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**PRESIDENT'S MALARIA INITIATIVE**

**UGANDA**

**Malaria Operational Plan for FY 2010  
DRAFT**

November 2009

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## ABBREVIATIONS

ACT	artemisinin-based combination therapy
AL	artemether-lumefantrine
ANC	antenatal care
BCC	behavior change communication
CDC	Centers for Disease Control and Prevention
CMD	community medicine distributors
CSO	civil society organizations
DDT	dichloro-diphenyl-trichloroethane
DFID	United Kingdom Department of International Development
DHS	Demographic and Health Survey
DOT	directly observed treatment
DSS	demographic surveillance system
EPI	Expanded Program on Immunization
ESR	epidemic surveillance and response
FANC	focused antenatal care
FIND	Foundation for Innovative New Diagnostics
FY	fiscal year
Global Fund	Global Fund to Fight AIDS, Tuberculosis, and Malaria
GOU	Government of Uganda
HBMF	home-based management of fever
HIPS	Health in the Private Sector project
HMIS	health management information system
HPAC	Health Policy Advisory Committee
IDP	internally displaced person
IEC	information, education and communication
IPTp	intermittent preventive treatment in pregnancy
IRS	indoor residual spraying
ITN	insecticide-treated net
JICA	Japanese International Cooperation Agency
JUMP	Joint Uganda Malaria Program
LLIN	long-lasting insecticide-treated net
M&E	monitoring and evaluation
MEMS	Monitoring and Evaluation Management Systems
MIS	Malaria Indicator Survey
MOH	Ministry of Health
NDA	National Drug Authority
NGO	non-governmental organization
NMCP	National Malaria Control Program
NMS	National Medical Stores
OTC	over-the-counter drugs
PEPFAR	President's Emergency Plan for HIV/AIDS Relief
PHP	private health practitioners
PMI	President's Malaria Initiative
PMP	performance management plan

PMTCT	prevention of mother-to-child transmission (of HIV)
QA	quality assurance
QC	quality control
RBM	Roll Back Malaria
RDT	rapid diagnostic test
RHU	Reproductive Health Unit
SP	sulfadoxine-pyrimethamine
UDHS	Uganda Demographic and Health Survey
UMSP	Uganda Malaria Surveillance Project
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USG	United States Government
VCD	Vector Control Division
VHT	village health team
WHO	World Health Organization

## **EXECUTIVE SUMMARY**

In June 2005, Uganda was selected as one of the first three countries to benefit from the President's Malaria Initiative (PMI). The goal of this initiative is to rapidly scale up malaria prevention and treatment in 15 high-burden sub-Saharan African countries and reduce malaria mortality by 50% by 2010.

Malaria is Uganda's leading cause of morbidity and mortality and is endemic in 95% of the country. According to Ministry of Health (MOH) records, malaria accounts for 25-40% of outpatient visits to health facilities and is responsible for nearly half of inpatient pediatric deaths. The most current information about national coverage of key malaria prevention and control measures in Uganda comes from the 2006 Demographic and Health Survey. According to this survey, 16% of households nationwide owned one or more insecticide-treated nets (ITNs) and 10% of pregnant women and children under five had slept under an ITN the night before the survey. The proportion of children under five treated with an antimalarial drug within 24 hours of onset of fever was 29%. Only 1% of patients received artemisinin-based combination therapy (ACT), but it should be noted that this survey was completed prior to the introduction of ACTs in Uganda. The proportion of women receiving two doses of intermittent preventive treatment in pregnancy (IPTp) was 16%. A Malaria Indicator Survey (MIS), planned for late 2009, will provide updated information on progress towards PMI and National Malaria Control Program (NMCP) targets.

