control. Some insects populations already developed resistance to conventional insecticides, as foreseen. In some of these places, it's being used an option of products which don't have as main goal the insect's death. Instead, it inhibits the emergency in adults, interfering on chitin's synthesis, main component for its growth and development, known as Bugs Growth Regulators. In Cuiabá (Mato Grosso/Brazil), this product was introduced after verification of resistance to temefós during 2010's second semester. Due to the short period of usage on the municipality, there isn't enough information to assess its efficiency yet. In January 2011, in Cuiabá, the Predial Infestation Index (IIP, in its initials in Portuguese), was 6.8 (high risk), and 91,7% of stratums researched by LIRA showed that risk in relation to IIP. In the same period in 2012, this index is in 7%. To estimate vetorial density in areas with high risk of infestation, one of the most recommended methods, due to its efficacy and economy, are the oviposition traps that allow estimating the vector's presence continuously. With this, this study began to check the presence of vectors in a Cuiabá neighborhood, with monitoring and usage of Novaluron. The place of study was justified due to the high infestation indexes registered, and by its key location, being one of the entrance ways on the municipality. Swabs were made during January 2012, through ovitraps installed within 10 residences randomly distributed in the place. Traps remained in field for five days and were later collected and stored in humid chamber for eggs' embryoning. 1989 eggs were found, with an Eggs Positivity Index (IPO, in its Portuguese initials) of 83% and Eggs Density Index (IDO, in its Portuguese initials) of 64%, with emergence index in about 90%. These preliminary results show the presence of fertile females in the region, even though larvicide was used. Aedes Aegypti's vectorial density is above the expected after the usage of novaluron. **Descriptors:** Aedes aegypti, vectorial control, ovitrampa, larvicides. **E-mail:** lucineiadetoni@gmail.com

Veccont023- **Biological control in the Amazon: assessement of *Bacillus* formulations effectiveness, as target on vector control under Amazonian climatic conditions**

Rodrigues, I.B.[1], Tadei, W.P.[2], Oliveira, C.D.[3], Pena, A.M.S.[4]
[1][2][3][4] **National Research Institute of Amazonia – INPA, Manaus, Amazonas - Brazil.**

Introduction: Several factors influence the microbiological agent based larvicidal effectiveness, such as, the formulation used, when an insecticide is industrialized. Some authors highlight the importance of the active principle occupying the target insect`s ingestion area, thus helping to maintain entomopathogens / vector contact. The objective of these studies was to evaluate formulations for vector control, considering the Amazon: (1) Larvicidal activity of some Brazilian formulations, *in Vitro*, (2) Assess *B. sphaericus* 2362 formulations in vectors` natural and man-made breeding sites, and (3) Toxicity of formulations after validity`s deadline. Material and Methods: Bioassays were conducted according to occurred following the WHO protocol (1985) assays with doses (1 ppm to 0.01 ppm) with Sphaerus SC formulation on *Anopheles nuneztovari* Gabaldon, 1940 larvae and Bt-horus G formulation on *Aedes aegypti* Linnaeus, 1972 larvae. In the following essay Vectolex (granulated) and Spherimos (liquid) formulations were applied on natural (11Kg/ha and 3L/ha) and on man-made (double dose) breeding sites, respectively. In the third assay, we tested, in the laboratory, Spherico SC-1 one year following validity`s deadline, and Spherico SC-2 four years following its usage deadline, on *A. nuneztovari* larvae. Bioassays findings the results of bioassays with Sphaerus SC formulation on *A. nuneztovari* showed LC_{50}=0.75ppm and LC_{90} =2.15 ppm, by 24h. The Bt-hourus G formulation on *A. aegypti* LC_{50}=0.31ppm and LC_{90}=0.65ppm, in 72 hours (95% confidence limit). In applying Vectolex Spherimos in natural habitats and reduction was observed in larvae, but differences between formulations were not significant by the nonparametric Kruskal-Wallis test (p <0.05). Vectolex and Spherimos formulations toxicity lasting time showed to be 15 days in natural breeding sites, whereas in man-made breeding sites (Psiculture ponds and brick factory pits) with double dose application of those larvicides, larvae reduction kept low as compared to control, by 35 days with Vectolex and 21 days with Spherimos.. Assessment made after validity deadline presented 78% mortality of the larvae of *A. nuneztovari* using 1 ppm of a Spherico after 72 hours, while the second Spherico showed 37% mortality. Conclusions: The formulations tested under environmental conditions of the Amazon eliminated larvae vectors under laboratory conditions, even after the larvicide`s validity deadline. In natural breeding sites the larvicidal effect was lower than in man-made breeding sites even when applied in a double dose. Spherico presents toxicity one year following its validity deadline.
Financial Support: CNPq/FAPEAM Rede Malária, CTPETRO. **E-mail:** brandao@inpa.gov.br

Veccont024- **Microbial analysis of water in tanks with larvivorous fish, in Northeast of Brazil**

Fontes RM, Frutuoso MS, Praciano CC, Pompeu MML, Melo VMM, Soares BC, Pamplona LGC.
Universidade Federal do Ceará, Fortaleza, Brazil; Faculdade Christus, Fortaleza, Brazil; Secretaria de Saúde do Ceará, Fortaleza, Brazil.

Introduction: In the absence of a safe and effective vaccine against dengue, all actions to control the disease are directed to *Aedes aegypti*, the main transmitter. In Ceará, due to frequent problems in water supply, the population uses a large number of tanks to store water, and these become the most infested deposits by *Aedes aegypti*. Since 2001, larvivorous fish are used in these large volume residential deposits, with a registry of more than 700,000 deposits with larvivorous fish. Brazil's Ministry of health advises that the use of living organisms can alter the pattern of the water's potability and can transmit pathogens that can cause infections, like gastroenteritis, and epidermal reactions. There are reports of the presence of mycobacteria in some fish species. However, little is known about the potential of transmitting disease to to the population that comes to consume the water from these reservoirs. Thus, the aim of this study was to evaluate, in a preliminary way, the bacteriological quality of water with these fish, regarding the presence of total and fecal coliforms and to investigate the presence of mycobacteria in them. **Methods:** We investigated the *Betta splendens* (Regan, 1910) species. To simulate real field conditions we used plastic tanks containing 60 liters of water supplied by the Companhia de água e

esgoto do Ceará (CAGECE). Two deposits were inserted with one fish each and a third tank was used only as control. After a period of three days, the water in the reservoirs was homogenized, collected separately in sterile containers and transported to the laboratory for microbiological evaluation. For this analysis we used the multiple tube technique to evaluate the presence of total and fecal coliforms. The fish, after the experiments, were removed and anesthetized. Then, these fish were fixed in formalin for dissection of the following organs: intestine, stomach, liver, spleen and heart. To elaborate the slides, the organs were subjected to press-imprint technique and stained with Ziehl-Neelsen. This experiment was approved by the Ethics Committee for animal Research, under number 11223820-3/59. **Results:** We observed the presence of total coliforms in water from all reservoirs (test and control), but with the absence of fecal coliforms. It was not found the presence of *Mycobacterium sp.* on slides prepared with samples of fish. **Conclusions:** It was not possible to conclude if the presence of fish alters the patterns of potability water in these large reservoirs, because both groups (test and control) obtained similar results in the search for total coliforms. The absence of mycobacteria in these fish may be associated with good nutrition and management. Besides, the creation of these fish in clean places can also be related with this finding. We need to increase the sample of this experiment in real field conditions in order to evaluate definitively the potential transmitter of disease of these fish. **E-mail:** pamplona.luciano@gmail.com

Veccont025- **Evaluation of the larvicidal activity of extracts from the root of *Poincianella bracteosa*(Tul.) L. (Caesalpinaceae) on *Aedes aegypti* (Diptera: Culicidae)**

Cruz, RCD[1]; Silva, SLC[1] and Gualberto, SA[2]
[1]**Research Laboratory of Natural Insecticides - State University of Southwest Bahia / Campus Itapetinga / Brazil; [2] Research Center of Applied Chemistry-UESB-Itapetinga / Brazil**

Among the tropical diseases that has attracted a global concern, stands out the dengue, and its main vector is the *Aedes aegypti*. Currently, control of this vector is accomplished through the use of synthetic insecticides; however, they lack selectivity, providing a negative environmental impact. Thus, it has been expanded search for natural insecticides originating from plants, synthesized for these active principles may have biological potential, and at the same time being less harmful for both human health and the environment. Therefore, the objective of this study was to evaluate the larvicidal activity of extracts from the root of *Poincianella bracteosa* on *Aedes aegypti*. Initially we evaluated the larvicidal activity of the ethanolic extract, after demonstrating its activity, was fractionated to yield the hexanic, dichloromethanic, ethyl acetate and hydroalcoholic, which were subsequently subjected to bioassays. We tested five concentrations of the extracts obtained (13.3 mg/ml, 6.7 mg/ml, 4.0 mg/ml, 2.0 mg/mL and 0.7 mg/mL). For this purpose, we used 30 third instar larvae per repetition, totaling four replicates per treatment. The observation of the mortality of larvae were conducted in the range of 1h, 2h, 4h, 8h, 16h and 24h after the start of the experiment. The dichloromethane extracts analyzed showed higher larvicidal potential, followed by hexanic extract. Bioassays performed with the dichloromethanic extract, after 24 hours of observation, showed no significant difference in larvicidal activity between the concentrations of 13.3 mg/mL (100.00%), 6.7 mg/mL (95.00 %), 4.0 mg/mL (96.68%) and 2.0 mg/mL (86.65%), and these were significantly more effective than the control group. As regards the hexanic extract, the data show that concentrations of 13.3 mg/mL (53.30%) and 6.7 mg/mL (47.50%) were significantly more effective compared with other concentrations and the control group. The lethal concentration 50 of extracts dichloromethanic and hexanic was 0.012 mg/mL and 7.98 mg/mL, respectively. The data reveal the potential root *Poincianella bracteosa* as larvicide and could be, with further study, a possible alternative for the control of *Aedes aegypti*. **E-mail:** cunhasls@uesb.edu.br

DIVERSE SUBJECTS

SNAKEBITES, SCORPIONS AND OTHERS

Bitesven001- Retrospective clinical and epidemiological study of accidents by *Crotalus durissus* in the state of Bahia, Brazil

Carvalhais, R.; Oliveira, D. C.; Biondi, I.[*]
State University of Feira de Santana, Feira de Santana-Brazil

Introduction: Considered a public health problem worldwide, the envenomations have caused a large number of deaths or sequelae, especially in countries in Africa, Asia and Latin America. Recently accidents by snakes were inserted by the World Health Organization list of neglected diseases. The present study aimed to describe the cases of accidents caused by *Crotalus durissus* in the State of Bahia, in the period 1990 to 1993. **Material and Methods**: We conducted a retrospective study analyzing medical records of patients in the Information Centre Anti-Poison (CIAVE), related to accidents for rattlesnake taking into account the following variables: (a) epidemiological data (age and sex of patients, the location of occurrence of accidents) and (b) local and systemic clinical manifestations. The local effects were grouped according to symptoms and systemic reactions according to the affected systems. **Results**: During 1990-1993 occurred in the State of Bahia 4300 snakebites, with 225 accidents/incidence of $1.87/^{100.000hab}$ caused by *Crotalus durissus*, with 09 deaths/case fatality ratio of 4%. The males were more affected (81.08%) in accidents. The injured workers aged 10-20 years account for 32.45% of cases and 30-40 years (14.59%). The city of Vitoria da Conquista index recorded the highest number of cases (12.52%), followed by the cities of Itaberaba (4.32%), Barriers, and Jacobina Ipirá (3.78%). In the case of local symptoms presented by victims been described: pain (64.32%), edema (45.95%), and erythema (9.73%). The systemic signs and symptoms related to the neurotoxicity of the venom were ptosis (37.84%), blurred vision (34.59%), myalgia (22.7%), diplopia (18.92%), somnolence (14, 59%), numbness (7.03%) among other clinical manifestations of lower frequency. The systemic symptoms in the kidney was: oliguria (12%), hematuria (11%), hemoglobinuria (8%), IRA (8%) anuria (6%) and hypertension (1%). Other symptoms developed by patients included hepatic failure (0.54%) and coma (0.54%). Changes in coagulability manifested such as bleeding skin (1.62%), gingival (1.62%), respiratory bleeding (0.54%), rectal bleeding (0.54%), epistaxis (0.54%), hematemesis (0.54%) and hemoptysis (0.54%). **Conclusion**: All patients received the serum monospecific anticrotalic, however there was no neutralization at 100% of cases and 15 patients as sequelae to chronic renal failure (CRF). These data resulted in a further study on the intraspecific variability of the venom of Crotalus durissus and its taxonomic status in which resulted in the manufacture of the first regional experimental serum for the State of Bahia. **E-mail:** rafaela_carvalhais@hotmail.com

Bitesven002- Acute renal failure secondary to snakebite by *Bothrops* snake: a case report

Victor Costa Morais de Oliveira[1], Izabella Picinin Safe[1], Alessandra Galvão Martins[1], Yumi de Oliveira Ohnishi[1], Marcus Vinícius Guimarães de Lacerda[1], Márcia Melo Damian[1]
1Fundação de Medicina Tropical – Dr. Heitor Vieira Dourado (FMT-HVD), Manaus, Brazil.

Introduction: *Bothrops* accidents are of great epidemiological importance in Brazil, and mostly cause with local manifestations secondary to acute inflammation of the poison. The *Bothrops* venom has a nephrotoxic action, that may cause severe systemic manifestation, but that`s more common to be observed in *Crotalus* accident. The occurrence of systemic complications and death is unusual, being related in part by delay in administration of specific antivenom or incorrect use. **Materials and methods:** We report a case of acute renal failure secondary to *Bothrops* accident in a woman of 33 years old whom

had a delay to receive the serotherapy. **Results:** On the second day of hospitalization, the patient progressed with clinical and laboratory signs of impairment of the renal function, unresponsive to vigorous fluid therapy, presenting oliguric with signs of uremia. The patient underwent to hemodialysis on the fourth day of hospitalization, with a total of five sessions. Since then, showed an increase in urinary volume, the clinical picture presented itself satisfactorily and the patient was discharged on the third week of hospitalization with recovery of renal function. **Main conclusions:** Knowledge of the risk of developing kidney damage after the *Bothrops* accidents, immediate care should include adequate intravenous fluid reposition. But the most important treatment is the early administration of specific antiophidic serum that should be available in rural areas with trained professionals to act in a timely manner. **E-mail:** izabellasafe@yahoo.com.br

Bitesven003- **Snakebites-induced acute kidney injury in Northeast Brazil**

Albuquerque PLMM[1,2], Lima JB[3], Lima CB[1], Girão MMV[1], Jacinto CN[1], Fernandes ATBM[1], Veras MSB[2], Silva Junior GB[1,4], Daher EF[1]
[1]Post-Graduation Program in Medical Sciences, Federal University of Ceará, Fortaleza, Ceará, Brazil; [2]Center for Toxicological Assistance, Instituto Dr. José Frota; [3]Hospital Geral Waldemar de Alcântara; [4]School of Medicine, University of Fortaleza, Fortaleza, Ceará, Brazil. Fortaleza, Ceará, Brazil

Introduction: Acute kidney injury (AKI) is a common complication of snakebites and is a public health problem in tropical countries. There are four venomous snakes genus involved in this complication: *Bothrops*, *Crotalus*, *Lachesis* e *Micrurus*. The aim of this study is to investigate the occurrence of AKI after snakebites in a reference hospital in Brazil. **Material and Methods:** This is a retrospective study including all patients victims of venomous snakebites admitted to the José Frota Institute, a reference emergency hospital in Fortaleza city, Northeast Brazil, from January 2003 to December 2010. Patients with AKI (group I) were compared to those without AKI (group II). Statistical analysis was done by the SPSS program, and p values<0.05 were considered significant. **Results:** A total of 233 patients were included. The majority of patients were male, precedent of rural areas (85.4%) and the most frequently affected body area was the lower limbs (62.2%). The prevalence of AKI was 10.3%. The main involved snake was *Bothrops sp* (62% of cases). The mean age of group I was 42±20 years, while in the group II it was 33±21 years (p=0.04). The time between the accident and medical care was higher in group I (23±24 hours) than in group II (14±17 hours), p=0.02. The time between the accident and the administration of the antiophidic sera was also higher in group I (24±24 hours) than in group II (13±15 hours), p=0.001. Serum sodium in group I was 134±6.9mEq/l, while in group II it was 139±4.8mEq/l (p=0.0001). The length of hospital stay was higher in group I (14±12.5 days) than in group II (3.3±2.2 days), p=0.0001. Factors associated to the development of AKI in the multivariate analysis were time between the accident and the administration of antiophidic sera, the dose of antiophidic sera and length of hospital stay. AKI was predominantly oliguric (54.2%), with a mean creatinine of 3.3±3mg/dl, need of dialysis in 29.1% of cases and complete renal function recovery in 50% of cases. There was no death in this cohort. **Main Conclusions:** AKI is an important complication of snakebites, being characterized by its severe course, in which half of the patients do not present complete recovery of renal function. The delayed administration of antiophidic sera is an independent risk factor for the development of AKI, which should guide preventive measures for providing these sera in the areas where accidents occur. **Financial Support:** CNPq (Brazilian Research Council). **E-mail:** ef.daher@uol.com.br

Bitesven004- **Ophidism urbanization in Rio de Janeiro, Brazil?**

Machado C.[1]; Bochner, R[2] e Fiszon, J.[3]
Instituto Vital Brazil [1], ICICT – Fiocruz [2], ENSP-Fiocruz [3]

The snakebites still represent a serious public health problem in tropical countries, because the frequency and the consequences that occur and deaths they cause. Most accidents in Brazil are recorded in the North and Northeast, where having the highest incidence. Most studies associating snakes rural activity. With the increasing urbanization of the country would be expected to reduce the number of cases. The State of Rio de Janeiro that has 97% of its population living in urban areas has been increasing the number of accidents. In the period 2007 to 2011, were registered for this state through the

Information System for Notifiable Diseases 2675 snakebites. Of the six cities that reported the most accidents are the capital, Angra dos Reis, Petrópolis, Nova Friburgo and Teresópolis, all with urbanization percentages exceeding 88%. Some factors may explain the presence of snakes in the increasingly urbanized areas. The first is the fact that snakes group of pit vipers (Bothrops and Bothropoides), responsible for 95% of accidents involving the identification of the animal who causes agression, being well adapted to disturbed areas. The second refers to the disordered occupation by man of urban and peri-urban areas near the preserved forests. The third may be associated with the growth of mountaineering activities in urban parks of regions comes closer to the man of the snakes. On the other hand, one should not forget that the legislation establishing the urban and rural areas is local prerogatives. Legislators may be defined as a municipal urban landscapes typically rural interest to meet tax collection. As a consequence, areas defined as urban activities that may harbor expose men to snakebites and thus an overestimate urbanization of snakebite. Further studies are needed for local, regional and national levels to establish the factors associated with this phenomenon. **E-mail:** herpetologia@vitalbrazil.rj.gov.br

Bitesven005- Evaluation of leucocyte response in individuals bitten by snakes in Campina Grande, PB, Brazil

Júnior, M. M. C.; Mendonça, G. A.; Luna, K. P. O.

Introduction: Snake envenomings are a serious neglected health problem. Snakebites occur worldwide and are a public health problem, victimizing around 421.000 people every year, with 20.000 deaths. In Brazil about 20.000 cases are reported every year with 0,5% mortality. As little is studied in Northeastern Brazil around envenomings caused by snakes, this work shows important data on cellular production triggered in bitten individuals. **Material and Methods:** Blood tests are performed at the Hospital de Emergência e Trauma Dom Luiz Gonzaga Fernandes, were patients are treated. Differential counts on leucocytes and platelets were performed at 0 hour before treatment, 12 hours and 24 hours after treatment. This platelet counting is made on an automatized counter (Counter 19 - Wiener Lab) and leucocyte counting is hand made with smear reading. **Results:** It was possible to observe that before treatment 70,83% of the envenomed patients presented leukocytosis, which remained even after 24 hours treatment (50%). Thrombocytopenia was observed in 45,83% of the patients, which remained elevated in 25% of same patients after 12 and 24 hours treatment. Typical lymphocytes levels were raised in only one individual, while after 24 hours treatment, 3 patients showed this level still raised. On the other hand, a decrease in typical lymphocytes was observed on 0 hours, and getting back to 33,33% of the patients after 24 hours treatment. **Conclusions:** Those results allow us to a better understanding on leucocyte and platelet response on humans, hematological parameters importantly involved on snake envenomings. **Keywords:** snake venom, leucocyte, platelet. **E-mail:** karlaceatox@yahoo.com.br, mmc-junior@hotmail.com

Bitesven006- Epidemiology of snakebites accidents in Petrópolis – RJ

Storck, D. S.[1], Machado, C.[2]
UNESA [1], Instituto vital Brazil [2]

Due to the large number of accidents caused by venomous animals in Brazil, especially in urban areas and areas that still retain fragments of forests on the periphery, data related to snake bites occurred during the period between 2007 and 2010 in Petropolis - RJ were analyzed. All the data were obtained from the Petropolis Epidemiological Surveillance electronic documents, filled in the "Single Record of Inquiry" (FII), completed by health care professionals at the time of the treatment. Later, for the same period of time, data were collected in the "Information System for Notifiable Diseases" (SINAN). From the analyzed data was observed that the municipality of Petrópolis ranks fourth in number of snakebites in the State of Rio de Janeiro and is the first among all the Mountain Region municipalities. The snake bites were in majority caused by Bothropoides jararaca with 92 cases evaluated (76.6%) and presenting symptoms compatible with the accident described, 13 cases (10.8%) were evaluated as Bothropoides accidents, but do not having the characteristic symptoms; 14 cases (11.6%) were evaluated as not

identified snakes and only 1 case (0.8%) was considered caused by a not venomous snake. Most accidents happened from October to April, with males and aged 10-50 years. The anatomic region most affected was the feet (45.8%), but in 3.3% of the cases this information was recorded as unknown region. The time elapsed between the accident and medical care was between 1-3 hours with 41.6% of cases. The accidents were mostly classified as moderate level (61.0%), followed by severe level (22.0%) and light level (14.4%). From the total of accidents, 99.1% were cured, although it is not possible by the FIIs to know if the patients had or did not have any sequel. Only one death was recorded. By the observed inconsistencies in the filled FIIs, it is concluded that special attention is needed to the epidemiology involving the snake bites in order to promote the improvement of information flow in public health care. It is observed that there is a huge lack of information regarding poisonous animals in the college courses related to the health care area. It is recommended more regional and / or state studies about the accidents epidemiological profile with venomous animals. **E-mail:** storck3@hotmail.com, herpetologia@vitalbrazil.rj.gov.br

Bitesven007- **Analysis of information and epidemiology about accidents by snakebites on the city Visconde do rio Branco – MG**

Machado, C [1], Carvalho, J. A[1][2].; Bruno, S. F.[2]
Instituto Vital Brazil [1]   Universidade Federal Fluminense [2]

Brazil has several families of snakes, but among these, only two are included in the group of venomous snakes: Viperidae and Elapidae. Considering the parafiletism of genus *Bothrops*, a new taxon was created (*Bothropoides*) and some species were reclassified. *Bothrops* and *Bothropoides* now belong to a group called Bothrops group. For the correct treatment of accidents caused by venomous animals, health professionals have access to the Manual de Diagnóstico e Tratamento de Acidentes por Animais Peçonhentos. The SINAN, Information System of Notifiable Diseases, aims to register, among other health problems, accidents caused by venomous animals. In the city of Visconde do Rio Branco, MG, there aren't analyses involving accidents caused by snakes. This work aims to analyze the information of snakebites in this city in the period from 2007 to 2010. Was made a search on the notification individual chips (FINs) of accidents in the city between 2007 and 2010 comparing them with SINAN database. A chip model was built from the FINs to fill the details of the accident. The fields considered most important were transferred to this model and all were filled again in accordance with the original chips. The information can be accessed at SINAN were compared with the notifications generated by the Secretary of the Municipal Health. All accidents reported to the Health Department of the Visconde do Rio Branco were caused by *Bothrops*. The percentage of male patients was higher than females, representing 71,4% of the accidents, which is probably due to the higher frequency of men working in the field. With respect to patient age, the most affected age group was between 25 to 49 years. The time elapsed between the bite and hospital care predominated between 0 and 1 hour after the accident. Regarding the severity of the accident, in three years no case was classified as severe, and most were classified as light. All patients were treated with antivenom. Most accidents received 4 ampoules. The treatment of moderate cases was also in accordance with the manual, but one patient received 10 ampoules, contrary to recommended. The absence of cases that led the patient to death may be indicative of low gravity of *Bothrops* venomous. Analyzing the area of occurrence of accidents, the countryside was the most affected both in accidents with females and males. The comparison of the information provided on the site of SINAN with fields that are present in notification individual chips resulted in 11 absent fields, approximately 47,8% of the information does not become public for viewing of all. That is, the data are not fully available in SINAN and it difficult to obtain the information. **E-mail:** herpetologia@vitalbrazil.rj.gov.br

Bitesven008- **Intestinal parasites in captive snakes of the Vital Brazil Institute, Niterói, Rio de janeiro, Brazil: preliminary results**

Souza, JL[1]; Barbosa, AS[2]; Nunes, BC[1]; Uchôa,CMA[1]; Vazon,AP[1]; Cortez,MBV[1]; Silva,VL[3]; Más, LB[4]; Melgarejo, AR[4]; Bastos, OMP[1].
1. Univ. Federal Fluminense-RJ, CMB, MIP. , 2. Fundação Oswaldo Cruz-RJ, IOC., 3. Fundação Oswaldo Cruz-RJ, ENSP, DCB. 4. Instituto Vital Brazil-RJ, Dep. de Zoologia Médica e Dep. de Herpetologia.

The intestinal parasitism in serpents may bring on impairment of their development and decrease in survival, especially under captive conditions. Although there is a significant amount of captive specimens, knowledge on intestinal parasites and more sensitive diagnosis techniques are still scarce, especially relating to protozoa. This work is targeted at broadening the knowledge about parasitic species and their diagnosis using concentration techniques. The serpents used are kept at Vital Brazil Institute and were captured in different places. In small amount, some of them were born at the very Institute. Fecal samples were collected from August (2011) to February (2012) of *Bothropoides jararaca*, *Bothrops jararacussu* and *Caudisona durissus*, totaling 60 samples. The fecal material was removed from the cardboard of the plastic retaining boxes and sent to the Laboratory of the Department of Parasitology at Universidade Federal Fluminense (UFF). The techniques were Ritchie (1948) modified by Young et al. (1979), Sheather (1923) modified by Huber (2003), and Willis (1921). The frequencies of parasitic structures found were: 13,3% for *Kalicephalus* sp.,10% for *Ophidascaris* sp., 18,3% for *Rodentolepis* sp., 3,3% for *Giardia* sp., 42% for amoeboid cysts, 71,7% for *Caryospora* sp., 11,7% for *Sarcocystis* sp., 11,7% for *Aspiculuris* sp., 6,7% for unsporulated coccidia, 8,3% for *Ancylostomatidae*, 10% for *Rhabdias* sp., 30% for *Syphacia* sp., in addition to larvae 16,7% and a great amount of acarus eggs 88,3%. Note that *Rodentolepis* sp., *Aspiculuris* sp. and *Syphacia* sp. were also identified and this may point to the occurrence of pseudoparasitism, as these animals are fed with mice, common hosts of the said parasitic species. The finding of parasites in serpents may reveal a reduction in their quality of life. Thusly, more in-depth studies on parasitisms and their respective treatments are necessary. Owing to the importance of the subject, the study will continue, involving the other specimens at Vital Brazil Institute, aiming at: implementing a parasitological management system which is most suitable to bioethics and welfare needs of these reptiles, so that they may fulfill their important role as an element in the chain of production of biopharmaceuticals. **Email:** alynne.barbosa@ioc.fiocruz.br

Bitesven009- Epidemiological aspects of accidents caused by venomous animals on the Piauí state, Brazil

Barros. J.C.S.*, Chagas. M.F.B.*, Araújo.T,M,E.**.
* Secretaria de Estado da Saúde - Teresina – Piauí – Brasil, ** Universidade Federal do Piauí – Teresina – Piauí – Brasil.

