

A green rectangular sign with white text is mounted on a wall. The wall is partially covered by lush green plants, including tall grasses and leafy shrubs. To the right of the sign, there are two small logos: one circular logo with a globe and the word 'UNEP' below it, and another logo featuring a palm tree. A yellow trash bin is visible in the lower right corner of the image.

Leishmaniasis Research Laboratory

POSTER PRESENTATIONS

BACTERIAL SEPSIS IN PATIENTS WITH VISCERAL LEISHMANIASIS IN NORTHWEST ETHIOPIA

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Visceral leishmaniasis (VL) is one of the neglected diseases affecting the poorest segment of world populations. Sepsis is one of the predictors for death of patients with VL. This study aimed to assess the prevalence and factors associated with bacterial sepsis, causative agents, and their antimicrobial susceptibility patterns among patients with VL.

Across-sectional study was conducted among parasitologically confirmed VL patients suspected of sepsis admitted to the University of Gondar Hospital, Northwest Ethiopia, from February 2012 to May 2012. Blood cultures and other clinical samples were collected and cultured following the standard procedures.

Among 83 sepsis suspected VL patients 16 (19.3%) had culture confirmed bacterial sepsis. The most frequently isolated organism was *Staphylococcus aureus* (68.8%; 11/16), including two methicillin-resistant isolates (MRSA). Patients with focal bacterial infection were more likely to have bacterial sepsis ($p < 0.001$).

The prevalence of blood culture confirmed bacterial sepsis was high, predominantly due to *S. aureus*. Concurrent focal bacterial infection was associated with bacterial sepsis, suggesting that focal infections could serve as sources for bacterial sepsis among VL patients. Careful clinical evaluation for focal infections and prompt initiation of empiric antibiotic treatment appears warranted in VL patients.

METHOD FOR QUANTIFICATION OF HELMINTHS EGGS IN HUMAN IN FIELD RESEARCH, MODIFICATION OF KATO/KATZ METHOD

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The Odongo-Aginya method is a modification of the classic Kato-Katz method. It has advantages over the Kato-Katz method because it's quick and shows the eggs of hookworms, Strongyloides larvae and protozoa cysts for a long period.

This method, substitutes the malachite green in the Kato/Katz method with a compound stain that contains 5% eosin yellow in 10% formalin, and 7.5% negrosin in 10% formalin mixed 1:1. This modification conserves the hookworm eggs for a long time and shows strongyloides larvae in slide where the Kato-Katz is not able to. Essentially stool specimen strained through stainless steel sieve of 250 μ mesh size to remove artifacts is used to fill a hole in a template measuring 41.7 milligram. A drop of about 50 μ l of the compound stain is then added to the measured stool smear on the slide. And the stain is stirred in the stool smear on the slide. A wettable cellophane cover slip cut 32 x 41 mm pre-soaked in 50% glycerin is placed on the stained stool smear and pressed down. The prepared slides can be examined immediately using x10 and x40 objectives.

The Kato-Katz and the Odongo-Aginya methods both use 41.7mg of sieved stool sample. In practice Odongo-Aginya method has been found to revealed more eggs than Kato/Katz method under the same condition and time point (Mahdi, et al.1999). This is because, it is easier to examine the slides in Odongo-Aginya prepared slide than the Kato/Katz methods due to the fact that, in well prepared smear parasites eggs, cysts, and larvae are well stained. More over in Odongo-Aginya method the prepared slides can be examined immediately. The long waiting clearing time in Kato/Katz makes some fragile eggs like those of Hookworm collapse under the cellophane cover slips and disappears or become difficult to recognise under the Microscope (Mahdi, et al.1999). Both Malachite green and the negrosin-eosin compound stain sometime obscure the good visualization of parasites eggs on the slide especially when dealing with hard stool specimens. Nevertheless these dyes are bactericidal especially in the nigrosin-eosin compound stain which has 10% formalin as the base. This helps to fix and kill most microorganisms thus rendering the sample safe to handle especially in this era of HIV (Mahdi, et al.1999).

Based on the long use of the Kato/Katz method and since the two method are comparable, any or both of the two methods could be used for field research as desire.

MANAGING CLINICAL DATA QUERIES USING AN IN-HOUSE BUILT QUERY MANAGEMENT SYSTEM - QMSPlus

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Query management is a key process in data management used in identification and resolution of data discrepancies. It directly impacts on data quality and also the integrity of research outcome. At DNDi Data Center we developed QMSPlus, a system that enables a simple yet rigorous, structured and semi-automated approach to QM for data managers and clinical trial managers.

QMSPlus is a web-based application which runs on Tomcat Server using Postgres Database Management System. Once QMS is installed, a study is setup using a simple interface. New users are defined and the necessary query related ".csv" files are uploaded. These include Query Definition file and Query Variable file. When new queries are generated in STATA based on the edit check program logic they are exported from STATA in csv format and continually uploaded onto QMSPlus. The Data Manager prints out data query forms are then sent to the respondents.

On receiving Query responses from the sites, the Data manager updates the QMSPlus with the necessary corrections and generates a STATA do-file which is executed to apply changes on the dataset extracted from OpenClinica and clean it. QMSPlus simplifies Query Management process and helps generate Query report based on different parameters.

QMSPlus has greatly impacted Data Management activities at the DNDi Data Center providing useful features such as;

- An automated clinical data Query management system developed on an open source software platform.
- Allows import and export of data in different formats hence easy to use with diverse data management systems
- It is 100% web-based - a user therefore only needs a computer, a web browser and internet connection to use the software.

Includes automated query analytics module for query analysis and query report generation

THE CURRENT STATUS OF CUTANEOUS LEISHMANIASIS IN OCHOLLO, SOUTHERN ETHIOPIA.

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Leishmaniasis are a group of vector borne diseases caused by the obligate intracellular protozoan leishmania. A study was done to assess the prevalence of cutaneous leishmaniasis in Dega Ochollo primary school students, Ochollo, southern Ethiopia.

A cross-sectional study was carried out among 523 school children aging between 6 to 25 years. The students were physically examined for the presence of scar and active lesions. Skin slit and blood were collected from students with suspected active lesions of cutaneous leishmaniasis. Scraps were cultured in Nicolle-Novy-MacNeal(NNN) medium and serological tests were performed using direct agglutination test.

