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ACRONYMS

ACT  Artemisinin-based Combination Therapy
ANC  Ante-Natal Care
CMD  Community Medicine Distributor
CQ   Cloroquine
DDT  Dichlorodiphenyltrichloroethane
DHO  District Health Office
DHS  Demographic & Health Survey
DHT  District Health Team
DOT  Directly-Observed Treatment
EIR  Entomologic Inoculation Rate
GFATM Global Fund for AIDS Tuberculosis & Malaria
HBMF Home-Based Management of Fever
HMIS  Health Management Information System
HSD  Health Sub-District
IDP  Internally Displaced People
IDSR Infectious Disease Surveillance Response
IPT  Intermittent Preventive Treatment
IRS  Indoor Residual Spraying
ITN  Insecticide Treated Net
LLITN Long-Lasting Insecticide Treated Net
M&E  Monitoring & Evaluation
MDG  Millennium Development Goals
MIS  Malaria Indicators Survey
MOH  Ministry Of Health
MTP  Monitoring, Training & Planning
NGO  Non-Government Organization
NMCP National Malaria Control Programme
NUMAT Northern Uganda Malaria AIDS & TB programme
PMI  Presidential Malaria Initiative
RDT  Rapid Diagnostic Test
SP   Sulfadoxine-Pyrimethamine
USAID United States Agency for International Development
VHT  Village Health Team
WHO  World Health Organization
Malaria accounts for up to 26% of the national burden of disease in Uganda. Malaria is endemic to 95% of the country (including all the mid-northern Uganda). The remaining 5% (mainly highland areas in southwest and scattered mountainous areas of the country) experiences waves of malaria epidemics with very high mortality across all age groups. The hallmark of the malaria disease is however among children below 5 years and pregnant mothers, mainly due to their weak acquired immunity. Every hour a child dies due to malaria, with annual death tolls of 70,000 – 120,000 people.

The importance of malaria as a contributing factor to poor health and underdevelopment is demonstrated by the proportion of patients seeking health care who have malaria. In outpatients departments, malaria contributes between 25-40% of all patients. For in patients 20-25% of all cases are due to malaria, and 17-20% of deaths are attributed to malaria. For patients seeking malaria treatment services, there is usually a delay in accessing effective treatment. This delay is partly responsible for the high malaria case fatality rate of 3%. This is highly regrettable for a disease that can be successfully treated and cured.

Under the national Health Sector Strategic Plan II 2005-10 (HSSP II), the NMCP has a component to address the burden of malaria on the health and socio-economic development of communities. Uganda National Malaria Control Programme (NMCP), as a partner to the Roll Back Malaria strategic framework, is leading the national efforts in scaling up national malaria control services that will render malaria less of a public health and social economic development menace.

Under the NMCP 2005-10 Strategic Workplan, key targets in the roll out of malaria prevention and treatment services were set. The overall impact of these concerted efforts is to ensure that malaria case specific mortality is reduced from 4 to 2%. In order to achieve this, malaria prevention efforts will be scaled up. Coverage with preventive services (long lasting insecticide treated nets (LLITN), indoor residual spraying (IRS), intermittent preventive treatment (IPT) are expected to reach 85% of the entire population. Furthermore, effective malaria case management using ACT drugs which are the most potent drugs available today and dispensed in a manner that minimizes development of resistance to the drugs by the parasites will be scaled up under the banner of universal access, using multiple strategies. These strategies include: effective case management in health settings, community access using a well regulated and supervised mechanism through home based management of fever (HBMF) strategy and private partnerships through private clinics and drug shops, in conformity with national guidelines. All these efforts will ensure that 85% of malaria cases are effectively treated within 24 hours of fever onset.
For malaria control services, we are in an era of raised hopes. There is more good will from partners to contribute to these efforts. There are expanded resources and opportunities that can effectively roll back malaria and lead to its eventual elimination.

There are dangers in the way to a successful malaria control services implementation too. The irresponsible and unfounded misinformation of the population, especially in northern Uganda districts against use of IRS, is a case in point. Lira district has experienced epidemics in the last few months, partly attributed to the denial of IRS services to the district as a result of court injunction against IRS use, brought by some environmentalists. There are still irregular supplies of malaria medicines and logistics. The phase out of malaria medicines mono-therapies are yet to be accomplished, especially in the private sector.

We need to move forward with concerted efforts and put together evidence that will provide direction for the future of malaria control strategies and activities. In the same vein, we need to come strongly against false perceptions that have been feed to the populations. We should be able to dispel all the wrong information being spread to the population.

This conference report could not have come at a better time, especially for Northern Uganda that is recovering from prolonged strife due to the armed conflict that caused misery and suffering to the population in the region and the nation at large. I sincerely welcome the efforts of all partners in coming together to share their experiences in restoring malaria control services to this region. Lessons learnt will be used to inform all partners and stakeholders on the most effective ways in the delivery of malaria control services. These initiatives are expected to contribute to the achievement of NMCP targets under the 2005-10 Work plan.

On my part, NMCP will continue to play its part, in leading the crusade against malaria in the country. I would also like to express my appreciation to NU-MAT program for coordinating and supporting this activity. I encourage all stakeholders to share these experiences and enable themselves to learn and scale up proven interventions that will help the country realize more success in the control of malaria.

Dr Richard Ndyomugenyi,
Manager,
Uganda National Malaria Control Program
Participants to this conference, I welcome you all and thank you for the commitment you have shown to be here which is indicative of the importance you attach to the issues we are discussing here today. In planning for this conference, we had several discussions and consultations both within NUMAT and with other partners on the content and format of today’s deliberations.

Funded by the Presidential Malaria Initiative (PMI), Malaria in NUMAT is one of the three broad areas the programme is focusing on in the nine Programme districts hence the issues to be covered here have a direct bearing on our programme activities. The importance of this conference can not be over emphasized; malaria remains among the top diseases in terms of morbidity and mortality burden not only here but in the entire sub Saharan Africa. It has huge economic and social consequences, contributing to 30-50% of outpatient cases and 35% of hospital admissions. Therefore it is my sincere hope that by the end of the day, we shall have agreed on issues that we can collectively address to strengthen our anti malaria programmes.

We know that there has been significant progress in the region as far as malaria is concerned. As we can see from the presentations lined up for the day, different strategies such as use of long lasting insecticide treated nets and HBMF among others are being used. There has also been significant progress in Monitoring and Evaluation of the malaria intervention in the region.