Introduction: The Poisonous animals cause accidents annually with relevance to public health in Brazil. In Piaui State accidents occur annually in all regions of the state, which sometimes result in removal of the extended work, permanent sequelae, and some deaths. **Objective:** Lifting the occurrence of envenomations with notification to the Information System for Notifiable Diseases (SINAN) of Piauí State, in the period 2010 to 2011. **Material and Methods:** This was an epidemiological survey carried out by means of observation of medical records to envenomations of the SINAN using the software TABWIN version 3.2. **Results:** In the period 2010 to 2011 were 2046 reported accidents caused by venomous animals, distributed in 86 cities, with the most relevant ones caused by scorpions (59.2%) followed by those caused by snakes (28%). The most affected age group was 20-34 years (25%), with predominance of aggression in males (62%), and 65% of cases were considered mild evolving to cure. Accidents predominate in rural areas with 67.5% of notifications. **Conclusion**: The epidemiological aspects evaluated show that the dynamics of accidents caused by venomous animals in the state of Piauí remains the same over the past five years. In this perspective, it emphasizes the importance of intensifying educational activities concerning poisonous animals, by the city health department, directed to the population, aiming to significantly reduce the incidence of awareness by the local population. **Keywords:** Poisonous animals, snakes bites, epidemiology**. E-mail:** barrosjulio97@yahoo.com.br; auropiaui@yahoo.com.br   telmaevangelista@gmail.com

Bitesven010- Epidemiology of accidents involving venomous animals in Piauí, 2001 - 2011

Sales, A. A. C. O. S.[1]; Silva, T. M. G. V.[1]; Almeida, M. G.[1]; Marcelino, P. F. S.[1]; Nunes, A. F.[1]; Pedrosa, J. I. S.[1]; França, L. D.[1]
[1]Federal University of Piauí (UFPI), Teresina, Piauí, Brazil

Introduction: In Piauí, are common accidents with venomous animals. In tropical countries, such occurrences are part of both socioeconomic and medical problems, especially where there is a greater negligence of care. In Brazil, reports of such accidents have become compulsory from the implementation of the National Program for Control of Accidental Poisonous Animals in 1998, which led to a discussion of this injury as a public health problem, considering its potential morbidity and mortality. The objective of this work was to do an overview of epidemiological envenomations in the state of Piauí concomitantly with the public policies implemented in the country. **Materials and Methods:** Quantitative descriptive and retrospective study of epidemiological character. It is based on direct collection of quantitative data for the interval 2001 to 2011 in tabulations of the Information System for Notifiable Diseases. Then, it follows an active search for theoretical bases Scielo, BVS and Bireme using the descriptors Accidents involving venomous animals. **Results:** For the reporting period, there were incidences of 645 reported cases of envenomations every year in the State of Piauí, in a total of 7068. A total of 810 (11.46%) had development in white / ignored. However, partial data by year show a rising curve of incidence in a total increase of 22%. There were 6255 (88.5%) of healing, increased from about 4% for the study period. Since the cases that evolved to death were 33 (0.46%). These facts corroborate with the literature findings that indicate low mortality, generally associated with species of the genus Crotalus. The cases of lower mortality but higher morbidity rates are generally in consequence of Bothrops, common across the state. **Conclusion:** The data found in Piaui reflects the general framework of Brazil for the period 2001 to 2011, saved the appropriate proportions. We can see the efficiency of service in all areas based on the progressive increase in healing over the years at a rate of 4%. In this light, we can infer the importance of epidemiological surveillance teams have to carry out campaigns for actions of promotion and health education, especially in rural areas not assisted by the health services in the strict sense. The knowledge of prevalence areas allows targeted actions and better development of strategies to cope with a public target situation. Although the time deployment of public policies aimed at these actions, are often the only links between community and health services to treat these illnesses. **E-mail:** allancsalles@hotmail.com

Bitesven011- New directions for antivenom serum therapy in Brazil: A study from the review anticrotalic monospecific serum used in the State of Bahia

Biondi, I.; Oliveira, D.C
State University of Feira de Santana, Feira de Santana, Brazil

Strategies to tackle the problem of snakebites in Brazil date back to the early twentieth century, when Vital Brazil, in 1911, recommended the book The Defence against Ophidismo actions which currently consists of epidemiological surveillance measures to reduce accidents and control, and treatment with gender-specific antivenom snake, taking into account the regionalization of the venom. According to this scientist, only a careful study of biology dealing with the toxins would provide the means to reduce accidents and deaths by snakes in Brazil and worldwide. Studies using refined techniques such as genomics, proteomics and advances in immunology, allowed the State University of Feira de Santana (UEFS), Bahia / Brazil, through the Laboratory of Venomous Animals and Herpetologists-LAPH, review the effectiveness of serotherapy against accidents venomous animals in the State of Bahia, studying: (i) interspecific and intraspecific variability of venoms, (ii) the taxonomic status of genera of snakes, along with a review of phylogenetic history and (iii) the review by gender and biogeographic populations snakes, (iv) the action of venom immunological and pathophysiological through experimental models. This study confirms that only the junction of several sciences in a multidisciplinary approach, it was possible to prove: (a) serum anticrotalic, monospecific, financed and distributed by the Ministry of Health for the State of Bahia, partially neutralizing the pathophysiological effects caused by the venom of *Crotalus*, (b) that evolved to cure patients developed chronic renal failure as a sequel, (c) the existence of new toxins from

population studies of snakes, and (d) the discovery of new species of the genus *Crotalus*, currently called for the status of *Crotalus sp* (publication in press) from the use of molecular biology. These results prompted the review of real-neutralizing capacity of sera used by the network of state health services, considering that at the time of production of these sera institutes responsible do not use venom representatives from the region of occurrence of accidents in the "pool" of production. It also initiates the process of manufacturing the first regionalized monospecific sera from Brazil experimentally against accidents caused by snakes (rattlesnake) the state of Bahia in Brazil in partnership with the Instituto Vital Brazil, Financing Secretary of Science, Technology and Innovation and the Secretary of Health, being the first product developed through the project "Venoms of semi-arid of Bahia and its biotechnological importance," which compose the platform Bioprospecting Toxin Animals in the Technological Park of Bahia, in line with guidance from the World Health Organization on the production of sera from the geographical region that will be used. **E-mail:** ilkabiondi@uefs.br

Bitesven012- **Accidents by venomous animals on RS: SINAN data analysis, from 2008 to 2010**

Silveira, C. da and Mardini, L. B. L. F.
State Health Ministry – Porto Alegre, Brazil

Introduction: The SINANNET data analysis is an important tool to guide the Health Surveillance actions and evaluate the impact on the venomous animals' accidents control. **Objective:** Analyze the notifications recorded on SINANNET and compare inconsistence and/or incomplete data percentage by year. **Material and Methods:** Data about accidents provoked by venomous animals on 2008, 2009 and 2010 was analyzed. With the usage of the TabWin, we have picked up the notifications where the field sorotherapy had filled out as YES. Starting with this scope we made the inconsistence and/or incomplete data analysis on important fields for the action plan on the Health Environment Surveillance and for the antivenom serum usage and distribution. **Results:** on the years of 2008, 2009 and 2010, respectively 2.09%, 1.25% and 1% of the notifications does not contain the number of the used antivenom serum ampoules on the treatments. In addition, 9.25%, 14.58% and 10.98% of the records do have some other type of inconsistence on the following fields: animal on the accident, serpent-specie, spider-specie, caterpillar-specie and manner of serum used. **Discussion and conclusion:** The results shows us that the notification percentage did decrease where the field "number of used antivenom serum ampoules" has not been filled out. But, even with this inconsistence percentage reduction from 2009 to 2010, they are higher than the percentage on 2008. So, we identified the needed to make changes on the way we are fixing the records. To implement those fixes we are scheduling meetings to discuss the epidemiologic aspects of the accident with venomous animals and preparing training sessions for the people responsible to insert the records on the application for all the 19 health subdivisions. **E-mail:** cynthia-silveira@saude.rs.gov.br

Bitesven013- **Analysis of the research form of Accidents involving venomous animals of the Information System for Notifiable Diseases (Sinan): Identifying gaps, suggesting changes**

Oliveira, D.C; Biondi, I*
State University of Feira de Santana, Feira de Santana – Brazil

Introduction: The understanding of the actual dimension of Accidents involving venomous animals implies the planning of surveillance with the premise of obtaining information to establish directives for prevention, assistance to victims, distribution of antivenom, among other things. In Brazil, the information of systems that relate accidents and deaths from venomous animals, the Information System for Notifiable Diseases (Sinan) covers 100% of the states of the federation. However, there are many difficulties for the monitoring of various health problems, being considered in this study the exclusion and/or absence of important fields, from 2007, the structure of the current form of research for accidents involving venomous animals. In this sense, the objective of this study was to identify the structure of the

current investigation of Sinan form elements that hinder the surveillance related to the health impacts caused by Accidents involving venomous animals. **Material and Methods:** The study was conducted through a qualitative approach of exploratory and descriptive. The relevance of data or absence of the structure of the form of the research Accidents involving venomous animals Sinan was analyzed based on a thorough literature review and documental of the guidelines for epidemiological surveillance of these accidents, resulting socioeconomic impact of the sequels, and statistics of accidents and deaths by venomous. **Results:** This study identified four gaps in the schedule in question: (i) in item "Background epidemiological" field 36 refers to the location of occurrence, but this name gives rise to doubts in the filling, it is the neighborhood, if the residence or recreation area, and (ii) absence of geo-field preventing the georeferencing of accidents. (iii) under "clinical data", the field 43 refers to the systemic manifestations, however, such events are grouped by type, without the possibility of individual identification, eg, renal (oliguria / anuria), (iv) the item "conclusion ", the field 57 refers to the evolution of the case, but does not have the data about healing with the sequel. **Conclusion:** The changes suggested in the form of research of the Accidents involving venomous animals Sinan are on field 36, the change of title to City District occurrence, besides adding the geo-field in order to better define the place where the accident occurred for georeferencing and planning in education, health and environment. For field 43, the suggestion is the breakdown of the data for better visualization of the systemic manifestations of reported cases, and 57 for the field, the change would be given the reinclusion Healing sequel, due to the exclusion of this from 2007, implying the lack of current cases that result in consequences. **E-mail:** ilkabiondi@uefs.br

Bitesven014- **Epidemiological profile of envenomations in the Rio Grande do Norte state, 2007-2012**

Barbosa, IR[1]; Barbosa, IV[1].
[1] Prefeitura do Natal, Secretaria Municipal de Saúde, Departamento de vigilância em saúde – Natal, Rio Grande do Norte, Brasil.

Introduction: In tropical countries, envenomations represent a serious public health problem, by frequency of occurrence and causing morbidity and mortality. There are geographical, social, economic and cultural factors that determine different profiles between regions and countries. Knowing these profiles is very important in the analysis and evaluation of health risks. **Objectives:** To describe the occurrence of envenomations in the state of Rio Grande do Norte, in the period 2007 to 2012, about age and gender, most affected anatomical site of the accident, the main local symptoms, type of animal involved in the accident, time elapsed between the accident and care, and death rate. Methods: Secondary data on cases of envenomations, occurred during the period 2007 to 2012 in the Rio Grande do Norte state (RN), registered at the Information System for Notifiable Diseases (SINAN). Data were analyzed using SPSS 17.0., calculating the relative frequencies for the variables analyzed. **Results:** A total of 15,615 were reported envenomations in the Rio Grande do Norte state. The highest incidence was registered in 2011, with 134,34 accidents per 100,000 inhabitants (Table 01). The female (53.17%) (Figure 01) and aged 15-24 years (19.24%) (Figure 02) were the most affected. Scorpions were responsible for 65% of the accidents, followed by snakebites (14%) (Figure 03). The feet and toes were the anatomical areas most involved in accidents. Over 45% of these accidents reached these areas of the body (Figure 04). And local reactions, 83.7% of patients reported local pain and 37.17% reported edema (Figure 05). Systemic manifestations were present in 7.3% of patients. The time between the accident and patient care, 30.28% of the accidents were served between 0 and 1 hour and 25.16% between 1 and 3 h, 5.7% waited more than 24 hours for care (Figure 06). There were 20 deaths in the period, representing a mortality rate of 0.12%. **Conclusions:** The envenomations profile in the Rio Grande do Norte state showed similarities with the profiles described for other areas and regions in Brazil, although peculiarities have been observed, as the higher incidence in females, and a low mortality rate, which was lower than that recorded for the northeast region and Brazil. It is believed that the highest frequency of accidents in the northeast region of Brazil is directly related to social and economic conditions to which the populations are submitted, plus a great urbanization of the species causing. Characteristically, the studied area aggregates risk factors and exposure to accidents, due to its vegetation, the climate, periphery cities phenomenon and low Human Development Index, reflecting deficiency in health practices and care practices and prevention lack. Although the descriptions of profiles of these accidents are more

common today, the clinical and epidemiological characteristics and the actual magnitude of envenomations in North and Northeast regions are still poorly known due to underreporting or omissions in the gathered information. **E-mail:** isabelleribeiro@oi.com.br

Bitesven015- **Epidemiological profile of accidents with scorpios in Uberlândia 2008 to 2011**

Pereira, N.V. , Carvalho, E.F.G. , Toffolo, S.R. , Oliveira, C.R.C.

Introduction: In Brazil, three species of the genus Tityus scorpions have been blamed for accidents on human T. serrulatus (yellow scorpion), T. bahiensis (brown scorpion), and T. stigmurus, and T. serrulatus is responsible for most severe cases. **Methods:** The methodology consisted of a bibliographic search in the database online as LILACS, MEDLINE, SciELO, using descriptors such as scorpions, scorpions and scorpion accidents. To collect data regarding the characteristics of accidents with scorpions in Uberlândia were used data from a system of health information from the National Health System - DATASUS available for the years 2008 to 2011. **Results:** During the study period, there were 11 admissions data, and the year 2010 was presented the highest number (54.54%). The most affected age group was 0-4 years (36.36%). Regarding gender, there was an almost equal distribution, with higher prevalence among females (54.54%), with no accident that led to death. The race was more involved in brown (63.63%), followed by white (36.37%). The total cost was 6,778.78 Brazilian real, with an average of 616.25 Brazilian real per admission, and the age group 0-4 years with higher spending 2236.56 dollars. The average hospital stay was 2.5 days, and in the age group 40-49 years, the average was 8 days. **Discussion:** Based on the results of the profile accidents by scorpions in Uberlândia includes females, mulatto, aged between 0 and 4 years. **Conclusion:** The data available on accidents by scorpions DATASUS portray a small occurrence, but this number may be higher due to not seeking medical attention. The prevalence in the age group 0-4, can be explained by the risk that children are subjected when exposed in play in places that are havens for these animals. **Keywords:** Scorpions.Accidents with scorpions. **E-mail:** norielvp@hotmail.com

Bitesven016- **Epidemiologycal profile of scorpions accidents at the region of Amures (SC) in the period of 2000 to 2010**

Quadros, R. M.[1], Varela, A. R.[1], Cazarin, M. G.[1], Milleti, L. C.[2], Marques, S. M. T.[3], Silva, M. R.[4]
1. University of Planalto Catarinense – UNIPLAC; 2. Santa Catarina State University; 3. Federal University of Rio Grande do Sul; 4. Center for Zoonosis Control (CCZ)

The scorpions are arthropods that have venom for defense and food capturing. Some venoms are very toxic in mammals including humans, providing serious risks to the health of the population. There are about 160 species of scorpions, being those of the genera Tityus responsible for more serious accidents. The main species capable to cause serious accidents are *T. serrulatus*, *T. bahiensis*, *T. stigmurus* and *T. cambridgei*. The *T. serrulatus* is widely distributed in Brazil, being considered the most poisonous in South America. In the state of Santa Catarina, there are two species recorded as the most dangerous, the *T. bahiensis* and *T. costatus*, responsible for the scorpionism cases. Due to deforestation and uncontrolled growth of cities, these arthropods invade houses, causing accidents, especially in children that can be fatal. The objectives were to identify the prevalence of scorpions' accidents in the region of AMURES using the data of the System of Information of Injuries and Notification (SINAN) in the period of 2000 to 2010 and to identify the main presented species in the city of Lages, SC. The research had the approval of the Ethics Committee of the University of the Planalto Catarinense (UNIPLAC- 011/2011).The results shows that it in recent years, the incidence of scorpionic accidents has been increasing in the region. The cities with the bigger occurrence of accidents were Anita Garibaldi (50%), Lages (27.2%), São José do Cerrito (6%) and Cerro Negro (5.3%). In relation to gender, men had more accidents (56,1%) and the place more affected was the fingers, that had presented the biggest number of accidents (35.7%), fact explained by the activity of workers in lumber sector. The only species found in Lages, SC,

according to the Center for Zoonosis Control is the *T. costatus.* Keywords: scorpions, *Tityus costatus*, scorpionic accidents. **E-mail:** rosileia@uniplac.net

Bitesven017- **Health education as a tool for control and prevention of scorpion: A study to assess knowledge and practices of Community Health Agents (CHA) in the municipality of Feira de Santana, Bahia**

Carvalhais, R.; Oliveira, D. C.; Biondi, I.[*]
State University of Feira de Santana, Feira de Santana-Brazil

Introduction: The scorpionism is a serious public health problem in many parts of the world. In Brazil, these accidents began occurring in the rural area to become typically urban. To guide the population on prevention of accidents by scorpions, the Brazilian health system, the level of primary care, has the Community Health Agents (CHA), which constitutes an important support in the development of actions in health education. Thus, this study aimed to assess the knowledge and practice of HCA on the subject Scorpion Scorpio and in the neighborhoods of the city of Feira de Santana, Bahia, Brazil, where agents carry out their activities. **Material and Methods**: We conducted a quantitative exploratory study with 123 community workers in three distinct stages: (a) applying the first questionnaire with independent variables related to the ACS (gender, education, training) and dependent variables related to the scorpion / scorpion (knowledge, presence / absence of the agent, prevention and treatment), (b) conducting a workshop on Scorpion and Scorpion, and (c) a second questionnaire with the same variables in the first questionnaire administered after the workshop. **Results**: In the first questionnaire results showed that 90% of ACS was female, 78.9% have completed high school education with 48.8% having found a scorpion in the neighborhood where they worked. 95.9% of ACS said they knew the subject Scorpion and Scorpion, with 37.4% referring to knowledge of the consequences of injury to health. On training on the topic in question, 69.1% of agents reported participation in courses conducted by the Centre Anti-Poison Information, located in the city of Salvador, the Laboratory of Venomous Animals and Herpetologists, located at the State University of Feira de Santana and by the city of Feira de Santana. During home visits by community health agents, 19% discuss the issue and Scorpio Scorpion. The type of treatment applied to the injured in the first survey 76% of agents said they know that the anti-scorpion is the only treatment for these injuries. In the item as acting with the victim 60% of health care providers who refer patients responded to the General Hospital Clériston Andrade, reference assistance to accident victims cited by 98.8% of agents in the second questionnaire. **Conclusion:** The community health agents in their practices using the theme Scorpion and Scorpion, with the aim of informing the community about the risks of the crash was so tenuous From these results the Laboratory of Venomous Animals and Herpetologists / State University of Feira de Santana intensified its work qualification agentsweekly occurring biannually in partnership with the municipal unions and the municipalities of the State of Bahia**. E-mail:** ilkabiondi@uefs.br

Bitesven018- **Scorpion stings in 2011 in Maceió, AL / Brazil**

Calheiros, M. B; Cavalcante, J. C; Pinto, M. S. C; Rocha, R. C. M. A; Góes, L. F; Antunes, T.M.T
Federal University of Alagoas; Municipal Health Secretariat of Maceió, Maceió, Brazil

Venomous attacks represent a serious public health problem in Brazil. Among different types of accidents, scorpion stings require special attention because of their high incidence and potential severity. Since 1988, the Brazilian Ministry of Health has required the reporting of new cases with the objective of establishing control policies and prevention. Despite these efforts, scorpion accidents are still quite common in many Brazilian states and the average national rate for the year 2010 was 26,3 cases per 100,000 inhabitants. Northeast region has the largest number of cases (23,929) with the State of Alagoas leading the way. The capital of Alagoas, Maceió, ranks as one of the three capitals of epidemiological interest to Brazil. This paper aims to draw a profile of the incidence of accidents involving scorpions during the year 2011in the city of Maceió. This is a cross-sectional study with data obtained from the Information System for Notifiable Diseases (SINAN) processed by the Municipal Health Secretariat of Maceió. There have been 2620 Scorpion stings in the city of Maceió, representing an

incidence of 276.8 cases per 100,000 inhabitants, 10,4 times higher than the average national incidence. The largest number of cases occurred during March, April, May and December. Among the affected individuals, 62% are female. The most affected age group was 15 to 24 with a total of 17,52% cases, followed by ages 5-14 with 15,88% of cases and ages 25-34, at 15,6%. Regarding occupation, the most affected were students with 22%, housewives with 15.5%, and retirees/pensioners with 6% and domestic employees in general services with 4.2% of all incidents. When analyzed, the anatomic site of the bite was identified most frequently in the lower limbs, accounting for 49.9% of cases, followed by upper, representing 34.5%, head and trunk correspond to 5.6% and 9.8% be unreported. As for the severity, 97.6% of cases were classified as mild and only 1.5% and 0.3% as moderate or severe, with 0.6% of the total unrated. Finally, with respect to the time between the occurrence of scorpion envenomation and treatment by a health professional, 52.5% of cases were seen within 1 hour and 20.7% of cases between 1 and 3 hours. In 2011, there were 2620 accidents with scorpions and the women, the age range 15-34 years and the students were the most affected groups. The site preferentially bitten was on the lower limbs and the majority of accidents were classified as mild in severity. The medical care was made until the first hour after the accident in most cases. **E-mail:** lilabulhoesc@gmail.com

Bitesven019- **Scorpion control: an important tool for envenomation surveillance in Minas Gerais state, Brazil**

[1]De Freitas, L. J. A.; [1*]Hatadani, H. S.; [1]Tourinho, B.; [1]Amâncio, F. F.; [1]Brito, M. G.; [1]Ferraz, M. L.
[1]Secretaria de Estado de Saúde de Minas Gerais (SES-MG), Belo Horizonte-MG, Brazil

Introduction: Minas Gerais (MG) is the Brazilian state with the highest number of envenomation reported cases, with increasing data over the years, according to the Reportable Disease Information System. In the years 2010 and 2011, there were 25416 accidents and 54 deaths, especially accidents by scorpions. Given that importance the health surveillance associated with the scorpion control in the municipalities of MG is essential to reduce the number of cases and mortality. Due to these animals have a high proliferation capacity, the correct scorpion control and handling become necessary. Thus, training has been conducted in MG to qualify and intensify efforts on scorpion control. Objective: To assess the scorpion control activities carried out in MG, Brazil, along the years 2010 and 2011. **Material and Methods:** Training was conducted in 2009 with support from the Brazilian Ministry of Health to train the technicians of the Regional Health Services of MG (RHS) about scorpion control, biology and handling in order to multiply the information for municipalities and to direct actions indeed. Thus, scorpion capture activities were established taken by active search in seven RHS that have implemented the scorpion control. Through the spontaneous demands in municipalities the main scorpion species in MG were identified. From the total captured animals by RHS calculations were made using proliferation spreadsheet, to estimate the amount of scorpions that could be generated from each one captured. **Results:** 5353 scorpions were captured in 2010 (n=2477) and 2011 (n=2876). Only Diamantina (3%), Patos de Minas (0.7%) and Uberaba (14%) RHS had captured in two years, so 563 specimens in 2010 and 393 in 2011. In 2010, Barbacena RHS (8%) and Pouso Alegre RHS (52.5%) captured 193 specimens and 1305, respectively, whereas the Montes Claros RHS (9%), 257 scorpions, and Ituiutaba RHS (35%), 1015 scorpions in 2011. Although Uberlândia RHS has not done the training, only the municipality worked actively on control activities and captured 1627 scorpions (30%), 416 in 2010 and 1211 in 2011. The most abundant species were *Tityus serrulatus*, great medical importance species, and *Tityus bahiensis*. The calculation using proliferation spreadsheet estimated that over two years, the number of captured scorpions could have generated 283709 new individuals, and 10106464 in four years, considering immature and adult animals. **Main Conclusions:** The scorpion control contributes to reduce these animals in the environment, which may have impact on accidents and deaths. In two years, the number of captured animals increased in most RHS, due to the high proliferation capacity of scorpions and/or effectiveness of control activities. Therefore, training and implementation on scorpion control proved to be an effective strategy for municipalities in the RHS of MG. **E-mail:** helenita.hatadani@saude.mg.gov.br

Bitesven020- Scorpionism in the Bahia State: epidemiological and clinical study of the accidents attended by the Anti–Poison Information Center (APIC), in the period of the 1995-1997

Biondi,I. Oliveira, D.C.
State Univercity of Feira de Santana, Feira de Santana-Brazil

Introduction: The accidents caused by scorpions, characteristic of the rural area, have been assuming new features, due to new favorable ecological conditions for the scorpions. This new situation enhances health risks. The constant appearance of scorpions in Salvador, Feira de Santana and other counties has directed our attention to the study of scorpionism of the Bahia state. Material and MethodsIn this study, a description of the clinical and epidemiological characteristics of the accidents occurred in Bahia is given, from 1995 to 1997 1.163 medical reports from the Anti – Poison Information Center (APIC) were analyzed. The counties and yours regions were studied for calculation of the incidence. The number of population used was the one resulting of the 1996 Population Counting. The variables were: time and space, etiological agent, demographic variable and local and systemic clinical manifestations, severity degree and treatment. ResultsThe epidemiological analysis show an incidence of accidents of 8,48/100.000 inhabitants, which points to an increase rate of the scorpionism in the state of 1,3 times (58,2%). Among the seven regions studied, the higher incidence was found in the Salvador region: 21,93/100.000 inhabitants. The lethality coefficient for the state was on of 1,79%, corresponding to 19 deaths, with a majority in the rural area (55,6%), all accidents provoked by the species *Tityus serrulatus*. As to the place of the accident, both in the rural and urban areas, female individuals had accidents at home and male individuals at work place. The time interval between the accident and medial assistance was longer for the urban area (73,3%). Considering the total of accidents, 46,57% of the individuals obtained medical assistance in three hours or less. Analyzing the agents by zones, *Tityus stigmurus* and *Tityus brazilae* prevailed in the urban area. The species *Tityus serrulatus* was responsible for the highest number of accidents in the rural zone (31,5%). The analysis of the accidents regarding the age groups showed that 52,02% of the cases (605 cases) hit the economically active age group (20-59). In categorizing the age of the stricken individuals, the most affected age group found was the group over seven years old, which was also the group who had less serum therapy administered, both in the rural and the urban area. Considering the severity of the accidents, the majority were classified as light accidents. The more frequent clinical local manifestations were pain and dormancy (91,4% and 67,9%, respectively) and the systemic were vomiting (25,9%), sweating (14,7%) and headache (13,5%). ConclusionThe accidents caused by scorpions in the Bahia state from 1995-1997 increase 1,3 times compared to 1992-1994 and occurred three times more in urban area. *Tityus serrulatus* was etiological agent responsible by 100% to deaths. The most affected age group was the group under 7 years old. **E-mail:** ilkabiondi@uefs.com

Bitesven021- Analysis of information about accidents by spider bites on the city Visconde do rio Branco - MG

Carvalho, J. A.[1][2]; Machado, C.[2]; Bruno, S. F.[1]
Universidade Federal Fluminense[1]; Instituto Vital Brazil[2]

According to Isbister (2011), the spiders of greater medical interest in Brazil belong to the genera Loxosceles (brown spider), Phoneutria (armadeira spider) e Latrodectus (black widow). In South America, the loxoscelism (accident by Loxosceles spider) is the most severe form of poisoning spider, is a syndrome characterized by hemolytic, necrotizing cutaneous or cutaneous-visceral (Freitas et al., 2006; Marques-da-Silva et al., 2006). For the correct treatment of accidents caused by venomous animals, health professionals have access to the "Manual of Diagnosis and Treatment of Accidental Venomous Animals of the Ministry Health" (2001). The SINAN, Information System of Notifiable Diseases, aims to register, among other health problems, accidents caused by venomous animals. In the city of Visconde do Rio Branco, Minas Gerais, located in the Zona da Mata, there isn't analyses involving accidents caused by spider. This work aims to analyze the information of spider stings in the city Visconde do Rio Branco in the period from 2007 to 2010. Was made a search on the notification individual chips (FINs) of

accidents in the city between 2007 and 2010 comparing them with SINAN database. A chip model was built from the FINs used by doctors to fill the details of the accident. The fields considered most important were transferred to this model and all were filled again in accordance with the original chips. The information can be accessed at SINAN were compared with the notifications generated by the Municipal Health. The countryside was the most frequent site of accidents arachnids. The females were predominant accounting for 53% of accidents. Most injured was over 50 years (46.6%). The classification of cases ranged from mild, moderate or severe, but considered mild accidents accounted for 76.3% of the total, only two cases moderate and severe. The use of serum in the treatment of accidents by spider bites was not adequate for mild cases, because all patients were treated with antivenom and according to the diagnostic manual of the Ministry of Health, mild cases should not be treated with serum (Brazil, 2001). In a moderate injury four vials were used according to the manual (2-4 ampoules) and the other five ampules were used outside of the recommended. The serious case washandled correctly, with 10 vials. The comparison of the information provided on the site of SINAN with fields that are present in notification individual chips resulted in 11 absent fields, approximately 47,8% of the information does not become public for viewing of all. That is, the data are not fully available in SINAN and it difficult to obtain the information. **E-mail:** josie_antonucci@hotmail.com

Bitesven022- **Case report of an accident with *Dirphia moderata* occurred in the Laboratory of Venomous Animals and Herpetologists (LVAH)**

Souza, F. S.; Andrade, Carvalhais, R.; Biondi, I*.

In Lepidoptera, the caterpillars represent the larval stage of the life cycle of the moths. It is at this stage that the accidents occur, whose clinic describes local symptoms (redness, pain, heat, formation of pustules and others), and systemic symptoms may develop and evolve to death depending on the causative agent of the accident. The species *Dirphia moderata* Bouvier, 1929 has its distribution restricted to the Southern Region of Brazil. However since 2005, our team recorded the seasonal occurrence of these caterpillars in the micro region of Feira de Santana, Bahia, and records here the geographic expansion of the occurrence of *D. moderata* to the state of Bahia, and from these data we work to develop the reproductive biology of this species, whose goal is the captive management for the development of studies with their toxins. This paper reports the occurrence of an accident with a specimen of D. moderata during maintenance in captivity in LAPH. This accident was possible to follow the damages at the inoculation site: pain, the sensation of 'burning', with training and erythema were the immediate local effects. Later there was the formation of pustules. After 72 hours the accident it was observed that at the inoculation site and presence of necrosis occurred algia. After 30 days of the accident, the site of inoculation found to be sensitive to the touch due to injury. With 45 days after the accident it was observed the healing process. With two months to the inoculation site was completely healed. After the accident, anesthetize some caterpillars and extract substances that make up the bristles, for assessing the haemorrhagic activity, according to Ferreira et al. (1992), using murine experimental model. Mice were inoculated intradermally with 30µg of the bristles of substances diluted in 50µl of PBS. After two hours the mice were sacrificed and the skin assessed for the evaluation of the extent of bleeding. The results demonstrated the occurrence of bleeding site, similar to that presented in the accident. **E-mail:** flaviane.fss@gmail.com

DIVERSE DISEASES

Diversedis001- Prevalence of HIV infection, syphilis, viral hepatitis and socio-behavioral vulnerability in the number of patients treated at the Center for Counseling and Testing of Tropical Medicine Foundation of Amazonas. Dr. Heitor Vieira Dourado (FMT-HVD).

Fernandes, BS, Miranda, AE, Talhari, S, Silva, LCF.
Tropical Medicine Foundation of Amazonas. Dr. Heitor Vieira Dourado.