The overall prevalence of tegumentary leishmaniasis including both scar and active lesions among the 523 students which underwent physical examination was 65.8 %. Besides, the study revealed that 64.8% of the participants had current and/or past lesion of cutaneous leishmaniasis. The prevalence of Mucocutaneous leishmaniasis and recidivans was 0.2% and 0.8%, respectively. Three hundred and thirteen (59.8%) students were with scar and 21(4.01%) were with active lesions whereas 8(1.5%) of the cases had both scar and active lesions. Majority (49.71%) of the participants belonging to the age group 11-15 years old were the most affected group (p -value<0.05). The average number of scars and lesions per patient was calculated to be 1.5 and 1.7, respectively. Majority (64.17%) of the cases had single scars while 22.74%, 7.48%, and 5.61% of them had double, triple, and four and above, respectively. The scars were more localized above the neck (82.16%) where the highest (54.56%) proportion of the scars was distributed on cheek. Of the 29 participants who had active lesions, 4(13.8%) of them were found to be culture positive.

Cutaneous leishmaniasis is prevalent in the area causing disfigurement and resulting social stigmatization. This calls for the implementation of prevention and control measures including treatment of infected individuals.

THE ORIGIN OF THE LEISHMANIA PARASITE: AN AFRICAN PROSPECTUS.

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See paper

STUDY ON KNOWLEDGE, ATTITUDES AND PRACTICES (KAP) OF COMMUNITIES TOWARDS KALA-AZAR IN KAFTA-HUMERA, NORTH-WESTERN ETHIOPIA.

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Evaluating communities KAP concerning Kala-azar can be one of the most crucial bases for prevention and control of Kala-azar. In spite of its importance, there is no literature in Ethiopia specifically focusing on KAP towards Kala-azar. Thus, this first KAP survey will help health program planners to distinguish between communities' perception about the disease, and their role for future prevention strategies.

A descriptive cross-sectional field based study using structured questionnaire was carried out between 16 Oct 2007 and 07 May 2008 in the Kafta-Humera District.

A total of 741 subjects were participated in this study and 89.2% of them had received information about Kala-azar through different mechanisms: 53.6% from health facility workers, 37.2% sick family member and only 125(18.9%) heard through radio. From symptoms of Kala-azar, fever and abdominal swelling were frequently stated (85.6% and 78.1%) respectively. Only 38.0% identified sandfly and 47.7% of them implicated mosquitoes for Kala-azar transmission. Respondents had theoretical knowledge about sandfly residing sites: 38.4% black cotton soil, 32.4% riverside sand soils, 29.5% tree cracks and canopy (*Balanitea egptica* and *Parikisonia aculeata*) shaded ground, and 6.5% termite hills. About 97.4% believed that Kala-azar is killer disease and 98.6% knew that Kala-azar is curable. Almost all respondents placed modern health facilities (hospitals) as their first choice for treatment and 98.6% agreed that Kala-azar is preventable; 96.9% owned bednet and 90.3% had sleeping habit of using bednet.

Although the communities' awareness about Kala-azar is encouraging, there is a lack of strategic interventions. The low awareness concerning vectors of Kala-azar and the presence of a gap in information dissemination by the state media and concerned authorities, as well as the absence of formal surveillance and treatment centers nearby indicate the fact that Kala-azar is still a poorly recognized and neglected disease in Ethiopia.

COMPARISON OF SAFETY AND EFFICACY OF SODIUM STIBOGLUCONATE AND LIPOSOMAL AMPHOTERICIN B FOR TREATMENT OF VISCERAL LEISHMANIASIS IN PATIENTS WITH AND WITHOUT HIV CO-INFECTION IN GONDAR.NORTH-WEST ETHIOPIA.

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Visceral leishmaniasis (VL) is a cause of morbidity and mortality mainly in endemic regions of the world. It causes an estimated 0.2 to 0.4 million new cases of the disease each year worldwide. The main stay of VL treatment has been sodium stibogluconate (SSG) in Ethiopia and AmBisome has been in use since 2006. Human immune deficiency virus (HIV) co-infection is a challenging problem in East Africa including Ethiopia. It results in poor treatment response, drug toxicity, and death. Comparative study of SSG and AmBisome safety and efficacy has never been conducted in Ethiopia.

A retrospective medical record review of 340 VL patients admitted between January 2009 and December 2012 was conducted. Data were entered into statistical package for social science (SPSS) version 16.0 and Epi-info version 3.5.3. Finally, analyzed by chi-square, Fisher exact test, and Mann-Whitney U test.

In the overall treatment response analysis, the efficacy of SSG (91%, n=232) was significantly higher as compared to AmBisome (74%, n = 63), OR = 3.52, 95% CI: 1.76 – 7.07. In HIV positive VL patients the efficacy of both drugs was very low (38.1%, n = 8) Vs (40%, n = 4) for SSG and AmBisome with no significant difference [OR = 0.9, 95% CI: 0.15 – 5.61]. However, in HIV negative patients the cure rate of SSG (95.7 %, n = 202) was significantly higher as compared to AmBisome (78.9%, n =56), OR =6.01, 95% CI: 2.32 – 15.83. Severe adverse events like Pancreatitis in 20 (7.8%) and cardiac arrhythmia (in one patient) occurred only in the SSG treated patients. Mild Infusion related reactions (fever and back pain) occurred in 12 (14.2%) of AmBisome treated patients. Mild hypokalemia was more common in AmBisome than SSG (35, 41.2%) Vs (5, 2%). The other adverse events like dyspepsia and increased alanine transaminase occurred frequently in SSG treated patients.

Sodium stibogluconate is highly effective for treatment of Ethiopian VL patients without HIV infection but more toxic than AmBisome. AmBisome is less efficacious but safer than SSG. Both drugs have low efficacy for VL treatment in HIV positive patients. Therefore, development of an effective therapy for VL treatment particularly in HIV positives is recommended.

BIONOMICS OF PHLEBOTOMINE SANDFLIES (DIPTERA: PSYCHODIDAE) IN A HIGHLAND KALA-AZAR FOCUS IN LIBO-KEMKEM DISTRICT, NORTHWESTERN ETHIOPIA.

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The bionomics of phlebotomine sandflies was studied for one year from May 2011 to April 2012 in three villages of Libo-kemkem district, a highland area where visceral leishmaniasis has become a major public health problem. The aim of study was to elucidate species composition, resting habits, seasonal fluctuations and incrimination of the vector.

CDC light trap, sticky trap and space spray were used for collection of sandflies. Dissection and molecular approaches were used for *Leishmania* detection from female *Phlebotomus*.