PMI and the Global Fund to Fight AIDS, Tuberculosis, and Malaria (Global Fund) are the main contributors to malaria control in Uganda, with a range of additional support from other donors. Uganda completed Phase I of a \$66 million Global Fund Round 4 grant that provided nationwide supplies of ACTs. The Global Fund Round 4 Phase II grant (\$71 million, signed in 2008) will provide adequate supplies of ACTs nationwide through 2011, and the Round 7 Phase I grant (\$51 million, also signed in 2008) will provide 17.7 million long-lasting ITNs (LLINs) to protect the most vulnerable populations.

Unfortunately, Uganda has fallen behind its neighbors in its efforts to control malaria. Bottlenecks in Global Fund procurements have repeatedly disrupted supplies of antimalarial commodities. To date, no ACTs or LLINs have been procured through Round 4 Phase II or Round 7 Phase I grants. In the past four years, Uganda has had three stock outs of artemether-lumefantrine, its first-line drug for the treatment of malaria. Even when drugs are procured, a weak pharmaceutical management system has created surpluses and/or stock outs at the facility level.

PMI/Uganda's FY 2010 Malaria Operational Plan, developed in close collaboration with NMCP and other major partners during a planning visit carried out in June 2009, considers and tries to address many of these challenges. The FY 2010 planned activities are as follows:

### **Indoor Residual Spraying (IRS) and Vector Control**

PMI has supported IRS in Uganda since 2006. The program has grown each year, spraying one district in 2006 and scaling up to six districts in 2008. To date, over 800,000 houses have been sprayed and nearly three million people protected from malaria in eight districts (two epidemic-

prone southwestern districts and six highly endemic northern districts). Acceptance of IRS has remained consistently high with more than 85% coverage.

With FY 2010 funding, PMI will continue to support IRS, focusing its resources on the six northern districts of Kitgum, Pader, Apac, Oyam, Gulu, and Amuru, all of which have the highest malaria transmission rates in Uganda. PMI will monitor vector resistance and potential environmental impacts of IRS, and increase support to build the capacity within the Ministry of Health (MOH) to conduct and monitor IRS. With FY 2010 funds, approximately 700,000 houses will be sprayed in the six districts and more than 2.6 million people protected.

### **Insecticide-treated Nets**

Since 2006, PMI has procured and distributed nearly two million LLINs, mainly to pregnant mothers and children under five years of age through mass campaigns, antenatal care clinics, non-governmental organizations, and civil society organizations. The national policy on LLINs recently changed from targeting vulnerable populations to universal coverage (defined in Uganda as one net per two persons). Although Uganda's Global Fund Round 7 grant will provide 17.7 million LLINs to achieve universal coverage, the first shipment of 7.2 million Global Fund nets, expected to arrive in early 2010, will be distributed to 75% of children under five and pregnant women nationwide. PMI will cover the remainder of the vulnerable population and provide support for the logistics of the nationwide campaign. To achieve universal coverage, the Global Fund will support a second procurement of 10.5 million LLINs anticipated to arrive over the next three years, providing enough nets to achieve universal coverage.

Using FY 2010 funds, PMI will procure and distribute approximately 1 million LLINs through antenatal care (ANC) clinics in the year following the mass campaign to retain high net ownership. To ensure proper net usage, PMI will use mass media and community mobilization strategies to increase knowledge and promote proper and consistent use of LLINs. Through these efforts, household ownership of ITNs is expected to increase to at least 85%.

### **Intermittent Preventive Treatment of Pregnant Women**

To increase the proportion of pregnant women receiving two doses of IPTp, PMI developed and distributed malaria in pregnancy wall charts and gestational wheels to 3,000 health centers as job-aids. Nearly 1,700 health workers were trained in IPTp and received regular supportive supervision. PMI also provided cups and drinking water to ensure that directly observed treatment of IPTp dosing was possible in nine northern Uganda districts and 13 central districts.

With FY 2010 funding, PMI will work with the MOH to revise their IPTp policy to monthly treatment with sulfadoxine-pyrimethamine (SP), and provide supportive supervision to ANC workers. PMI will also continue to provide safe water and drinking cups so that women can take their treatments under direct observation at both public and private ANC clinics. PMI also plans to support an evaluation of the efficacy and effectiveness of SP for IPTp in Uganda. As a result of these efforts, the percentage of pregnant women receiving two doses of SP is expected to increase to 60% in 2011.