Background: Brazil has accumulated extensive experience in testing and counseling for HIV/AIDS mainly conditioned by significant demand and responsibility to implement and expand the network of units/Counseling and Testing Centers in country. Individual counseling is a dialogue of trust that seeks to provide the user of health services (Center for Counseling and Testing) conditions to assess their vulnerability, their behavior, their own risks, facilitating decision making and judgment finding realistic ways of addressing its problems related to STD / HIV / AIDS. The Foundation for Tropical Medicine Dr. Heitor Vieira Dourado (FMT-HVD) functions how HIV Testing and Counseling Center for STD / HIV / AIDS (CTA/FMT-HVD). The aim of this study was to describe the epidemiological and socio-behavioral vulnerability on users of the CTA - FMT-HVD. **Methods**: Descriptive study will be cross-sectional in users of the CTA - FMT-HVD in the period July 2010 to June 2011. The procedures for data collection will follow the routine operations of the CTA FMT-AM, where the spontaneous demand of users will be screened and referred for nursing consultation and post-test. To determine the prevalence will use the results of HIV tests, VDRL and HBsAg and Anti HBc Total for hepatitis B and anti-HCV for hepatitis C. For the variable "reason for test" and the socio-behavioral frequency distribution will be held. Data were analyzed using the software EpiInfo Windows. For the prevalence of HIV infection, syphilis and hepatitis B and C, were calculated the percentage of reactive test results related to the total sample. The project was approved by the Ethics Committee in Research of the FMT-HVD. **Results:** Studied 339 cases. Of the total, 186 (57.2%) were male, whose gender ratio was 1.3 men for every woman. 147 (45.2%) were aged between 20 and 29 years - median of 27 years (23-36 DIQ). Schooling, 178 (53.3%) referred to the hight school. Of the total, 172 (51.5%) reported being single. Among women, 12 (8%) were pregnant at the time of service. Among the reasons for the CTA exams stood out story of risk exposure to STD / AIDS with 148 (43.9%). For the past 12 months, the prevailing type of partnership in both the heterosexual male (112 - 75.2%) and females (112 - 59.3%). Regarding the type of exposure, 303 (89.9%) referred to the sexual. Concerning the use of condoms with steady partner, 124 (36.7%) patients reported never having used a condom during the period. The most prevalent reason for not using condoms was a trusting the partner with 114 (33.7%). A total of 117 (34.5%) had symptoms related to HIV / AIDS. The reactive serology comprised 58 (17.1%) for HIV, 10 (3%) for VDRL, 3 (0.9%) for hepatitis C and no cases of hepatitis. There were 05 cases of HIV co-infection and syphilis. 224 (66.1%) patients returned to receive the results of tests performed. **Conclusion**: It was evidenced in this study a higher prevalence of HIV infection among cases compared with other infections studied. HIV infection was significantly high, being greater than or consistent with the findings of other studies. The socio-behavioral vulnerability evidenced indicates proximity of equality in HIV enter men and women, indicating greater vulnerability among the young adults, with a median schooling. Exposure to sexual risk remains the most common among the population, with heterosexual behavior and trust in a steady partner for not using condoms. **E-mail:** bruno_fernandes14@hotmail.com

Diversedis002- Knowled about sexually transmitted diseases in Campina Grande

Leal, NV[1]; Aires, J[1]; Cruz, RS[2]; Diniz, PA[3]; Marques, G[4]; Donato, ST[5].
[1]:Academic of Medicine, Federal University of Campina Grande, Campina Grande , Brazil; [2] : Academic of Pharmacy, Estadual University of Campina Grande, Campina Grande, Brazil; [3]: Academic of Physiotherapy, Estadual University of Campina Grande, Campina Grande, Brazil; [4]: Nurse of the Municipal Health of Campina Grande, Brazil; [5]: Professor Master Medical Microbiology (MSc) - Federal University of Campina Grande, Campina Grande, Brazil.

Introduction: Since antiquity, Sexually Transmitted Diseases (STD) pejoratively as major reservoirs and disseminators of SDT. However, many professionals choose such profession in search of better living conditions, since they are victims of the system, being socially marginalized, suffering from violence and prejudice, some living, even, in clandestinely. Most do not seek medical care for suffering discrimination, shame, or even lack of access. Therefore we see how the profession is stigmatized to the point that the actions of health coverage are faulty. **Material and Methods:** We interviewed 21 prostitutes in the city of Campina Grande-PB, Brazil, through questionnaires, by previous consent, with questions about the major STD. The invitation for this was done in a basic health unit. **Results:** The age of onset of sexual activity is distributed as follows: 11 (52.4%) began before the age of 15, 8 (38.1%) between 16 and 18, and only 2 (9.5%) above 18 years. On the demand of regular health services, only 17 (80.95%) reported frequent them regularly, with 11 (64.71%) in order to perform Pap smears. About exams once performed, 12 (57.14%) have already undergone HIV research, 9 (42.86%) for syphilis and 8 (38.10%) for viral hepatitis, while 8 (38.10%) never made any of these tests. When they were inquired whether they knew what was a STD, 7 (33.3%) denied and 14 (66.7%) affirmed, however, only 3 (21.4%) correctly approached the three possible modes of transmission: vaginal, anal and oral sex. Regarding the use of condoms, we find that 17 (80.95%) related that only one condom is enough for effective protection; in contrast, nearly half, 10 (47.62%) reported that protection is optimized with the simultaneous use of male and female condoms. **Main conclusions:** From the results, we find that the respondents began their sexual life very early in adolescence, constituting a risk factor, which is heightened by the multiplicity of partners. The access to health, as well as the exams, is restricted, consistent with the reality of our country, Brazil. More than half of the interviewees were aware that STD can be transmitted through vaginal sex, however, only a small percentage reported knowing transmission by oral and anal sex. Regarding the use of condoms, we can also verify conflicting information, as the majority were able to answer correctly that only one condom is effective for the protection, but about half believe that protection is improved by the simultaneous use of male and female condoms, information misguided, since it increases the chances of breaking the latex due to friction, facilitating the transmission of diseases. Such knowledge denotes how is deficient the information about the forms of transmission and protection of STD. **E-mail:** silviatdonato@gmail.com

Diversedis003- Frequency of Urinary Tract Infection in ambulatory patients and its bacterial antibiotic resistance pattern

Sanchez-Salas J. L.[1,] Hernandez-Robles A. G.[1,] Santiago-Lara A.R.[1]
[1] **Departamento de Ciencias Quimico-Biologicas. Escuela de Ciencias. Universidad de las Américas Puebla. Ex-Hacienda de Sta. Catarina Martir S/N. San Andres Cholula, Puebla, Mexico**

Background: Urinary Tract Infection is worldwide common and Mexico is not the exception. Epidemiological data collected from 2003 to 2008 in Mexico showed that Urinary Tract Infection occupied the third cause of morbidity. Women are the most affected population and risk increases with pregnancy. Children, elders and immunosuppressed patients are the other affected groups and gram negative bacteria rods are the most isolated being *Escherichia coli* more often isolated. However, Gram positive cocci are common too, especially *Staphylococcus spp*. Exist a lot reports about the antibiotic resistance mainly from nosocomial infections and little work is searched on ambulatory patients. Our goal was to establish the frequency of Urine Tract Infection in different age and sex and in different conditions (i.e. pregnancy or newborn). Also, to state the antibiotic resistance pattern from strains isolated from urine culture from ambulatory patients of Tehuacan, Puebla. **Material and Methods:** Urine samples were collected by aseptic conditions using benzalkonium chloride. One □L of urine sample was streaked on MacConkey, Mannitol Salt and Blood Agar all from Bioxon®. All petri dishes were incubated at 37°C overnight. The positive culture was considered when the UFC/mL was ≥100,000. Lower counts were considered when fastidious bacteria were isolated. When more than two different genera were found was considered contaminated sample and discarded. We use the Cowan and Steel criteria to start the identification and confirmed by Biomerieux® ID gallery (for identification) and a Biomerieux® ATB gallery (for antibiogram) depending if the bacteria was gram positive, or negative and special ATB gallery for *Pseudomonas* or *Streptoccocus*. For the statistic analyze, we used STATISTICA software from StatSoft Technologies and Mintiab software from Minitab, Inc. We applied different multivariate statistic models. **Results:** From the statistics with a p-value of .05 we confirmed that *E. coli* is the most common bacteria

isolated from pregnant women, following *Enterobacter gergoviae* and *Corynebacterium sp.* A high percentage of *E. coli* strains isolated showed resistance to oxacillin, trimetropi-sulfametoxazol, amoxicillin, penicillin and ticarcillin. In the other hand, *Staphylococcus* genera were isolated from the majority children samples. The majority *Staphylococcus spp* showed resistance to penicillin, trimetropi-sulfametoxazol, gentamicin, erythromycin, clyndamycin, tetracycline and oxacillin. **Conclusions:** In ambulatory patient still E.coli is the more often isolated bacteria mainly in pregnant women and Staphylococci coagulase negatives the most common in children. The antibiotic with less resistant was Imipenenm and clyndamicin which is the most prescribed in the medial service the different bacterial isolated showed high resistance to it. **E-mail:** jluis.sanchez@udlap.mx; robles.ale2210@gmail.com; ana_medinter@hotmail.com

Diversedis004- Fournier´s Syndrome as aggravating factor for death postpartum in the maternity ward of the Azevedo Lima State Hospital, in Niterói, Rio de Janeiro – a case report

Macedo, T.S.C.; Boechat, M.E.H.; Martins, C.S.; Santana, C.M.G.; Braga, A. L.S.
Hospital Estadual Azevedo Lima

Introduction: The Fournier Syndrome is a rare condition that has an acute onset and high level of morbi-mortality. Several are the predisposition factors associated with this condition such as diabetes mellitus, immunosuppression, kidney and liver failure, surgical procedures, peri-rectal, perineal and genitourinary infections and other less common conditions. The puerperal state is also a contributive aspect to the condition in analysis that may increase the vulnerability to the clinical manifestation of this syndrome. **Objective:** To present an account of a maternal death, an evolution of a postoperative of an individual with Fournier Syndrome **Materials and Methods:** Documental research using as a main source of information the Maternal Death Investigation Files and puerperal and newborn records. **Results**: L.C.S, thirty years old, living in Niteroi, Rio de Janeiro, homemaker, thirty one weeks along in her pregnancy. Presented symptoms and was admitted in the hospital in August, the nineteenth of 2011, with abdominal, lombar and thoracic pain. Obstetrical exam within normal parameters. Unsystematic pulmonary tuberculosis treatment for a year with as prescribed drugs. CHEST X-RAY: lung cavities, pleural effusion, brochiectasis, pneumatoceles, with presence of liquid. Positive Acid fast bacilli (sputum):++, VDRL and anti HIV negatives. Lower Urinary Tract infection with presence of 10 leukocytes per field. C-section performed on 08/20/2011.Newborn´s Apgar scale rating: 8/9. Left hospital by default on 08/24/2011 with her newborn, however both returned to same hospital on 08/27/2011. Patient presented in puerperium with low blood pressure (hypotension), circulatory shock, diffuse abdominal pain, surgical wound presenting with putrid discharge; no signs of peritoneal irritation; crackles and rales heard in left flank and epigastrium. In current use of tuberculostatic drugs with the addition of ofloxacine. Laboratory test results: hematocrit:27.4%, a leukocytosis of 23,800 with 16 rods, calcium:6.4, BUN:73 mg/dL, AST:743 u/L, ALT:694 u/l, alkaline phosfatase level:742U/L, GGT:593 u/l, amylase level:643 u/l, albumin 1.7,TAP: 26%,with an INR of 2,65; PTT 2,07. Chest Cat Scan revealing giant sized lung cavity at base of right lung with diffusely surrounding fibrosis, left lung with diffuse bands and smaller sized cavities, and a pulmonary condensation seen in both bases. Patient progressed into respiratory failure and submitted to endotracheal intubation with subsequent cardiopulmonary arrest and successfully resuscitated. On 08/28/2011, patient enters once again in arrest, and again successfully resuscitated. Died on 29/08/2011. Infant discharged from hospital on 09/10/2011. **Conclusion:** The puerperal patient clinical aspects associated with her other health conditions that included immunosuppression, liver failure, and tuberculosis have offered the ideal circumstances for the development of the Fournier Syndrome during the post-op period. **E-mail**: meditati@yahoo.com.br

Diversedis005- Frequency of potentially congenital infections in women with high risk pregnancy in Mexico

Murrieta.S.[1], Castañeda-Huitrón. A.L.[1], Figueroa. R.[2], Caballero-Ortega. H.[1], Correa. D.[1]
[1]Instituto Nacional de Pediatría, Lab. Inmunología Experimental, México, DF/MX, [2]Instituto Nacional de Perinatología, Servicio de Infectología, México, DF/MX

Introduction: TORCH, HIV and other infections can be vertically transmitted and provoke abortions or give birth to congenitally infected newborns, most of who are born subclinical but with high risk to develop squeals later in life. In Mexico, there are few reports on the frequency of these infections in pregnant women, and especially of co-infections. **Material and Methods:** Pregnant women attended at the National Institute of Perinatology are being studied for infection markers of acute or current infections using commercial ELISAs. The results presented herein come from the first 477 women, who donated serum for detection of six serologic markers. They also answered a questionnaire applied to search for clinical related factors. **Results:** The frequency of different infection markers and of co-infections can be observed in table 1.The frequency of infections peaked in the second and last age groups. HIV and CMV were the commonest infections and no positive case of HBV has been found. All CMV cases had high IgG avidity, i.e. they were re-infections. A previously unknown frequency of 1.0% of Parvovirus B19 was also observed. Syphilis was only detected in a woman from the older group who also was infected with HIV. Other two co-infections were observed. **Conclusion:** The results seem different to data reported in other parts of the world, probably due to a) a quite large proportion of young women; b) markers of acute or current infection were looked for in the cases of CMV, Rubella, Parvovirus and HBV; c) Rubella IgM is probably reflecting response against the vaccine actually being administered by the Ministry of Health of Mexico, since no case presented clinical signs of the disease. Table1. Number and percent of infection markers in a sample of pregnant women with high risk pregnancy

Age group	n	CMV IgM	Rubella IgM	Parvovirus IgM	HCV Abs	HBsAg	Syphilis*	HIV**
<21	119	1(0.8)	0	1(0.8)	0	0	0	1(0.8)
21-25	82	1(1.2)	3.7	1(1.2)	0	0	0	2(2.4)
26-30	86	1(1.2)	0	1(1.2)	1(1.2)	0	0	1(1.2)
31-35	85	1(1.2)	1(1.2)	0	0	0	0	0
>35	105	2(1.9)	1(1.0)	2(1.9)	1(1.0)	0	1(2.5)	3(2.9)
Total	477	6(1.3)	5(1.0)	5(1.0)	2(0.4)	0	1(0.4)	7(1.5)

*Syphilis frequency was calculated from 223 women, since the laboratory test was not valid for the rest of the samples; **HIV infection data were gathered from the questionnaire. Note: three cases presented co-infections: one HIV+CMV, another HIV+Syphilis and a third one CMV+ParvovirusB19. **Supported by:** CONACYTgrantNo.69666.**E-mail:** murrietasandra10@yahoo.com.mx

Diversedis006- Epidemiology of Tick borne enchephalitis and Lyme borreliosis in Sliovenia-risk for travelers health

Karl Turk,Zoran Simonovic

Introduction: Notification of Lyme borreliosis (LB) and tick born encephalitis (TBE) is mandatory in Slovenia. LB is endemic in whole Slovenia, while TBE cases occur mainly in northern, central and eastern regions of the country with expansion of new endemic foci in the last decade. An increasingly higher incidence rate of LB, but not for TBE, during the last 20 years is noticed. Reported incidence rates for TBE varied presumably due to climatic and some other factors. Slovenia is one of the 3 countries with the highest overall reported incidence rates of TBE in Europe. **Material and Methods:** Descriptive study of epidemiological data of notified LB and TBE cases was conducted and tourism data of Slovenian statistics bureau is presented to illustrate a travelers risk for tick borne diseases in Slovenia. **Results:** 2596 to 6304 cases of LB and 166 to 373 cases of TBE were reported yearly in period 2000-2010. Both diseases have typical seasonal pattern with majority of cases diagnosed from May to August (60% of LB and 76% of TBE cases). In analyzed period incidence of LB shows significant increase (p<0.01). In the last 5 years average incidence is 236/100.000 and 14/100.000 for LB and TBE, respectively. More than 3.000.000 tourists visit Slovenia yearly and spend on average 3 nights here. More than 70% of foreign tourist coming for holidays, leisure, entertainment and to visit friends and relatives and can be considered to come in contact with tick habitat. Approximately 2/3 of tourists travel to TBE most affected regions of Slovenia. **Main Conclusions:** In Slovenia increasing trend of notified LB cases and one of the highest incidences of TBE in Europe represent a high health risks also for travelers to this country in tick season.

Information about tick bites prevention measures and vaccination against TBE is of high importance for travelers to LB and TBE endemic countries. **E-mail:** karl.turk@zzv-mb.si

Diversedis007- **Creutzfeldt-Jacob disease: cases registered in a university hospital from Northeast Brazil between 2005 and 2011**

Façanha MC, Sousa FIC, Mesquita SMPB

Background: Creutzfeldt-Jacob disease (CJD) is characterized by progressive dementia and occurs in adults aged 50-70 years. Between 1980 and 1999, 105 deaths suspected were registered in Brazil. Their sources of infection are not well known. DNA or RNA associated with the disease has not been found. After a long incubation period, brain damage and loss of intellectual abilities (dementia) becomes increasingly evident. At first, the symptoms do not differ from other dementias: apathy, irritability, memory lapses and confusion, tiredness, drowsiness, insomnia. Muscle spasms occur in the first six months of symptom onset, tremors, numbness and peculiar body movements, in addition, to impairment of vision may be associated. In general, in less than two years, there is progression to a severe disease and death. **Objective**: Describe the epidemiologic and clinical data of patients with suspected Creutzfeldt-Jakob disease (CJD). **Method**: Cases registered as suspect of CJD from June 2005 to December 2011 in University Hospital Walter Cantídio, in Fortaleza Ceará had their charts reviewed. Data were collected from Sinan, Brazilian national surveillance diseases system and from medical records. **Results**: 13 cases were registered. Five were females and eight males, whose ages ranged from 36 to 70 years. The average age of onset of symptoms was 56.4 years. The most relevant clinical signs were progressive dementia, psychiatric disorders, sleep disorders, and cerebellar ataxia. Electroencephalogram was consistent with the disease in 90% of the patients. The MRI also showed changes consistent with CJD in 80% of the cases. Eight of 13 patients have already died. The mean disease duration was 8 months. In one of the patients from whom prion protein 14.3.3 (PrP) was not performed, cerebral biopsy confirmed DCJ. In 13 cases investigated 10 studies were performed for PrP: 2 were positive (probable cases), 2 were negative, 6 are still unknown. So, one case was confirmed, 2 defined, 6 probable and 5 possible. **Conclusion**: More attention must be played to patients with progressive dementia, because of CJD the diagnostic possibility. The initial clinical manifestations in these patients were consistent with psychiatric illness, probably delaying diagnosis. We must develop mechanisms to overcome the difficulties with identifying the specific care for these patients, improving quality of life, and family support. Multiply the knowledge about the disease is one way Public health can work to improve the diagnosis and care. **E-mail:** mfacanha@yahoo.com

Diversedis008- **Epidemiological aspects of Creutzfeldt-Jacob´s disease in Pernambuco state, Northeast Brazil, 2006 - 2011**

Assunção, RS; Melo, NGDO; Jatoba, E.A.M; Silva; Cavalcanti,V.O;Azevedo, BAS; BARROS; M.S;Hans, R.S.

Introduction: Creutzfeldt-Jakob's Disease (CJD) is a brain disorder characterized by memory loss, tremors, and changes in gait, rigid posture, myoclonus and facial paralysis, due to a rapid loss of brain cells caused by a transmissible protein known as prion. Approximately 85% of cases of CJD occur sporadically, that is, there is no known source of infection and no history of the disease in the patient's family. The familial form occurs in approximately 10 - 15% of cases of CJD and is the result of mutation in the gene that codifies the production of the prion protein. Iatrogenic transmission is the consequence of medical procedures in which infected human tissues or neurosurgical instruments have been used. The food form appeared in the United Kingdom in 1996, in human cases of the variant CJD (vCJD) with its own clinical-pathological and laboratorial characteristics and correlation with the consumption of beef carrying bovine spongiform encephalopathy. **Objective:** To describe the incidence, clinical-pathological and laboratorial characteristics, form of diagnosis, distribution by sex and age group, and evolution period of the cases of CJD notified in Pernambuco State between 2006 and 2011. **Material and Methods:** A descriptive study of cases notified to the Epidemiological Surveillance Unit of the Pernambuco State Health Authority, in the period 2006 to 2011. The criteria for definition and classification of the cases of

CJD are those used in the national program: possible, probable and defined. **Results:** In the period between 2006 and 2011, nine cases of CJD were notified in Pernambuco State, representing an average of two cases per year. Of the total of cases notified, six were confirmed, revealing an incidence of 0.1 per million inhabitants. Of these cases, five (55.6%) were classified as defined CJD, two (22.2%) as possible CJD, and two (22.2%) were rejected. The incidence by sex showed 0.1/1 million cases in males, there being no difference in relation to sex. Ages varied between 24 and 63, with an average age of 52. The most frequent clinical characteristics of the cases of CJD were dementia and myoclonus (100.0%). In the cases confirmed by necropsy and neuropathology (5/9) the protein 14-3-3 was positive in three, magnetic resonance was compatible in three and the electroencephalogram in two. The interval of evolution of the disease varied from two to six months, with an average of four months. **Conclusion:** The analysis of CJD in this period showed an average of one case per year, below that expected for the state (8 cases/year). The incidence of 0.1/1 million inhabitants/year represented only 10.0% of the incidence quoted in the literature (1 case/1 million inhabitants), suggesting significant underreporting. There was no difference in the incidence between the sexes. The predominant age group was 50 - 65. It was noted that in the period analyzed there was no case compatible with vCJD. **E-mail:** gvagravos.pe@gmail.com

Diversedis009- **Dermatological manifestations in a series of liver disease in a hospital of reference, Belem, Pará, Brazil: preliminary results**

[1]Maia NC; [1]Araújo FC; [1]Pires CAA; [1,2]Conde SRSS; [3]Souza OSC; [3]Brito EMF; [3]Nunes HM; [3]Soares MCP
[1]UFPA.[2]FSCMPA. [3]Institute Evandro Chagas. Belem, Para, Brazil

Introduction: a wide spectrum of extrahepatic manifestations has been attributed to liver disease of viral or not viral etiology; the skin lesions may be the first or even the only manifestations of the presence of these liver disease. **Objectives:** to detect and describe the major skin lesions, in a series of liver disease in a hospital of reference for liver disease, Belem, Para, Brazil. **Material and Methods:** between October 2011 and February 2012, serial patients consulted in the Clinic of Hepatology of Santa Casa de Misericordia of Para Foundation, diagnosed with liver disease, before treatment, were individually examined for dermatologist. After reading and signing a letter of consent, the finding of clinical, dermatological and laboratory interest have been documented using a previously elaborated developed research protocol, photo images and serum samples that were analyzed for serological markers of viral hepatitis infection. The research was authorized by the ethics committee in human research (CAAE-0034.0.072.000-11). **Results:** 38 individual were included in this study, aging 16 to 85 years. 60.5% were female. The most prevalent primary liver disease were: hepatitis C (42.2%), hepatitis B (15.7%), steatohepatitis (10.5%), primary biliary cirrhosis (5.2%), and in 2.6%, it has been found schistosomiasis, cholelithiasis, hepatic cysts, hypertransaminasemia and not-known etiology hepatomegaly. The secondary hepatic complications were found in 23.6% of the cases. Cirrhosis was present in 18.4%, followed by esophageal varices in 13.1%, portal hypertension in 10.5% and two cases of organ transplantation (hepatic and renal) and one case of hepatic encephalopathy and ascites. The most significant dermatologic lesions were present in 84.2% of the studied sample; in this group, 75% presented two or more associated lesions; fingernails alterations were present in 28.1% and hair alterations in 9.3%. The most prevalent skin lesions were: xerosis (37.5%), telangiectasia (25%) and seborrheic keratosis (18.7%). Bulleuse diseases in the acute phase were found in 12.5% of the examined patients, such as herpes simplex, herpes zoster and varicella. Superficial mycosis such as cutaneous candidiasis, pityriasis versicolor and tinea corporis were found in 12.5%. Cases of leprosy and cutaneous ulcers were found in 6.2% and one case of Sjögren Syndrome and vitiligo. Onycomycosis was present in 66.6% of fingernails alterations and nail dystrophy in 33.3%. **Conclusion:** dermatologic alterations can influence the diagnosis and clinical management of hepatic disease as the liver functional reserve is determining for the treatment of dermatologic conditions. **Email:** heloisanunes@iec.pa.gov.br

Diversedis010- **Comparative analysis of the physical performance of athletes with history of anemia and malaria and health athletes**

Ms. Ramón Núñez Cárdenas[1]; Dr. Rodrigo Stabeli[2]; Drª. Ivete de Aquino Freire[3].
1 Universidade Federal de Rondônia, 2 Fiocruz Região Norte, 3 Universidade Federal de Rondônia

In the sport of high competition, it is necessary a biologic control of all athletes, about their health and physical conditions. The study presented here is part of a broader project that aims to assess the physical performance of athletes with a history of anemia and malaria in the city of Porto Velho. This is an experimental research involving a multidisciplinary team consisting of Doctors, Nutritionist and Physical Education Professionals. In this subproject, titled "Comparative analysis of the physical performance of athletes with a history of anemia and malaria and healthy athletes" performed a comparative descriptive study. The participants were 48 athletes in two team sports (basketball and Volleyball) the city of Porto Velho-Rondônia-Brasil. A group of 24 individuals with a history of anemia and malaria, including 12 athletes of basketball and 12 athletes of volleyball players. Another group of 24 healthy athletes, 12 athletes practicing volleyball and 12 basketballs. Both groups were subjected to physical evaluation. The study sought to gather information on the physical performance of athletes with a history of anemia and malaria; seeks to compare the physical performance of athletes with a history of anemia and malaria and healthy athletes. The findings may be useful as preventive actions and support technically periodization of athletic training with a view to putting the city of Porto Velho in a prominent place in the elite competitions, the medium and long term. To this end, we carried out the study interdisciplinary approach about the physical performance of athletes and their interrelationship with human health. This approach allows evaluating the associations between the "malaria", "anemia", and "physical performance, in order to construct indicators of health surveillance of athletes from endemic regions. Thus, this research may serve as a national reference in the drafting of Public Health Policies in Athletes. For the analysis of the variables using test Chi-squared test we considered the significance level of 5% ($p<0.05$). The study results indicate a significant difference in physical performance of athletes, observing better results in healthy athletes. This study can serve reference for drawing up proposals preventive, especially in endemic regions. It can serve as a stimulus for new studies to help maintain a higher biological control of athletes during training, to optimize and ensure the health of those during sports. Taking into account the results obtained is very important the continuity of this study incorporating other steps such as laboratory tests and nutritional. These variables will be investigated in other phases of the research; which will allow verifying the actual condition of these athletes to the sport of high performance. Rondônia is considered an endemic region. Exploratory studies indicate that most of athletes' communities have a high risk of malaria. Allied to this factor, according to the literature, all kinds of malaria leads to the existence of anemia **E-mail:** rnunezcardenas@yahoo.com.br

Diversedis011- *Calodium hepaticum*: household clustering transmission and the finding of a source of human infection in a community of the amazon region

Gonçalves AQ[1,2], Ascaso C[2], Serra PT[1], Santos I[1], Julião GR[1], Orlandi PP[1]
[1]**Instituto Leônidas e Maria Deane, Fiocruz-AM, Manaus, Brasil;** [2]**Facultat de Medicina, Universitat de Barcelona, Barcelona, España**

Introduction: *Calodium hepaticum* is a zoonotic parasite causing rarely reported liver disease in humans. The most frequent type of infection is spurious (not true infection) with the parasite being excreted in the stools without causing disease. The dynamics of the transmission of *C. hepaticum* and the risk factors associated with infection by this helminth still remain unclear. In populations in the amazon region, the mechanism of transmission based on the ingestion of non embryonated eggs present in the liver of wild mammals has been suggested as the cause of the spurious infections described. Studies are needed to confirm this route of transmission and to investigate its epidemiological importance. **Material and Methods:** A coproparasitological study and an epidemiological investigation were performed in 2009 in a rural community of the Brazilian amazon (Presidente Figueiredo, Amazonas) to determine the incidence of spurious infection, risk and transmission of *C. hepaticum*. Stool samples of 135 individuals and two dogs were analyzed by spontaneous sedimentation technique. A liver tissue of a peccary captured and eaten by the residents was manually shredded with a 0.85% NaCl solution and submitted to spontaneous sedimentation technique. Feeding habits were also investigated in the community and differences between groups were evaluated using the Fisher exact test. **Results:** The incidence of spurious infection was 6.7% (2.08-11.24; CI 95%). Cases of infections were observed in 7.5% (1.50-20.38; CI 95%) of the families and in these the incidence was between 50% to 83.3%. The risk of spurious infection was 10-fold greater in persons consuming the liver of wild mammals [10% vs. 0% ($p= 0.02$)]. The liver tissue

evaluated was infected by eggs characteristic of *C. hepaticum* and was determined to be the source of the spurious infection diagnosed in individuals of the same family. One sample of dog stool was infected and was from the garden of the home in which human infection was also present. **Main conclusions:** This is the first identification of a source of spurious infection by *C. hepaticum* in humans and we describe a high rate of incidence in family clusters related to alimentary habits. The finding of contaminated peridomiciliary ground suggests a greater risk of new infections without the participation of a wild agent. Given the dynamics of *C. hepaticum* transmission in the community it may be concluded that the mechanism of ingestion of liver is important for transmission in this area. **E-mail:** alequeiroga@gmail.com

Diversedis012- **Parasitism of *Rhipicephalus sanguiens* in human in Goiania, Goias, Brazil**

D'Alessandro, W. B.[1]; Barbaresco, A. A.[1]
[1] **Institute of Tropical Pathology and Public Health, University Federal of Goiás**