A total of 10, 776 sandflies comprising of two species of the genus *Phlebotomus* and five species of the genus *Sergentomyia* were collected. *Phlebotomus orientalis* was the predominant species accounting 86.6% of the total captured. The remaining species in descending order were *Sergentomyia bedfordi* group (6. 5%), *S. squamiplueris* (4.2%), *S. schewtzi* (2.02%), *S. africanna* (0.68%), and *S. clyedi* (0.001%) and *P. rodhaini* (0.0001 %). Variation in species of sandflies among the three villages was observed. *Phlebotomus orientalis* exhibited two peaks of density, a smaller in January 2012 (6.5flies per trap night for CDC light trap; 0.98flies/m²/night for Sticky traps) and the larger one in March for Sticky traps (1.06flies/m²/night) and April for CDC light trap (18. 7flies per trap-night) were observed. Although statistically insignificant, abundance of the flies were positively correlated with average monthly temperature ($r=0.530$, $P>0.05$ for CDC light trap; $r=0.563$, $P>0.05$ for Sticky traps) and negatively correlated with rainfall ($r=-0.272$, $P=0.392$ for CDC and $r=-0.171$, $P=0.594$ for Stick traps). A total of 1067 *P. orientalis* and 1 *P. rodhaini* dissected did not reveal any infection microscopically. A similar result was obtained when 247 *P. orientalis* females were processed by using Polymerase chain reaction for detection of the parasite.

Although natural infection was not detected in the current study, *P. orientalis* is no doubt a vector of VL in this highland area of the country mainly due to its denser populations and other circumstantial evidences. Therefore, control of the disease in this particular area should involve designing of tactics that mainly target the vector of the disease by considering its seasonal abundance and behaviors.

SPECIES COMPOSITION, ABUNDANCE AND SEASONAL DYNAMICS OF PHLEBOTOMUS SPECIES IN A VISCERAL LEISHMANIASIS ENDEMIC AREA OF NORTHWEST ETHIOPIA

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Visceral leishmaniasis (VL) is significant public health problem in northwest Ethiopia particularly in Kafta Humera district. This study was conceived to investigate the species composition and population dynamics of sandflies (altitude 500-600masl) in five urban and semi-urban area of Kafta Humera district namely Setit Humera, Mykadra, Rawiyan, Bereket and Adebay.

Sand flies were collected for three nights monthly from May 2011 to April 2012 using CDC light-traps and sticky traps. Traps were placed within villages, at periphery of villages and farm fields. Sticky traps were also used for sampling indoor active sandflies.

A total of 13097 sand flies comprising of six *Phlebotomus* species of four subgenera were indentified: *Phlebotomus* (Larrousius) *orientalis*, *P.(Phlebotomus) papatasi*, *P.(Ph.) bergeroti*, *P.(Ph.) duboscqi*, *P. (Paraphlebotomus) alexanderi*, and *P. (Anaphlebotomus) rodhani*. In addition, two *Parvidens* (*P. lesleyae* and *P. heischi*) species were recorded in the study area. Among these, *P. orientalis* was the most predominant species, accounting for (58.12%) followed by *P. papatasi* (29.62%), *P. lesleyae* (5.61%), *P. bergeroti* (3.80%), and *P. duboscqi* (2.07 %), *P. alexandri* (0.37%), *P. heischi* (0.24%) and *P. rodhaini* (0.18 %). On average, significantly higher densities of *P. orientalis* were caught in the periurban area of Adebay with compared to the urban area of Setit Humera. Overall, 684 *Phlebotomus* females were dissected for detection of *Leishmania* infection, but none was infected. Significant positive correlation was found between the monthly abundance of *P. orientalis* and *P. papatasi* and the monthly averages temperature ($P < 0.05$) whereas negatively correlated with monthly average rainfall and relative humidity ($P < 0.05$). Abundance of *P. orientalis* and *P. papatasi* significantly increased during the dry season (January- May) but decreased in the wet season (June - September) ($P < 0.05$) in the study areas. With regard to habitat preferences, a large number of *P. orientalis* was collected from outdoors especially in the farm fields with cracked vertisol. In contrast, *P. papatasi* was highly abundant indoors as well as outdoors within and the periphery of villages.

P. orientalis is a predominant species and highly abundant during the dry season and possibly able to transmit VL in the study area. Appropriate control methods should be designed according to the knowledge of *P. orientalis* habitat preferences and seasonal dynamics in relation to climate condition.

ANTILEISHMANIAL ACTIVITY XANTHIUM BRASILICUM VELL. LEAVES AND ISOMERIC MIXTURE OF XANTHUMIN & XANTHININ ISOLATED FROM PETROLEUM ETHER & N-HEXANE EXTRACTS

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Visceral leishmaniasis (Kala-azar) is the fatal form of leishmaniasis if not treated; it is highly endemic in Indian sub-continent and in East Africa. According to WHO 2014 report about 200 000 to 400 000 of VL new cases worldwide with 20 000 to 30 000 deaths occur annually. Problems associated with the current drugs like development of resistance, cost, and serious side effects and need for hospitalization makes the search for new molecules is highly necessary.

i) Extraction: *Xanthium brasilicum* leaves were extracted successively by soxhlet apparatus using six solvents; extracts were dried under vacuum and kept in a refrigerator. ii) Fractionation & isolation: Column chromatography and crystallization were used for fractionation of the active extracts & purification of the compounds. iii) Structure elucidation: Ultraviolet spectroscopy, infra-red spectroscopy, mass spectroscopy, nuclear magnetic resonance, specific rotation and melting point were used for identification of the active compound. iv) antileishmanial activity (promastigotes of *L. donovani*) was carried according to Atta-ur-Rahman et al. (2005) method using 96 well plates, SSG & amphotericin B were used as positive control. Antiamastigotes for the isolated compounds was performed by Dr. Vanessa Yardley, London School of Hygiene & Tropical Medicine.

N-hexane extract exhibited the highest activity (>50 % inhibition at 5 µg/ml), followed by petroleum ether, and chloroform extracts with moderate activity. n-hexane extract was fractionated to fourteen fractions, two of them were found to be active, but with less activity than the original crude extract. Compounds A & B, isolated from petroleum ether extract and n-hexane extract respectively, co-chromatography proved that they are the same compound. The compound was very active against *Leishmania* promastigotes (>50 % inhibition at 3.5 µg/ml). The activity of the compound against intracellular amastigote was very good, but unfortunately toxic to macrophages. The compound was found to be a racemic mixture and identified as xanthumin with its epimer xanthinin. Melting point and specific rotation indicated that xanthumin predominates in the mixture.

X. brasilicum leaves have a good antileishmanial activity which is attributed to the group of compounds known as sesquiterpene lactones which are abundant to the family Asteraceae; xanthumin & xanthinin belong to the same group and showed a remarkable leishmanicidal activity.

SERO-EPIDEMIOLOGICAL AND LEISHMANIN SKIN TEST SURVEYS FOR VISCERAL LEISHMANIASIS IN NORTH EAST ETHIOPIA

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In Ethiopia, visceral leishmaniasis is caused by *Leishmania donovani*. The reported and estimated country-wide incidence of VL in Ethiopia is 2000 and 3700-7400 cases/year respectively. The balance between anthroponotic and zoonotic transmission is still unknown even though most authors believe that VL in east Africa is anthroponotic. Asymptomatic leishmania infections occur more frequently than clinically apparent VL cases. In endemic area of Ethiopia the prevalence of asymptomatic leishmania infection ranges from 5-30% using LST and as high as 5.4% using DAT. An estimated 10%–20% of persons with asymptomatic infections develop clinically overt VL.