## **Case Management**

PMI has invested in training, supervision of health workers, logistic support for home-based management of fever (HBMF), and ACT procurement and quality testing to improve malaria case management. Training on malaria case management, including severe malaria, and the provision of supportive supervision was provided to over 10,000 health workers, including almost 3,000 workers from the private sector. Three-hundred and fifty health workers in northern Uganda received training on logistics management, and over 5,300 ACT charts were distributed. To improve malaria diagnostics, PMI has supported laboratory training of 630 health workers. In northern Uganda, PMI provided 11,831 HBMF kits and 1,200 registers for community medicine distributors. In addition, PMI provided technical assistance to the NMCP, National Medical Store, and National Drug Authority on pharmaceutical management, quality control, and logistics. PMI has twice responded to stock outs of ACTs through emergency procurements.

The Global Fund Round 4 grant is expected to provide sufficient ACTs through 2011. Therefore, with PMI FY 2010 funds, PMI will help support antimalarial drug distribution to health facilities from the district level, where needed. PMI, together with the USAID/Uganda health sector, will help rebuild the national pharmaceutical supply chain system by strengthening performance and financial management, clarifying pharmaceutical policy, and establishing a transparent logistics management information system. To improve diagnostic capacity, PMI will continue to support training in microscopy and rapid diagnostic tests. Finally, PMI will work to expand access to ACTs by working with the private sector to appropriately diagnose malaria and prescribe ACTs. At the end of Year 5, PMI expects that 60% of children under five with fever will receive antimalarial drugs within 24 hours of developing fever.

## **Epidemic Response and Surveillance**

Fifteen of Uganda's 81 districts are prone to malaria epidemics. With funding from PMI, the World Health Organization has developed malaria-specific guidelines and algorithms to detect and respond to potential malaria epidemics. Specifically, health centers in four districts have been trained to establish facility-specific malaria thresholds and analyze case data to allow for a rapid response to any outbreaks.

In FY 2010, PMI will continue its support to the World Health Organization to strengthen the NMCP's ability to detect and respond to epidemics in the 15 epidemic-prone districts in Uganda. PMI funding will support continued training and development of the epidemic surveillance and response system for malaria through the NMCP and district health teams.

## **Monitoring and Evaluation (M&E)**

PMI continues to support monitoring and evaluation to measure the progress of malaria control in Uganda and enable decision-makers to utilize these data. Currently, nine sentinel sites are active in collecting data on malaria morbidity and mortality and distribute such data to the NMCP and implementing partners on a monthly basis. Although a combined AIDS/Malaria Indicator Survey was scheduled for 2008, operational disagreements delayed the survey for over a year. The Ministry of Health recently agreed to implementation of a stand-alone MIS, and data from the 2009 Malaria Indicator Survey will be available in 2010. In FY 2010, PMI will contribute to the 2011

Demographic Health Survey (including a verbal autopsy study), improved data collection and analysis of sentinel sites, and continued strengthening of the NMCP M&E unit. PMI's M&E plan is coordinated with the NMCP, Global Fund, and other partners.

### **Budget Summary**

The proposed FY 2010 PMI budget for Uganda is \$35 million, distributed as follows: 42% for IRS and entomological/environmental monitoring, 23% for the procurement and distribution of ITNs, 4% for IPTp, 16% for improved malaria diagnosis and support to ACT distribution and the supply chain management system, 6% for M&E, 6% for administration, and 3% for capacity building and private sector support. Approximately 35% of the total budget will be spent on commodities.