Introduction: *Rhipicephalus sanguineus* is the most important ectoparasites of domestic dogs. By developing in synanthropic environments in several cities in Brazil, where it occurs in high densities, this tick is likely to cause increased incidence of ehrlichiosis, babesiosis and Rocky Mountain spotted fever, as antropozoonoses emerging. Recently it was shown in Brazil and abroad that this ticks, has fueled mainly through their immature forms in humans more often than previously thought. This paper aims to report cases of parasitism of *R. sanguineus* in humans. **Material and Methods:** Between 2007 to 2008 were collected ticks (larvae, nymphs and adults) in a residence located in the city of Goiania, Goias, Brazil. The ticks collected were sent to the laboratory, which with the aid of a stereoscopic, taxonomic identification was carried out. **Results:** All ticks collected were identified as *R. sanguineus*. It was found that all members of the house have found at least once *R. sanguineus* in their garments and bodies. **Conclusion:** This case relate aimed to analyze the presence of *R. sanguineus* in domestic environments as well as in humans. The habit of letting the dog enter the house becomes a great engine in the infestation of *R. sanguineus*, which is a favorable environment for their development and transmission of pathogens. Other species such as *Amblyomma cajennense*, *Rhipicephalus microplus* and *Amblyomma fuscum* have been found parasitizing humans. The present case reports that *R. sanguineus* has hematophagic in humans even though the host dog as primary food source and could narrow the list of conveying the disease between host and parasite. **E-mail:** walmirton@hotmail.com

Diversedis013- **The correlation between positive parasitoscopy and anemia in residents of Holy Spirit community, Acará – Pará, Amazon, Brazil**

Barros[2], T. G., Melo[1], M. F. C., Rodrigues[1],L. C. S., Barros[1],C. A. L.
1 - Pharmaceutical Biochemistry Teacher's in Federal University of Pará. 2 - Pharmaceutical Biochemistry in Federal University of Pará. 3 - Laboratory technician in Federal University of Pará, Federal University of Pará, Belém, Brazil, Bible Society of Brazil, Belém, Brazil

Introduction: Even if knowing the intestinal parasites irritate the intestinal mucosa producing a hypersensitivity process, causing an eosinophilia, just as it is known that intestinal parasites can cause anemia by producing a localized bleeding or cover the surface of the intestinal mucosa in intestinal lumen and thereby damaging the absorption of important nutrients in the formation of erythrocytes, it is necessary to scientifically prove this correlation. The aim of this study was to evaluate the correlation between positive parasitoscopy and anemia in residents of Holy Spirit community, Acará-Pará. **Material and Methods:** The Holy Spirit Community belongs to the Acará city in Pará State, Amazon, Brazil, with a population of 280 inhabitants living in stilt houses and deficient sanitation. We collected 144 blood samples and 126 fecal samples of adults and children, which were performed haematological and parsasitological analysis. The results were analyzed by chi-square ($X2$) for two independent samples, with Yates adjustment. **Results:** Positive parasitoscopy 86, 5% (109/126), parasitoscopy negative 13, 5% (17/126), anemic individuals 45,8% (66/144), non-anemic individuals 54,2% (78/144). Statistical analysis using chi-square test for two independent samples was highly significant $X2 = 48,751$; GL=1, $p < 0, 0001$; Yates adjustment = 46,984, $p < 0, 0001$, $P < 0, 05$. **Main Conclusion:** The vast majority (86.5%) of the study population has positive parasitoscopy for some kind of intestinal parasites found. A significant

prevalence of 45.8% (66/144) had a type of anemia found. The more prevalent species of intestinal parasites were E. nana, E. coli, G. lamblia, T. trichiura, A. lumbricoides, Ancylostomideos, E. histolytica e I. bütschli. In the Holy Spirit Community, belongs to the Acará city in Pará State, there is a statistically highly significant correlation between the positive parasitoscopy and anemia. **E-mail:** calb@ufpa.br, taina@ufpa.br

Diversedis014- **Acute febrile syndrome surveillance in State of Minas Gerais, Brazil**

Amâncio F.F.[1,2], Dinis S.C.[3], Guerra M.R.[3], De Lima Dure A.I.[3], Oliveira M.A.[3], Santiago C.P.[3], Pereira G.C.[3], Calic S.B.[3], Leite A.C.[1], Fraga G.L.[1], Chamone T.L.[1], Ferraz M.L.[1], Carneiro M.[4]
1- Secretaria de Saúde do Estado de Minas Gerais, Belo Horizonte, Brasil. 2- Pós-Graduação em Ciências da Saúde: Infectologia e Medicina Tropical da Universidade Federal de Minas Gerais. 3. Fundação Ezequiel Dias, Belo Horizonte, Brasil. 4. Departamento de Parasitologia, Instituto de Ciências Biológicas da Universidade Federal de Minas Gerais.

Introduction: During the year of 2001, an outbreak of yellow fever occurred in State of Minas Gerais, Brazil, with a case fatality rate of 53%. After that outbreak, the State implemented a laboratory routine surveillance system known as "*Hemorrhagic fever protocol*". That system consisted in a panel of laboratorial tests done in parallel aiming the diagnosis of acute febrile diseases of health public importance. The *Hemorrhagic fever protocol* is targeted for early detection of outbreaks, monitoring disease trends and ensures that the diagnosis of a relevant disease, such as yellow fever, is performed, even if the possibility is not considered by the physician. The purpose of this study is to evaluate the results of this surveillance system during the period of 2006 to 2009. **Methods:** The study included all samples sent to the *protocol* during the period of 2006 to 2009. For each sample serological tests (ELISA) were performed for dengue, yellow fever, leptospirosis, Hantavirus, Brazilian spotted fever and hepatitis A. All samples were tested in the Fundação Ezequiel Dias (FUNED), according the Brazilian Ministry of Health standardization. **Results:** During the period studied was sent 2058 samples from 1912 patients. In average, 514 samples were sent each year. Most samples were from men (65.6%) and the mean age was 33.4 years. Dengue was the predominant arboviruses detected, accounting for 282 (13.7%) of samples tested. Considerable yellow fever cross-reactivity was observed for dengue-positive samples. From 282 samples with definitive dengue diagnosis, 27 (9,6%) also had IgM reactive to Yellow Fever antigen. Leptospirosis was the second most frequent illness indentified; 89 (4.8%) samples had IgM reactive to leptospirosis. IgM reactive to hantavirus was identified in 54 (2.6%) samples. Among all the samples, 33 (1.6%) were positive for IgM anti-hepatitis A virus (HAV) and 5 of them were also dengue-positive. Regarding Brazilian spotted fever, 15 samples showed evidence consistent with the diagnosis of the illness. Hantavirus, Brazilian spotted fever, dengue and leptospirosis cases showed a marked seasonal distribution, while the yellow fever cases occurred sporadically or in outbreaks. Hantavirus and Brazilian spotted fever cases showed a distribution concentrated in particular areas of the State. **Conclusions:** Syndromic surveillance based in a panel of laboratory tests could be a good strategy to detect febrile acute diseases of health public importance. Regarding its main disadvantages we could cited the high cost, frequent cross-reactivity among tests and difficult in obtain convalescent samples. However, the possibility of early detection of outbreaks and the ability to monitor disease trends may overweight these disadvantages. **E-mail:** manzoff@gmail.com

Diversedis015- **Analysis of cases of Lucio´s Phenomenon in Fernandópolis – SP, between the years of 2001-2011**

Gaggini,MCR; Rabelo,JV; Costa, ADRG; Moimáz,TA; Pinto Neto,JM; Cola,CO; Villani,JP; Lenes,MS; Silva,MM.
Universidade Camilo Castelo Branco

Introduction: The Lucio´s phenomenon, also denominated erythema necrotisans, was first described by Rafael Lucio and Ignacio Alvarado in 1852 in Mexico. It is a variant of type 2 lepra reaction, in patients with lepromatous leprosy. It is characterized by outbreaks of erythematous-purpuric maculae, painful,

progressing to ulceration and necrosis. It resembles the severe burned, with protein and electrolyte loss. Generally, the lesions may cease after 1 week of treatment or can get to death by sepsis. **Objective:** The objective of this paper is evaluating incidence of Lucio´s phenomenon in the service of infectious diseases of Fernandópolis – SP over the past 10 years. **Materials and Methods:** Retrospective study, from the patient records of CADIP – Service Center for Infectious and Parasitic Diseases – and Santa Casa de Misericórdia de Fernandópolis, between 2001 and 2011. **Results:** According to review of patient records, in the last 10 years, it was found the occurrence of 5 cases of Lucio´s phenomenon, being 4 men and 1 woman, all aged greater than 45 years. Everyone had lepromatous leprosy, however just one pacient was in treatment with MB MDT (Clofazimine, Rifampin, Dapsone). The diagnosis of Lucio´s phenomenon was confirmed by histopathology of the lesion, which presented positive baciloscopy, thrombosis of vessels of dermis, ischemic necrosis, endothelial proliferation and inflammation scarce. Multidrug therapy was introduced, in those patients without treatment, associated with Thalidomide and antibiotic therapy specifies with spectrum for Gram positive and Gram negative. With the evolution of the disease, 3 patients died of bacterial sepsis, secondary to skin infection. The rest remains in follow up with the scarring of necrotic lesions. **Main Conclusions:** It is concluded that the Lucio´s phenomenon, in endemic areas of leprosy, has high incidence, representing a very severe reaction with high morbidity and mortality. However, in most studies the mortality is 95%, and this analysis was of 60% due to antibiotic therapy in early. **E-mail:** mgaggini@terra.com.br

Diversedis016- Burden of Podoconiosis in East and West Gojam Zones, northern Ethiopia

Molla Y. B.[1*], Tomczyk[2] S. , Amberbir[2] T. , Tamiru[3] A. , Davey[1] G.
[1] **Brighton and Sussex Medical School, Falmer, BN1 9PS, Brighton, United Kingdom,** [2] **International Orthodox Christian Charities, Addis Ababa, Ethiopia,** [3] **International Orthodox Christian Charities, Debre Markos, Ethiopia**

Introduction: Podoconiosis (non-filarial elephantiasis) is a geochemical disease that affects barefoot individuals exposed to red clay soil of volcanic origin. It is prevalent among barefoot subsistence farmers that live and work in these areas, and results in bilateral progressive swelling of the lower legs, usually limited below the level of the knees. Podoconiosis can be prevented, early forms of the disease can be treated, and disease progression can be curbed. Podoconiosis has been reported in Africa, Central America and northern India. The aim of this study was to assess the burden of podoconiosis in East and West Gojam Zones, northern Ethiopia. Specifically, overall, gender- and age-specific prevalence; manifestations of ALA episodes (acute adenolymphangitis: painful inflammation of the foot and leg with swollen lymph nodes and fever); clinical disease stage; treatment seeking behavior; foot washing and shoe wearing practices of patients were assessed. **Methods and Materials**: A cross-sectional household survey was conducted in two districts of East and West Gojam Zones. The survey covered all 17,553 households in 20 *kebeles* (administrative subunits) selected randomly. House to house census using a checklist was done by community health workers. Then detailed structured interview using questionnaire by nurses was conducted on 1319 of the podoconiosis cases identified. **Results**: The prevalence of podoconiosis in the population aged 15 years and above was found to be 3.3% (95% CI, 3.2% to 3.6%). 87% of cases were in the economically active age group (15-64 years). Median age of onset was 22 years, and on average, patients sought treatment five years after the start of the leg swelling. Most subjects had second (42.7%) or third (36.1%) clinical stage disease, 97.9% had mossy lesions, and 53% had open wounds. On average, patients had five episodes of acute ALA per year. The commonest treatment facilities visited were health centers (28.7%) and traditional healers (29.4%). ALA precipitating factors mentioned were long walks (72.2%), '*mitch*' (effect of the sun inducing inflammation, 52.1%), laborious work (28.9%), and dust (13.2%). The most common coping measures employed against ALA were staying in bed (55.6%), resorting to less laborious work (44.2%), use of antibiotics (25.8%) and *Hareg Resa* (a local herb that is boiled to steam a patient who is believed to have *mitch*, 20.5%). The median age of first use of shoes and socks were 22 and 23 years, respectively. More men than women owned more than one pair of shoes (61.1% vs. 50.5%; χ^2= 11.6 p=0.001). At the time of interview, 23.6% of the respondents were barefoot, of whom about two-thirds were women. **Conclusions**: This study showed high prevalence of podoconiosis and associated morbidities such as ALA, mossy lesions and open wounds in northern Ethiopia. Predominance of cases at early clinical stage of podoconiosis

indicates the potential for reversing the swelling and calls for disease prevention interventions. **E-mail:** jordi_belayneh@yahoo.com

Diversedis017- **Acute Respiratory Infections among Moroccan Hajjis in 2011**

N.Dghoughi, I.Jroundi, A.Barkia, D.Samhouri, M.Obtel, A.Barakat, A.Maaroufi, A. Jumaan

Background: In 2009 and 2010 respectively, 35.81% and 31.45% of pilgrims from Morocco were diagnosed with Acute Respiratory Infections (ARI) during the Hajj. We assessed the burden of ARI and the concurrent risk factors in a cohort of pilgrims during Hajj, 2011. **Methods:** We conducted a longitudinal study among 830 hajjis from city of Rabat during the annual pilgrimage from October 8th to December 20th, including one month after their return to Morocco. Nasopharyngeal samples were taken and examined by Real Time Polymerase Chain Reaction from patients in Rabat. Standardized questionnaires were administered to identify socio-demographic factors and vaccination status. ARI was defined as acute onset of at least one of the following symptoms: cough, sore throat, shortness of breath or coryza AND a clinician's judgment that the illness was due to an infection. We used SPSS version 17.0 and Epi Info 3.5.1 statistical software for data entry and analyses. **Results**: A total of 829 pilgrims consented to participate in the study; 59% were women and the mean age was 58 years (range 25-86 years). Although all pilgrims except one were vaccinated against influenza, 377 cases (45.5%) of ARI were detected. Persons lodging with more than three people per room developed ARI more frequently than those in less crowded accommodations (94.0% versus 6.0%; p=0.004). Laboratory testing demonstrated two patients with Influenza B among the 36 people evaluated. **Conclusion**: ARI among hajjis this season was higher than previous years. We have shown that lodging in crowded rooms may be a risk factor for infection. Limiting the number of persons per room may decrease the burden of ARI during the Hajj. **Keywords:** pilgrim, health risk, impact vaccine, respiratory infections. **E-mail:** imane.jroundi@cresib.cat

Diversedis018- **A study of phenol toxicity and its some advanced oxidation intermediate by products using *daphnia magna***

Maleki A, Kalantar E, Ebrahimi R, Davari B, Zand Salimi Y, Rezaee R
Environmental Health Research Center, Kurdistan University of Medical Sciences, Sanandaj, Iran

Abstract: Phenol is one of the most common compounds found in the effluents of many industries such as petroleum refining and petrochemicals, pharmaceuticals, pesticides, paint and dye industries, organic chemicals manufacturing, etc. The contamination of bodies of water with phenol is a serious problem in terms of environmental considerations due to its high toxicity. In this study, toxicity of phenol and its degradation mixture by the sonochemical, photochemical and photosonochemical processes were investigated. Toxicity assay carried out using *Daphnia magna* as a bio-indicator. The sonochemical and photochemical experiments were carried out using a bath sonicator (500 W) working at 35 and 130 kHz frequencies and with a 400 W medium pressure mercury lamp, respectively. Experiments were performed at initial concentrations of 100 mg L^{-1}. Bioassay tests showed that phenol were toxic to *D.magna* and so resulted in quite low LC$_{50}$ values. Comparison of toxicity units (TU) between phenol and effluent toxicity has shown that TU value for photosonochemical effluent was lower than that obtain to phenol, photochemical effluent and sonochemical effluent. It was found that toxicity unit of photochemical effluent was lower than that obtain to sonochemical effluent. Thus, according to *D.magna* acute toxicity test photosonolysis and photolysis enabled to decrease the toxicity of by-products formed during the degradation of phenol aqueous solution. So, in conclusion, photosonic and photolytic processes can be a recommended approach for the treatment of phenolic wastewater. Keywords: Toxicity assay, sonochemistry, photochemistry, phenol, *D. magna*

Diversedis019- Razbilitation of vocal disorders present in patient treated for laryngeal tuberculosis through speech therapy

Lucena,MM1; Silva,FS1; Costa,AD1,2; Leite,NKS1,2; Barcelos,RO2; Bezerra,DCO1; Torraca, TSS1,2; Bom-Braga,FP3; Nascimento,MR1,2; Ruas,ACN1,2; Rolla,VC4; Valete-Rosalino,CM1,2.
1- Laboratório de Vigilância em Leishmanioses-IPEC-FIOCRUZ; 2- Faculdade de Medicina-UFRJ.3-Faculdade de Medicina-Unigranrio; 4- Laboratório de Pesquisa Clínica em Micobacterioses-IPEC-FIOCRUZ. Rio de Janeiro-Brasil

Introduction: Tuberculosis is an infectious disease caused by Mycobacterium tuberculosis. The laryngeal tuberculosis (LT) is considered the most common granulomatous disease of the larynx, and is usually secondary or concomitant to pulmonary tuberculosis, but recent studies indicate a prevalence of up to 20% of primary LT. The healing of laryngeal lesions favors the development of fibrosis by altering the flexibility of the mucosa of the vocal folds causing stiffness and may interfere with vocal production. As a consequence, dysphonia is the main symptom of LT, present in 91.3% of cases diagnosed. **Material and Methods:** We report the case of a patient with residual dysphonia after treatment of TL and that underwent speech therapy evaluations (evaluations software VoxMetria with acoustic and auditory perception) and laryngoscopy quarterly, at IPEC / FIOCRUZ. **Case Report:** Male, 58 years old, who after the end of the treatment for TL still presented dysphonia. The laryngoscopy showed partial destruction of the epiglottis, infiltration, edema and hyperemia in the vestibular fold and arytenoid, and prolapse of the left ventricle. In the first speech therapy assessment, the patient had vocal alterations and the results of the scale RASAT presented mild hoarseness, moderate roughness and breathiness, and severe tension. The findings from the acoustic analysis were consistent with those alterations. The patient attended weekly speech therapy sessions, where vibrational and resonance techniques were used, as well as vocal health recommendations. After six months, laryngoscopy showed partial destruction of the epiglottis, infiltration on the left vestibular fold and prolapse of the left ventricle. In the acoustic and auditory evaluations the patient presented scale RASAT with mild hoarseness, roughness and breathiness, without overloading or tension when speaking, and the findings of the statistical acoustic analysis matched this improvement. The results demonstrated improvement in all parameters. **Conclusion:** We conclude that speech therapy was effective in improving the residual dysphonia after the drug treatment of TL in this patient, showing the importance of multidisciplinary comprehensive care to patients even after clinical cure. **E-mail:** claudia.valete@ipec.fiocruz.br

Diversedis020- Pharmacotherapy follow-up in patients with malaria treated in a non-endemic area, Rio de Janeiro

Pedro RS[1,2], Brasil P[1,2], Machado CR[1,2], Costa AP[1,2], Guaraldo L[1,2*]
1Instituto de Pesquisa Clínica Evandro Chagas (IPEC), Fundação Oswaldo Cruz (Fiocruz), Rio de Janeiro, Brazil. 2Centro de Pesquisa Diagnóstico e Treinamento em Malária (CPD-Mal), Fiocruz and Secretaria de Vigilância em Saúde (SVS) – Ministério da Saúde (MS), Rio de Janeiro, Brazil.

Introduction: Malaria is a potentially severe disease, widely distributed in the tropical and subtropical regions of the world. Despite drug resistance, other factors are directly related to infection's response to antimalarial treatment, such as adherence to the treatment, drug interactions and adverse drug events. Monitoring these factors by pharmacotherapy follow-up is important to guarantee the effectiveness of treatment preventing drug related problems and ensuring patient safety. The aim of this study was to describe the effect of pharmacotherapy follow-up (PF) in patients with malaria seen at a referral centre located in the city of Rio de Janeiro, an area without active transmission of malaria. **Methods:** Descriptive study conducted from January 2005 to February 2012 at IPEC. Data collections were carried out before and after the implementation of PF. Data were collected from medical records and follow-up interviews. The variables included were age, gender, comorbidities, antimalarials and concomitant medications used, adverse drugs events and adherence to antimalarial treatment. Groups from different periods were compared using chi-square test. **Results:** A hundred and fourteen patients were included. Seventeen of them were treated at least twice resulting in 138 malaria treatments. The majority was male (76.3%) with ages between 13 and 66 years. We observed 104 adverse events to antimalarials considered as 79

adverse drug reactions, three medication errors and 22 therapeutic failures. The majority of patients (90.4%) had a high adherence behavior according to Morisky's questionnaire. Since 2009, when PF started, information related to adverse event increased in 46.0%, and to clinical and parasitological cures increased in 29.8% and 49.4%, respectively. Besides, loss to follow-up after malaria treatment reduced in 24.2% ($p < 0.05$). **Main cconclusions:** Before PF, we had no accurate information about patient safety. Furthermore, treatment effectiveness was not known because patients were not followed. Then, we concluded that an improvement in malaria patient's care was achieved by surveillance activities, including pharmacotherapy follow-up. **E-mail:** lusiele.guaraldo@ipec.fiocruz.br

Diversedis021- Bovine re-immunization whith peptide *r*SBm7462T as control strategy for the tick *Rhipicephalus (Boophilus) microplus*

Gabriel A. Tafur Gómez, Byron A. Hernandez Ortiz, Cintia F. Fidelis, Leandro Araujo, Marcio Mendes, Joaquin H. Patarroyo Salcedo1
1. Laboratório de Biologia e Controle de Hematozoários e Vetores, Instituto de Biotecnologia Aplicada à Agropecuária – BIOAGRO, Departamento de Medicina Veterinária, Universidade Federal de Viçosa, Viçosa, Minas Gerais, Brasil.

Ticks are the most important pathogens vector in infections both domestic and wild animals, after mosquitoes are the second most important in borne diseases to humans. *Rhipicephalus (Boophilus) microplus* is more damaging ectoparasite to global bovine production, 80% of livestock population worldwide is affected by borne pathogens and their parasite action; causing economic losses excess 8 billion dollars annually. Brazil whit the second world cattle herd, the damage in livestock industry by parasite effect is over up 2 billion dollars annually. Between control strategy alternative, vaccination became a viable option that does not generate resistant population ticks, provides safety to animal products and warrant protection to environment. Despite enormous advances in understanding ruminant's protective immunity, elucidation dose-related paradigms and adaptive immune response remain unknown. The aim in this study was to evaluate vaccine efficacy induced by re-immunization whit *r*SBm7462T (150 a.a) expressed *Pichia pastoris* strain Km71, previously transformed with mini-genes designed to express the immunogenic epitopes sequence of synthetic vaccine SBm7462® characterized by SDS-PGE and Western blotting. To the first schedule immunization 2 mg of peptide and 1.5 mg of saponin were injected subcutaneously during three times at intervals of 30 days in 10 *Bos Taurus* calves divided into two groups (A peptide and B Control). Re-immunization was made 14 months after the last inoculation, where bovines group A were injected with 0.5 mg of *r*SBm7462T and 0.5mg of saponin subcutaneously three times at intervals of 30 days. To biological challenge, 8000 *R. microplus* larvae were placed per animal 28 days after the last immunization. The biological parameters results of collected engorged females, weight, oviposition and fertility were significantly better than the results of first immunization schedule, indicating that the peptide revaccination with lower doses are effective in increasing vaccine efficacy in livestock. **E-mail:** byron.ortiz@ufv.br

Diversedis022- Immunomodulation after post-natal infection in mice born or suckled in schistosomotic mothers

Santos PEA[1], Lorena VMB[2], Fernandes ES[1], Sales IRF[1], Silva MC[1], Holanda GCR[1], Gomes YM[2], Albuquerque MCPA[1], Costa VMA[1], Souza VMO[1]
1Laboratory of Immunology, Laboratory of Immunopathology Keizo Asami LIKA/UFPE-Recife/Brazil, 2Aggeu Magalhães Research Center-CPqAM/Fiocruz-Recife/Brazil

Rationale: *Schistosoma mansoni* induces immunosuppression against heterologous antigens in the host. In endemic areas, chronically infected pregnant women are common. Our previous results demonstrated that *Schistosoma*-infected mothers could alter the immunity to unrelated antigen of their uninfected offspring or lactants, in the adult life. In mice born from infected mothers, the anti-ovalbumin (OA) humoral response was suppressed by mechanisms IL-10-dependent. Otherwise, in suckled animals there was an enhancement in antibodies levels and high IL-2 production. However, it is unknown the OA immune response in the mice born or suckled in Schistosomotic mothers and submitted to post-natal infection. **Methods:** Uninfected females *Swiss* mice (4-wk old) or infected females (20 cercariae), after 60 days and

before caged, had their estrus regulated by chorionic gonadotrophin. Soon after birth, offspring from uninfected mothers were suckled in *S. mansoni*-infected mothers and vice versa. Male offspring, 7-wk old, were infected with 80 cercariae and the groups (n=5) were formed: 1)Infected mice Born from Schistosomotic Mothers (Inf.BSM) 2)Infected mice Suckled in Schistosomotic Mothers (Inf.SSM) 3)Infected mice Born and Suckled in Uninfected-mothers (Inf.BSU) 4)Uninfected mice Born and Suckled in Uninfected-mothers (Unif.BSU). The mice were immunized with OA, s.c., in adjuvant. On 8th day, we compared the hypersensitivity reactions (HR) after challenged with aggregated OA in the footpad, the levels of OA-specific IgG1 and IgG2a, IL-4/IFN-γ/IL-10 cytokines in the supernatants from OA- or mitogen-stimulated splenocytes culture and regulatory T cells frequency. **Results:** Comparing to control Unif.BSU, anti-OA immediate HR was suppressed in all infected groups, but it was strongly decreased in Inf.SSM. In this last, there was high regulatory T cells frequency. After mitogen-stimulation there were higher IL-4 and IL-10 production and lower of IFN-γ in infected groups compared to Unif.BSU. Upon OA-stimulation, in Inf.BSM, IL-4, IL-10 e IFN-γ levels were decreased, while in Inf.SSM the IL-10 levels were not altered. There was not enhancement or suppression of anti-OA IgG1 and IgG2a production, since there was no difference among the groups. **Conclusions:** Post-natal infection restored the anti-OA humoral immunity in offspring or lactants from Schistosomotic mothers and induced an immunosuppressive potential in previously breastfed mice in these mothers**. E-mail:** valdenia.souza@gmail.com

DIAGNOSIS AND CHARACTERIZATION

Diagnosis001- **DiversiLab rep-PCR system for characterization of *Serratia marcescens***

Costa, WLO[1,3]; Aboim, JB[1,3]; Matos, ECO[2,3]; Conceição, ML[2,3]; Carneiro, ICRS[2]; Bastos, FC[3]; Lima, KVB[2,3]
1-Universidade Federal do Pará, Belém, Brazil, 2-Universidade do Estado do Pará, Belém, Brazil 3- Instituto Evandro Chagas, Belém, Brazil

Introduction: *Serratia marcescens* is a pathogen associated with nosocomial infections, mainly in the Neonatal Intensive Care Units (NICU). The emergency and the costs associated to them increase the need for refinement of molecular approaches to aid in the diagnosis and epidemiological analysis of nosocomial infections. The pulsed field gel electrophoresis (PFGE) is generally considered one of the most reproducible and highly discriminatory typing techniques available. However, this method requires specialized equipment and besides being labor-intensive. Recently, one semi-automated system for strain typing based on the rep-PCR technology has become available: the DiversiLab Microbial Typing System (DiversiLab). The objective of this study was to assess the reliability of the DiversiLab rep-PCR system for characterization of *S. marcescens.* **Material and Methods:** The thirty-eight *S. marcescens* isolates were obtained in the outbreak occurred in NICU of a reference hospital in Belém, Pará, Brazil. For the Automated rep-PCR the DNA was extracted, amplified and analyzed using an UltraClean Microbial DNA isolation kit and DiversiLab Serratia (MoBio Laboratories and bioMérieux), according to the manufacturer's instructions. The PFGE was performed after restriction enzyme XbaI. The electrophoretic profiles were analyzed using the BioNumerics 6.5 software (Applied Maths, Belgium), using Dice coefficient (3% of tolerance). **Results**: The PFGE provided 4 clusters called from A to D where each cluster has been divided into 13 subsets according to the patterns obtained, the cluster A (A1 and A2), B (B1 through B4), C (C1) and D (D1 through D6). By DiversiLab system, thirteen different patterns (type I through XIII) were identified. There was an agreement of 82% by rep-PCR (31 out of the 38 strains) compared to PFGE. Seven strains were differently distributed by rep-PCR: six were added with strains of different groups by PFGE and one, formerly belonging to subgroup A1, became a unique pattern. The cluster B showed a greater diversification by DiversiLab, divided into 7 subgroups (types I through VI and VIII) approximately 75% similar, and the subgroup B4 (100% similar by PFGE) showed similarity above 93% between 7 isolates of this subgroup. **Conclusions**: There was a significant agreement between the techniques tested, however, some differences were found. BioNumerics software allows user

modifications having the freedom to manually identify the bands, while the DiversiLab can differ them automatically by the presence and intensity of bands. The DiversiLab is a simple and fast procedure compared to PFGE, which is valuable in case of outbreak. **E-mail:** wana.lailan@gmail.com

Diagnosis002- **Characteristic on adaptation to *in vitro* culture of wild isolates from Southeast Asia and Eastern Indonesia**

Tantular I.S.1,2 , Pusarawati S.2, Khin L.3, Kawamoto F.4*
1 Institute of Tropical Disease and 2 Department of Parasitology, Faculty of Medicine, Airlangga University, Surabaya, Indonesia; 3 Department of Medical Research Upper Myanmar, Mandalay, Myanmar; 4 Research Promotion Project, Oita University Faculty of Medicine, Yufu, Japan