To determine the prevalence of asymptomatic *L. donovani* infection and assess the degree of exposure among residents in Raya Azebo Woreda villages where cases of VL were recently diagnosed.

Community based cross-sectional study was conducted between May and July 2013, employing Direct Agglutination Test (DAT) and leishmanin skin tests after clinical screening. In North east Ethiopia, where VL cases had been diagnosed before, were selected for the epidemiological assessment. Data was entered into excel and transported to SPSS version 17 for statistical analysis. Finally conclusions and recommendations were forwarded based on the findings.

A total of 1099 subjects comprising 401 males and 698 females were included in the study. After clinical screening, 1040 sera were tested to determine prevalence of anti-leishmanial antibody using DAT. The positive DAT rate varied from 0.33% to 5.88% among the different localities & overall positivity was 0.87%. Leishmanin Skin Test positivity was varied from 6.2% to 28.6%, with 9.08% over all prevalence. The difference in leishmanin positivity by age group and sero-prevalence by sex were all statistically significant ($P < 0.01$ and $P < 0.05$ respectively). Out of the 9 sero-positive individuals, 7 had no history of travel out of Raya Azebo.

The survey results do not suggest stable endemicity of VL in the study area but it shows that VL occurs sporadically among the human populations presumably acquired from a zoonotic cycle.

PREVALENCE OF KALA-AZAR INFECTION IN POKOT COUNTY, AMUDAT DISTRICT, NORTH- EASTERN UGANDA

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Visceral leishmaniasis (kala-azar) caused by *Leishmania donovani* and transmitted by the sand-fly *Phlebotomus martini*, is endemic in certain foci in North-Eastern Uganda where it is thought to be confined to Amudat District, Pokot County.. Amudat Hospital records (April 1998-March 1999) indicated that kala-azar accounted for about 17% of hospital in-patient visits. However the actual prevalence of kala- azar infection in the community in Pokot County is unknown. This lack of information limits efforts geared towards its control.

To determine the prevalence of kala-azar infection in Pokot County, a cross-sectional study was conducted in Pokot County in March 2010. The study participants were ≥ 5 years and were randomly selected from age and sex strata in the chosen clusters. A questionnaire was used for data collection. Standard procedure for direct agglutination test was performed using dried blood spots on filter paper. Data was entered in EPIINFO 3.3 and exported to STATA 10, where descriptive statistics were generated

The overall prevalence of kala- azar infection in Pokot County was 17.2% (49/285) [95%CI: 13.1%-22.2%] and that of symptomatic infection was 2.5% (7/285) [95% CI: 1.08%-5.22%]. The ratio of symptomatic to asymptomatic kala-azar was 1:6. Kala-azar infection prevalence in Loroo and Karita sub-counties at 31.9% and 14.6% respectively were significantly different from Amudat Sub-county prevalence of 5.3%; Adjusted Odds Ratio (AOR) being 7.18 (95% CI 2.57 - 21.6) and AOR 2.75 (95% CI: 0.93 - 8.12) respectively.

With kala-azar infection prevalence at 17.2% in the community, there is an urgent need to institute a control program in the region spearheaded by the Ministry of Health. Furthermore, there is a need to evaluate recent reports of cases from other districts within the region, the heterogeneous distribution of infection within the county and the current risk factors, including the possible role of animals in kala-azar transmission in this area. More detailed discussions will be held on the above results.

ARGINASE ACTIVITY - A MARKER OF DISEASE STATUS IN PATIENTS WITH VISCERAL LEISHMANIASIS IN ETHIOPIA

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See poster

TEST OF CURE FOR VISCERAL LEISHMANIASIS

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Visceral Leishmaniasis invasive parasitological diagnosis remains the practice in East Africa where the k39 RDT is not sensitive like the case in the Indian subcontinent. We have addressed limitations of the rK39 with a new synthetic polyprotein, rK28, followed by development and evaluation of new rK28-based RDT prototype platforms which includes the k39, rk26 and rk9 in the diagnosis of visceral leishmaniasis. This was followed by Phase II studies that showed high sensitivity and specificity of rk28 RDT in detection of VL in East Africa. Based on these results a larger phase 3 clinical study was initiated in Sudan using fresh whole blood samples and serum. This study is currently under analysis.

We used high through put ELISA to look at antibody levels and dynamic changes to specific *L. donovani* antigens in longitudinal patient serum samples collated at 0, 7, 14, 21, 30, 90, 180 days from Southern Ethiopia site and 0, 30, 90, 180 and 365 days post treatment from Bangladesh. The main goal and purpose is to define the antigenic nature of the specific antigen significant antibody level and dynamic changes of the levels of these antigen specific antibodies and to see whether these changes correlate with treatment outcome and cure.

Antibodies against rk39 and rk28 were high in infected patients and remained high for 180 days in Sudan and 365 days in Bangladesh. Antibodies against rk26 in Bangladesh and rk18 in southern Ethiopian were high in infected patient but showed significant drop in titer post treatment that correlated with treatment success and cure. Similar was observed in a limited samples in Brazil where decline in K26 antibodies correlated with success of treatment. Please see figures 1, 2, and 3.

The correlation between the decline in antigen specific antibody titer and success of treatment is a step towards the development of test of cure in VL.

RESIDUAL PREVALENCE OF TRACHOMA AFTER SIX YEARS OF MDA IN TWO ENDEMIC SEGMENTS OF NAROK COUNTY, KENYA

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Trachoma is a Neglected Tropical Disease and leading cause of infectious blindness. Control of infection includes implementation of the full SAFE strategy. Narok baseline prevalence survey was conducted in 2004 with impact assessment surveys in 2010 and 2014. In both Impact surveys, two segments are still endemic despite un-interrupted MDA since 2008. A quantitative study was conducted to assess the residual prevalence of trachoma. The backlog of TT in the two segments had grown by 60%. The prevalence of TF decreased marginally and the UIG for the A component of SAFE was not achieved.

The study was conducted in two segments where prevalence survey results had confirmed a prevalence of TF>20%. A segment is a geographical area with between 100,000 and 200,000 and corresponds to the population size of World Health Organization recommended trachoma intervention unit. Quantitative data was collected through clinical graders for TF and TT. Quantitative data were analyzed using Predictive Analytics Software (PASW version 18.0) computer package.