## **INTRODUCTION**

### **President's Malaria Initiative**

In June 2005, the United States Government (USG) announced a five-year, \$1.2 billion initiative to rapidly scale up malaria prevention and treatment interventions in high-burden countries in sub-Saharan Africa. The goal of this initiative is to reduce malaria-related mortality by 50% by the end of the program's implementation. This will be achieved by reaching 85% coverage of the most vulnerable groups – children under five years of age and pregnant women – with proven therapeutic and preventive interventions, including artemisinin-based combination therapies (ACTs), intermittent preventive treatment for malaria in pregnancy (IPTp), indoor residual spraying (IRS), and long-lasting insecticide-treated nets (LLINs).

The President's Malaria Initiative (PMI) began in three countries (Angola, Tanzania, and Uganda) in 2006. In 2007, four countries (Malawi, Mozambique, Senegal, and Rwanda) were added. In 2008, PMI expanded to eight additional countries (Benin, Ethiopia (Oromia Region), Ghana, Kenya, Liberia, Madagascar, Mali, and Zambia) to reach a total of 15 countries. Funding began with \$30 million in Fiscal Year (FY) 2006 for the initial three countries; it increased to \$160 million in FY 2007 and \$300 million in FYs 2008 and 2009. Funding is anticipated to reach \$500 million in FY 2010 for all 15 countries.

In implementing this initiative, USG is committed to working closely with host governments and within existing national malaria control strategies and plans. Efforts are coordinated with other national and international partners, including the Global Fund to Fight AIDS, Tuberculosis, and Malaria (Global Fund), Roll Back Malaria (RBM), the United Nations Children's Fund (UNICEF), World Health Organization (WHO), and non-governmental and private sector organizations to ensure that investments are complementary and RBM and Millennium Development Goals can be achieved.

This annual operational plan for FY 2010 was developed in collaboration with the Government of Uganda (GOU) and other stakeholders and presents a detailed implementation plan for the fifth year of PMI in Uganda. It briefly reviews the status of malaria control policies and existing interventions supported by all partners in Uganda, identifies challenges and unmet needs to reach the targets of PMI, and provides a detailed description of proposed Year 5 PMI activities. The total amount requested for PMI in Uganda for FY 2010 is \$35 million.