Preservation of wild isolates of human malaria parasites in wet ice and adaptation efficacy to in vitro culture. Wild isolates of the human malaria parasites were preserved at fields in wet ice for 2-12 days, and cultivated at a laboratory in Indonesia by a candle jar method. In four isolates of Plasmodium falciparum collected from Myanmar and preserved for 12 days, parasitaemias were much decreased from the original values, and all isolates failed to grow. In 31 isolates preserved for 5-10 days, nine were transformed to young gametocytes within Day 6, and stopped asexual growth. However, other 22 isolates grew well. Particularly, 14 isolates grew well for a month or more, and stocked as culture-adapted isolates. From Ranong, Thailand, nine isolates were cultivated after preserved for 7 days, and six isolates grew well. On the other hand, all of 59 isolates collected from eastern Indonesian islands (Buru, Halmahera and Flores) failed to establish as culture-adapted isolates, even though most of them were preserved only for 2-3 days: 49 isolates were transformed to sexual stages within Day 5-10, and ten isolates stopped to grow on Day 3-5 by unknown reason. These results indicated that a great different characteristic on adaptation to in vitro culture may exist between wild isolates distributing in continental Southeast Asia (Myanmar and Thailand) and in eastern Indonesia, and gametocytogenesis might be easily switched-on in Indonesian isolates after new ring forms appeared in culture. In wild isolates of *P. vivax*, *P. malariae* and *P. ovale* collected from Myanmar and Indonesia and preserved for 2-9 days, ring forms or young trophozoites were survived, but adaptation to in vitro culture was failed. These results may indicate that wild isolates of the four human malaria parasites could be preserved in wet ice for around 10 days. **E-mail:** hiko@oita-u.ac.jp

Diagnosis003- **Ultra-sensitive pathogen detection to avoid false negatives diagnostics using the ApoH-sample pretreatment technology**

Francisco Veas[1], Gregor Dubois[1], Sylvia Tigrett[2], Estelle Lucartz[2], Ilias Stefas[2]
[1]**Comparative Molecular Immuno-Physiopathology Lab, UMRMD3, &** [2]**ApoH-Technologies, Faculty of Pharmacy, Montpellier University, Montpellier, France**

All diagnostic methods are evaluated through their both sensitivity and specificity, which in turn depend on the number of false-positives and false-negatives. We present here a new method to prepare the sample to strongly enhance sensitivity without impacting specificity, by making the targeted organism more accessible and concentrated. Complex biological samples are pre-treated with Apolipoprotein H (ApoH), which is a human acute-phase protein exhibiting capturing and scavenging activities on different kind of microorganisms: bacteria (Gram+, Gram-), viruses (DNA or RNA enveloped or non-enveloped), yeasts, parasites. Solid supports such as ApoH-coated magnetic beads or ApoH-ELISA-coated plates bind microorganisms from complex biological samples such as blood, plasma urine, feces, etc. This remarkable ability of ApoH allows microorganisms to be washed, concentrated and re suspended in controlled media for their highly improved detection sensitivity (from 1 to several $logs_{10}$). Since captured microorganisms are still whole and living, subsequently, all current detection methods can be applied (qPCR, ELISA, fluorescence, electron microscopy, cultivation…). Current methods without the pre-concentration and washing steps generate high rates of false negatives diagnostics that could lead to dramatic consequences in terms of pathogens diffusion or in terms of treatment follow-up efficacy, as can be the case of nosocomial contaminations in hospitals, viral (HCV) or antibiotic multi-resistant bacteria. Thus, this sources false negatives diagnostics are drastically reduced: (i) interfering agents present in the

sample are washed away. (ii) Many hospital samples contain antibiotics, which lead to false negatives in hemoculture-dependent diagnostics. (iii) Blood samples may also contain EDTA, or other unknown agents that are PCR-inhibitors, or hemoglobin and white blood cells, which may interfere with absorbance readings. (iv) The concentration of microorganisms improves the detection threshold of all current detection methods. Larger sample volumes may be treated, dramatically increasing probabilities to capture pathogens present at very low levels that are subsequently re suspended in small volumes that are compatible with existing detection lab or commercial procedures. This useful sample enrichment increases sensitivity of any known pathogen and may be particularly valuable when dealing with slow growing bacterial strains or with rare viruses. In addition, ApoH is able to discriminate between virulent strains and commensal bacteria. This eliminates some false positives, notably when using molecular biology techniques. The broad pathogens capture capacity of ApoH represents a tremendous advantage enabling multiplexing capabilities and also, unlike antibody-based assays, allow the capture of unknown and emerging pathogens. Different clinical and food security examples will be shown and discussed, including HCV, Dengue, Hantavirus, Rotavirus, *Staphylococcus aureus*, nosocomial infections, *Listeria monocytogenes*, *Salmonella typhi*, etc. **E-mail:** francisco.veas@ird.fr

Diagnosis004- **The molecular identification and evolution of Psaroniocompsa vectors of *Onchocerca volvulus* and *Mansonella ozzardi***

Crainey JL[1], Almeida TAP[1], Shelley AJ[2], Hamada N[3], Luz, SLB[1]
1Instituto Leônidas e Maria Deane- FIOCRUZ/Amazônia, Manaus, AM, Brasil, 2Natural History Museum – Department of Entomology, UK, 3Instituto Nacional de Pesquisas da Amazônia – INPA - Coordenação de Pesquisas em Entomologia, Manaus, AM, Brasil.

Introduction: Psaroniocompsa is a species-rich subgenus of simuliids containing multiple vectors of the medically important parasites *Onchocerca volvulus* and *Mansonella ozzardi*. A good understanding of the evolution of Psaroniocompsa and the role its members have in South American disease epidemiology has historically been hindered by unreliable identifications and controversies concerning the subgenera's systematics. This is, largely, explained by the fact Psaroniocompsa systematics have hitherto been focused on morphological characters, the reliable identification of which can often require expert training and the weighting of which can be prone to subjectivity. Molecular systematics and identifications, by contrast, are far less prone to subjective weighting and require only basic laboratory skills, which can be purchased as a commercial service. In the work presented here we have targeted the mitochondrial cytochrome oxidase I (COI) gene in an attempt to resolve historical taxonomic disputes and to develop a low-skill tool for the reliable identification of Psaroniocompsa Simuliid disease vectors. **Methods:** Psaroniocompsa Simuliids were field-caught from a variety of sites across Brazil and were morphologically identified using standard morphological keys. PCR amplification and Sanger sequencing were used to sequence COI genes from 94 specimens, representing a diverse range of Psaroniocompsa species. Phylogenetic analysis with the obtained sequences was then used to evaluate the utility of the targeted COI gene for molecular identifications and to try to resolve the subgenus's taxonomy. **Results:** A total of 94 COI sequences were obtained from 19 species of Psaroniocompsa specimens from a variety of localities across Brazil. Phylogenetic analysis with all the obtained sequences in the background of >800 COI (obtained from a diverse range of Simuliid species) showed these sequences to be reliable species-identifiers and placed all the obtained sequences within a single Psaroniocompsa-exclusive bootstrap supported monophyletic group. **Main conclusions**: PCR and sequencing of COI genes can be used to reliably identify both Psaroniocompsa disease vectors and non-vectors alike. Phylogenetic analysis of the obtained COI data: supports the monopoly of the Psaroniocompsa subgenus; shows the group to be genetically diverse and suggests the subgenus has an ancient origin. **E-mail:** sergioluz@amazonia.fiocruz.br

Diagnosis005- **Relation of altered IgM, IgA or IgE levels to infectious diseases in hospitalized newborns of a third level hospital in Mexico City**

Murrieta. S.[1], Gomez-Toscano. V.[1], Hernandez-Islas. J.-L.[1], Lopez-Candiani. C.[2], Macias-Parra. M.[3], Luna-Pastén. H.[1], Castañeda-Huitrón. A. L.[1], Correa. D.[1]

[1]**Instituto Nacional de Pediatría, Lab. Inmunología Experimental, México, DF/MX, [2]Instituto Nacional de Pediatría, Neonatología, México, DF/MX, [3]Instituto Nacional de Pediatría, Infectología, México, DF/MX**

Introduction: A Neonatal Screening Program has preventive-prophylactic purposes. In Mexico, it is limited to diagnose only a small group of diseases, none of them infectious. In our country there are few data regarding frequency of subclinical congenital infection by screening-like procedures: three small studies allowed estimation of CMV (0.68%), toxoplasmosis (0.2%) and syphilis (0.15%). The screening is based on detection of specific immunoglobulins (Igs) that do not cross the placental barrier and hence are produced by the fetus, i.e. IgM (mainly) and IgA. Some studies have also shown that presence of IgE in the blood of newborns reflects exposition to allergens or parasites. Since it is costly to screen each infectious disease, we decided to test the hypothesis that abnormally high levels of any of these Igs could be associated to infectious diseases acquired perinatally and thus to some clinical problems. **Methods:** Ten neonates younger than 7 days who were hospitalized at the Neonatal Service of the National Institute of Pediatrics of Mexico were included. They presented variable clinical problems, unknown by the laboratory personnel who assessed the level of IgM, IgA and IgE in serum by antigen-capture ELISAs. Specific tests for infectious agents were performed to those presenting abnormally high levels of any of the Igs. **Results:** No baby presented abnormal levels of IgM, but one newborn had abnormal concentration of IgA (791 µg/mL) and another one extremely high levels of IgE (782 ng/mL). The first patient was cursing a severe Citomegalovirus infection (confirmed by positive CMV test) and the second had complicated cystic fibrosis. Seven babies presented non-infectious congenital disorders and one had early sepsis, without abnormal levels of any Ig. No co-infections were detected. **Conclusion:** IgM, IgA or IgE abnormal levels can be associated with congenital or newborn infections, but not early sepsis. This high risk group was a good sample for pilot hypothesis regarding relation between abnormal levels of fetal Igs and infections. **E-mail:** murrietasandra10@yahoo.com.mx

Diagnosis006- **Phenotypic analysis of enzymatic production of clinical samples *Stenotrophomonas maltophilia***

Moraes, F.C[1*,;] Prazeres, R.F.[1†]; Menezes, A.[1];Gonçalves, L.H.[2];Monteiro-Neto,V.[1] ;Figueiredo, P.M.S[1]
[1]**Centro Universitário do Maranhão - UNICEUMA/São Luis – Brasil, [2]Laboratório Gaspar / São Luis - Brasil**

Introduction: Currently, the presence of *Stenotrophomonas maltophilia* has become increasingly more common among the clinical samples. Routinely, it is isolated from intravascular devices, endotracheal tubes, urethral probes and others. Critically ill patients in use of invasive procedures are easy targets for colonization / infection by such bacteria. The pathogenicity of this microorganism involves the production of various hydrolytic enzymes that act on the cell membrane favors the tissue invasion. Thus, this study analyzed phenotypically enzymatic production of clinical samples of Stenotrophomonas maltophilia. **Materials and Methods**: We evaluated 14 samples of samples originating from Stenotrophomonas maltophilia clinics. An enzyme production was evaluated by the bite central Muller Hinton Agar (HIMEDIA) supplemented with 5% gelatin, Skin Milk at 10% and 10% Egg Yolk. **Results**: Phenotypically gelatinase production of 78.57% was observed in the protease and 84.61% at 14.28% phospholipase. **Conclusion:** the results suggest that the enzyme production by this bacterium may be related to tissue destruction, which may compromise the clinical condition of the infected patient. **E-mail:** cyelle_moraes@yahoo.com.br

Diagnosis007- **New molecular identifiers for the South American Onchocerciasis vectors *Simulium limbatum* and *Simulium incrustatum* reveal hidden diversity and a novel *S. limbatum* savannah ecotype**

Conceição PA[1], Crainey JL[1], Almeida TAP[1], Shelley AJ[2], Luz, SLB[1]
[1]**Instituto Leônidas e Maria Deane- FIOCRUZ/Amazônia, Manaus, AM, Brasil,** [2]**Natural History Museum – Department of Entomology, UK**

The wide diversity of vectors involved in the transmission of South American Onchocerciasis makes understanding its epidemiology a far more complex challenge than the challenge posed by African Onchocerciasis epidemiology. Accurate vector identifications provide key fundamental primary data for all reliable vector-borne disease models and effective disease control programmes, but often rely on very specialist expert knowledge (training for which is becoming increasingly difficult to find). Molecular identification of species using DNA barcodes (PCR and DNA sequencing of targeted taxonomic identifier genes), by contrast, requires only basic laboratory skill that are practised in thousands of laboratories around the world and which can be purchased as a commercial service. Although many DNA markers have been used for DNA barcoding, the mitochondrial cytochrome oxidase I (COI) gene has emerged as among the most reliable for insect species' identifications. In the work described here, we report 15 *Simulium incrustatum* COI sequences and 20 *Simulium limbatum* from field-caught adult females from two different ecological settings in Roraima state: the forest and the savannah. As well as assessing the utility of COI barcoding as a simple epidemiological tool for the rapid and reliable identification of these two neglected Onchocerciasis vectors, the collection of blackflies from two different ecological environments allowed us to address an important epidemiological question: Is the ecological range of *Simulium limbatum* limited to the savannah and thus outside the Roraima state main focus? Phylogenetic analysis with the sequences generated in this study, confirms the utility of the COI gene for identifying both these species, which are not easily distinguished at all life-stages by their morphology, and also shed light on this important question. Whilst relatively little genetic diversity was detected among *Simulium incrustatum* blackflies and *Simulium limbatum* collected from the savannah, comparatively high levels were found among the *Simulium limbatum* collected from the forest area. These data thus suggest that a *Simulium limbatum* savannah ecotype has recently evolved from a forest ancestor and that contemporary forest ecotypes may also be competent, and because of their ecology, active onchocerciasis vectors. **E-mail:** sergioluz@amazonia.fiocruz.br

Diagnosis008- **Microorganisms isolated in issue cultures mediastinal patients with mediastinitis post-surgical, Pernambuco, Brazil**

Magalhães, MGPA; Alves, LMO; Alcantara, LFM; Bezerra, SMMS[1]; Lima KM[2].
[1] **Universidade de Pernambuco;** [2] **Universidade Federal de Pernambuco;** [3]**Faculdade Estácio/FIR, Recife, Brazil.**

Introduction: The mediastinitis post-surgical is defined as an infection and / or inflammation of the conjunctive tissue of the mediastinum associated with sternal osteomyelitis, with or without instability, and can reach even the retrosternal space. The incidence of mediastinitis post-surgical varies according to the institution of routine, prophylactic use of antibiotics, standardization of aseptic techniques, etc, was estimated from 0,4 to 5,0%. Among the infectious agents found in cultures of inflamed mediastinal tissue, stand out Staphylococcus aureus, Staphylococcus epidermidis, Pseudomonas sp and Escherichia coli, the latter being associated with a high mortality rate. However, mixed infections are still reported, respecting the variation of each service. In some cases, the cultivation of exudate mediastinal can be negative, what in most cases due to previous use of antibiotics. In this work, we present the prevalence of microorganisms found in cultures of mediastinal tissue in patients affected by mediastinitis post-surgical in Pronto Socorro Cardiológico de Pernambuco (PROCAPE). **Material and Methods:** Through the analysis of 896 records of patients submitted to cardiac surgery with sternotomy, in PROCAPE. Was realized a cross-sectional retrospective study, with a quantitative approach to the records of 21 patients with confirmed medical diagnosis of mediastinitis post-surgical between June 2007 and June 2009. **Results:**

There were 21 cases of mediastinitis after cardiac surgery corresponding to 2,3% of postoperative infections occurred in the hospital. These, 7 (33%) patients died. The bacteria most frequently isolated were Staphylococcus aureus (25%) and Klebsiella pneumoniae (21%), followed by Enterobacter sp and the Staphylococcus epidermidis, both with 13,0%. **Main Conclusions:** The present study demonstrates an extensive wide range of infectious agents associated with this grievance, respecting the variations of each service. The high number of cases assigned to Klebsiella pneumoniae and Enterobacter sp. may be associated with long period of hospitalization of patients (16 to 132 days), pulmonary complications resulting from mechanical ventilation, tabagism (61,9% of patients), and chronic obstructive pulmonary disease (4,8%). The mediastinitis is a serious complication, determining significant increase in hospitalization costs, also be debilitating, in some cases demonstrating the importance of strict infection control and rapid institution of therapy. **E-mail:** gabi.magalhaes@hotmail.com

Diagnosis009- Liver fluke phenotypic characterization in Andean human endemic areas: valley versus altiplanic patterns analysed in liver flukes from sheep from Cajamarca and Mantaro, Peru

Pérez-Crespo I, Khoubbane M, Artigas P, Peixoto R, Debenedetti A, Mas-Coma S & Valero MA
Departamento de Parasitología, Facultad de Farmacia, Universidad de Valencia, Valencia, Spain

Introduction: Fascioliasis is a parasitic disease of humans and livestock caused by fluke species of the genus *Fasciola*. In South America, this disease is caused by *Fasciola hepatica* and gives rise to a serious public health problem, including many human endemic areas where children and females are the most affected and animal endemic areas almost throughout. **Material and Methods:** Given the necessity to characterize *F. hepatica* populations involved, the phenotypic features of fasciolid adults infecting sheep present in human fascioliasis endemic areas were analysed in the Cajamarca Valley and Mantaro Valley (valley transmission patterns) and the northern Bolivian Altiplano (altiplanic transmission pattern). A computer image analysis system (CIAS) was applied on the basis of standardized measurements. To complete the characterization, all these South American highland populations were compared to standard lowland populations of (i) *F. hepatica* natural infection from Valencia, Spain, and (ii) *F. hepatica* experimental adults from Bialowieza National Park, Poland. Liver fluke size was studied by multivariate analyses. Two phenotypic patterns could be distinguished in *F. hepatica* adult size: the valley pattern (Cajamarca and Mantaro, Peru) and the altiplanic pattern (northern Altiplano, Bolivia). **Results:** Within-comparison of the values of the *F. hepatica* populations shows a general overlap between them, regardless of the geographical area of origin. The first common principal component (CP1) of the five populations can be interpreted as a measure of overall size. The results show that *F. hepatica* populations of the Cajamarca and Mantaro valleys (Peru), from Spain as well as the experimental *F. hepatica* standard population have a similar maximum size and similar minimum size. On the contrary, the northern Bolivian Altiplano population shares its maximum size with the aforementioned *F. hepatica* populations but presents a lower minimum size. Our results indicate that liver flukes from Peru and Europe (natural and experimental) have a common minimum size from which the parasites begin to be gravid, however, this minimum size is smaller in Bolivian liver flukes. There was no consistent relationship between the size-free pattern of variation and altitudinal differences. No significant correlation between Mahalanobis distances and geographic distances was detected. No significant correlation between CP1 liver fluke average and worm burden was detected. **Main Conclusions:** The results of this study demonstrate that there is no apparent relationship between the shape of fasciolid adults with regard to altitudinal difference or geographical origin and that allometry-free shape appears as a more stable trait than size in fasciolid species. Results are analysed in terms of intensity/crowding effect aspects and permanent/seasonal transmission characteristics. Studies were funded by Projects Nos. SAF2006-09278 and SAF No. 2010-20805 of the Ministry of Education and Ministry of Science and Innovation, Madrid, Spain; and by the Red de Investigación de Centros de Enfermedades Tropicales – RICET (Projects No. C03/ 04, Nos. ISCIII2005-PI050574 and ISCIII-RETIC RD06/0021/0017 of the Programa de Redes Temáticas de Investigación Cooperativa RET- ICS/FEDER), FIS, Ministry of Health, Madrid. Coordination activities in Peru and Bolivia partly carried out within Project No. RLA5049 of IAEA (Headquarters Vienna, Austria). This study is part of the worldwide initiative of WHO (Headquarters Geneva, Switzerland) against human fascioliasis. **E-mail**: madela.valero@uv.es

Diagnosis010- **Laboratory of Parasitology Open for Community Activities: The Contribution of Extension on the Enlargement of University Boundaries.**

Mariano, APM; Silva, GCN; Barreto, ELM; Silva, RMR; Silva, MF; Carvalho, SMS
Laboratory of Parasitology Profa Maria Lena Melo Mariano (LAPAR) - Dept. of Biological Sciences – State University of Santa Cruz (UESC) - Ilhéus - Bahia.

Introduction: The rapid growth of urban centers leads to the establishment of marginal communities with large social groups and usually devoid of minimum health infrastructure, which results in profound social inequity with optimal conditions for transmission of parasites. Bahia state, for its large territory, has encountered difficulties to accomplish the goals of national public health (SUS) at the expenses of the increased demands of population and poor access to better health services. In this context, the actions promoted by Laboratory of Parasitology Prof[a] Maria Lena Melo Mariano (LAPAR) in the community has wide applicability, since it is based on the epidemiological surveys, education, diagnosis, orientation for collection of biological samples, running of clinical trials with no cost to patients. **Material and Methods:** Once concluded the initial diagnosis of different social groups, such as schools, kindergartens, nursing homes, neighborhood associations, and other of communities located within 50 miles of the Campus Soane Nazareth de Andrade (UESC). The territories were set to recognize and to estimate major problems that could reveal contamination risk factors. The community diagnosis included an analysis of diseases background knowledge, consequences, prevention and prophylaxis of intestinal parasites. After the clear consenting and following the guidelines to collect stool, the residents yielded three samples on alternate days for each, including minors authorized by their parents. All parasitological analyzes were processed by the method of Mariano & Carvalho in LAPAR. With the final report from LAPAR on the epidemiological intestinal parasites circulating in the community, and at the same time they were delivered the results of parasitological tests, other educational activities were developed as adapted plays, songs and games with specific themes for the parasites found, dispense of the proper medication and explanations necessary for their use, accompanied by educational pamphlets. **Results**: It was possible to identify intestinal parasites commonly associated with age, sex and sanitation, and hygiene notions of the population. The rate of positive samples was 20%. The higher frequency of intestinal parasites in both mono and polyparasited individuals were: *Ascaris lumbricoides* (28.47% and 33.54% respectively), *Entamoeba coli* (22.95% and 19.53% respectively), *Trichuris trichiura* (11.92% and 17.19% respectively). **Main Conclusions**: Since these parasites cause diseases with different parasitic life cycles that involve contact with larvae, eggs and cysts, the educational proposals of LAPAR were based on the recognition of present circumstances in the housing and its surroundings, and should be targeted for intervention and improvement of the health condition. Compared to other parasitological surveys the diagnosis made by LAPAR showed high levels of positivity which is strongly influenced by the notions and practices of public health, with emphasis on the education, prevention and prophylaxis, major goals of the extension program of UESC in Bahia, Brazil. **E-mail:** apm.mariano@hotmail.com

Diagnosis011- **IgA, IgM and IgE levels in serum and filter paper-embedded blood from umbilical cord of newborns attended in a general hospital of Mexico**

H. Caballero-Ortega[1], J.L. Hernandez-Islas[1], S. Murrieta[1], B.L. Tecuatl-Herrada[1], M. Vela-Amieva[2], M.P. Escobedo Torres[3], D. Correa[1]
1. Instituto Nacional de Pediatría, Lab. Inmunología Experimental, México, DF, Mex. 2. Instituto Nacional de Pediatría, Lab. Errores Innatos del Metabolismo, México, DF, Méx. 3. Hospital General Dr Manuel Gea González, Infectología Pediátrica, México, DF, Méx.

Introduction: Cord blood serum levels of IgA and IgM are normally below 55 and 200µg/mL, respectively, while no IgE is usually present in healthy newborns. Since these immunoglobulins are not transferred from the mother, abnormally high levels at birth may reflect fetal exposition to infectious agents or response to antigens traversing the placenta. A test which allows detection of altered levels of IgA, IgM or IgE in filter paper embedded blood (FPEB) could be used to screen congenital infections or allergies. The aim of this study was to correlate the levels of IgM and IgE eluted from FPEB in Guthrie cards to their corresponding serum concentration. **Material and Methods:** Forty eight cord blood samples

were obtained at the General Hospital "Manuel Gea González" of Mexico City. Guthrie cards and serum samples were prepared by standard procedures. Both samples were tested using antigen-capture ELISAs to determine IgA, IgM and IgE concentrations. Those cases with abnormal values were localized and clinically attended to diagnose specific congenital infections, as well as maternal history of allergy, vaccination or clinical problems. **Results:** Mean IgA and IgM concentration in cord blood serum were 26.48 ± 20.66 and 104.5 ± 19.6 µg/mL, respectively; five out of the 48 cases (10.4%) presented abnormally high levels. The mother of the newborn with the highest IgM level (>400) had prolonged cystitis along pregnancy, and other mothers had been vaccinated against tetanus. A high correlation ($r=0.89$) between serum and FPEB was obtained, with 39% elution efficiency. Correlation between first and second samples (taken 7-10 days later) was $r=0.99$, with an increase of around 25% of the original concentration due to aging. Only two (4.2%) serum samples were positive for IgE (above 2 µg/mL) but no relation to maternal or newborn clinical or exposition factor was found. FPEB samples gave more erratic IgE results than sera. **Conclusions:** IgA and IgM can be eluted from FPEB (Guthrie cards) in a significant proportion, so this biomarker can be tested as indicator of fetal exposition to infectious agents or other antigens. IgE antibodies are known to be related to certain infections and to allergy; thus it is worthy analyzing this marker with a larger sample of cord bloods. **E-mail:** hcaballero_2000@yahoo.com.mx

Diagnosis012- **Evaluation of the co-transport of Na^+-glucose, Na^+-glutamine, H^+-alanyl-glutamine and H^+-arginine, chloride active secretion and resistance through the ileal mucosa in Üssing chambers in normal and malnourished mice by regional basic diet**

Sampaio IC[1]; Guedes MM[1]; Soares AM[1]; Oliveira JS[1]; Havt, AB[1]; Moore SR[2]; Lima AAM[1]
[1]INCT-Biomedicine, Faculty of Medicine, Federal University of Ceará, Fortaleza, Brazil, [2]Cincinnati Children's Hospital Medical Center, Cincinnati, Ohio, USA

Malnutrition is considered the main cause of morbidity and mortality in children from underdeveloped countries. From this, the purpose of this study was to evaluate the cotransport of Na+-glucose, Na+-glutamine, transport of alanyl-glutamine and arginine as measured by short-circuit current (Isc), as well as the transepithelial resistance (TR) in mice nourished and undernourished. Male albinic mice 3-4 weeks of age were subjected to a standard diet or diet basic regional deficit of proteins, lipids and minerals. They were anesthetized with ketamine (35 mg/Kg) and xylazine (5 mg/Kg), then the ileum were removed, dissected the serosal membrane, open with a scalpel and cut in line mesenteric segments from 0.5 to 1 cm for mounting in Üssing chambers. A $CO2/HCO3-$ - Krebs solution was aerated with a carbogenic mixture (5% CO2 and 95% O2) and used for perfusion. To examine the membrane integrity in these groups, it was the same experiment with the addition of a solution of lactulose-mannitol and at the end of the trial, the infusion solutions were colleted to measure the suger markers by high performance liquid chomatogrphy (HPLC). Theophylline significantly increases the Isc in all groups, but their effectiveness was reduced in malnourished mice when compared with the group of nourished. The TR increased in both groups, no significant difference between them. Therefore, the results suggest that transport of chloride was changed to malnutrition and TR modulated by cAMP stimulation by the theophylline. The cotransport of Na+ - glucose, Na+ - glutamine, and transport of arginine and of Ala-Gln did not change significantly as well as their co-regulation in TR. After adding the solution of mannitol-lactulose, the nourishment showed a more significant increase in Isc in the control group, while the malnutrition experienced no such variation. These data show that even in malnutrition, these carriers were functional preserved and, essential to the principle of pharmacological oral rehydration solution. Some of these substrates, like glutamine and alanyl-glutamine favor the recovery of the intestinal barrier function which potential could, alleviate the vicious cycle of malnutrition, infection and diarrhea. Supported by: Capes/CNPq **E-mail:** alima@ufc.br

Diagnosis013- **Analysis of gene expression of P-glycoproteins in resistant strains of caenorhabditis elegans to ivermectin**

Figueiredo, L.A.1; Miranda, R.R.2; Fujiwara, R.T.1
1- Instituto de Ciências Biológicas, UFMG - Belo Horizonte, Brazil, 2- Centro de Ciências Agrárias e Biológicas, UVA - Sobral, Brazil

Introduction: The inappropriate use of drugs to control parasitic diseases induces the genetic selection of resistant subpopulation of parasites and contributes to emergence and dispersion of resistance to chemotherapeutic agents used. The P-glycoproteins (Pgp) are ABC transporters (ATP binding cassette) whose allelic variants and gene expression are involved in resistance to anthelmintic drugs. The nematode *Caenorhabditis elegans* is a free-living worm and phylogenetically related to species of interest for parasitology, presenting high similarity of physiological, molecular and morphological features with parasitic nematodes. The current study proposes to induce in vitro anthelmintic resistance in a wild strain (Bristol N2) of *C.elegans* and assess possible changes in their gene expression depending on the selection of resistant subpopulations. **Material and Methods:** The selection of resistant strain was obtained using increasing under dosing of Ivermectin added to NGM-agar (Nematode Growth media) in successive in vitro passages. Subsequently, total RNA was obtained from both strains using NucleoSpin RNA II (Macherey-Nagel,Germany) according to the manufacturer protocol. RNA concentration was determined using the NanoDrop® ND1000 spectrophotometer and total RNA (2000 ng) was converted into cDNA using Transcriptor high fidelity cDNA Synthesis kit (Roche) according to the manufacturer protocol. The expression of all twelve Pgps mRNA was measured by real-time PCR based on the SYBR Green methodology, an ABI Prism® 7500 (Applied Biosystems). PMP-3 and CDC-42 genes were used as endogenous controls for assays and the relative expression was demonstrated by values of $2^{-\Delta\Delta Ct}$. **Results:** Until this moment, twelve pairs of primers were selected and the analysis of mRNA expression for these sequences were evaluated in the wild and resistant strains, identifying the curve of amplification efficiency of each gene selected, and the differences in gene expression between strains. **Conclusion:** This study may contribute not only to understand the mechanisms involved in anthelmintic resistance in nematodes, but also helps the identification of potential molecular markers associated with anthelmintic resistance. **E-mail:** luiza.almeida.figueiredo@gmail.com

Diagnosis014- **Computer-supported cooperative work (CSCW) to foster neglected diseases differential diagnose as well as collection, compilation and sharing of data for eco-epidemiological research and surveillance, in South-western Amazonia**