Therefore, having a forum like this which brings together different actors provides us an opportunity for comparing notes and updating one another on what we are doing and what is being planned. It is an opportunity for us to look at some of the issues, challenges and strategies as a team to ensure that we all move in the same direction.

Once again, I want to thank all of you for coming and sharing your experiences with us. I also want to thank PMI for funding this conference and supporting malaria activities in Northern Uganda.

I wish you all good and productive discussions.
Thank you very much.

Med Makumbi
Chief of Party, NUMAT
Presentation: “The Burden of Malaria in Uganda and the state of the art in malaria control interventions”, by Dr. Patrobas Mufubenga (MOH, NMCP)

Globally, 350–500 million malaria cases are reported annually and 1.5 million people are estimated to die from malaria each year; about 80% of these deaths occur in Sub-Saharan Africa. In Uganda, malaria accounts for 26% of the national Burden of Disease in Uganda (BOD Uganda 1995) and is responsible for 33% of all OPD attendances; 25% of hospital admissions; 20% of all deaths among hospitalized children below 5 years of age; and between 70,000-120,000 of deaths among children every year, heavily contributing to the national infant and child mortality rates. Besides, malaria is the major underlying cause of severe anemia in both children and pregnant women; and it further complicates pregnancy with high rates of abortions, low birth weight and eventually maternal mortality. The socio-economic impact of the disease translates into severe economic losses, low economic productivity, lost school days and long-term disability.

The intensity of malaria parasite transmission is normally expressed as the entomologic inoculation rate (EIR), the product of the vector biting rate times the proportion of mosquitoes infected with sporozoite-stage malaria parasites. The largest part of Uganda is exposed to a very high transmission level with an estimated EIR ranging between less than 1 in the mountainous south-western region to 1,564 in swampy Apac district, the highest EIR worldwide. In line with the Health Sector Strategic Plan II of Ministry of Health, the Malaria 5-year Strategic Plan 2005-10 is the reference document for the National Malaria Control Programme (NMCP). Its goal is to control and prevent malaria morbidity and mortality, minimize social effects and economic losses attributable to malaria in the country; the overall objective is to scale-up countrywide all effective interventions to prevent and treat malaria. The strategic priorities are three:

1. To focus on a rapid increase of coverage with preventive measures like indoor residual spraying (IRS), intermittent preventive treatment in pregnancy (IPTp) and insecticide treated nets (ITN).
2. To ensure universal access to Artemisinin-based combination therapy (ACT).
3. To concentrate intervention on most vulnerable groups, such as young children and pregnant women in highly endemic areas, disadvantaged or difficult to reach populations and People living with HIV/AIDS.

The NMCP has also set its targets to be reached by 2010 as follows:

- To increase the proportion of households having at least two insecticide-treated net (ITN) from 15 to 85%
- To increase the proportion of targeted structures for indoor residual spraying (IRS) in targeted areas from 0 to 85%
- To increase the proportion of children under 5 getting correct treatment within 24 hours of onset of symptoms from 25 to 85%.
- To increase the proportion of pregnant women who have completed IPT₂ from 34 to 85%.
- To reduce the case fatality rate among malaria in-patients under five from 4 to 2%.
In particular, the IRS strategy will employ DDT and other insecticides for vector control. Though the issue is considered controversial, the Stockholm Convention permits the production and use of DDT strictly for vector control, under WHO recommendations and guidelines. Vector control to reduce malaria vectors is an essential component of any malaria control programme. Mosquitoes feed and rest indoors: the use of IRS, including the use of DDT, is therefore indispensable in vector control, thus reducing the morbidity and mortality associated with malaria; additionally, IRS is the most cost-effective method for controlling malaria epidemics still occurring in some few districts in Uganda.

DDT is both cheaper and more effective than any of the alternative insecticides available; and it maintains its ability to repel and kill malaria vector mosquitoes after being sprayed on inside walls of houses for over 9 months, which is much longer than any alternative insecticide.

The current areas of IRS operation are indicated in the map and IRS is being conducted in both epidemic and endemic settings.

System for supply of logistics, insecticide and equipment has been established and more than 5,000 spray operators have been trained. Environmental monitoring is also conducted to assess compliance with set standards.

So far, the results achieved with IRS are the following: more than 92% of targeted homes have been sprayed in all areas. There was high compliance and acceptance from community members after adequate mobilization; more than 2.6 million people were protected in past 2 years and malaria parasitemia in sprayed areas steeply decreased from 30% to 4%.

However, there are many challenges still facing IRS. Lack of adequate funding to sustain it (IRS is currently dependent on donor funds), human resource issues including attrition of health workers, negative publicity perpetuation based on political inclinations rather than technical reasons are some of the major hindrances to smooth IRS services delivery. Furthermore, economic interests by both local and foreign business communities compromise choice of insecticides, based on scientific evidence.

Despite efforts to control malaria in Uganda, malaria-associated morbidity and mortality are still high mainly because of insufficient action to break the transmission cycle. A multi-faceted approach, utilizing all available strategies and interventions needs to be adopted and the use of IRS - including DDT - is among the effective strategies.
Malaria is endemic to 95% of Uganda. In addition, 5% of the country — mainly highlands — represents unstable malaria transmission zones that are epidemic-prone. Transmission of malaria depends on several conditions pertaining in an area simultaneously. The vector (female anopheles mosquito), whose successful breeding relies on rainfall pattern and favourable temperatures. A reservoir of malaria parasite (infected human carriers and malaria-susceptible populations. It has to be noted that climate change leading to warming has a tremendous effect on transmission patterns, with a mere increase in half degree centigrade translating into 30-100% increase in mosquitoes’ population.

The minimum temperature for the parasite development of P. falciparum and P. vivax approximates 18°C and 15°C respectively. Higher temperatures of aquatic breeding sites hasten larval development; besides, deforestation and cultivation of natural swamps creates conditions favourable for Anopheles mosquitoes’ rapid breeding.

The main data sources on malaria cases in Northern Uganda are the weekly Infectious Disease Surveillance Response (IDSR) reports from health facilities under both government and NGOs (but excluding private practitioners). However, IDSR data are affected by the number of health facilities reporting; the completeness and timeliness of reporting; and the validity of data compiled by health workers.

Analyzing malaria trends in Northern Region means looking at the incidence of malaria in the region against a period of time and relating it with associated factors; these are the rainfall, vector control interventions (including IRS) and early treatment of cases that reduces the human reservoir of malaria parasites.