A total of 1,140 adults aged >40 years were examined: 600 in South Eastern segment and 540 in South Western segment. The prevalence of TT was 5.9% (SE segment 5.8% and SW was 5.9%). TT surgical coverage for people was 17.3% while the TT recurrence rate for people was 57.1%. A total of 1,520 children 1-9 years old were examined: 800 in South Eastern segment and 720 in South Western segment. The mean prevalence of TF was 21.4% (SE segment 21.8%, SW 21.0%).

Conclusions/Recommendations: The backlog of TT is growing due to population increase, high prevalence of TT and inadequate TT surgical services. High prevalence of active TF also leads to high incidence of TT. There is a high risk of re-infection due to cross-border migrations. Full SAFE Interventions are still required for the next three years.

IDENTIFICATION OF ENVIRONMENTAL PARAMETERS AND RISK MAPPING OF VISCERAL LEISHMANIASIS IN ETHIOPIA BY USING GEOGRAPHICAL INFORMATION SYSTEMS AND STATISTICAL APPROACH

Teshome Tsegaw, Endalamaw Gadissa

Armauer Hansen Research Institute, All-Africa Leprosy and TB Rehabilitation and Training Center, Jimma Road, Addis Ababa, Ethiopia;

Visceral leishmaniasis (VL), a vector-borne disease strongly influenced by environmental factors, has (re)-emerged in Ethiopia during the last two decades and is currently of increasing public health concern. Based on VL incidence in each locality (kebele) documented from federal or regional health bureaus and/or hospital records in the country, Geographical Information Systems (GIS), coupled with binary and multivariate logistic regression methods, were employed to develop a risk map for Ethiopia with respect to VL based on soil type, altitude, rainfall, slope and temperature. The risk model was subsequently validated in selected sites. This environmental VL risk model provided an overall prediction accuracy of 86% with mean land surface temperature and soil type found to be the best predictors of VL. The total population at risk was estimated at 3.2 million according to the national population census in 2007. The approach presented here should facilitate the identification of priority areas for intervention and the monitoring of trends as well as providing input for further epidemiological and applied research with regard to this disease in Ethiopia.

VISCERAL LEISHMANIASIS (KALA-AZAR) RISK MAPPING USING GEO-SPATIAL TOOLS: A CASE STUDY IN KAFTA HUMERA DISTRICT, NORTH WESTERN ETHIOPIA

Negussie Solomon, K.V. Suryabhagavan and Endalamaw Gadisa

Armauer Hansen Research Institute, All-Africa Leprosy and TB Rehabilitation and Training Center, Jimma Road, Addis Ababa, Ethiopia;

Visceral Leishmaniasis (VL) is a severe vector-borne parasitic disease. In Ethiopia, the estimated incidence of VL ranges from 2,000 to 4500 cases per year. Based on this, the main objective of this research was to develop an area risk map of VL and to estimate the total population at risk in KaftaHumera District, Northwestern Ethiopia. To achieve the stated objective, geospatial tools were used to extract and develop risk cover map of VL using variables including rainfall, temperature, vegetation cover, soil type, altitude, slope and population data. Multivariate logistic regression analysis was used to assign weight of influence for the variables in spatial weighted overlay analysis model. The result revealed that temperature, elevation, soil, slope, rainfall and NDVI were the major predictors of VL presence with percentage influence of 29%, 22%, 15%, 13%, 12%, and 9%, respectively. From the produced risk map, 3453.69 km², 2210.38 km² and 269.59 km² representing 58.21%, 37.25%, and 4.54%, of the total area of KaftaHumera District are at high, medium and low VL risk, respectively. In addition, the estimated population at high, medium and low risk level are 92,831 (68.98%), 34,864 (25.91 %) and 6,874 (5.11%), respectively. Based on the output, villages such as Bereket, Rawoyan, Baeker, Adebay, May Kadra and Humera town were identified with high population at risk for VL. Identification of priority Villages requiring immediate attention from health agencies as well as the local community greatly reduces the cost, time and energy for designing effective VL control measures.



In search of better health

BACKGROUND

The Kenya Medical Research Institute (KEMRI) is a state corporation established through the Science and Technology (Amendment) Act of 1979, which has since been amended to Science, Technology and Innovation Act, 2013.

The 1979 Act established KEMRI as a National body responsible for carrying out health research in Kenya. It spells out the mandate and responsibilities of KEMRI.

MANDATES

- To carry out research in human health.
- To cooperate with other research organizations and institutions of higher learning on matters of relevant research and training.
- To liaise with other relevant bodies within and outside Kenya carrying research and related activities.
- To disseminate and translate research findings for evidence based policy formulation and implementation.
- To cooperate with the Ministry responsible for Health, the National Commission for Science, Technology, and Innovation, and the Medical Sciences Advisory Research Committee in matters pertaining to research policies and priorities.
- To do all such things as appear to be necessary, desirable or expedient to carry out its functions.

VISION

To be a leading Centre of Excellence in Research for Human Health

MISSION

To Improve Human Health and Quality of life through Research, Capacity Building, Innovation and Service Delivery

MOTTO

The motto of the Institute is "In Search of Better Health"



KENYA MEDICAL RESEARCH INSTITUTE (KEMRI)

Research Programmes

KEMRI has Six (6) Main Programmes, that are aligned to the KEMRI Strategic Master Plan and the Vision 2030 as follows:-

1. Biotechnology Programme
2. Traditional Medicine & Drug Development
3. Infectious and Parasitic Diseases
4. Public Health and Health Systems
5. Non Communicable Diseases
6. Sexual, Reproductive, Adolescent & Child Health

Research Centres

The following are the Research and Training Centres in the Institute

- Centre for Biotechnology Research and Development (CBRD) Nairobi.
- Centre for Clinical Research (CCR) Nairobi.
- Centre for Public Health Research (CPHR) Nairobi.
- Centre for Infectious and Parasitic Diseases Control Research (CIPDCR) Busia.
- Centre for Microbiology Research (CMR) Nairobi.
- Centre for Respiratory Diseases Research (CRDR) Nairobi.
- Centre for Traditional Medicine and Drug Research (CTMDR) Nairobi.
- Centre for Global Health Research (CGHR) Kisumu.
- Centre for Virus Research (CVR) Nairobi.
- Centre for Geographic Medicine Research, Coast (CGMRC) Kilifi.
- Eastern and Southern Africa Centre of International Parasite control (ESACIPAC) Nairobi.
- KEMRI Graduate School of Health Sciences (KGSHS), Nairobi.

Human Resource Capacity

KEMRI has developed a critical mass of scientists, technical and administrative support staff to rank as one of the leading

centre of excellence in health research development. KEMRI has trained all cadres of professionals totalling 1250 and it boasts of Professors, about 100 PhD's, over 200 Masters & medical doctors, over 900 highly trained technologists, technicians and career administrators.