Cesario, M1; Luz, S2; Massoodian, M3.
1 - University of Franca's Health Promotion Graduate Programme; Franca-SP; Brazil, 2 - Trinity College Dublin's Computer Science Department; Dublin; Ireland, 3 - University of Waikato's Computer Science Department; Hamilton; New Zealand

Introduction: It has been argued that global climate change and regional land use and cover changes are contributing to the (re)emergence of two neglected vector-borne diseases in South-western Amazonia: Bartonellosis (Carrión Disease) and American Cutaneous Leishmaniasis (ACL). The large geographical distances in Amazonia and the sparse human settlements in the region pose significant challenges for the collaboration among health professionals, whose goals range from making differential diagnose in such neglected diseases to monitoring their spread. This paper presents work in progress on a computer-supported cooperative work (CSCW) prototype, to support the differential diagnose tasks of local healthcare professionals and to enable collection, compilation and sharing of data for purposes of epidemiological research and disease surveillance in these remote regions. **Material and Methods:** An initial assessment of the needs of individual actors and organizations involved in treatment and monitoring of emerging infectious diseases in the South-western Amazonia, including health professionals from Brazil, Peru and Bolivia has been carried out through survey of the literature, fieldwork and informal interviews. This approach consists in employing key concepts from well-established CSCW frameworks and case studies of their application in mobile healthcare situations in order to facilitate

requirements elicitation. **Results:** Application of this method resulted in iterative refinement of the assessment, which is consolidated and presented in the next sections. It also served as a basis for the specification of a first prototype which will, in turn, be instrumental to the next phases of this research. In order to further explore some of the needs and possibilities discussed above, we have implemented a prototype (called nu-case) which runs on Androidtm smart-phones and tablets. We have produced a concept video demonstrating the functionality prototype in order to gather feedback on the needs assessment described above, and assess the perceived usefulness of the different features implemented, their suitability to the tasks they are meant to support, potential pitfalls and constraints etc. This video has been used in conjunction with questionnaires and interviews conducted with Brazilian healthcare professionals. While this work is still in progress, some preliminary observations arising from interviews (following a video-based demonstration of the system) with medical researchers working on disease surveillance in the Amazon region are encouraging. **Main conclusions:** Fostering further user involvement by conducting structured interviews and live prototype demo sessions will help us evaluate system functionality as well as elicit further requirements for its future development towards field trials. **E-mail:** manuel.cesario@uol.com.br

EPIDEMIOLOGY AND CONTROL EDUCATION

Epidemcontrol001- **Time series: basic concepts and methodology in epidemiological surveillance.**

Gener M.E
UnB, Brasília, DF, Brazil

Introduction: Epidemiological surveillance generates information for action. On the other hand, time series are values of a particular variable (incidence, prevalence, etc.) represented in a time scale, well-ordered and uniformed (same measure) way and supposedly that these values are related to each other (autocorrelation) with time or another variable. Often the usefulness of collected information is compromised by lack of appropriate methods for processing and analysis. The proper methodology of time series is important to subsidize the correct decision-making in epidemiological surveillance; describe and assess the behavior of the event and control measures (action) in the past, present and future; propose scenarios and possible measures to improve the course of the event with respect to population's health; better planning of human and material resources, as well as identification of necessities for progress-training, computer software, etc. **Objective**: To describe the pretreatment, identification and interpretation of time series' components and its prognosis by deterministic method. **Material and Methods:** Some fundamentals of temporal series and methodological sequence of the deterministic model were showed for epidemiological surveillance. It was started from characterization of pre-treatment; followed by identification, modeling and extraction of time series' components (trend cycle, seasonality and residue); finally obtaining the integrative function, the prognosis, tuning methods (use, interpretation, advantages and disadvantages) and interpretation of results. **Conclusion**: Time series' methodology by deterministic method is an introduction to advanced methods to develop and analyze some aspects of pre-treatment, identification and interpretation of the series components and its forecasting. This would be very useful to epidemiological surveillance in State and Local Health Departments, considering that many do not use any methodology, and those who do, use inefficient tools disregarding the series elements in an integrated view. **E-mail:** fmttocantins@yahoo.com

Epidemcontrol002- **The varDB database: from samples to sequences**

Joannin N., Diez D, Hiranuka K. and Goto S
Bioinformatics Center, Institute for Chemical Research, Kyoto University, Gokasho, Uji, Kyoto 611-0011, Japan

Antigenic variation (AV) is one of the major factors that allow malaria parasites to avoid their mammalian hosts' immune systems. When a host is exposed to a particular antigen, its immune response generates antibodies that target that specific antigen, eventually becoming part of the host's acquired immune response. By changing its surface antigens, the parasites can evade the hosts' acquired defenses. This immune evasion allows the parasite to maintain itself in or reinfect its hosts. The study of AV is hindered by many aspects of the very nature of this phenomenon. Malaria parasites, in particular, can switch the expression from one protein to another depending on factors that are still poorly understood and with researchers lacking means to control this switch. Additionally, the large number of sequences within each protein family makes it difficult to choose an appropriate target for further experimentation. Investing time, effort and money into such a "moving target" is at best risky for any research team. However, avoiding research in the field of AV may prove to be a deprivation for opportunities to develop new strategies to fight malaria. We have created **varDB**, a database of AV sequence data (www.vardb.org). The goal of this resource is to centralize all available data pertaining to AV: we had originally collected data from Genbank, PlasmoDB and other data sources, concentrating our efforts on being as broad as possible. We had also started with the central dogma of one gene, several transcripts, one transcript, and several proteins. Today, we realize that this dogma is limited. The democratization of mass data collection is resulting in a deluge of data from a much wider range of specimens. We are now faced with the need to extend the original dogma to englobe genomes, and more importantly, isolates and samples. I present our current efforts to modernize varDB through the development of a new data model, from the samples to individual sequences. **E-mail:** nicolas@kuicr.kyoto-u.ac.jp

Epidemcontrol003- **On the origin of sex bias in infectious disease epidemiology**

Guerra-Silveira F[1,2]; Abad-Franch F[1*]
[1]Instituto Leônidas e Maria Deane, Fiocruz, Manaus, Brazil; [2]Universidade do Estado do Amazonas, Manaus, Brazil

Introduction: Infectious disease incidence is often male-biased. Two main hypotheses have been proposed to explain this fact. The steroid-immunomodulation hypothesis (SIMH) emphasizes sex-related physiological differences, while the differential-exposure hypothesis (DEH) stresses gender-related behavioral differences. Surprisingly, the population-level predictions of these hypotheses have yet to be thoroughly tested in humans. **Material and Methods:** We test SIMH and DEH predictions about incidence and exposure-prevalence patterns for 10 major pathogens. Compulsory-notification records (Brazil, 2006-2009) are used to estimate age-stratified male: female incidence rate ratios for the general population and across selected urban/rural contrasts. Exposure-prevalence odds ratios are derived from 72 published surveys. We estimate summary effect-size measures using random-effects models; our analyses encompass nearly 0.5 million cases of disease or exposure. **Results:** We find that, after puberty, disease incidence is male-biased when Th1- or antibody-dominated responses are protective (e.g., the leishmaniases, hepatitis A, leptospirosis, meningococcal meningitis), and female-biased when they enhance pathogenesis (e.g., severe dengue forms) or favor a particular clinical picture (e.g., tuberculoid leprosy is female-biased but lepromatous leprosy is male-biased). For most diseases (the leishmaniases, schistosomiasis, leptospirosis, meningococcal meningitis, and, to a lesser extent, tuberculosis and hepatitis A), male bias emerges also during infancy, when behavior is unbiased but sex steroid levels transiently rise. Behavioral factors likely modulate sex bias in some diseases (leishmaniasis, tuberculosis, leptospirosis, or schistosomiasis) and age classes; however, average exposure-prevalence is significantly sex(male)-biased only for *Schistosoma* and *Lepstospira*. **Main Conclusions:** Our results closely match most SIMH predictions and contradict some crucial DEH predictions, suggesting that gender-specific behavior plays an overall secondary role in generating sex bias. The physiological crosstalk between sex hormones and immune effectors thus emerges as the main candidate driver of gender differences in infectious disease susceptibility. From an academic perspective, our robust findings provide novel insight into the evolutionary biology of sex and immunity in humans; in more practical terms, they (i) warn against unthinking extrapolation of biomedical research results across ages and genders, (ii) may further our understanding of pathogenesis (with potential implications for clinical practice), and (iii) can help develop a more coherent view of infectious disease epidemiology (and consequently enhance prevention). **Funding:** Fiocruz, FAPEAM (scholarship to FG-S). **E-mail:** fernando@amazonia.fiocruz.br

Epidemcontrol004- **Biodiversity and Health: the agreement between experts' recommendations and the vector-borne diseases surveillance policies**

Cavalheiro M, Labarthe N, Chame M.
Programa Institucional Biodiversidade & Saúde, FIOCRUZ,Rio de Janeiro, Brasil

Introduction: The environmental changes caused by human actions alter the dynamics and behavior of hosts, including humans, pathogens and vectors resulting in different ecosystem arrangements that enhance pathogens transmission. The Programa Institucional Biodiversidade e Saúde FIOCRUZ developed a workshop about "Estado da Arte da Saúde Silvestre no Brasil" in 2009 with the purpose of obtaining, from the experts invited, the identification of the importance of bio-ecological and climatic parameters that promotes emerging and reemerging diseases related to biodiversity and recommendations for their prevention and control. Using the results of the participatory work of experts in arthropods, the concordance between the parameters analyzed and the recommendations indicated by them with the national health policies was measured, besides rank the parameters in order of importance and identify gaps in knowledge. **Methods:** Several indices were created to generate numerical values comparable between the content analysis performed to evaluate the concordance between the experts and the legal instruments of health. **Results:** The knowledge gaps were found only in the physical-chemical parameters of soil for subgroups of sandflies and fleas, and population and community parameters only for the sandflies. The experts indicated 16.1% of the 56 parameters analyzed as high degree of importance to the promotion of diseases transmitted by arthropods and 60.37% as important. These parameters are linked to loss of biodiversity and the environmental and climate changes and their consequences. The concordance between the experts' advice and the policies were high in the category education. Although strongly recommended, the category preservation and conservation of biodiversity and sustainability showed poor agreement with the policies in health. **Main Conclusions:** The policies of surveillance and control were considered immature in the incorporation of bio-ecological and climatic parameters. This inclusion is necessary and would help risk analysis and prevention measures adjusted to local complexities with benefits for health and biodiversity conservation. Results indicate the need for an ecosystem approach in formulating health public policies as a tool for control and prevention of emerging diseases originating from wildlife. **Keywords:** Biodiversity; public policy; arthropods, content analysis, surveillance and control. **E-mail:** mariannacavalheiro@gmail.com

Epidemcontrol005- **Tool for construction of endemic maps for the city of Maceió – AL / Brazil**

Pinto, M.S.C.; Cavalcante, J.C.; Silva, R.B.; Rocha, R.C.M.A; Lobo, A.T.; Rizzo, C.M.G; Xavier Jr., A.F.S; Calado, T.S.
Universidade Federal de Alagoas; Secretaria Municipal de Saúde de Maceió-AL/Brasil (SMS)

The Health Surveillance needs important information tools for making decisions that enable daily monitoring of the disorder, its occurrence and territorial advance, to invest in prevention and control of specific disease or injury. This study presents a tool for the construction of Endemic Maps for the city of Maceió-AL/Brazil, which dynamically provides a spatial visualization of endemic disease in the city and the everyday progress of an epidemic. The map still illustrates the neighborhoods with highest numbers of cases or incidents in the city, identifies gaps in surveillance and builds reports of events. Its elaboration used Map Base import, in Microsoft© Excel format and included developing the programming module to connect to the SINAN (Information System for Notifiable Diseases) exported files; tabling data per day and city of residence or occurrence on a map and a chart; building form and option module that includes: table by notification or confirmation; table by date of onset of symptoms or notification; file directory selection; class intervals selection, in the map legend; enable or disable notification of imported cases and, finally, enable or disable visual effect of inclusion of cases in the territorial areas. This tool shows, in a detailed and easy to understand way, the buttons that will be used to perform the selected tab, being very effective in checking the progress of the disease in the territory of the municipality, and still provides, at the end of the process, a report of imported cases, index cases and total cases for districts and their implications. The tool can be implemented for any municipality, allowing the preparation of daily control

charts for all injuries reported to SINAN, and you can also use for the SIM (Mortality Information System) and SINASC (Born Alive Information System). The Endemic Map was able to show dynamically the progress of cases occurring in the territorial space, classifying the neighborhoods by the number of cases or incidents and building reports of events, thus identifying the neighborhoods with problems in the area of epidemiological surveillance. **E-mail:** jairocalado@terra.com.br

Epidemcontrol006- **Spatial analyses of the occurrence of envenomations in the state of Rio Grande do Norte.**

Barbosa, IR[1]; Barbosa, IV[1]
[1] Prefeitura do Natal, Secretaria Municipal de Saúde, Departamento de vigilância em saúde – Natal, Rio Grande do Norte, Brasil.

Introduction: Studies addressing the spatial pattern of occurrence of envenomations may aid dynamic understanding and support important health surveillance actions. The clusters occurrence identification of these accidents can be of great relevance for decision and measures implementation in different magnitudes compared to the factors predisposing to its occurrence. **Methods:** An ecological study using secondary data on cases of envenomations recorded in the Information System for Notifiable Diseases (SINAN) for the 167 municipalities in the state of Rio Grande do Norte (RN) in the period 2001 to 2010. Data were obtained from the website of DATASUS. The study included the 22,242 recorded accidents whose municipality of residence is located in the RN. From these data, we calculated the mean incidence rate per 100,000 inhabitants in ten years by municipality. To observe the existence of spatial autocorrelation of the cases of envenomations in the state of the RN, was calculated global Moran index (I) and to analyze the pattern of spatial distribution and intensity of the clusters (cluster, random or dispersed) according to cities using the local Moran index (Ii) (ranging from -1 to 1), both considering the statistical significance of $p < 0.05$. For the production of thematic maps of the average incidence rate, BoxMap, Scatter plot, LisaSig Map and calculate the Moran Global and local index, Terraview 4.1.0 and GeoDa 0.9.9.14 were employed. **Results:** The incidence mean map showed that municipalities with higher incidences are those located in the eastern state (on the coast or near the coast), with predominantly wet tropical climate with higher rainfall and more regular rainfall throughout the year. In the west of the state, in the driest areas in semi-arid climate, the envenomations incidences observed were lower (Figure 01). The cartogram shows areas with high outliers (Figure 02). To the average rate of accidents with poisonous animals in RN state, the rate of global Moran (I) was found to be 0.408088 (p-value = 0.01), showing the spatial autocorrelation occurrence of these accidents, with the formation of clusters. By Moran Local Index (Ii) (Figure 03 and 04), can be observed by MoranMap's, 16 municipalities forming clusters High-High (Metropolitan area and Trairi's region) and 25 municipalities forming clusters Low-Low (Seridó region and Upper West), both with statistical significance (p-value <0.05) (Figure 05). **Conclusions**: In the Rio Grande do Norte state, the envenomations have public health importance for the high rates recorded, identifying significant clusters of occurrence of these accidents. The study reaffirms the importance of spatial analysis and use of GIS as tools for the characterization of planning and management services and health systems, and strong ally for making decisions based on evidence. **E-mail:** isabelleribeiro@oi.com.br

Epidemcontrol007- **Spatial analysis of the waterborne diseases and their risk factors in one location of Ananindeua, Pará, Brazil**

Tavares, C. G. M.[1]; Ribeiro, K. T. S.[2]; Palácios, V. R. C. M.[1]; Rocha, E. M.[1]; Pinheiro, A. F.[3]; Guimarães, R. J. P. S.[4]; Sousa Junior, A. S.[4]; Veiga, N. G.[4]
[1] Universidade do Estado do Pará – UEPA, Belém, Pará, Brasil, [2] Universidade Federal do Pará – UFPA, Belém, Pará, Brasil, [3] Universidade Federal Rural da Amazônia- UFRA, Belém, Pará, Brasil, [4] Instituto Evandro Chagas - IEC, Ananindeua, Pará, Brasil

Environment, social and economy issues in addition to the disorganized usage of geographic space have been related, in the last decade, to influential and determining variables which affect the epidemiological scenarios in the Amazon, with outcomes that cause concern. These issues can be observed, considering

the health conditions of human populations exposed to risks of diseases due to the usage of inappropriate water, caused by many different reasons such as garbage that infect the soil as well as the water tables. In this context this paper aims to present the characteristics of this epidemic situation and the relations with the risky factors to the infections that come as a result of this water problem, observed in the community named Parque Clube, located in Ananindeua District, in Para. Researches were developed using documents, charts and forms from the Health Department – Secretaria Municipal de Saude de Ananindeua – and the water in question was analyzed .Physical, chemical and microbiological analyses were held. Next, the data related to the quality of the water being used and all the results of the analyses in addition to the epidemiological aspects of the population were analyzed using the Kernel Method, that allowed to measure how related all of these variables are, taking in consideration all the collected data. The results of the study are: 45,5 % of the population do not treat the water at all, 55,6 % of micro area IV, do not take care of the garbage at all, leaving it outdoors, next in micro area II with 44,4 %. According to the water analyzed 57,1 % tested positive to total coliforms and 39,3 % to Escherichia coli, distributed in micro areas 2, 3and 4. The physical and chemical parameters such as nitrate, ammonia, ph , fluoride , their relation and intensity were visualized in micro areas 1, 2, 3 and 4.Because of the bad quality of the water ,diseases were observed such as : dermatitis, intestinal parasites and diarrhea that were found in areas 2, 3 and 4.The Moran's coefficient , came out positive, showing that all the variables were highly related. Using geo-technology in eco-epidemiological studies, proved to be very efficient when the goal is to express how the sanitary and the environmental conditions are related considering the diseases transmitted by non treated water, pointing out that this relation was more evident in micro area 2, 3 and 4. **E-mail:** cileidegomes@oi.com.br

Epidemcontrol008- **Food insecurity in Assis Brasil – AC, 2011**

[1]Mantovani, S.A.; [1]Delfino, B.M · [1]Pereira, T.M;.; [1]Martins, A.C.; [1]Oliart-Guzman, H., [1]Braña, A.M.; [1,2]Filgueira-Júnior, J.A, [1]Santos, A.P.; [1]Ramalho, A.A.; [1]Guimarães, A.S.; [1]Campos, R.G.; [1]Oliveira, C.S.M.; [1]Araújo, T.S.; [3]Estrada, C.M.L; [4]Velasco, N.A.; [1]Muniz, P.T.; [1]da Silva-Nunes, M.
[1]Federal University of Acre, Rio Branco, Brazil, [2]Federal University of Mato Grosso, Cuiabá, Brazil. [3]Dirección Regional de Salud de Madre de Dios, Puerto Maldonado, Peru, [4]Instituto Nacional de Salud, Lima, Peru.

Introduction: The use of the Brazilian Scale of Measure of Alimentary Insecurity (EBIA) is increasing since its validation (2003). It was adapted from the North American Household Food Security Survey Module- HFSSM (Segall-Correa, 2007). It is a direct method of measurement of the food security, classifying it in food security, or food insecurity (low, moderate, high). In 2009, The Household National Survey Program (PNAD,2009), using the EBIA, showed 43.4% as the prevalence of food insecurity to the Brazilian children between 0 and 5 years old, 26.1% as low food insecurity, 10.1% as moderate food insecurity and 7.5% as high food insecurity. In Acre the food insecurity found was 47.5%, 25.4% as low food insecurity, 11.7% as moderate food insecurity and 10.4% as high food insecurity. **Material and methods:** The municipal district of Assis Brasil is in the border between Brazil, Peru and Bolivia and it possesses 6,020 people's population (IBGE, 2010). In the year of 2011, we accomplished a cross-sectional study in the urban area of Assis Brasil, applying the EBIA interview in all the homes that had children between 0 to 5 y. o. A household questionnaire and a personal questionnaire for each child of the residence were also applied, together with weight and height measurements for anthropometric evaluation. Data analysis was performed using the software SPSS 13.0. The calculation of the anthropometric values was made using the Anthro software (WHO). The scoring system of EBIA attributes 1 point for each positive answer, being nutritionally safe homes with a score equal to 0, low food insecurity those with scores from 1- 5, moderate food insecurity those with scores from 6 to 10, and high food insecurity those with scores from 11 - 15. **Results:** We found a prevalence of 43.0% of food insecurity (n=440) for the children from 0 to 5 years in Assis Brasil. This value is compatible with the Brazilian reality shown by PNAD (43.4%). Of those children bearing food insecurity, 21.1% presented stunting, while only 9.9% of those children without food insecurity presented stunting (p=0.002, Pearson´s chi-square). Of those children living in households with no more than four inhabitants, only 33.6% were living in conditions of food insecurity, while those that live in homes with more than 4 people, 50.8% had food insecurity (p=0.000, Pearson´s chi-square). **Main Conclusions:** The results showed that the food insecurity level in Assis Brasil in the moment of the collection of data is similar to the found by for the Brazilian children. However, stunting is much higher in Assis Brasil (14,3%) than the average levels for

Brazil (7.0%, PNDS 2006, 2008). These results suggest that not only lack of food is an important source of stunting, but also the quality of food intake, which seems to be worse in Assis Brasil than for the average Brazilian children, despite city modernization and local commerce improvement with the Pacific road construction in 2003. **E-mail:** sauloaugustomantovani@hotmail.com

Epidemcontrol009- Sanitary conditions in a neighborhood with low-socioeconomic indicators in Campina Grande

Maia RE[1]; Donato, ST[2]
[1]:**Academic of Medicine, Federal University of Campina Grande, Campina Grande – Paraíba;** [2]:**Professor Master Medical Microbiology (MSc) - Federal University of Campina Grande, Campina Grande - Paraíba**

Introduction: The importance of sanitation and its association with human health is recognized in most ancient cultures. It protects people's health, minimizing the consequences of poverty and protects the environment. The lack of potable water and sewage treatment facilitates the transmission of diseases; it is estimated cause about 30,000 deaths daily in the world. Most of them happen among children, especially the poorest classes, who die dehydrated from diarrhea caused by microbes. In Brazil, unfortunately more than 3 million households do not receive treated water and a number of homes 2.5 times that this has no sewer. Developing countries, including Brazil, entered the third millennium raising pathologies of the early twentieth century, such as diarrhea, hepatitis, cholera and intestinal parasites. The lack of studies on the influence of population covered by sanitation services on health conditions in the various units of the federation is an important gap in research in the field sanitation in Brazil. It is essential to recognize the reality of the health to direct investments and address the consequences of this deficit. **Materials and Methods:** Application of a questionnaire to the population served by the Basic Health Unit Family Luiz Gomes de Andrade, district Tambor - Campina Grande-PB, between November and December 2011, with a cross-sectional observational study using EPI-Info 6.0 for data analysis. **Results:** Of 299 respondents, 99.66% (n = 298) reported having piped water at home, however, 0.33% (n = 1) did not have such service. With regard to the sewage system, 94% (n =) had sewage at home, 3.66% (n =) were open sewers and 2.33% (n =) had no access. **Main Conclusions:** Piped water and sewer items are now considered basic sanitation provided by the public. Currently, Brazil has managed to improve these health conditions and thus also minimizing costs in the short, medium and long term complications, especially in health, arising from the absence of these features. However, the present data reinforce that there are still deficits to be covered, which requires the investment of resources in these key areas. **E-mail:** rayanamaia@hotmail.com

Epidemcontrol010- Prevalence of food insecurity and association with socioeconomic index in the city of Mâncio Lima - AC, Western Brazilian Amazon

[1]Mantovani, S.A.S; [1]Ramalho, A.A; [2]Filgueira-Júnior, J.A.; [1]Pereira, T.M.; [1]Martins, A.C; [1]Delfino, B.M.; [1]Campos, R.G.; [1]Monteiro, F.A.; [1]Guimarães, M.G.S.; [1]Klein, W.W.; [1]Nogueira, R, [1]Braga, C.B.; [1]Escalante, A.C.; [3]Cavasini, C.E.; [4]Malafronte, R.; [1]da Silva-Nunes, M.
[1]**Federal University of Acre, Rio Branco, Brazil,** [2]**Federal University of Mato Grosso, Cuiabá, Brazil.** [3]**Faculty of Medicine of São José do Rio Preto, São José do Rio Preto, Brazil,** [4]**Institute of Tropical Medicine, University of São Paulo, São Paulo, Brazil.**

Introduction: Food insecurity is configured in a reduced access to enough food for an active and healthy life and is determined mainly by poverty and social inequalities. To measure the magnitude of this uncertainly Radimer*et. al.* (1992) proposed a scale that has been applied in several countries. Based on this, was created and validated the Brazilian Food Insecurity Scale (Escala Brasileira de Insegurança Alimentar– EBIA). The aim of this study is to verify whether there is an association between social inequality and food insecurity in the city of Mâncio Lima – AC. **Material and methods:** Mancio Lima has 15,206 inhabitants spread over an area of 5453 km^2 and is located in the extreme west of the Brazilian territory, being limited to the north with Amazon, south and west with Peru to the east with the city of Rodrigues Alves - AC, and northeast with the city of Cruzeiro do Sul– AC. Cross sectional population-based probabilistic and random sampling based on the records of the Community Health Agents of the

city was performed. The data collection was done between February and March 2012. The final sample size was 335 households. For measurement of food insecurity was used EBIA, and to estimate the social inequality a socioeconomic index (SEI) based on the presence of consumer goods and housewares was built through principal components analysis (Filmer and Prichett, 2001). Initially 25 items made up the index. Kaiser's criteria were applied to choose the most important items (the first principal component explained 33.63% of the total variance). The households were scored and then classified into thirds, being the first one that with the lowest socioeconomic index and the third one that with the highest socioeconomic index. To assess the association between food insecurity and socioeconomic index we used the Pearson chi-square test. **Results:** Fifty-eight percent (n= 194) of the households were classified as having food insecurity, being 11.0% with high food insecurity levels, 17.3% with moderate insecurity levels and 30.1% with low insecurity levels. The SEI and the proportion of households bearing food insecurity are inversely correlated. In those households with food security (n=139), only 19.4% belonged to the lowest third SEI. On the other hand, of the 194 households bearing food insecurity, 42.9% were classified in the poorest SEI and only 20.4% were classified in the highest SEI. Thirty-seven households were classified as having severe food insecurity, and 62.2% of those had the lowest SEI and only 5.4% had a high SEI (p <0.001). **Main Conclusions:** The prevalence of food insecurity in Mancio Lima are higher than national and the Northern Region averages observed in the last National Survey by Household Sampling (Pesquisa Nacional por Amostra de Domicílios - PNAD, 2009).In Brazil in 2009 approximately 55.0% of households in moderate and severe food insecurity were in the class of monthly per capita income of up to ½ minimum wage. **E-mail:** sauloaugustomantovani@hotmail.com

Epidemcontrol011- **High prevalence of enteric protozoan and the microbiological analysis of drinking water in Maxacalis indigenous land, Minas Gerais, Brazil, 2011 - 2012**

Carvalho G.L.X[1]; Gripp H.L[1]; Costa B.A.S[1]; Teixeira L.F.M[1]; Marinho C.C[1] ; Silva S.Q[2]; Machado-Coelho G.L.L[1]
1Laboratório de Epidemiologia de Doenças Parasitárias, DECME, UFOP, Ouro Preto, MG, Brasil; 2. Departamento de Ciências Biológicas, ICEB, UFOP, Ouro Preto, MG, Brasil.

The ethnic group Maxakalis is composed of 1497 individuals distributed in 142 households. They currently live in two locations – "Água Boa" and "Pradinho", in the north of Minas Gerais state. Of all the indigenous groups in the state, this is the one whose most preserved the culture, social structure, the language, despite the introduction of foreign culture and even being direct contact with outside civilization. Since 2000, the "Fundação Nacional de Saúde" (FUNASA) has intensified the basic sanitation actions, which, however, need to be evaluated for their effectiveness. The objective of this study was to determine the prevalence of intestinal protozoan infections in the Maxacalis population, and evaluate the microbiological quality of drinking water in this location. From all of 1497 *inhabitants*, only 555 (37.07%) returned the containers with feacal samples for parasitological research. Three faecal samples from each subject were collected with the TF-Test ® Kit on alternate days and processed by double filtration and centrifugation before examination for parasite. After the parasitological analysis of feaces, microbiological analysis of water was carried out. A sample (n= 57) of households was selected using as criteria the presence of children infected with *Giardia duodenalis* and / or *Entamoeba histolytica* at home. The drinking water was collected in specific bags collectors of 100 mL, and these, sent to the laboratory for water analysis. Filtration was performed under vacuum system through a Millipore membrane®. The membranes were transferred for petri dishes in ColiBlue ® medium - to detect total coliforms (red colonies), and *Escherichia coli* (blue colonies) and incubated at 37°C for 24 hours for growth. Feacal analysis results showed the pathogenics protozoa *E. histolytica / E. dispar* in 48.9% of the samples, and *G. duodenalis* in 32%. The non-pathogenics protozoa found were *Entamoeba coli* in 40.8% of the samples, and *Endolimax nana* in 10.3%. Regarding microbiological analysis of drinking water, from 57 selected samples, 100% were positive for *Escherichia coli* and Total coliforms. The present study showed a high prevalence of intestinal protozoa, and contamination of drinking water with *E. coli* in the totality of samples examined. These data indicate the need to combine health education actions with sanitary engineering measures implemented by FUNASA in Maxacalis Indigenous Land. **Support:** CNPq and FAPEMIG. **E-mail:** gabixlanna@yahoo.com.br.