Rainfall pattern closely relates to the weekly clinical malaria pattern. Rainfall pattern in Northern Uganda shows that there is little rain between December and January, a steady rise in February-April, a peak in May-June and August-October and finally a steady decline from October to December. Clinical malaria pattern fol-
In conclusion, the climate in Northern Uganda favours all year transmission of malaria, with very little seasonal variability during December-January period. IRS using DDT provides a longer period of protection and control of malaria in the region than ICON. Effective implementation of HBMF strategy can also greatly affect malaria transmission through early and treatment in communities. This can lead to observed low malaria incidence at health units, when HBMF data is not incorporated).

Malaria control services supported through NUMAT program are home based management of fever (HBMF) and intermittent preventive treatment (IPT). Targets under HMBF consisted of: training of 4,500 CMDs in HBMF services delivery using artemisinin based combination therapies (ACT); distribution of 1,000,000 doses of COARTEM; treatment of 60% of children < 5 years with suspected malaria fever within 24 of fever onset. Targets under IPT include training 180 health workers in integrated reproductive health services, monthly integrated support supervision to all health units with ANC services and reaching 40% of pregnant mothers in the 9 districts with IPT. These targets refer to 2007/8 program year.

Building the capacity of districts to deliver malaria control services is one of the areas supported by NUMAT program. On the left, the DHO Lira gives a presentation to Lira District Trainers and supervisors of HBMF services.

The main activities under HBMF comprise of CMD/VHT refresher trainings, distribution of HBMF logistics to CMDs (e.g. Coartem, registers, etc), conducting monthly support supervision of CMDs and quarterly CMD/VHT meetings and collection of monthly data from CMDs.

Below, health workers from Gulu and Amuru district during training in IPT services delivery integrated in reproductive health and HIV prevention services delivery. Health workers are being received at a health centre where they conducted practical sessions on quality services delivery. The 2nd from right is Dr Mufubendga of NMCP (malaria in pregnancy officer). NMCP together with NUMAT program provided technical support to this training.
The main activities under IPT consist of supply of IPT logistics for enhanced malaria in pregnancy control. These include distribution of sulfadoxine & pyrimethamine (SP), clean water vessels, water dispensing caps and aqua-safe water treatment tabs for IPT-DOT services. Coordination of LL-ITN distribution for malaria prevention, monthly integrated IPT/RH support supervision and data collection activities are supported through the program as well.

Some of the challenges faced so far involve mostly HBMF services delivery. Community-based health services using VHT and CMD volunteers seem to lead to conflicting interpretations, with some community health workers thinking that VHT concept is a replacement of CMD and not reinforcement. Retention of CMDs and possible ways of motivating them, regular support supervision from health units, frequent Coartem® stock outs and weak coordination of activities between CMDs and health units are some challenges that are currently being addressed.

The priority activities to strengthen services delivery target identified gaps. Districts will be supported to incorporate HBMF services and CMD activities in their work plans. Technical support will be provided to DHO’s office in malaria service delivery. This support will include regular supervision, data collection & analysis, adequate/timely quantification & submission of orders to NMS and timely delivery of HBMF & IPT logistics and commodities to all implementing health units.
Uganda is a country with high malaria burden. Malaria accounts for 25–40% of cases in outpatient departments of public health facilities; it is responsible for 8–14% of inpatient deaths in Uganda. Children below 5 years and pregnant women are the most vulnerable to malaria.

With PMI-USAID funding, RTI is supporting the MOH to implement the strategy of vector control through indoor residual spraying (IRS). Large scale IRS services implemented commenced in March 2006 in Kabale district and was later extended to Kanungu district. In both districts amba-chyhalothrin (ICON 10% WP) was used. In 2007, the program was scaled up in 6 more districts in the North (Kitgum, Pader, Gulu, Oyam, Apac and Amuru district) and plans are underway to scale further to a total of 15 districts.

Delivery of IRS services involved several steps. Baseline and post-spray entomological studies were conducted in each district. Training of service providers in partnership with MOH and other implementing partners was carried out. Community mobilization was carried out working with different partners and stakeholders. Services’ data were compiled and disseminated on spray coverage and population protected. Eventually, follow up monitoring was done to assess the outcome of the exercise.

High coverage with IRS was achieved, with more than 95% of targeted homes been sprayed in all areas. High
compliance and acceptance from community members was realized during this phase. Capacity to deliver IRS services was built: spray personnel were trained, equipped, deployed. Rapid decline of malaria parasitemia in the target population was documented.

The population protected from malaria with IRS is summarized in the table above. Several tasks are needed in the post-IRS period: post IRS waste sorting, weighing and safe disposal needs to be done. Preparation for round 3 activities in Kitgum and Pader districts is underway, involving communities in services awareness and mobilization for their utilization; procurement and supply of logistics; refresher training for spraying personnel, and assessment of their physical fitness. Entomological assessments will be carried out, comprising efficacy studies and vector behavior to the insecticides.

Some challenges have been encountered in the delivery of IRS services. Spraying during the dry season is preferred but rains never stopped in June-July period in northern Uganda. More surfaces to spray are expected as peace and security return to northern Uganda, with movement of residents from IDP camps to their ancestral homes. Unanticipated events e.g. outbreak of hepatitis E and anti-IRS campaigners disrupted program implementation for some time. Hard-to-reach areas are not accessed by hired trucks: alternative modes of transports such as bicycles are needed.

<table>
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<tr>
<th>District</th>
<th>HH Sprayed</th>
<th>Population</th>
<th>&lt; 5 children</th>
<th>Pregnant women</th>
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<tbody>
<tr>
<td>Kabale (2 rounds)</td>
<td>179,413</td>
<td>853,286</td>
<td>142,973</td>
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<tr>
<td>Kanungu (1 round)</td>
<td>45,321</td>
<td>191,399</td>
<td>36,222</td>
<td>5,580</td>
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<tr>
<td>Kitgum (2 rounds)</td>
<td>158,579</td>
<td>712,846</td>
<td>175,167</td>
<td>28,226</td>
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<tr>
<td>Pader (2 rounds)</td>
<td>300,739</td>
<td>1,200,079</td>
<td>290,791</td>
<td>76,489</td>
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<tr>
<td>Amuru (1 round)</td>
<td>102,247</td>
<td>399,175</td>
<td>108,079</td>
<td>21,147</td>
</tr>
<tr>
<td>Gulu (1 round)</td>
<td>131,821</td>
<td>525,505</td>
<td>117,443</td>
<td>22,728</td>
</tr>
<tr>
<td>Oyam (1 round)</td>
<td>94,876</td>
<td>315,765</td>
<td>70,549</td>
<td>12,274</td>
</tr>
<tr>
<td>Apac (1 round)</td>
<td>103,205</td>
<td>322,697</td>
<td>78,761</td>
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<td>Total</td>
<td>1,116,201</td>
<td>4,520,752</td>
<td>1,019,985</td>
<td>188,764</td>
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The Ministry of Health (MOH) with the support from Malaria Consortium/AFFORD has been distributing insecticide treated nets in 24 districts in Greater Northern Uganda since 2003. The distribution has been mainly facility-based using the existing MOH health structures that have active ANC services.