Major Achievements

MAJOR REGULATORY FUNCTIONS

- KEMRI is the Medical Research arm of the Government and provides advice to the Ministry on various aspects of healthcare and delivery.
- National diseases surveillance and rapid response capacity for major disease outbreaks (cholera, chikungunya virus, H1N1 flu, yellow fever, rift valley fever, ebola, aflatoxicosis etc)



GUIDELINE DEVELOPMENT

- Technical and research support for the ETAT (emergency care of critically ill children) guidelines
- KEMRI provided Technical Facilitation in development of National Guidelines for Prevention of Cervix, Breast and Prostate cancers
- Developed a curriculum and guidelines on biosafety and biosecurity for Health Care Workers in collaboration with Ministry of Health
- Rationalization and regulation of traditional medicine
- Human resource capacity development for research through attachments and in the KEMRI-JKUAT INTROMID collaboration

SIGNIFICANT RESEARCH OUTCOMES

- KEMRI Researchers were part of the team that demonstrated prevention of HIV using antiretroviral drugs- (Pre exposure prophylaxis and treatment as prevention) which was hailed as a scientific breakthrough and No 1 Discovery of the year 2011 by Science Magazine, 2011
- KEMRI scientists participated in research on combination therapy for treatment of Visceral Leishmaniasis which reduced the treatment of Leishmaniasis from 30 days to 17 days;
- Development of treatment regimens that have reduced treatment period for leprosy and Tuberculosis (TB).

- KEMRI is hosting three (3) of eleven sites participating in RTSS (Malaria prevention vaccine) where Phase II and III Clinical Trials results were hailed as Scientific Discovery No. 4 of the year 2011.



INTERNATIONAL RECOGNITION IN THE PROMOTION OF GLOBAL HEALTH RESEARCH INITIATIVES

- Regional laboratory capacity building in operation research under the East African Public Health Laboratory networking project (EAPHLN).
- WHO designated International Training Center to implement capacity strengthening training courses to support Neglected Tropical Diseases (NTDs) control Programmes.
- WHO designated Centre of excellence in Malaria, Nutrition and Virology
- World Health Organization (WHO) Collaborating Centre for HIV/AIDS, Tropical Diseases Research, Polio Immunization, Viral Hemorrhagic Fevers and Anti-Microbial Resistance (WHO-NET).
- USA National Research Council recognized training institute for postdoctoral and senior research awards
- The Africa Regional headquarters for Drugs for Neglected Diseases Initiative (DNDi).
- Africa's regional center for International Union against TB and Lung Diseases, the International Union against Cancers and the Global Health Initiative on Climate Change and Health.
- Africa Network for Drugs and Diagnostics Innovation (ANDI) Centre of Excellence in the Manufacturing and Development of Diagnostic Kits and as a Centre of excellence for HIV Operational research.
- A designated "Good Clinical Practice Centre" for Clinical Trials.
- Global Centre of Excellence in Parasite Control under Hashimoto Initiative Programme.
- Regional Headquarters for Emerging and Re-Emerging Disease and Climate Change & Health.



Dr. Lillian Apadet
Chairperson KEMRI Board of Management



Prof. Solomon Mpoke
Director, KEMRI



Dr. Elizabeth Bukusi,
Deputy Director, (Research & Training)



Ms. Linah Boit,
Deputy Director,
(Administration & Finance)



INTERNATIONAL RECOGNITION OF KEMRI SCIENTISTS

- Dr. Andrew Githeko, a KEMRI Scientist was one of the winners of the Nobel Peace Prize 2007 jointly with Inter-Governmental Panel on Climate Change (IPCC). The Nobel Prize was also awarded to the panel together with US Vice President Albert Arnold (Al) Gore Jr. for their efforts to build up and disseminate greater knowledge about man-made climate change, and to lay the foundations for the measures that are needed to counteract such change.
- Dr. Alexis Nzila, a Kenyan scientist won the inaugural Royal Society Pfizer Award 2006 for his research on a new anti-malarial drug. He was crowned for his novel study on a drug to combat the disease's resistant strains winning about Shs. 7.8 Million Award Grant.
- Dr. Abdisalan M. Noor KEMRI –Wellcome Trust Scientists was awarded African Union National Young Scientists Award in Life and Earth Sciences in 2009. The US dollar 5,000 award is designed to celebrate the achievements of African scientists and to promote all efforts to transform scientific research into entrepreneurship, attract investments to Africa, and create research centers of excellence.
- Dr. Faith Osier, a KEMRI –Wellcome Trust Scientists was awarded the prestigious African Research Leader (ARL) Fellowship in 2013. During the fellowship, Dr. Osier intends to work on a project that will define the targets of protective immunity against *Plasmodium falciparum* malaria using multi-centre cohort studies, combined with bio-informatics and proteomic approaches. The ARL Fellowship, is supported by The Medical Research Council, UK and the UK Department for International Development (DfID), and is designed

to strengthen research leadership across sub-Saharan Africa (SSA). The Fellowship does this by putting in place incentives to attract and retain exceptionally talented researchers to lead research on key global health issues pertinent to SSA.

→ Dr. Samuel Kariuki, a KEMRI scientist received the Royal Society Pfizer Award 2012 for his work on invasive Non-Typhoidal Salmonella (NTS) infections in Kenya. Kariuki received the £60,000 (Sh8.22 million) prize to further his research. He also received a personal prize of £5,000(685,000).

Corporate Social Responsibility

The Institute promotes the spirit of Social Action through Corporate Social Responsibility activities such as Community Involvement and Public Health Education, as well as clinical, laboratory and diagnostic services.

Research Committees

KEMRI's research regulation is comprised of the following research committees:-

Scientific Programme Committee (SPC)
Scientific Steering Committee (SSC)

Ethical Review Committee (ERC)
Animal Care and Use Committee (ACUC)
Publications Committee (PC)

Products and Services

Through its research activities KEMRI has over period of time developed various research products and service namely:-

Products

HEPCELL Rapid®
KEMCOM Rapid®
KEMPAC Rapid®
TBcide®
KemTAQ®
KEM - rub®
KEMpreg Rapid®