Epidemcontrol012- Physico-chemical analysis and microbiology of water consumed in three elementary schools in the city of Ariquemes, Rondônia, Brazil

Pompeu, E. C.[1]; Bavaresco, M. F.[1]; Simonato, R.[1]; Zan, R. A.[1]; Meneguetti, D. U. O.[1]; Ramos, L. J.[1]; Barbosa, N. V.[1]
1. Faculdade de Educaçâo e Meio Ambiente, Ariquemes, Rondônia, Brazil

Introduction: Water is fundamental to human survival, be it in the production of food, organic and cellular activities, and also in hygiene. However, water is not an abundant resource because only 0.27% of all water on the planet can be used for drinking. In relation to physical, chemical and biological, water can be classified as contaminated, harmful, polluted or potable. Thus, water-borne diseases are related to contamination by pathogenic microorganisms through water contaminated via the fecal-oral route. As such, the most feasible way to make it drinkable is through treatment and supply offered by the public water supply system. The objective of this study is to evaluate microbiology and physic-chemical of water provided by the public water supply system which is consumed in three public elementary schools in the City of Ariquemes in the State of Rondonia, Brazil. Since children are individuals with immature immune systems, they are more susceptible to diseases transmitted by water. **Material and Methods:** Samples were collected for microbiology and physic-chemical analysis in three areas in the schools (trestle, faucet and drinking fountain) for a period of 21 days during the month of September, 2011. An evaluation was performed weekly in each school. Both the operational part of the collection, as well as the sample analyses, were based on procedures detailed in the "Practical Water Analysis Handbook" by National Foundation of Health (2006). The microbiology water analysis method utilized was rapid test Coitag, which detects the presence of total coliforms and *Escherichia coli*. The physic-chemical evaluated pH parameters, conductivity, free residual chlorine, turbidity and color. All the analyses were performed in triplicate, except for the determination of residual chlorine. The results were expressed as mean and standard-deviation. **Results:** According to legislation of Ordinance No. 518 dated March 25, 2004, all the water samples analyzed indicate levels of fecal contamination unfit for human consumption. The physic-chemical parameters present values above those permitted by federal legislation. The pH level was the parameter which produced the most positive results, as 100% of the samples analyzed were within the limits of potability. **Conclusion:** From the results obtained, attention needs to be paid to improve water quality and corrective action taken by those responsible for the water supply system of the municipality. **Keywords:** Analysis, Microbiology And School. **E-mail:** dionatas@icbusp.org

Epidemcontrol013- Microbiological and parasitological survey in vegetables grown and marketed in Vicente Pires, Federal District, Brazil

França, D.D.[1]; Gurgel-Gonçalves, R[1]
[1]Laboratório de Parasitologia Médica e Biologia de Vetores, Faculdade de Medicina, Universidade de Brasília, Brasília, Brasil.

Introduction: Several studies have demonstrated vegetables contaminated by bacteria, protozoa and helminths in Brazil. In the Federal District of Brazil (FD), part of the production of vegetables is done in small farms located in urban areas, and are sold at fairs. So far, no study has assessed the contamination of these vegetables by pathogenic organisms. Here, we performed parasitological and microbiological analysis in vegetables produced and marketed in Vicente Pires, FD, to assess the potential risk of infection in the local population. **Material and methods:** We collected 120 vegetables samples in three different properties and in three stands at the fair in Vicente Pires between September and November of 2010. Five different types of vegetables were collected from each property and stand, in triplicate: crisp lettuce (Lactuca sativa curly variety), Lettuce (Lactuca sativa, American variety), arugula (Eruca sativa), watercress (Nasturtium officinale), and cabbage (Brassica oleracea). For parasitological analysis, leaves of all samples (n = 120) were washed, and the washing water was processed using the methods of sedimentation (Hoffmann, Pons and Janer) and flotation (Faust). Microscopic observations of fresh samples were performed at 400-fold magnification. We also used the Kinyoun staining for detection of Cryptosporidium. For microbiological analysis, we used samples of 25 g of 30 vegetables to detect

thermo tolerant coliforms, by using the MPN (most probable number) of coliforms at 45 ° C/100mL based on the method of the American Public Health Association. **Results:** The parasitological analysis revealed contamination in only two samples (1.6%), from the properties. In one (L. sativa curly variety) we detected a hookworm filarioid larvae, and in the other (E. sativa) we detected a hookworm rabditoid larvae; no stained slide showed Cryptosporidium oocysts. The microbiological research detected fecal coliform values above acceptable by the National Agency of Sanitary Surveillance in only one sample (3.3%), which was E. sativa from a property. Samples taken at the fair showed no growth of these bacteria. **Main Conclusions:** The results indicate low occurrence of parasites and bacteria in vegetables grown in the properties of Vicente Pires and absence of contamination in samples taken at the town's fair. Local producers say that they wash the vegetables with sodium hypochlorite after harvest, which reduces the chances of contamination. However, detection of hookworms and fecal coliforms in samples collected on farms indicates the potential risk of infection. Therefore, we recommend continuous sanitary inspection. **E-mail:** davidf12ster@gmail.com

Epidemcontrol014- The profile of antimicrobial in a public hospital at Acre state, Amazon Bain, Brazil – Preliminary results

Macedo L.F.[1,3], Dattoli V.C.C.[1,3], Beltrão R.[1,3], Barbosa G.V., Moraes F.H.P.[1,3], Vilela S.B.[13], Dantas T.O.[2,3]
[1] – Medical school student - Universidade Federal do Acre; [2] – Professor in Infectious Diseases - Universidade Federal do Acre; [3] – Liga Acadêmica de Infectologia e Medicina Tropical do Acre

Introduction: Antimicrobials are among the most prescribed drugs in primary health services. The increasing use of these drugs combined with non-appropriated use has raised the number of resistant bacteria. Furthermore, the patient may have undesirable consequences in the use of these drugs, especially toxicity. In developing countries, vigilance on the use of drugs is poor, especially in more isolated regions, such as Amazonian states. Moreover, there are few data regarding the profile use of these drugs in the Amazon region. To contribute to the management of the therapeutic in hospitals and control of bacterial resistance coupled with a better quality of care provided to patients, this study has been justified. We aimed to describe the profile of antimicrobial drug prescription in a Public Hospital at Amazon Bain in Brazil. **Material and methods:** It was reviewed all medical records which involved antibiotic prescriptions in the "Hospital das Clinicas do Acre", Acre state, Brazil, between January 2010 and January 2011. **Results:** We analyzed 4,252 patient charts. Of them 54.7% were male, the mean age was 48.75 years old. The infectious disease sector were responsible for 19.9% of all prescription, followed respectively by the specialties of internal medicine (16.9%) and general surgery (16.5%). 33.1% of the antibiotic use were related with infection acquired in the hospital. Concerning infection's topography, the abdomen was committed in 27.9%, followed by the lower airways with 21.4%. Among the prescriptions, 99.5% of patients had mono therapy, 22.7% had double therapy and 5.1%had triple therapy. The groups most commonly used antimicrobials were cephalosporins (46.9%), quinolones (15.9%) and glycopeptides (6,6%). The cephalothin, ciprofloxacin and ceftriaxone are the antibiotics most used with 24.7%, 10.2% and 7,1 % respectively. **Conclusion:** Although the study was descriptive can be noted from other studies, a trend in the use of antimicrobials. The acknowledgment of antibiotic prescription would provide a better management of these drugs. Thus bringing the concept of a more restrict use of such drugs, mainly avoiding the development of multi resistant bacteria and reducing the risk of undesirable consequences for the patient. **Email:** lucas_felipemacedo@hotmail.com

Epidemcontrol015- Occupational accidents with biological material in firefighters of Campo Grande, MS, Brazil

Contrera-Moreno, L, Andrade, SMO, Pontes, ERJC, Barbieri, AR, Stief, ACF, Ajalla, MEA, Motta-Castro, ARC
Universidade Federal de Mato Grosso do Sul, Campo Grande, MS, Brazil.

Introduction: Occupational transmission of hepatitis B, C and HIV in military Personnel is a fact that has drawn the attention of many researchers. Firefighters, due to the nature of their activities, also are at high

risk of acquiring these infections. **Objectives**: To identify the prevalence of occupational accidents with potentially contaminated biological material self-reported and reported by firefighters of Campo Grande MS, and identifies the factors associated with the occurrence of occupational accidents with biological material in the corporation. **Methods**: This cross-sectional epidemiological study was conducted with 308 firefighters from the municipality of Campo Grande, central-western Brazil. Interview and consultation to original Health Certificates (2006-2010) have been made. To estimate the adjusted prevalence ratios, Cox regression (with time equal to one unit) has been used, with significant variables <20%. **Results:** The prevalence of occupational accidents with biological material was 64.0%. Among these only four were reported during the study period; the underreporting rate was 97.4%. Adherence to the occupational post-exposure protocol was 18.8%. Most accidents occurred in intact skin (91.8%), followed by percutaneous (15.2%) and mucosal (11.6%) exposures. Most accidents occurred due to failure in the use of personal protection equipment − PPE (69.0%). The logistic regression analysis showed that a statistically significant association was found between the incomplete use of PPE and occupational accidents. **Conclusions**: The prevalence of occupational accidents was high and the main factor associated with accidents at work was the incomplete use of PPE. The following items are needed: the implementation of the occupational post-exposure protocol; the implementation of the protocol of flow of assistance to firefighters in case of accidents with biological material; and the awareness of proper use of standard precautions and of the health hazards they are exposed to. **Supported by:** Fundect, process number 23/200.290/2009 **E-mail:** l.contrera@ufms.br

Epidemcontrol016- **"Municipalities and Communities in the prevention of environmental illnesses"**

Salta, Argentina.
Segovia, M.A, Ministry of Health. Lerma 790.Salta.Argentina. CP.4400

Introduction: In a municipality or community Healthy "the different social actors, the governors, the local public and private organizations agree to undertake a process of economic construction, social, environmental preservation and construction of community health in pursuit of better quality of life of the population. "The National Healthy Municipalities and Communities (PNMCS) promotes active community involvement. The approach depends on conditions of tropical diseases, can also be done in the context of this program by designing, implementing and evaluating participatory local projects. **Materials and Methods:** In March 2010, the health authorities of the Nation and the province of Salta, signed the Framework Convention for the implementation of PNMCS in the province. Referring was designated a Provincial. Awareness days were held and training to team members regarding municipal technicians and the various sectors of the community. Some municipalities were the Sectoral Working Groups and appointed a local reference. In 2010, the PNMCS made a call to introduce participatory local projects. Also conducted training for the elimination of potential breeding sites of A.aegypti. **Results:** As of March 2012, included 32 municipalities with a total of 59 municipalities in the province of Salta. Municipalities PNMCS members are: Animaná, El Tala, La Caldera, Salta , Aguaray, A. Saravia, Cachi, Cafayate, C.Quijano, Cerrillos, C. Moldes, El Bordo, El Carril, El Galpón, El Potrero, El Quebrachal, G. Ballivián, G. Guemes,G. Mosconi, Guachipas, Isla de Cañas, Joaquín V. González, La Viña, Las Lajitas, Payogasta, Río Piedras, R. de la Frontera, S. Mazza, S. Carlos, Orán, Santa V. Oeste, Tartagal. In 2010, it selected projects for the prevention of diseases of environmental origin in the municipalities Aguaray, Campo Quijano and La Viña. The training to eliminate potential breeding sites of A. aegypti, were made in Oran, Cerrillos and Salta, who joined the referents of 9 neighboring municipalities. From these trainings were strengthened measures to prevent and control de dengue. **Conclusions:** During the period June 2010-March 2012, 59 municipalities in Salta, 32 (54.24%) were included in the PNMCS, 3 (9.37%) will develop projects to prevent environmental illnesses. Strengthened actions Dengue control in 12 (42.75%) municipalities PNMCS members. **Email:** amaliasegovia@yahoo.com.ar

Epidemcontrol017- **Mucosal immunity enhancement as a challenge to reduce mucosal transmission of pathogens**

V. Rainone[1], G. Dubois[2], M. Clerici[3,4] & F. Veas[2]
[1]University of Milan, Department of Clinical Sciences, Milan, Italy, [2]Aix-Marseilles University, UMR-MD3, Comparative Molecular Immuno-Physiopathology Laboratory, Faculty of Pharmacy, Montpellier, France, [3]University of Milan, Department of Biomedical Sciences and Technologies, Milan, Italy, [4]Don C. Gnocchi Foundation, IRCCS, Milan, Italy.

Mucosal sites represent an important surface of the body, and they are the entry doors for a wide numbers of pathogens, including bacteria, parasites and viruses. Some of these pathogens, including influenza virus, target and stay mucosal sites, whereas others go thru to induce systemic infections. However, in these conditions, infection occurs to a relatively low rate, due to an efficient host defense system at the mucosal surface. Some pathogens can however infect organisms, and for this reason, the development of prophylactic and therapeutic vaccines against mucosal infections still represents a definite challenge. The chemokine CCL28 or MEC (Mucosae-associated Epithelial Chemokine) binds to CCR3 and CCR10 receptors recruiting IgA-secreting plasma cells (IgA-ASC) resulting in the induction of an increased IgA-dependent protection against muco-tropic viruses. IgA present in mucosal tissues constitutes the first and main adaptive immunity line of defense against such infections. Intramuscular mice immunizations were done using HIV-1$_{III}$B-Virus-Like Particles (VLPs) alone (150 ng Env/mouse) or in combination with a CpG-free CCL28-expression vector (50 μg/mouse). A CCL19 expression vector was used as an irrelevant control in addition to a saline control. Fourteen days later an immune boosting was done. Mice were sacrificed on day 28 after the first immunization. Serum chemokine was first determined to ensure proper *in vivo* expression vector of chemokines. Serum and vaginal anti-HIV-1 IgG and IgA were detected and quantified by ELISA at different time points. Their neutralization activity was assessed through the use of HIV-1$_{III}$B. Finally, IgA secreting plasma cells were stained and quantified in the *lamina propria* of colonic mucosa. Immunizations with chemokine alone or in combination with HIV-1-VLPs results in a significant increase of chemokine at the serum level as expected. Serum IgG and IgA were increased in VLPs-CCL28 mice as compared with VLPs-CCL19 mice (p = 0.05 and 0.046) or VLPs alone mice (p = 0.042 and 0.04). No anti-HIV antibodies were observed in CCL28 alone, CCL19 alone, and saline treated animals. Total IgA from vaginal secretion of immunized mice showed a significant increase in VLPs-CCL28 treated mice as compared to all other conditions, whereas anti-HIV-1 IgA exhibited a significant increase in VLPs-CCL28-treated mice as compared with VLPs-CCL19 (p=0.04) and VLPs alone (p=0.042) treated mice. IgA antibodies from HIV-1/VLPs-immunized mice played a major role in the neutralization of both the HIV-1$_{III}$B lab-adapted strain and a primary isolate of HIV-1 from C subtype. This IgA-mediated neutralization activity was enhanced in a CCL28-dependent manner, whereas in the absence of CCL28, the neutralization was decreased and mostly IgG-dependant. Finally, a massive IgA+ secreting plasmacytes migration to the colon epithelium was observed in VLPs-CCL28-immunized mice as compared to all other mouse groups (p=0.04). Local mucosal protection against pathogens through an increase in both IgA+ secreting B cells and neutralizing IgA could lead a significant reduction of pathogen transmission. The positive immuno-modulatory role of CCL28 in combination with antigen immunization allowed improved protection through the presence of higher plasma and vaginal IgA levels and through a better neutralization activity. These results suggest that CCL28 could play a role of efficiency enhancer of preventive vaccines against pathogens exhibiting a mucosal tropism. **E-mail:** francisco.veas@ird.fr

Epidemcontrol018- **Infant Mortality Rate and Proportion of acute diarrhea by age group in the city of São Mateus, Espírito Santo, from 2000 to 2009**

Sena,L.B., Capucho,S.A..; Caran, M. E.; Sena, L. B.; Vieira, A. C. B. C. ; Santos,B.P.P.C.; Caser, L. T.
Universidade Federal do Espírito Santo, São Mateus, ES, Brazil

Introduction: Among the many health indicators, infant mortality was considered as one of the most important by the World Health Organization, gaining great prominence in the Alma-Ata Conference that prioritized primary health care (FILHO, J. G. B., ET AL.) The first year of life is considered one of the

periods of greatest risk of death, therefore, it was necessary to achieve reduction in the number of deaths among children less than one year, one of the main goals of public health policies. The acute diarrheal illness (DDA) is one of the diseases that most affects this age group, and higher incidence in developing countries like Brazil. **Objective:** To investigate and analyze the infant mortality rate and the proportion of DDA by age group in the city of São Mateus, the State of Espirito Santo, from 2000 to 2009. **Methods:** We conducted cross-sectional study based on secondary data obtained from the following data sources: the Mortality Information System (SIM) Information System on Live Births (SINASC), the Brazilian Institute of Geography and Statistics (IBGE), the Book of Deaths of the Municipal Health Secretariat of São Mateus, and Monitoring Program of Acute Diarrhoeal Diseases (MDDA). **Results:** From 2000 to 2009, the Infant Mortality Rate (TMI) higher in the city was recorded in 2001, with 20.82 deaths per 1,000 inhabitants. From 2007, there was a decline in infant mortality rate, and in 2009 reached the lowest value during the period studied, namely, 4.0 deaths per 1,000 inhabitants. Looking at TMI, the proportion of DDA in children under one year decreased from 18.7% in 2003 to 8.44% in 2009. **Conclusion:** The TMI decreased over the study period in the city of São Mateus, following the trend of decline that Brazil has experienced in recent years. Significant reduction of cases of DDA in the age group studied. These factors are mainly explained by the improvement of health services, greater access to new technologies, reducing fertility and factors related to improvement of sanitation, however, it must be emphasized the permanence of such lasting quality health services, prioritizing primary care, to the continued trend of declining rates. **Keywords:** Health, disease, infant mortality, acute diarrhea, **E-mail:** lari_barreto1@hotmail.com

Epidemcontrol019- **Correlation between pluviometric indexes and the number of hospitalizations for classic dengue in Penedo, Alagoas, 2010**

Santos JGRP, Lyra TM, Alves WA.
Federal University of Alagoas, Maceió, Alagoas, Brazil

Introduction: Dengue is considered a short-term and acute infectious disease, of varying severity, caused by an arbovirus. Although it is transmitted primarily by infected *Aedes aegypti* mosquitoes it is also by *Aedes albopictus*. The *Aedes aegypti* is found mainly in tropical and subtropical regions. Indeed, the rate of transmission of the dengue is influenced by the high temperature and humidity of such places, dropping considerably in places with temperatures below 16º C. The Dengue epidemics usually occur during the summer when periods of heavy rain happen. The disease is expanding quickly and there is a general concern among scholars that in the coming years the transmission rate level will surge in all tropical areas of the world if no effective precautions to contain epidemics are taken. **Materials and Methods:** the methodology applied is known as an ecological study. The variables used were the 2010 monthly indexes of pluviometric and the 2010 number of hospitalizations for classic dengue from January to December. The data regarding the number of hospital admissions were obtained from the Ministry of Health's database. The pluviometric indexes were obtained from the satellite data of the Study Centre of Weather and Climate (CPTEC) at National Institute for Space Research (INPE), Ministry of Science and Technology.A descriptive statistical analysis was conducted to calculate both the means and the standard deviations of the number of admissions and of the pluviometric indexes. Statistical analysis was used to measure the association of two variables by applying the Spearman's rank correlation test. The level of statistical significance considered for this test was 5%. The data analysis software used was Graphpad Prism 5. **Results:** The mean of the number of hospitalizations for classic dengue in 2010 ranged from 6.08 to 8.30. The mean of pluviometric index for the same period range from 71.16 to 90.69. The Spearman's rank correlation coefficient(r) showed a value of -0.1(p-value=0.73). Possible reasons to explain these results are: the primary care, which diagnose early and treat efficiently. That fact avoids the appearance of complicated presentations of the disease. Consequently, fewer patients need hospitalization. Other explanations are the efficient prophylaxis, through educative campaigns that teach the population doesn't leave standing water or even the training of health teams. **Conclusions:** The value of the Spearman's rank correlation coefficient showed a weak correlation between the variables and the inverse signal of what expected for the variable coefficient, meaning that the value of a variable grows while that of other variable decreases). However, this correlation was not statistically significant. However

these results are understandable, if there is an efficient prophylaxis, early diagnosis and correct treatment of the disease. **E-mail:** waneska.alves@yahoo.com.br

Epidemcontrol020- **Panorama of neglected diseases in morbidity and mortalityin the state of Pernambuco**

Rocha, R. S.[1]; Bonfim, C[2]; Medeiros, Z[3].
[1,3]Faculdade de Ciências Médicas. Universidade de Pernambuco. Recife, Pernambuco, [2]Diretoria de Pesquisas Sociais. Fundação Joaquim Nabuco. Recife, Pernambuco.

Introduction: The neglected tropical diseases (NTD) are long-lasting chronic infections, which produce serious physical, mental and socioeconomic deficiency in the populations which need of quality education and health services. They are considered a challenge to public health because they still represent a great impact in morbidity, causing severe and permanent disability, with high rates, but rarely leading to death. Describe the panorama of NTD (dengue, Chagas disease, leishmaniasis, schistosomiasis, leprosy, tuberculosis and filariasis) on mortality and morbidity in the state of Pernambuco, in the period 2007 to 2010. **Material and Methods:** This is a quantitative and descriptive study. Data came from Brazil's Mortality Information System (SIM) and Notification Injuries Information System (SINAN), the Ministry of Health (MS). **Results:** Of all the diseases studied, there were a total of 88,470 cases in Pernambuco, in the period 2007 to 2010; emphasis on dengue accounted for approximately half the cases the state (49.47%), followed by tuberculosis (22.94%), leprosy (15.53%) and schistosomiasis (9.51%). Data on SIM/MS indicate a total of 1,357 deaths of the seven NTD, corresponding to 6.26% of total mortality of Pernambuco. The NTD mortality rate calculated for the year 2007 was 4.50 deaths per 100,000 inhabitants, increasing to 3.88 deaths per 100,000 inhabitants in 2010, representing a decrease of 13.77%. The year 2008 had the highest proportion of cases of NTD corresponding to 26.52% of total deaths. The NTD group studied corresponded to 13.73% of total deaths from infectious and parasitic diseases. **Conclusion:** The results show that NTD persist in large numbers in the state of Pernambuco, with emphasis on dengue and tuberculosis, which demonstrates the need for new intervention strategies to improve the situation of these diseases, by the state. Despite the reduction in NTD mortality rate over the four years, more efforts are needed in planning, monitoring, and implementation of health programs that enable the reduction and elimination of this group of diseases in Pernambuco. **E-mail:** roh.santos25@gmail.com

Epidemcontrol021- **Impact of Global Health Initiatives on the Health System in Angola**

Craveiro, Isabel and Dussault, Gilles
Instituto de Higiene e Medicina Tropical, Unidade de Saúde Pública Internacional e Bioestatística, Universidade Nova de Lisboa, Portugal

Material and Methods: This paper discusses the impact of Global Health Initiatives (GHI), namely the Global Fund, on the health system of Angola, through the analysis of the perceptions of key stakeholders. This research comes as a response to the need to understand these external mechanisms and how the national health system has responded to them. We interviewed key informants (policy-makers in the Ministry of Health, representatives of donors and of non-government organizations). We also carried out an extensive analysis of relevant documents, such as national health policy, national programmes of Malaria, Tuberculosis and Maternal Health and national and international reports. Data collection was done between April and June 2009 and in May 2011. **Results:** Results reflect the complexity of the interplay between the Angolan health system and key external actors. Respondents identified advantages of GHI's in Angola at three levels: 1) politically, reinforcing the strategic planning in the health sector; 2) providing services that complement Government funds to control and treatment of diseases such as TB, HIV and Malaria, having an impact on activities, like introducing new vaccines (with the support of GAVI); 3) strengthening of health institutions; training of staff - expansion of services, training of technicians, improvement of certain laboratories. **Main Conclusions:** Because Angola is not dependent on external funding, there are more complementarities between national strategic programs and service delivery and

the interventions of GHI, which is different from what is observed in other African countries like Mozambique. **E-mail:** isabelc@ihmt.unl.pt

Epidemcontrol022- **Evaluation and analysis of using deep wells in Mopti, Mali**

Takeshi Yoda1, Kayako Sakisaka2, Akira Yoshioka1, Noriko Sakano3, Nobuyuki Miyatake3, Takeshi Suzue1, Tomohiro Hirao1
1 Department of Public Health, Faculty of Medicine, Kagawa University, Miki, Japan, 2 Faculty of Policy Studies, Chuo University, Hachioji, Japan, 3 Department of Hygiene, Faculty of Medicine, Kagawa University, Miki, Japan

Introduction: Mali is located at the south of the Sahara, arid climate makes it difficult to access water sources. The access ratio of safe water is only 57% in rural Mali (2002). Japan International Cooperative Agency (JICA) had made hand-pumped deep wells in rural areas from 2002 to 2007, because deep wells are considered to be less likely to become contaminated by bacteria. After 5 years since deep wells were constructed, we evaluate the efficacy of deep wells using questionnaire from inhabitants directly. **Material and Methods:** We conducted this study between February and April, 2011. We randomly selected 63 villages and interviewed households using a questionnaire to determine: 1. the socio-economic status of residents, 2. the source of their drinking/washing water, 3. the recent/last 5 years health conditions for them, 4. their knowledge of safe water practices, and 5. lifestyle change before/after using deep wells. We analyzed each content by multiple correspondence analysis (MCA) method. **Results:** A total of 730 questionnaires were collected. Villagers who used deep wells are 443(65.5%), others are 233(34.4%).The odds ratio for decreasing family diarrhea about using deep wells vs. others is 5.12 (p<0.01). MCA results showed that women's burden of water drawing water is greatly reduced after using deep wells. **Main Conclusions:** We conclude that using deep wells are drastically decreased diarrheal patient for the family member in rural Mopti. Furthermore, deep wells improved women's quality of life. Our research results may affect the choice and implementation of safe water supply systems in the Sub-Sahara African countries. **E-mail:** tyoda@med.kagawa-u.ac.jp

Epidemcontrol023- **A checklist of anopheline distribution in Spain**

Delacour-Estrella, S.*, Melero-Alcibar, R., Estrada, R., Ruiz-Arrondo, I. Pinal, R., Alarcón-Elbal, P.M. & Lucientes J..

Introduction: Spain was for years a country with endemic malaria. Due to the work and effort of health services both as researchers and mosquito control systems, they finally succeeded with the eradication of the disease in the middle of last century. However, a new case of malaria was diagnosed in 2010 and put the public health on alert. From the epidemiological point of view regarding the transmission of the disease, is essential to know which mosquitoes (specifically *Anopheles*) develop their life cycles in the specified area. From this perspective, the first step is to review the most up-to-date literature on all the cases of Anopheles mosquitoes referred in our country in order to have an idea of which would be the areas with a priori higher risk of "epidemic" if new cases of infected people appear. This is the beginning of the subsequent field studies which permit to keep track of what is the real status of anopheline populations that currently appear in Spanish soil. **Material and Methods:** This paper aims to update previous studies showing by maps species of genus Anopheles occurred on Spanish soil, including Spanish islands too. Also to detail those places which were mentioned by the authors from the first field studies. For this purpose we used the computer program Google Earth to determine the whole geographical coordinates in every location also the IDRISI Kilimanjaro version 14.02, Clarklabs. 1987-2004 program to make the specific maps. **Results:** We present the 15 species anopheline distribution maps cited in the Spanish territory: *Anopheles algeriensis, An atroparvus, An claviger, An hyrcanus, An labranchiae, An maculipennis ss, An Marteri, An melanoon, messeae W, W Petragnani, An plumbeus, An hispaniola cinereus, An multicolour, An sergentii, An.superpictus.* **Main conclusions:** Knowledge of the insect fauna found in each country is one of the best tools available to make risk maps to assess the certain spread disease vectors. It is therefore most important to perform any work that allows obtaining information about the real situation of insects involved in the transmission of emerging diseases in order to implement control strategies to limit diseases outbreaks. **E-mail:** delacour@unizar.es

Epidemcontrol024- **Study of microbial quality and free chlorine levels within Sanandaj drinking water distribution system**

Maleki A, Kalantar E, Ebrahimi R, Zand Salimi Y
Environmental Health Research Center, Kurdistan University of Medical Sciences, Sanandaj, Iran

Introduction: Microbial quality is one of the primary indicators for safety of drinking water supply. The aim of this study was to determine of coliform bacteria, free chlorine & correlation between them in the Sanandaj drinking water distribution system. **Material and Methods:** A sampling program was set up within the drinking water distribution system to determine coliform (150 samples) according to multi tubes fermentation method and free chlorine (450 samples) according to DPD method. So, they were measured over a 6 months period and correlation analysis was carried out. **Results:** Result showed that 11.3% of samples had microbial contamination and the comparison of them with free chlorine results specified that 94% of positive microbial samples had free chlorine lower than 0.2 mg/l or zero. Also,7.3% had any chlorine. Also in 10.6% of samples free chlorine concentration was lower than 0.2 mg/l and 21.7 % of samples had free chlorine higher than standard level, so that it must be controlled because of unhealthy effects, taste and odor problems. As well, it was found that in treated water, a highly significant relationship (p<0.001) between total coliform and free chlorine was observed. **Conclusion:** This study provides evidence that the free chlorine is viable indicator of potable water quality monitoring. Also, the certain parameter such as distance from the initial treatment point, network expansion, network contraction, secondary pollution and so on were caused decrease of free chlorine within the water network. **Keywords:** Coliform, Free chlorine, Water monitoring. **E-mail:** maleki43@yahoo.com

Epidemcontrol025- **Study of weather related mortality in the Nouna Health and Demographic Surveillance System (HDSS) area, Burkina Faso**

Eric Diboulo[1], Joacim Rocklöv,[2] Ali Sié[1], Louis Niamba[1], Maurice Yé[1]
[1]**Centre de Recherche en Santé de Nouna (CRSN), Nouna, Burkina Faso,** [2]**Umea Centre for Global Health Research, Umea, Sweden**

Introduction: Growing evidence points to emissions of greenhouse gases related to human activities as a key factor of climate change, which in turn affects human health and well-being. Weather has been found related to mortality in most areas of the world. It can either affect directly, but also indirectly through impacts on biological systems. Few studies have studied the short-term effects of weather on mortality in rural African populations little is therefore known on how meteorological factors influence mortality on a daily basis. We studied the association between weather patterns and mortality in the Nouna Health and Demographic Surveillance System (HDSS) area from 1999-2009. **Methods:** Meteorological data were obtained from 10 automatic weather stations located within HDSS area and linked to mortality data. Time series analysis methods were applied in R statistical software package to assess significant trends and associations between rainfall/temperature and mortality. We used a time series approach to study the association of weather variables with daily and monthly mortality series. We adjusted for time trends and seasonality, this allows us to study how well the weather variables predicted deviations in mortality from what is expected at a given time (season, year). Adjustment for time trends were done using cubic spline functions allowing 5 degrees of freedom per year of data in the daily analysis. Lagged effects of daily weather were studied using lag strata of average meteorology respectively for 1 day (lag 0-1), 5 days (lag 2-6) and 7 days (lag 7-13). Lagged effects of monthly weather were studied using single lags (lag 0) in the model. **Results:** Our results show a significant relationship between temperature and mortality, as well as a seasonal pattern in the mortality. The smooth function of precipitation effect on mortality describes a threshold with monthly rainfall below 100 mm leading to no apparent changes in mortality, while rainfall above 100 mm may lead to linear increase with up to 7 times higher mortality that normal in the extreme case. Overall, rainfall is the dominant variable explaining mortality patterns, while temperature has a minor effect in comparison with linear mortality increases during the colder months. **Conclusion:** Our study showed that mortality patterns in the Nouna HDSS tend to be closely related with climate/weather conditions, in particular extreme rainfall, and call for further investigation on cause-specific mortality patterns to better understand the particular effects of potential climate changes on

population health. **Keywords**: *Climate change, weather, rainfall, temperature, mortality, Nouna, Burkina Faso.* **E-mail:** dibouloeric@yahoo.fr

Epidemcontrol026- Integrated strategy for control and elimination of neglected diseases

Oliveira Scripnic DSC, Silva DM, Jatobá EAM, , Lobo MC., Cavalcanti M., Carvalho R., Gomes PC, Matos Sá AV, Mello LMBD.
Secretaria de Saúde de Recife PE Brazil - Partnership with the BID.