The main objective of this project was to provide access to at least 85% of pregnant women with protection from getting malaria by sleeping under insecticide-treated nets. The anticipated impact was to contribute to reduction in malaria morbidity and mortality among pregnant women and children less than 5 years. Furthermore, there was anticipated increase in the number of pregnant mothers attending ANC clinics. This would lead to more utilization of broader RH packages for pregnant women at health facility level.

Identification and training of health facility staff on malaria in pregnancy, long-lasting insecticide-treated nets (LLITN) distribution system and data recording was carried out. Malaria consortium/AFFORD delivered nets to the district, who in turn were responsible for the distribution to the health facilities and re-stocking of nets in cases of stock out. The nets were made available free of charge to all pregnant women attending ANC with emphasis on first visits. Health education to emphasize the benefits and importance of using the nets was integrated into the routine health messages given out at the facility. Documentation and reporting through the routine district Health Information flow system was instituted. Support supervision, on job mentoring and monitoring was periodically carried out.

District participation in the planning and implementation has promoted district ownership of the project. Integration of ITN distribution in routine ANC services consequently contributed to increase in ANC attendance. MC/AFFORD scaled up LLINS distribution in Northern Uganda from 5 districts in 2003 to 24 districts in 2007. Capacity of health workers to deliver integrated services in malaria control & reproductive health was done. Facility based distribution coupled with health education focused on malaria prevention promoted retention and use. Exit interviews revealed that the pregnant women who received the nets reported less bouts of malaria compared to an earlier period when they did not have the nets.

Timeliness, accuracy and reliability of data collection and submission to the district remains a challenge. Data on LLITN is not integrated in the HMIS system. Facility based distribution though effective, is slow in reaching large numbers in the community. Accessibility to health units by population returning to the villages is still challenging. Sustainability of these services is still doubtful since current support is from donor support. Duplication of activities, with different partners targeting the same beneficiaries, affects coverage. Health education to pregnant women during ANC though effective doesn’t necessarily contribute to who actually uses the net (actual use of the net depends on family and decision making hierarchies at household level).

In conclusion, involvement of the district in planning, implementation and monitoring promotes ownership of the project. LLITN distribution through routine ANC achieves excellent targeting of nets to pregnant women. Integration of reports from health facilities to the district has greatly improved on ITN reporting.
The main objective of the survey was to assess the availability, accessibility and utilization of ITNs among pregnant women and children of less than five years of age in Omoro County, Gulu district. The study used a cross-sectional design, employing multi-stage random sampling methodologies. Two-stage cluster sampling was done (sub county, parish) followed by systematic simple random sampling (targeting households). A sample of 1,550 respondents was selected. Semi-structured questionnaire in local language were administered to the community members. For the VHT, English structured questionnaires were administered. Health facility (HF) check list was developed for the health units. Community survey was carried out between December 2007 and January 2008, involving 1,493 respondents (96% response rate; 73.8% Female; 74.1% aged 25–59 yrs and 70.7% ever attended school). The proportion of respondents within 5Km radius of the health unit was 83.5%. Most households (HHs) had children of less than 5 years (97.4%) and about one-quarter had at least one pregnant woman (26.5%). Knowledge on malaria transmission and prevention was found high in Omoro County. 78.2% of the respondents accurately mentioned the cause of malaria. Nearly all mentioned one or more symptoms of malaria (98%), at least one preventive measure (96.3%) and at least one anti-malarial drug (97%) especially Chloroquine, Quinine, Coartem®. The high level of knowledge could be explained by district efforts to fight malaria that have been intensive following the country’s commitment to the Roll Back Malaria Initiative targets set at Abuja in 2000. In addition, Gulu district has a functional network of trained VHT members, whose role includes community education about malaria and other communicable diseases. Over three-quarters of the HHs (80.4%) had a malaria case during the past six months preceding the survey. About 13.5% of households reported a death from malaria within the year preceding the survey (69.7% among children less than 5 years and 10.4% among pregnant women). These findings emphasize the importance of malaria as a disease responsible for high level of morbidity and mortality in the community, particularly to the vulnerable children with less than 5 years of age and pregnant women. Most households, 44.2% accessed anti-malarials from a VHT, 27.5% from government health facilities and 16.4% from private clinics. Household ITN ownership was at 46.8%. The Uganda Demographic & Health Survey (UDHS 2006) found coverage of 46.7% in Internal Displaced Peoples (IDP) camps of Acholi & Lango, but much lower in the rest of Uganda at 16%. 81.8% ITN owners reported use the previous night.

**Presentation: “ITN Use-Baseline Survey Report”, by Otim Tom, Ovuga Emilio, Patrick Odong, Raymond Tweheyo, Ritah Namutebi, Matthew Okello, Lucy Anena (Gulu University Teaching Hospital/UNICEF Collaboration)**
ITN use coverage from the study sample was only 20.7% and 32.9% among children below 5 years and pregnant women respectively. These findings depict the district as far below the NMCSP ITN coverage of > 70% for children below 5 years and pregnant mothers. However, among those households where ITN were reported being used the night before the survey, those who slept under it were children below 5 years in 66% of cases, pregnant women in 28.5% and other household members in the remaining cases. Majority (92.2%) recognized that there was need for use of ITNs in HHs to prevent malaria. Nearly half, 44.8% felt that ITN distribution should be done through health facilities, followed by VHTs, 42.3%. Some recommendations can be generated from the above findings. The DHT with partner support should educate the community about the importance of ITN use for malaria prevention among children below 5 years and pregnant women. Community sensitization needs to be increased through radio talk shows, radio sports and community dialogues to promote use of ITNs and 1st line drugs recommended for malaria treatment. ITN distribution mechanisms should aim at achieving higher coverage for children below 5 years and pregnant mothers. Finally, DHT with partner support should institute clear coordination mechanisms for ITN distribution in order to have rational use of resources.
Oyam district lies in malaria endemic region where chronic infection poses dangers to both maternal & child health. Chronic infection leads to maternal anaemia; high placental infections lead to intra uterine fetal death, intra uterine growth retardation, low birth weights and poor child survival. It also increases the risk of mother to child transmission of HIV during pregnancy for HIV+ pregnant women.