Services

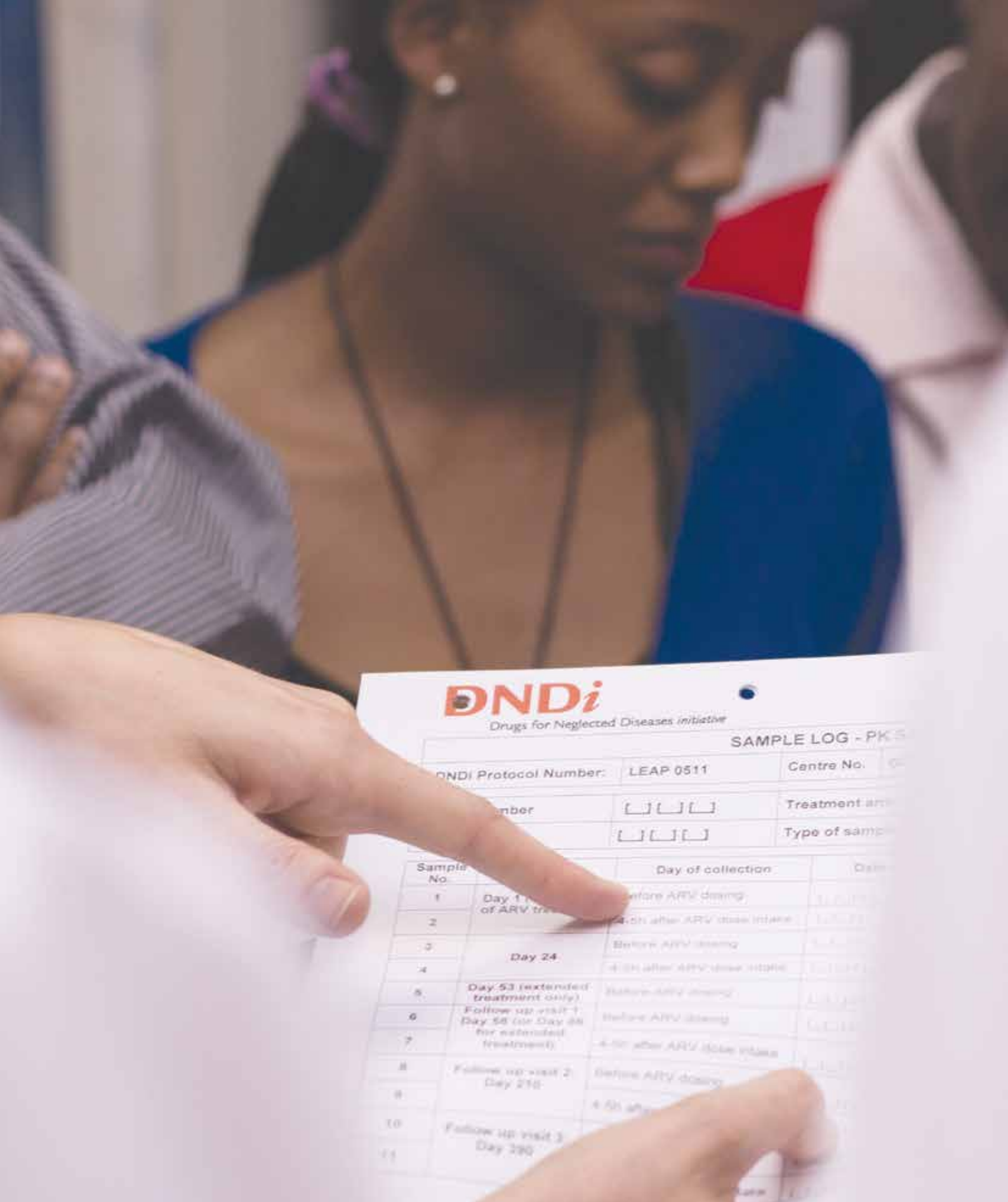
Ethics Review for research protocols
The Wellness Programme
Conference Facilities
Incineration Services
Cancer Registry
Rapid Emergency Response and Disease Surveillance
Clinical Laboratory diagnostic services



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KEMRI is ISO 9001:2008 Certified



DNDi

Drugs for Neglected Diseases initiative

SAMPLE LOG - PK 5

DNDi Protocol Number: LEAP 0511 Centre No. 001

Member [][][] Treatment arm [][][]

[][][] Type of sample [][][]

Sample No.	Day of collection	Date
1	Day 1 (before ARV dose)	1.1.11
2	Day 1 (4h after ARV dose intake)	1.1.11
3	Day 24 (before ARV dose)	1.1.11
4	Day 24 (4h after ARV dose intake)	1.1.11
5	Day 53 (extended treatment only)	1.1.11
6	Follow up visit 1: Day 56 (or Day 66 for extended treatment)	1.1.11
7	Follow up visit 1: Day 56 (or Day 66 for extended treatment)	1.1.11
8	Follow up visit 2: Day 210	1.1.11
9	Follow up visit 2: Day 210	1.1.11
10	Follow up visit 3: Day 330	1.1.11
11	Follow up visit 3: Day 330	1.1.11

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Donors

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DNDi, Geneva Switzerland

Conference Chief Guest, Dr. John Amuasi

Invited guest and participants

Ministries of Health (Ethiopia, Kenya, Uganda and Sudan)

LEAP Partners and Institutions

LEAP countries – the communities where we work

All DNDi Africa Staff



ADDITIONAL USEFUL INFORMATION

General information

Dear Participant,

Welcome and Happy Ethiopian New Year!

The 1st LEAP Scientific Conference will be held between September 29th and 30th in Bahir Dar, Ethiopia.

Venue

Avanti Blue Nile Hotel

PO.Box 1387 Bahir Dar

Kebele/Wereda: 03

Bahir Dar Ethiopia

Telephone numbers:

Ms. Ulian Fikre: +251 911 38 95 02

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reception@avantibluenilehotel.com

reservations@avantibluenilehotel.com

Avanti Blue Nile Hotel is located on the shores of Lake Tana, Bahir Dar, Ethiopia. It features a Bar, a Restaurant and a Garden. All rooms in the Hotel are fully air conditioned with flat screen TV, Mini bar and safe box. Blue Nile Avanti offers a 24 hour front desk service, 24 hours electricity, free WiFi internet access, money exchange services, luggage storage facilities, Private parking and laundry services. City and airport shuttle services are available on request. The premises are also guarded by security personnel.

Registration (at the conference)

Meeting registration will start on the afternoon of Sunday September 28, 2014, at the Avanti Blue Nile Hotel. Kindly look out for the registration desk at the lobby

Language

The meeting will be conducted in English. Meeting documents are available in English.

Useful Information for Presenters

Individuals making oral presentations are asked to send their presentations and short biographies (150 words) to leap@dndi.org latest Tuesday 23rd September 2014.

Ticket reconfirmation

Our travel agent, Incentive Travel will reconfirm all the tickets at least one day before departure.

Transportation

The hotel is 6.8km from the airport (approximately 11 minutes' drive). Airport transfers have been pre arranged.

Please confirm the time of your arrival in Bahir Dar with Joy (jmalongo@ndi.org) to allow her to arrange airport transfers for you. You may also contact her on telephone +254731006784.

The person meeting you at the airport will be holding a sign with '**DNDi LEAP**' written on it.

Accommodation

DNDi will be happy to give you all necessary logistical assistance for visa application and/or hotel booking.

Conference participants will be accommodated at Avanti Blue Nile Hotel and hotels nearby.