Introduction: Considering the importance of neglected diseases (ND) in the process of world development, the World Health Organization has listed out a group of ND in the Global Plan for Neglected Tropical Diseases (WHO/2008-2015). These diseases have interventions available to promote their elimination or reduction of disease burden. In the impoverished population groups, these diseases remain, maintaining the transmission and continuity of cases. The study is a demonstration project in public schools with integrated intervention measures to reduce the burden of leprosy, filariasis, schistosomiasis and helminthiasis in Recife's student population (capital of Pernambuco Brazil). **Method:** The initial sample of 5115 students between 6 and 14 years. For schistosomiasis and filariasis and helminthiasis, the protocol of the Pan American was used to evaluate the interruption of transmission of filariasis (3000 tests - TIC) and To evaluate the prevalence (P) of schistosomiasis and helminthiasis, were collected 500 stool samples (Kato-Katz examination). The Hoffman's technique was used to investigate the prevalence of protozoa. For leprosy, a self-image was designed with signs and symptoms and subsequently clinical examination. The school received training to know the mode of transmission, prevention and treatment of these diseases.**Results**: The prevalence for filariasis was 0.03% (1 case). Active search was made on the neighborhood, but all were negative. For soil transmitted helminthiasis, the prevalence was 12.3% (*Ascaris lumbricoides* was the most prevalent) and without cases of schistosomiasis. The prevalence of protozoa was 24.3% with highest frequency of *Giardia intestinalis*. For leprosy, the self-image questionnaires collected (2036), 33.3% reported signs or symptoms of illness or case history in the family. On clinical examination, 19 cases were detected in students, and 2 examined students were receiving treatment. Besides these, the disease was detected in a school guard, a total of 20 cases. From 7/10 schools assessed, only two did not showed leprosy cases. All patients received recommended ND treatment. **Conclusion:** The process of interrupting the transmission of filariasis in the city has an important advance. The status of the municipality as non-endemic area for schistosomiasis is consistent, and among the parasites, *Giardia* infection was more frequently. The leprosy detection rate was four times higher than estimated for children under 15 years old, confirming the hyperendemic status in the city. The execution of the project reveals the school as an important sentinel to develop integrated strategies for control and elimination of neglected diseases. This project will be extended to two Recife cities bordering. **E-mail:** deniseoliveira40@hotmail.com

Epidemcontrol027- Prenatal assistance and the Control of the Syphilis and HIV Vertical Transmission in the county of Caxias-MA, BRAZIL, from 2007 to 2011

Sousa, M.D.G; Pacheco, N.S.S.; Mendes, V.H.L; Santos, A.P.S.; Marques Filho, F.I.C.B.; Oliveira, P.F.A.
Universidade Estadual do Maranhão – UEMA, Caxias, Brazil, Universidade Federal do Piauí – UFPI – Teresina, Brazil , Faculdade Integral Diferencial – FACID, Teresina, Brazil.

Introduction: The main goals of the prenatal are to ensure the full gestational development, contributing to the healthy birth of the newborn, without compromising the maternal health; besides decreasing negative consequences in confinement and puerperium. The syphilis and the HIV virus infection are among the main infectious diseases found in pregnant women that can by transmitted vertically: during pregnancy, during childbirth or breastfeeding. Prior knowledge- through early syphilis serology (VDRL) and anti-HIV- which must be requested at the first visit of prenatal care- is primordial to the adoption of effective treatments, besides the planning of the childbirth and orientation to the pregnant woman for the purpose of minimize the vertical transmission (congenital or perinatal) of infectious diseases. **Material and Methods:** A descriptive and quantitative study was conducted where it was evaluated

epidemiological, social and care characteristics of HIV+ pregnant women and of congenital syphilis cases on the county of Caxias-MA, by the time of 2007 to 2011. The data from the Sistema de Informação de Agravos e Notificação (SINAN) were gathered at the county's Epidemiological Vigilance and were tabulated and statistically analyzed later. **Results:** In 2011, there was a 900% increase in congenital syphilis cases, when compared to the year before. The study showed that 15,38% of the infected pregnant women were under 20; 53,84% had not finished junior high; 15,38% did not have a pre natal exam; all the women were diagnosed during pregnancy, although only 38,46% had a serologic test during the first trimester and only 7,7% of their partners were not treated. The data related to the HIV positive women showed that 30% were under 20; 60% did not finish junior high; were housewives (20%) or farmers (70%); 30% had vaginal delivery, 10% had cesarean and 10% aborted. However, the information gathered was damaged by errors in the investigation charts with a relevant number of blank or ignored information. **Conclusion:** There was an increase in the AIDS and congenital syphilis cases by the investigation increase itself of these diseases. However, the sub notification still is high, aside from the number of pregnant women who get a late diagnosis or who do not have access to pre natal exams, which jeopardizes the treatment and increases the chances of congenital and perinatal transmission. Sex education, family planning, early prenatal exams with serologic tests, diagnosis, aside from early and effective treatments is essentials preventive measures for control of vertical transmission of HIV and syphilis. **E-mail:** marcosdavi2006@yahoo.com.br

Epidemcontrol028- **Evaluation of vaccination coverage and factors associated with adherence to the Brazilian immunization schedule to children under 5 years of the city of Assis Brazil, AC**

Branco, FLCC; Delfino, BM; Pereira, TM; Martins, AC; Guzman, HO; Brana, AM; Mantovani, SAS; Campos, RG; Oliveira, CSM, Muniz, P.T.; Da Silva-Nunes, M.

Introduction: Vaccines are of great importance to the reduction of morbidity and mortality in diseases preventable by immunization, especially during childhood. Here we evaluated the adherence to the infant immunization schedule for children under 5 years old, living in the city of Assis Brazil - AC in terms of number of children vaccinated related to the number of children living in the area, number of doses and time immunization (month of life), to identify factors associated with adherence and non adherence to vaccination schedule proposed by the Ministry of Health. **Material and Methods:** A census with mothers of children from 0 to 59 months of age (n = 385 and median age = 28 months) was conducted in the urban area of Assis Brazil, between January and March 2010, detailing the compliance of the immunization schedule for this age group. **Results:** The vaccination coverage for BCG was 98.9%; for MMR 90.5%; 93.7% for yellow fever vaccine; for the first dose of OVHR 71.4%, for the second dose 55.3%; for the first, second and third dose of OPV was 98.3%, 94.7% and 88.9% respectively; for the tetravalent vaccine the values of coverage found were 94.9%, 89.2% and 86, 9% for the first, second and third doses, respectively. The BCG and the first and second dose of vaccine against hepatitis B were the vaccines that had fewer delays. The vaccines that had higher median and average delay were: the third dose of hepatitis B vaccine (administered at 6 months), the yellow fever vaccine (administered at 9 months) and MMR (given at 12 months). In addition, were checked high percentages of complete schema for several vaccines, only OPV, Tetravalent, and OVHR presented indices of full schema below 90%. The vaccination coverage above 90% was not achieved for only the 2 doses of vaccine OVHR, for the second and third dose of tetravalent and to the third dose of OPV. It was found too that children from families with higher incomes have lower delay for the MMR vaccine, yellow fever and tetravalent. **Conclusion:** The analysis showed that the adherence to vaccination schedule is related to the socioeconomic conditions of the family. It was found that the greater the number of doses of a vaccine, higher non-adherence to the immunization schedule. In addition, the doses administrated around birth showed less delay. Thus, the unities basic of health from the municipality must be attentive to those vaccines administered several months after birth and to the vaccines OVHR, Tetravalent and OPV that require more than one dose to obtained full immunization. **E-mail:** flccbranco@uol.com.br

Epidemcontrol029- **Indigenous vaccination: routine coverage in indigenous areas Raposa Serra do Sol and San Marcos in Roraima, Brazil, 2011.**

Silva, RCMS. Souza, MA. Marreiros, ACC. Bezerra, JTM. Pereira, SF. Lima, JG.
Secretaria de Vigilância em Saúde, Ministério da Saúde, Brasília, Brasil.

Introduction: The National Health Care for Indigenous Peoples, regulated by Decree n. 3156 of 08/27/99, and by Law n. 9.836/99, of 09/23/99 establishes the Health Care the Indian Health Care System (SUS) in line with the Constitution and Organic Laws of Health adopts different model of organization of services, the Special Indigenous Health Districts (DSEI), spaces with defined territory and actions technical operational rationalized and classified as health care. The policy is geared towards the protection, promotion and restoration of health, ensuring a network of indigenous lands articulated network of SUS, to ensure them access comprehensive health care, aiming to overcome the factors that make this population more vulnerable to injuries. The National Immunization Program (PNI) provides vaccines to Brazil for the control, elimination and eradication of preventable diseases. Included in the policy of PNI is the vaccination of indigenous peoples, guaranteed by Ordinance n. 1946 of 07/19/10, establishing, in Brazil, the Vaccination Calendar for Indigenous Peoples. The specific protection of people, provided by the actions of immunizations, it is of great importance for their higher risk of becoming ill because the occurrence of an infectious disease in a village may endanger the existence of ethnic. **Objective:** To evaluate the coverage routine oral polio vaccine (OPV), tetravalent (tetra) and hepatitis B (hep B) in 2011, children under 05 years in indigenous areas Raposa Serra do Sol and San Marcos in Roraima, Brazil. **Method:** We analyzed the records of the database of the Information System of Health Care Indigenous (SIASI), 2011. We selected the routine coverage of children under 5 years of age, stratified under 1 years and children between 1-4 years old, indigenous areas Raposa Serra do Sol and San Marcos in Roraima. **Results:** In the areas Raposa Serra do Sol and San Marco, it was observed that, in routine OPV vaccines, tetra and hep B in children 1-4 years have a higher percentage of coverage compared to those administered to children younger than 1 years. For OPV coverage ranged from 38.5% to 47.8% in those younger than 1 years and from 87.3 to 89%, 5% for children 01-04 years. For tetra, 35.3% to 39% coverage less than 1 years and 79.6% to 81.6% from 1-4 years. For the 3rd dose of help B in children under 1 year, the coverage varied between 38.8% and 50.7%, and of 1-4 years, the coverage was between 85% and 89.2%. **Conclusions:** Even the coverage aged 1-4 years being higher than in children younger than 1 year, this percentage does not reach the goal set by PNI of 95% or more for these vaccines. The low coverage demands to think of new vaccination strategies for this group. **E-mail:** regyna9001@yahoo.com.br

Epidemcontrol030- **Tool for construction of control charts for the municipality of Maceió – AL / Brazil**

Pinto, M.S.C.; Cavalcante, J.C.; Rocha, R.C.M.A; Silva, R.B.; Lobo, A.T.; Rizzo, C.M.G; Xavier Jr., A.F.S; Calado, T.S.
Universidade Federal de Alagoas; Secretaria Municipal de Saúde de Maceió-AL/Brasil (SMS)

Epidemic can be defined as the number of cases of a disease higher than expected, and this definition is an implicit comparison between the cases detected and a "normal" number of expected cases. For the epidemiological monitoring is important to know the historical incidence of a disease and what period of year it occurs, necessitating the construction of control charts where the actual incidence may be compared to historical impact. Building control charts is a time consuming task if is it calculated and manually mounted. The use of computer resources significantly reduces construction time allowing the upgrade at any time. In SMS, the Coordination of Epidemiological Analysis needs to weekly identify which sanitary districts (DS) and neighborhoods have epidemic situations, just in time for implementation of control measures. This study presents a tool for construction of Control Charts for the city of Maceió-AL/Brazil. We sought to develop a tool capable of building Control Charts for all DS/city districts with reports of statistical accuracy, using the base of the Information System for Notification Diseases (SINAN) since 2005. The software Microsoft®Excel was used application to generate and automate the reading of database for the current year considering the series of cases and the endemic zone. Incidence week,

cumulative incidence, logarithmic transformation, square root transformation and Freeman-Tukey transformation are worked. Finally, there is a transformation (Root (100.000(+1 cases)/population)) which ensured a better accuracy and display of graphics. To situate the events connected with the seasons and holidays, they were added to the tool. Operations must not take longer than one minute. The tool can be implemented for any municipality, allowing the preparation of daily control charts for all injuries reported to SINAN, and it was employed for the SIM (Mortality Information System) and SINASC (Born living Information System). Each information system has a set of capture folders. For birth and death certificates are required two years in most cases to catch the epidemiological weeks simulated by date of death or birth. The system was able to achieve its goals by contributing for the decision of which DS / neighborhoods in the city are epidemic. Reveals preferential territorial areas and neighborhoods with long-term epidemic. The timely notification is desired for the system better track the epidemic that is desired for Epidemiological Surveillance of diseases. The use of transformations can lead to more accurate results and better viewing. **E-mail:** jairocalado@terra.com.br

Epidemcontrol031- **University extension and popular education in health onto enteroparasitosis control in Northeast Brazil**

Almeida, M. G.[1]; Nunes, A. F.[1]; Silva, T. M. G. V.[1]; Sales, A. A. C. O. S.[1]; Marcelino, P. F. S.[1]; Costa, J, R.[2]; Pedrosa, J. I. S.[1]
[1] Federal University of Piaui (UFPI), Teresina, Piaui, Brazil; [2] Professional Education Center Camille Saint, Teresina, Piaui, Brazil

Introduction: In his view, the SUS would provide access to health ruled by principles such as universality, integrality and equity, sometimes infeasible, causing failures in health care, reflecting directly on the quality of life. In this sense, health fairs emerge as a measure to mitigate these errors, since they are based on the principle of improved quality of life through prevention and health promotion, while informing and sensitizing the population towards change potentially harmful lifestyle habits, as well as guidance on the clinical picture, providing an earlier diagnosis. In addition, contribute to medical education, while urging the academic discussion about the risk factors and social determinants involved in the most common health problems, as well as necessary forms of intervention. **Materials and Methods:** Qualitative and quantitative ethnographic and action research conducted during health fair in a rural community in Northeast Brazil. The project included conducting screening and consultations by medical students to identify the main health problems and discuss risk factors that may be responsible for. In addition, lectures and talks wheels, focus groups, recreational activities, cultural exchanges and experiences that demonstrate the holistic approach of the event. **Results:** The most frequent complaint was intestinal parasites, predominantly in children. In the background there has been a community with predominantly low socioeconomic status and poor sanitation, as evidenced in the wheels and groups. In this context, was reported contact with the ground, defecation in inappropriate place in the vicinity of residences and consumption of food and water without adequate treatment, as well as frequent contact with animals, corroborating together into a framework of greater risk. **Conclusion:** The high prevalence of intestinal parasites in the community and its potentially harmful consequences bring to light the urgent need for intervention, either by policy measures are strictly for Popular Education in Health. It is worth to universities, in this sense, act as a bridge of knowledge in health and how exacerbating social mobilization essential for effective implementation of its Public Policy. **E-mail:** manoel.medufpi@gmail.com

Epidemcontrol032- **Prevalence of intestinal parasites and educational intervention in scholars from São Cristóvão-SE**

Santana, J.C.V; Chagas, J.C.; Menezes, F.H.P.; Prado, N.M.C.S.; Ribeiro, C.M.; Barbosa,L.; Katagiri,S.

Intestinal parasitic infection is amongst the most prevalent diseases worldwide. There is a considerably high incidence of morbidity and mortality rates related to these infections. In northeast Brazil, particularly São Cristóvão municipality, intestinal parasitic infections are prevalent because of low living standards

and poor environmental sanitation. The objective of this study was to determine the prevalence and predictors of intestinal parasitosis among children at school age, thus helping to develop health promoting activities, monitoring those already delivered to the school community. **Material and Methods**: This study was carried out in 2011 at two selected schools for grades 1-4 (age: 4-14 years), from São Cristóvão-Sergipe. Initially, an educational awareness was made with all employees and heads of households from the selected schools about parasitic infections and prevention methods. After that, stool samples were collected and processed by centrifugation-sedimentation method (CS), centrifugation-flotation (CF) technique for parasites diagnosis. Orientation regarding the main aspects related to intestinal parasites was given to these children week-by week. Recreational activities were developed within all these students and considered an important tool for the understanding the relation in between intestinal parasites activity and hygiene habits**. Results**: This study was performed with 516 individuals, although only 299 stool samples were voluntarily received and examined. It was observed an overall prevalence of intestinal parasites of 40,1%. The following parasites were detected: *Trichuris trichiura* (12%), *Ascaris lumbricoides* (9,4%), Ancilostomídeos (7,4%), *Entamoeba coli* (11,4%), *Giardia duodenalis (*8,7%), *Endolimax nana* (6,4%) Other different helminthes such as hookworms and *Strongyloides* sp. were found at very low rates. Mixed intestinal parasitic infections were seen in 51 (17%) studied children. **Main Conclusions**: The prevalence of intestinal parasites in the study area is significantly high in comparison to the National rate. The lack of sanitation conditions and general information about parasites contributed to this drastic result. Although this is a matter of government action and responsibility, health professionals have got to work against the lack of political actions in order to improve the public health awareness among the community. **E-mail:** sativet@gmail.com, satiekatagiri@hotmail.com

Epidemcontrol033- **Characterization of hygiene in schools hall of education of Santo Antonio de Jesus – Bahia - Brazil**

Almeida, J.S.; Amor, A.L.M.; Silva, I.M.M.
Centro de Ciências da Saúde, Universidade Federal do Recôncavo da Bahia, Brazil

Introduction: The legislation does not provide specific operating rules for kitchens of educational institutions. The rules used to control operation of these galleys are the same as that determines the operation and structure of industrial kitchens. **Methodology:** Research carried out in 16 municipal schools in Santo Antonio de Jesus, Bahia served by the National School Feeding Programme (PNAE), from January to may 2011. Check list form was applied, with 164 items valued, included in Resolution RDC 275/2002, the National Agency for Sanitary Surveillance (ANVISA), divided into five sections: 1. Buildings and Facilities 2. Equipment, furniture and fixtures 3. Handlers, 4. Production and Transportation of Food and 5. Documentation. It is the percentage of compliance in the areas of food preparation in each school, classifying it into: group 1, when served from 76 to 100% of items, group 2, when met 51-75% of the items and group 3 when met 0-50% of items. **Results:** The proportion of adequate hygienic and sanitary conditions was low, ranging from 27.20% to 57.85%. In block 1, 81.25% of schools were classified as group 3, noting no smooth finish ceilings, absence of insect screens and bins with lids. In block 2, 62.5% of schools were classified as group 3, recording the use of wooden utensils. Block 3 had 68.75% of schools as members of group 2, noting that 45% of food handlers did not wear protective hair, 100% did not use proper uniform, 80% had a loud, 65% had dirty fingernails or nail polish and 90% talked at the time of preparation. The analysis of block 4 allowed us to classify 93.33% of the schools in group 3, with a record store together with food hygiene material. Compared to block 5, it was found that 100% of schools classified in group 3 had not given any item, such as provision of the Manual of Practice and Standard Operating Procedures. **Conclusion:** Whereas PNAE aims to offer a healthy diet, adequate and secure the school, the schools evaluated achieved a low level of qualification, demonstrating the precarious hygienic control. We suggest the implementation of the Good Handling Practices to reduce risk in order to create a work environment more secure, efficient and satisfactory. **E-mail:** ana_amor@ufrb.edu.br

Epidemcontrol034- Analysis of the impact of the Labor Education Program for Health (Family Health-PET) in hospitalizations due to infectious and parasitic diseases, Alagoas.

Monteiro DAS, Freire DA, Pacheco AMU, Silva MEB, Alves WA. Universidade Federal de Alagoas, **Maceió, Alagoas.**

Introduction: In Brazil there is progressive reduction in mortality in children under five years and significant change in the epidemiological profile. Infectious and Parasitic Diseases (IPD) have occupied an important role among the causes of illness and death in the state of Alagoas. This group of diseases is of significant importance for their socio-economic impact and is directly associated with poverty and low quality of life, framing diseases related to poor housing conditions, diet and hygiene. The Family Health-PET is regulated by Ministerial Decree between the brazilian Ministry of Health and Education. Provides scholarships for tutors, mentors and graduate students to conduct teaching, research and extension in Primary Care (PC). This study aimed to assess the morbidity of individuals under the age of five years from IPD in the years 2009 to 2011 in the municipality of Penedo, Alagoas, in order to present results to the Municipal Health Secretariat (SMS) to improve the quality of data hospitalization and preparation services to new needs or expectations. **Materials and Methods:** Since 2009 the Federal University of Alagoas, in partnership with SMS, the program has PET-Family Health in health units (BHU) in the city, having 3 tutors-teachers, 6 mentors-doctors, 12 scholarship students and 12 non-scholarship students of the undergraduate course in Medicine. Preceptors and students have load-of 8 hours per week in BHU performing outreach and research in the biennium 2010-2011 have focused on the theme "maternal and infant mortality". For the analysis of hospitalization data were used data from the of Ministry of Health of Brazil reported in the Hospital Information System - SIH. **Results:** The data analyzed represent 15% (1,839 cases) the general causes of hospitalization during the study period. The IPD account for a total of admissions in this population 78% (517 admissions) in 2009, 76% (509) in 2010, and 59% (297) in 2011. By analyzing data from hospital, with reference to the year of implementation of PET in the BHU Family Health (2009), we observed reduction in the percentage of admissionsby 23% IPD in 2010 and 3% in 2011. Among the risk factors for IPD also add to the sociopolitical and average poverty incidence of 60% and 20% of the population that does not use general network of drinking water, according to the Brazilian Institute of Geography and Statistics (IBGE, 2010). **Conclusion:** The results of exploratory data analysis were consistent with other findings showed that hospitalizations for IPD as a marker of a malfunction to PC and sanitation policies. However, the implantation of the Family Health-PET seems to show that they have positively impacted on the reduction of hospitalizations for IPD in Penedo, Alagoas. **E-mail:** waneska.alves@yahoo.com.br

Epidemcontrol035- Analysis of the educational methods at the medical college of the Federal University of Mato Grosso

Rubio, P. S.; Souza, M. J. G.
Universidade Federal de Mato Grosso

Abstract: The objective of this study, done by exploratory research to collect data from a survey with open and closed questions for a quali-quantitative analysis applied to medical students of the Universidade Federal de Mato Grosso (FM/UFMT) and of some other institutions, was to analyze the application and the acceptance of the already utilized educational methods at the FM/UFMT, the traditional and the hybrid – which is the current method in use since 2008. The quali-quantitative interview had 70 voluntaries, of which 91% are students and 9% are professors. The results reveal that 58,5% of the interviewed prefer the hybrid method, even though 62,8% don't consider its application satisfactory at UFMT. Among the positive points of the hybrid method, the approximation between professors and students, evaluated as positive by 78% of the students, and the higher proportioned interdisciplinary, considered by 70%, were highlighted. Besides that, 49% believes the current method does the students study more, while only 31% considers the PBL better in this point. The interviewed points the hybrid method as the most efficient for the theoretical learning (54%) and the practical and motor learning (50%) of the students, and the promotion of a more modern and holistic knowledge of the professors (54%).

Still, 74% of the interviewed cited as the main generative reason of the found dissatisfaction, the lack of sufficient training of the professors to be more homogeneous in the position of tutors, besides 28% of those who explained point the lack of the necessary structure as being a difficulty for the success of the method execution. Even though 43% considers the hybrid method, applied at UFMT, does not correspond to their expectations, 58% would like the university to keep it. The analysis of the results shows that the chosen method is considered better by professors and students, but it is still necessary the structural improvement and the real engagement of the teachers to make the method execution better. The purely qualitative research, applied to 10 students, which includes only-hybrid, only-traditional and both methods learners, asked about their favorite method and the reason of that, besides its mistakes and hits, to make possible, from their answers, to imply which method corresponds to the real proposal of a holistic medical formation. **Key-words:** FM/UFMT, methods, education, hybrid, traditional. **E-mail:** monicajanine@live.com

Epidemcontrol036- **Activity of prevention for sexual transmitted diseases (STD) through health education**

Pinheiro, A. M.[1]; Luz, D. A.[1]; Silva, M. C. M.[1]; Almeida, R. G. L.[1], Bastos, M. L. C.[1]; Costa, E. V. S.[1], Dias, C. K. B[1]., Guimarães, N. M.[1], Pontes, A. C. A. A.[1]; Santos, C. C.[1]; Sarmento, R. M.[1]; Silva, A. D. V.[1]; Silva, J. V. S.[1]; Silva, L. C.[1]; Silva, M. L.[1]; Silva, R. P[1]., Silvestre, J. V.[1], Dolabela, M. F.[2].
1 - Member of the PET Group Pharmacy, College of Pharmacy, Institute of Health Sciences, Federal University of Pará (UFPA); 2 - Tutor of PET-Pharmacy.

Introduction: From 1980 to 2007, were notificated 407.211 cases of STD/AIDS. The number of infected predominates on young of 13 to 24 years old. The cause of this situation is the no use of condoms, promiscuity and lack of information. This study aimed transmits basic information about STD for the public, like method of prevention, contract, way and place of treatment. So, health education was used like strategy of prevention. **Materials and Methods:** The education activity was made in a Basic Health Unit (BHU) in the city of Belém, in the period of 01 to 29 of September of 2012. The number of participants was 30. The first part of the activity was the application of one questionnaire about the theme. The document was constituted for 12 questions, 10 were objectives (yes or no), and the others related with personal identification. Then was developed one lecture about STD, and distribution of folders about the same theme. In the end, the same 30 users had done one valuation of activity through one second questionnaire. **Results:** The age group of 15 to 30 years old corresponded about 75% of interview; the others 15% were between 31 to 55 years old. The female sex was the majority (93%). Rate of education varied from incomplete basic education (73%), complete high education (20%) and complete superior education (7%). When asked about the STD theme 44% said don´t know what was about. The others (68%) said know the ways of transmit of STD/ AIDS. The majority of the group (96%) marked the option 'yes' for the possibility of be infected, when practice sex without condoms. In the end, 14% had already been infected for some STD. During the lecture, the public demonstrated interest and many doubts were asked. **Main conclusions:** The health education contributes for the clarification about STD. At the end of activity 80% of interviewee knows the ways of transmission and prevention of STD. About the valuation of information 21% of interviewee said it was "Good", and 79% said it was "Excellent". **E-mail:**rad.lana@hotmail.com

Epidemcontrol037- **A practical lesson as an education auxiliary on health: becoming familiar with parasites at school**

Santos, S. P. ; Alves, P. S. C.; Pereira, F. A.; Araujo, T.E.*; Miranda, P. M.; Gois, P. S. G.; Franco, T.M.; Ferraz, K. F.;

A practical activity was performed by scholarship students and by the supervising teacher of the Biology course of the Institutional Project of Scholarships to the Initiation towards Teaching (IPSIT – PIBID in Portuguese) – Biology Subproject, sponsored by the Coordination of Personal Development at Graduating Level (CPDGL – CAPES in Portuguese). The scholarship students who are working on this project are students at the Federal University of Uberlândia, Pontal Campus, Brazil. The practical lesson

was performed at a public state school in the center of Ituiutaba-MG. The chosen content about Parasites is needed for the basic teaching due to the significance of education on health at schools, which serves as a prevention tool for various diseases. The aim of this practical lesson was to present some kinds of parasites to students from the groups of **Platyhelminthes** and *Nemathelminthes,* showing them their morphology and the diseases they cause, so that they can have a better knowledge of the diversity of the studied groups in an independent and reflexive manner, thus being able to avoid undesirable contaminations. The practical lesson was performed on 05th September, 2011 for the regular 2nd grade evening group, which was taken for the first time to the school Science laboratory. A short theoretical part was given, explaining about the external structures of the animals, their relation towards the life cycle within the host, followed by prophylactic methods of the diseases each parasite caused. Then, specimens samples, which had been mentioned, were showed (*Taenia sp.*, *Ascaris lumbricóides* and *Enterobius vermicularis*) conserved in formaldehyde. As an evaluative method, a questionnaire was applied, which was answered with the help of the textbook, and which aimed at consolidating the content. The students interacted a lot with the scholarship students, that is why they referred to it as a different activity and that enabled a greater exposure of their previous knowledge. They were scared of the possibility of the parasites causing severe diseases and asked a lot about the diseases caused by other parasites. From the comparative analysis carried out between a regular expository lesson and the practical lesson performed at the laboratory, one could conclude that the students showed much more interest in the topic approached and, therefore participated more actively in the lesson than they normally do in their regular lessons. **E-mail:** thadia_evelyn@hotmail.com