Strategies and resources to address this situation are now widely available. These include; prevention of malaria parasites transmission through use of LLITN, intermittent preventive treatment through use of Sulfadoxine-Pyrimethamine (SP) and effective malaria case management.

Services coverage for IPT has been low in the district. For 06/07 financial year, IPT2 coverage was 30.2% (Target 60%). Identified bottlenecks to services scale up were; health workers related factors (skills & work load), shortage of facilities for IPT services delivery using DOT strategy and poor client satisfaction with services.

With support from NUMAT, Oyam district implemented strategies to address identified gaps and bottlenecks to IPT services uptake and coverage. Health workers were trained in integrated reproductive health using Performance Improvement Approach (PIA) in collaboration with NMCP & NUMAT. Support to IPT-DOT services with provision of clean water vessels, water treatment tabs (aquasafe) and water dispensing cups was provided. Regular support supervision & mentoring of staff at health units implementing IPT services was scaled up.

Challenges experienced include: staff turnover rate, and heavy work overload at health units. The way forward to ensure sustainable and universal coverage of IPT services in the district include; consolidating support supervision integrated in broader RH/HIV/AIDS, focusing on in-services training and mentoring of health workers, monitoring and documenting the impact of IPT-DOT scale up on the health of pregnant mothers and reproductive health outcomes.
Prompt and accurate diagnosis of malaria is the key to effective disease management. The diagnostic approaches include clinical, microscopy, rapid tests and others. Clinical diagnosis is the most widely used approach. However it is unreliable because the symptoms of malaria are very often non-specific. Microscopy is the gold standard, but presents technical and personnel requirements that often cannot be met, particularly at periphery health facilities. RDT presents a new approach: tests can be performed by individuals with minimal training and require no electricity and no special equipment.

Parasite prevalence (parasitaemia) is likely to reduce, as scale up of malaria control services attains the desired targets. Many fevers will very soon be due to other causes rather than malaria. These changes are anticipated as a result of the scale up in the Roll Back Malaria programs. Gametocidal effect of ACTs will contribute to interruption of transmission as well as extensive use of LL-ITN. Scale up in the use of IRS will also lead to reduction of the vector density.

Currently in Uganda there is no provision for microscopy at health centre II level. There is lack of functional microscopy in approximately 30% of HC IIIs either due to lack of equipment or personnel. Inadequate staffing at all levels of health facilities is currently being experienced. Several regions in the country with unstable transmission of malaria remain prone to epidemics. Therefore, the introduction of RDTs is a justified, relevant and realistic measure to introduce in the country.

Since mid-90s, RDTs have been used at H/F even up to the community level in countries like Thailand, Cambodia, India, and Brazil. In Africa, Uganda is among the first countries to initiate RDT use. Others are Zambia and Tanzania.

In Uganda, the malaria diagnosis policy document is complete, undergoing necessary approvals. Training manual, users’ guide and job aides are complete, undergoing field testing. Through WHO, FIND, PMI and MOH collaboration several steps are being undertaken. Quality assurance and quality control plans and processes are being finalized. RDT roll out plans finalized; 800,000 RDTs are in the country to kick start the roll out with support from GF, PMI & other partners. Actual trainings have started with training of TOT in RDT use.

Below: Pracheck pf, an example of HRP-2 RDTs
Wider partner involvement in RDT roll out plan & processes (studies, policy preparation, guides, planning etc) has created a lot of cohesion and joint ownership. Effective involvement of DHT in all programmes within districts is critical for ownership and sustainability. Country RBM Partnership Forum is also important for effective joint planning, coordination implementation, reviews and M&E. There are some challenges to be overcome for RDT to play its role in malaria cases diagnosis and effective management. Many clinicians still do not believe in the RDT results and continue to treat all RDT negative tests with anti-malarials.

Documentation of RDT use is currently also problematic, since HMIS forms and registers do not have provision for RDT reporting. Role of RDTs in HBMF in Uganda is not yet defined since the service still relies on presumptive diagnosis and treatment. Since funding for RDT roll out is to a great extent donor funded, the issues of sustainability need consideration. In conclusion, advantages of RDTs far outweigh their disadvantages. Diagnostic tests (microscopy and RDTs), used correctly, can contribute to better and more cost-effective disease management and can reduce the unnecessary and irrational use of anti-malarial drugs.
The goal of SPS in supporting PMI is to ensure the continuous availability, the equitable use of safe, effective, quality anti-malarials and related products both in the healthcare setting and in the community. This implies partnerships at both national and district level.

At national level, SPS collaborates with National Drug Authority for the phase out of mono-therapies and re-classification of ACTs. SPS supports NMCP to establish a coordinated quantification team, build its capacity and support quantification exercises including severe and uncomplicated malaria and RDTs (in collaboration with PMI and GFATM). It collaborates also with NMS in the ACT Roll-out, in emergency distribution for Coartem, to streamline orders and storage processes, and improve efficiency and the monitoring system.

At district level, SPS introduced MTP, an innovative approach to skills building that places training tools and responsibility in the hands of local staff, uses defined indicators to measure the problem, proposes solutions and sets targets for improvement.

The main MTP activities are:
- Training of Trainers
- Training of district, HSD and facility staff
- Assessment of supply chain at the facility
- Development of performance improvement plans
- Integrated support supervision visits
- Dissemination of findings.

Advantages from adopting the MTP model are a strengthened supervision, facilitated re-distribution of ACTs between facilities, improved dispensing practices and communication between the district/HSD and the facilities.

There are some few challenges though, like human capacity, NMS efficiency, lack of data and coordination in quantification exercises.

MTP approach is effective but requires time to institute and change behaviors, needs integration with existing supervision systems at district and national level and calls for resources for quick scale-up to nationwide coverage.

In conclusion, rational drug use, including anti-malarial drugs, is influenced by effectiveness of Medicine & Therapeutic Committees, prescribing patterns, counseling and dispensing Practices and adherence tools and monitoring protocols.