Once you confirm your arrival details, Joy will confirm to you the name of your hotel

The hotel will request some **proof of identity** (such as an ID card or passport) at check-in. Hotel Check-out is by 11:00 a.m on the morning of departure.

The hotel is booked on bed and breakfast basis. Any extras will be billed to you

Visas and other entry requirements

Visas are required for all visitors to Ethiopia, **except Kenya and Djibouti nationals**. You are strongly advised to get your visa in your country, before departure. Please check with your local Ethiopian Embassy for visa requirements. **Tourism visas** can be obtained **on arrival** at Bole International Airport at **USD20**. Visa fees will be reimbursed. Please ensure you retain your receipt to facilitate reimbursement.

Ethiopia - Useful Information

Money/ Credit Cards

The unit of currency here is Ethiopian Birr (100 cents make a Birr) available in the following denominations: 1,5,10, 50 and 100 birr notes and a 1, 5, 10,25,50 cents coins.

The exchange rate to the US Dollar is approximately: 1.00 USD= 19.8645 Ethiopian Birr.

Foreign currency can be exchanged at any commercial bank, including branches located at larger hotels and at the airports. Exchange rates are the same everywhere.

ATMs are available in Bahir Dar. They accept international Visa cards but they don't work with Cirrus and Plus systems and also don't accept MasterCard. Credit cards can be used in large hotels in Addis Ababa but are not widely accepted outside the capital. Travelers' cheques can be cashed in banks, but are difficult to exchange outside Addis Ababa.

Vaccination and malaria prophylaxis

Please carry your International Certificate of Vaccination with proof of yellow fever vaccination as it may be required. Your doctor may recommend additional vaccinations prior to travel.

For optimal prevention of malaria, protection from mosquito bites is essential: carry mosquito repellent cream and/or spray. Your doctor may advise on prophylaxis.

Electrical Plugs

In Ethiopia the standard voltage is 220 V. The standard frequency is 50 Hz. The power sockets that are used are of type C / E / F / L. Below you find pictures of these power sockets and corresponding plugs.



Type F: This socket can also be used with plug C.



Type C: This socket can also be used with plug F.



Type E: This socket can also be used with plug C. Plug F will also do, but only with an additional pinhole.



Type L

Time

UTC/GMT +2 hours

Weather in September

September is at the end of the rainy season in Bahir Dar. The week of the conference, temperatures in Bahir Dar are expected to be 12-23°C (54- 73 Farenheit).

Tourism information

Bahir Dar or Bahar Dar (Amharic for "sea shore") is a city in north-western Ethiopia. The city is the capital of the Amhara Region (kilil) and is one of the leading tourist destinations in Ethiopia. It has a small daily market and some entertainment spots, and a variety of attractions in the nearby Lake Tana and Blue Nile River. Blue Nile Falls (Tis Issat) are located about 30 km to the south of the city.

The most common and convenient way of traveling in Bahir Dar is cycling. Taxis also provide efficient transportation in the city.

(Source: http://en.wikipedia.org/wiki/Bahir_Dar)

Trips from the Avanti Blue Nile Hotel to the Monasteries and The Blue Nile falls can be organised at the reception of the Hotel at an additional charge. (Source: <http://webcache.googleusercontent.com/search?q=cache:http://www.jovago.com/en-gb/ethiopia/bahar-dar/hotel/o5477/avanti-blue-nile-hotel>).

Wishing you a safe journey!

EVALUATION FORM

1ST LEISHMANIASIS EAST AFRICA PLATFORM (LEAP) SCIENTIFIC CONFERENCE

**Bahir Dar, Ethiopia,
29th September – 30th September 2014**

Dear Participant,

We hope that you have found the LEAP scientific conference, to be informative and useful. In this regard, we would be most grateful if you could provide feedback to the organizers on your experience at the conference. On a scale of 1 to 5 represented as below:

5 = Excellent

4 = Very Good

3 = Good

2 = Average

1 = Below Average

I. GENERAL ASSESSMENT

1. What is your overall assessment of the event?

5

☐

4

☐

3

☐

2

☐

1

☐

Please feel free to provide further comments / suggestions

Comments:

II. CONTENT

1. How would you rate the relevance of the topics presented to you/ your organisation?

5

☐

4

☐

3

☐

2

☐

1

☐

Please feel free to provide further comments / suggestions

Comments:

• **Session Three: VL: Diagnosis and Immunology**

5

☐

4

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3

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2

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1

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Please feel free to provide further comments / suggestions

Comments:

• **Session Five: Regulatory and Ethics Harmonization : A Possibility or a Mirage ?**

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Please feel free to provide further comments / suggestions

Comments:

• **Session Six: Neglected Tropical Diseases 1**

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Please feel free to provide further comments / suggestions

Comments:

• **Session Seven: Neglected Tropical Diseases 2**

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Please feel free to provide further comments / suggestions

Comments:

2. To what extent do you expect to use the information obtained at this conference in your work?

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Please feel free to provide further comments / suggestions

Comments:

3. How would you rate the appropriateness of the content of the conference as a whole?

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Please feel free to provide further comments / suggestions

Comments:

III. SPEAKERS/FORMAT

1. How would you rate the quality of the discussions held during each session?

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Please feel free to provide further comments / suggestions

Comments:

2. How would you rate the time allocated for presentations and discussion?

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Please feel free to provide further comments / suggestions

Comments:

IV. ORGANISATION

1. How would you rate the quality of background documents and materials provided and their relevance for your organization?

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Please feel free to provide further comments / suggestions

Comments:

2. How would you rate the venue of the conference?

5	4	3	2	1
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Please feel free to provide further comments / suggestions

Comments:

3. How would you rate the organisation of the conference room?

5	4	3	2	1
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please feel free to provide further comments / suggestions

Comments:

4. How would you rate the organisation of the conference (support from organisers)?

5	4	3	2	1
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Please feel free to provide further comments / suggestions

Comments:

Any other comments regarding the organization of the conference?

V. FUTURE CONFERENCES TO BE ORGANISED BY LEAP/ DNDi

1. Please identify possible future topics and areas for discussion with high relevance to R&D in Africa or policy impact that should be covered at the future conferences to be organised by LEAP.

2. Please indicate if you are interested in attending future conferences organized by LEAP, DNDi or her partners (Please share email address to receive future information)

YES ☐

NO ☐

Name (optional):

Telephone (optional):

Email address (optional):

LEAP

LEISHMANIASIS EAST AFRICA PLATFORM

1st LEAP Scientific Conference

**Bridging the Gap: Progress on the Current Research Innovation
& Access to Visceral Leishmaniasis Treatment**

*29th - 30th September 2014
Bahir Dar, Ethiopia*





Drugs for Neglected Diseases *initiative*

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