Presentation: “Pharmaceuticals management response in support to PMI-Uganda” malaria control services scale up, by Loi Rwoita (SPS)
Effective malaria case management depends on early case detection and treatment, within 24 hours of fever onset using most effective drugs, according to policies. The first remedy of mothers seeking treatment to their sick children is through self medication. This approach is highly ineffective since malaria treatment guidelines are not complied with.

HBMF strategy provides a policy framework to address the issues of self medication, provide accessible effective malaria fever case management at home, according to national malaria control guidelines. HBMF services delivery entails several steps.

- Identification of capable volunteers in the village (VHT), working with LC leadership.
- Training and motivation of the VHT as community medicine distributors (CMD) to treat simple malaria cases at home and make appropriate referrals.
- Distribution of medicines, registers and other commodities for HBMF services delivery and documentation.
- Support supervision and monitoring of HBMF services to ensure that guidelines are adhered to and systems to.

Gulu district is one of the districts where HBMF services using coartem® was piloted. The district population is 343,000 and children population, 5 years and below, is 70,326 (projected from 2002 housing and population census). The district HBMF services status summary is as follows. Personnel for HBMF services include 12 district supervisors, 33 Health unit VHT supervisors and 819 village health team (VHT) volunteers. Two quarterly review meetings were held in 2008. 40,470 doses of Coartem® were distributed in 2008. Key outputs of HBMF services delivery is presented in the charts below.

Malaria Trends among children <5 years of age

![Malaria Trend for 2006-2008]
Key opportunities to HBMF services scale up in Gulu district has been;
• District built the capacity to supervise the delivery HBMF services.
• The presence of trained VHT in HBMF services delivery at the community level. Local ownership and support form local leadership.
• Support from various partners and programs
• New staff which was recruited in the district to fill identified gaps and help in delivery of health services.

Key challenges to sustained HBMF services in Gulu district include;
• Weak mechanisms for VHT motivation & retention; lack of standardized process for VHT follow up, including carrier path.
• Frequent malaria medicines stock outs for HBMF services.
• Lack integrated approach at a village level. Need to have VHT multi skilled and involved in comprehensive health services at the village level. This would emphasize public health preventive approaches.

To strengthen current gains in HBMF services, as well as address encountered challenges, priority should be given to;
• Integrated HBMF services in the broader public health interventions in the community. Provision of meaningful rewards to CMD volunteers. This should include defined carrier development paths.
• Ensure regular supplies of medicines and other commodities for malaria control at the community level.
• Ensure that resources are provided through district development plans & budgets in order to sustain HBMF and malaria control services.

Gulu District HBMF services summary
The recent international and national efforts to scale-up the response to Malaria, TB and HIV/AIDS have implications for the type of M&E data needed to be collected and assessed. With billions of dollars invested, expectations of short-term results are high. Multiple initiatives are taking place simultaneously: MDGs, GFATM, and MAP, all requiring feedback information.

The MCP M&E system demonstrates progress in achieving outcomes and impact in control efforts; contributes to more efficient use of data and resources by ensuring indicators and sampling methodologies are comparable over time & reducing duplication; encourages coordination and communication between different stakeholders; and builds capacity for monitoring and assessing progress towards set targets.

The HSSP II Malaria Indicators to be achieved by FY 2009/10 are listed below:

The goal of M&E is to provide a framework for obtaining reliable information to determine progress in malaria control and inform programme improvement decisions.

Several indicators can be measured. Some of the measure the output:

- ITNs (no. of insecticide-treated nets (ITNs) distributed, by target group)
- IRS (no. of districts covered by IRS)
- IPT (no. of pregnant women receiving IPT)
- Case Management (no. of children under 5 years of age treated with ACT within 24 hrs at community level using the home based management of malaria fever strategy)

Other indicators measure the outcome:

- ITNs (no. of HH with at least 1 LLIN, no. of U5 who slept under an LLIN)
- IRS (proportion of targeted population protected by IRS)
- Case Management (proportion of children under five years old with fever in the last 2 weeks who received treatment with any anti-malarial within 24 hours of onset of fever)
- IEC/BCC (proportion of people aware of malaria prevention measures)
Other indicators measure the impact:

- Under five, all-cause child mortality
- Proportion of deaths attributable to malaria for children under five from nationally representative sample
- Proportion of deaths attributable to malaria among children under five in a defined population
- Laboratory confirmed malaria cases in health facilities
- Percentage of OPD visits attributed to malaria
- Number of in-patient malaria cases and deaths

The data sources are many from different implementing partners. One approach that is currently being developed is the Malaria Indicator Surveys (MIS), intended to be a simpler, malaria-focused survey alternative to DHS or others. Its purposes are to collect nationally-representative data on coverage of critical malaria interventions, to measure impact through biomarkers and to allow tracking of trends over time.

A population-based survey offers high quality data, is nationally representative, it can be compared with other demographic data, allows for comparability across time and across countries and provides the possibility of supplementary information such as geo-coding, anthropometry, wealth index, etc. Some of the questions asked by M&E regarding malaria are: what is the current coverage of the program and what are the targets (household survey)? What are the current prevalence and incidence (HMIS, surveillance)? What are the existing commodities and projected needs (logistic system)? Budget for activities (financial system)?

The use of MIS (and other surveys) helps in tracking scale up of coverage, measuring impact, tracking progress towards Abuja Goals, PMI Goals, MDGs, etc. and for global reporting, like the Africa Malaria Report (2003), the World Malaria Report (2005) and the Malaria in Children Report (2007).
The use of MIS (and other surveys) helps in tracking scale up of coverage, measuring impact, tracking progress towards Abuja Goals, PMI Goals, MDGs, etc. and for global reporting, like the Africa Malaria Report (2003), the World Malaria Report (2005) and the Malaria in Children Report (2007).
The M&E duties and expected outputs are as follows:

- Data Quality Assurance
- Establish and maintain malaria data base
- Analyze and interpret programmatic, outcome and impact data
- Prepare and regularly update the national malaria profile
- Provide feedback, prepare quarterly monitoring reports and annual malaria reports & reviews
- Develop sub-national level M&E capacity

M&E faces some challenges. There is lack of M&E facilitation, equipment and space; poor flow of data from partners, poor quality services (stock outs, personnel, referral etc), lack of effective supervision of DHOs. Other systemic challenges include those affecting HMIS in general: timeliness, completeness, validity and consistency. Besides, it is difficult to measure indicators like malaria-specific morbidity and mortality; some indicators do not get through HMIS (ITN use and prompt treatment of fever episodes in the community). Sex disaggregation of data by Male/Female is only recent.

The proposed ways forward are:

- To facilitate, equip and house M&E
- To streamline data flow systems within the programme as well as between partners and Districts.
- To facilitate and align zonal coordinators to programme
- To strengthen District Health Management Systems to boost quality, coverage and reporting by Districts.
- To improve reporting through introduction of easy to use supplementary data entry sheets to supplement HMIS forms.
- To conduct regular surveys to capture community based information
- To sustain capacity development and strategic planning
- To keep on routine Monitoring for continuous quality improvement
- To conduct periodical evaluations, learning and decision making
- To conduct operational research
- To strengthen the health system as a whole
Surveillance for malaria in Uganda is a challenging task for the following reasons: diagnosis is often made clinically without obtaining a confirmatory test; there is no link between the outpatient department and the lab in health facilities, limited ability to track data; and ultimately it is difficult to estimate the true malaria burden using data currently collected in health facilities. UMSP has then established a malaria surveillance system to support ongoing malaria control activities and strengthen HMIS at sentinel sites. Its objectives are:

- To collect accurate data on the burden of malaria and clinical practices at the sentinel sites;
- To monitor the impact of various interventions on key malaria indicators;
- To inform clinical practice and national policy;
- To build capacity and create a sustainable malaria surveillance system;
- The sites are indicated in the map below.
Data are collected at the outpatient clinics, using existing staff assigned for data collection. Where this is not feasible, data clerks are recruited. Types of data collected include: patient demographics (age, gender), address (village and parish), diagnosis, malaria smear result and treatment given.

The following are the indicators being measured:
- Total number of patients seen per month
- Proportion of cases suspected to have malaria
- Proportion treated for malaria
- Proportion of suspected malaria cases with blood smear done
- Proportion with a malaria positive result
- Health worker treatment practices
- Anti-malarials prescribed

The data shows a mixed picture: cases of suspected malaria have shown a small downward trend, confirmed malaria have remained largely the same and only a few cases of suspected malaria have a blood test done.

In brief, more data is needed before firm conclusions can be made. Greater effort should be made to increase the proportion of suspected malaria with a confirmatory test done. The main challenges are inadequate staffing; frequent power cuts where laboratory and other activities are often stalled, only a small proportion of cases needing a smear actually have one done, large numbers of suspected malaria cases treated empirically and little faith in produced results.
General observations

Malaria remains the biggest health challenge in the region. At the moment, there is more determination and resources which presents great opportunity to contain & eventually eliminate malaria in Uganda in general and Northern Uganda in particular.

Indoor Residual spraying

There is need to ensure continuity in consolidating initiated activities. Rapid expansion without sustainability plan of initiated services should be avoided. Community awareness and education on the benefits of IRS versus the perceived dangers to health and the environment should be maintained and extended to all targeted communities in order to dispel fears and myths about IRS. Adherence to implementation protocols on the use of insecticides (mosaic application) should be observed in order to slow down development of resistance of mosquitoes to the insecticides currently in use.

LL-ITN

For more meaningful malaria prevention program, use of LLITN should be scaled up from the current target groups (children, 5 years & pregnant women) in order to cover the whole household. This will in the long run ensure behavior change on malaria prevention practices, while at the same time leading to reduction of malaria parasites reservoir through interruptions of vector human being contacts.

SESSION 5: SYNOPSIS

Presentation: “Priority areas for malaria control services” by Dr Tumukurate Espilidon (NUMAT)
to translate supplied nets into protection given to the targeted population. Scale up in BCC messages to educate & influence communities on utilization of the LLITN protection preventive services against malaria should be sustained and scaled up using multiple channels (radios, community mobilization and awareness by local leadership etc). Phase out of ITN which are not permanently treated should be instituted urgently in order to benefit from LLITN which are more effective. Strategy of nets distribution needs constant evaluation. In addition to ANC outlets, multiple other channels should be used (OPD departments, pharmacies, drug shops, and after delivery in labor wards.

Rapid Diagnostic Tests (RDT)
Phased approach from presumptive to definitive malaria diagnosis as the %age of fever due to malaria hopefully declines with scale up in malaria control services should be implemented, taking into consideration local situation and capacity to handle these services. RDT scale up is needed due to low lab capacity for facilities at lower level & ease of utilization. Ways of implementing HBMF services in face of RDT need more study and ways of policies harmonization. Issues of cost, reliability, counterfeit/donated material & sustainability require close monitoring in order to ensure that reliable reagents are used. Winning trust of clinicians in lab diagnosis versus clinical diagnosis requires more mentoring and training so that clinicians get more confidence and trust in laboratory results. This will help to ensure that prescription habits will conform to lab diagnosis made on malaria and other diseases.

Medicines Supplies and Logistics Chain management
Change from mono therapy to ACT policy requires close monitoring to ensure full implementation and compliance to current policy on ACT use. Prompt medicines utilizations reports submission and timely ordering of medicines in order to minimize medicine stock outs, require emphasis and capacity building both at facility, district and national levels. This will help to minimize malaria medicine stock outs that are now rampant. Incorporation of aspects of medicines and other malaria control logistics management monitoring during support supervision should be done through integration with other services supported by DHMT. This will help to ensure comprehensiveness in tracking and identification of needs at facility levels that are essential for sustained malaria control services.

Home Based Management of Fever
Harmonization of VHT/HBMF approach needs to be implemented so that the two approaches complement each other. VHTs should be taken advantage of as the basic unit of the health system at the peripheral level where integration of health services can be implemented at a community level. Follow up and support to VHT/CMD volunteers would be scaled up through appropriate motivation mechanisms and support supervision. Support for VHT services from LG & MOH need to be incorporated in LG work plans and PHC. There is need to explore ways of sustaining donor initiatives after the projects wind up.
**Intermittent Preventive Treatment**

Coverage of IPT services is still below the 2005/10 work plan target of 85% coverage with IPT2. Strengthening of reproductive health services, with skilled and well mentored personnel will help to ensure that mothers (whose 1st ANC attendance is already satisfactory in the region) come for return visits, including IPT2 doses administration. Regular support supervision, in services training and mentoring of health workers at health units with ANC services will help to ensure that the ANC services providers' skills are appropriate and of quality that will lead to clients' satisfaction. This will help in the scale up of IPT2 coverage. Furthermore, to ensure compliance to IPT uptake IPT DOT services should be supported. Provision of clean water through provision of storage vessels, water treatment tabs and dispensing cups should be made available in all ANC units.

**Monitoring & Evaluation**

In order to ensure that timely decisions are made data submission should be regular and timelines observed by all implementing partners, at all levels. Data validation mechanisms at HSD & district levels before submission are encouraged, in order to increase the reliability of the collected information. For more comprehensive and integrated malaria control services monitoring and evaluation, all MCP partners should regularly provide program updates and their work plans with the centre in line with the 3 ones.
# Annex 1: Conference Programme

<table>
<thead>
<tr>
<th>Time</th>
<th>Topics</th>
<th>Organization</th>
<th>Presenter/s</th>
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<tr>
<td>8.00-8.30</td>
<td>Participants Arrival &amp; Registration</td>
<td>Secretariat</td>
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<tr>
<td>8.30-9.00</td>
<td>The Burden of Malaria in Uganda and the state of the art in malaria control interventions.</td>
<td>MOH/NMCP</td>
<td>Dr Mufubenga Patrobas</td>
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<td>9.10-9.20</td>
<td>Malaria in Northern Uganda: Trends analysis</td>
<td>WHO</td>
<td>Dr Vincent Oryem Yooman</td>
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<td>9.30-9.40</td>
<td>PMI Support through NUMAT-An Overview</td>
<td>NUMAT</td>
<td>Dr Espilidon Tumukurate</td>
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<td>9.40-10.00</td>
<td>Official Opening</td>
<td>Gulu LCV Chairperson - NUMAT COP</td>
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<td>10.00-10.30</td>
<td>Tea break</td>
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<tr>
<td><strong>2nd Session: Prevention; Chair Patrobas Mufubenga</strong></td>
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<tr>
<td>10.30-10.40</td>
<td>Indoor Residual Spraying (IRS): Services roll out and preliminary results</td>
<td>RTI</td>
<td>Richard Onen</td>
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<td>10.50-11.00</td>
<td>ITN: Distribution strategies, services coverage &amp; utilization by target groups in Northern Uganda</td>
<td>Malaria Consortium/ AFFORD</td>
<td>David Odongo</td>
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<td>11.10-11.20</td>
<td>Use of ITN in Gulu, Gulu University Teaching Hospital (GUTH) study</td>
<td>GUTH/UNICEF</td>
<td>Dr Raymond Tweheyo</td>
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<td>11.30-11.40</td>
<td>Control of malaria in pregnancy: Use of DOTS strategy: Experience of IPT DOT services in Oyam</td>
<td>DHV/FP Reproductive Health, Oyam District</td>
<td>DHO/MFP Francis O.Leone</td>
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<td>11.50-1.00</td>
<td>Plenary Discussion</td>
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<td>1.00-1.30</td>
<td>Lunch break</td>
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<tr>
<td><strong>3rd Session: Treatment; Chair Mukone George</strong></td>
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<tr>
<td>1.40-1.50</td>
<td>Use of rapid diagnostic tests (RDT) in malaria definitive diagnosis - Reliability, affordability and approach in RDT services delivery - preliminary assessment results</td>
<td>WHO/MCP</td>
<td>Dr Katureebee Charles</td>
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<tr>
<td>2.00-2.10</td>
<td>ACT treatment policy implementation - Two years progress; supply and availability of medicines.</td>
<td>SPS</td>
<td>Loi G.</td>
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<td>2.20-2.30</td>
<td>HBMF using ACT at the community level; Experiences in Northern Uganda</td>
<td>Gulu District</td>
<td>John Opwonya</td>
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<td><strong>4th Session: Monitoring and Evaluation; Chair Mukone George</strong></td>
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<td>2.40-3.00</td>
<td>NMCP M&amp;E framework &amp; The Malaria Indicators Survey (MIS) - Brief on the process and time scale</td>
<td>MCP</td>
<td>Dr Ebony Quinto</td>
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<tr>
<td>3.10-3.20</td>
<td>Malaria surveillance (the experience in Apac district)</td>
<td>Malaria surveillance programme (CDC)</td>
<td>Dr Hasifa Bukwirwa</td>
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<td>3.30-4.00</td>
<td>Plenary Discussion</td>
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<td>4.00-4.20</td>
<td>Tea break</td>
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<td><strong>5th Session: Synopsis &amp; Closure; Edward Ssemafumu</strong></td>
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<td>4.20-4.30</td>
<td>Way forward; Key messages, priority areas &amp; strategies for sustainable malaria control services scale up</td>
<td>Conference secretariat</td>
<td>Dr Espilidon Tumukurate</td>
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<tr>
<td>4.30-5.00</td>
<td>Closing Remarks</td>
<td>Deputy RDC Gulu District - NUMAT COP</td>
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<td>5.00-6.30</td>
<td>Cocktail</td>
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Annex 2: useful websites

- [http://www.rbm.who.int/](http://www.rbm.who.int/). Roll Back Malaria (RBM) Partnership was launched in 1998 by the World Health Organization (WHO), the United Nations Children’s Fund (UNICEF), the United Nations Development Programme (UNDP) and the World Bank. Its mandate is to work together to enable sustained delivery and use of the most effective prevention and treatment for those affected most by malaria by promoting increased investment in health systems and incorporation of malaria control into all relevant multi-sector activities.

- [http://www.malariajournal.com/](http://www.malariajournal.com/). Malaria Journal is an Open Access, peer-reviewed, online journal. It is aimed at the scientific community interested in malaria in its broadest sense. It is the only journal that publishes exclusively papers on malaria and, as such, it aims to bring together knowledge from the different specialties involved in this very broad discipline.

- [http://www.malaria-world.com/](http://www.malaria-world.com/). Malaria-World is a free service for anyone interested in malaria. Their objective is to become the most comprehensive resource on malaria information worldwide. They produce a free weekly news bulletin.

- [http://www.ehproject.org/ehkm/malaria.html](http://www.ehproject.org/ehkm/malaria.html). The Malaria Bulletins by the Environmental Heath at USAID provide citations and abstracts of recently published malaria studies. Links are included to full-text and/or author email addresses when available. The Malaria Bulletins can be downloaded free of charge.

- [http://fightingmalaria.org/issues.aspx?issue=14](http://fightingmalaria.org/issues.aspx?issue=14). Africa Fighting Malaria is a non-profit health advocacy group founded in 2000 and based in South Africa and the United States. Their mission is to make malaria control more transparent, responsive and effective. They conduct research into the social and economic aspects of malaria and raise the profile of the disease and the issues surrounding its control in the local and international media.
NORTHERN UGANDA MALARIA, AIDS & TUBERCULOSIS PROGRAMME
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