## **BACKGROUND**

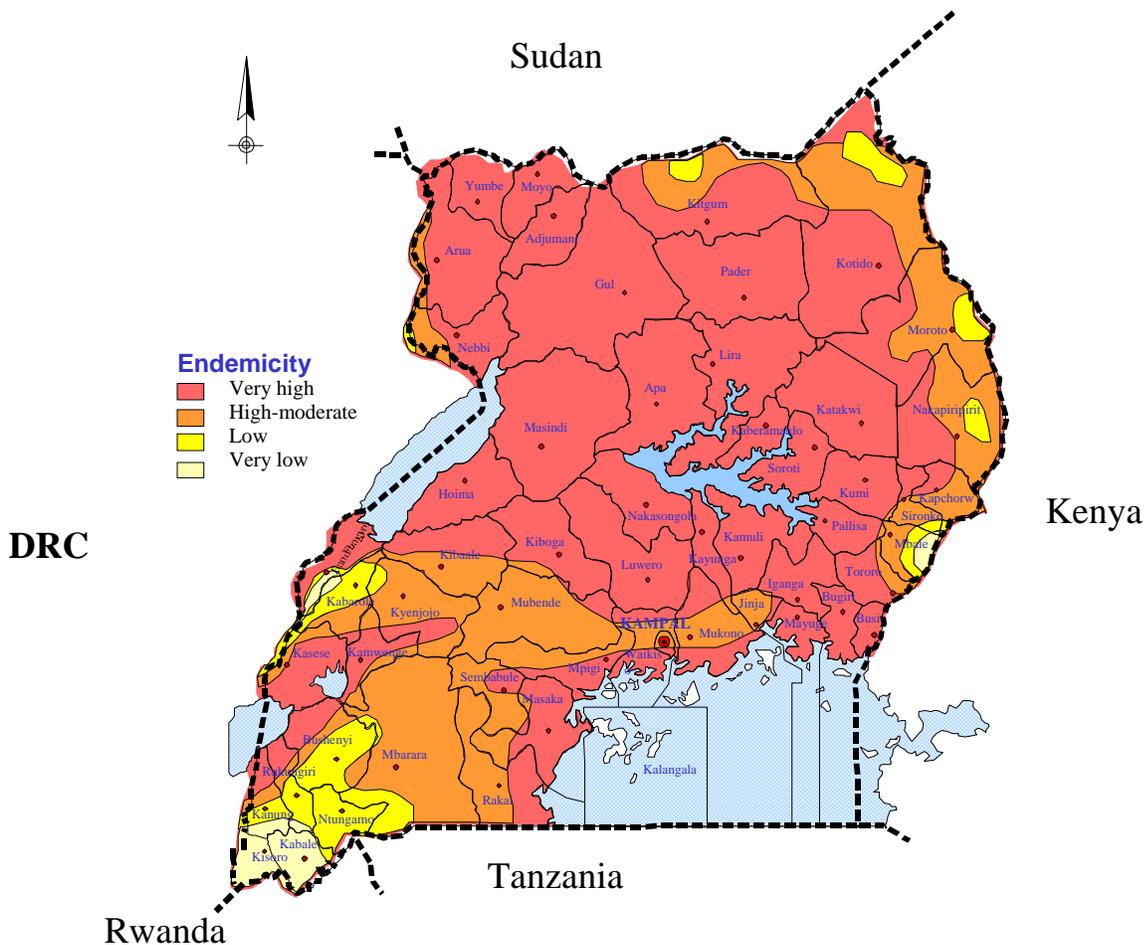
### **Malaria Situation in Uganda**

In Uganda, malaria is the most commonly reported disease by both public and private health facilities. Clinically-diagnosed malaria is the leading cause of morbidity and mortality, accounting for 25-40% of outpatient visits at health facilities, 15-20% of all hospital admissions, and 9-14% of all hospital deaths. Nearly half of in-patient deaths among children under five years of age are attributed to clinical malaria. A significant percentage of deaths occur at home and are not reported by the facility-based Health Management Information System (HMIS). The current estimated

annual number of deaths from malaria ranges from 70,000 to 110,000 (Uganda Malaria Control Strategic Plan 2005/6-2009/10).

In most parts of Uganda, temperature and rainfall allow stable, year round (perennial) malaria transmission at high levels with relatively little seasonal variability. Malaria is highly endemic in 95% of the country, covering approximately 90% of the population of 29.4 million. The remaining 5% of the country consists of unstable and epidemic-prone malaria transmission areas in the highlands of the south- and mid-west, along the eastern border of Kenya, and the northeastern border of Sudan. In some areas of northern Uganda, the entomological inoculation rates (infective biting rates) are among the highest in the world.

### MALARIA ENDEMICITY IN UGANDA



The most common malaria vectors in Uganda are *Anopheles gambiae s.l.* and *A. funestus*, with *A. gambiae* being the dominant species in most places. *A. funestus* are generally found at higher altitudes and during the short dry seasons (September through November), when permanent water bodies are the most common breeding sites. In some areas of Northern Uganda, such as Apac and Oyam, *A. funestus* is the most common vector. *Anopheles gambiae s.l.* and *A. funestus* feed and rest indoors, making ITNs and IRS viable vector control strategies in Uganda.

*Plasmodium falciparum* is responsible for 90-98% of malaria cases. *P. malariae*, accounts for 1-3% of cases as a mono-infection but is more commonly found as a mixed infection with *P. falciparum* (up to 16% of childhood infections in highly endemic areas). Both *P. vivax* and *P. ovale* are rare and do not exceed 1-1.5% of malaria cases in Uganda.

## **Major Partners in Malaria Control**

PMI and its implementing partners follow the RBM Strategic Plan and the “three ones” principle: one coordinating mechanism, one plan, and one monitoring and evaluation (M&E) system. The Health Policy Advisory Committee (HPAC) – chaired by the Permanent Secretary of the Ministry of Health (MOH), and whose membership includes representatives from all MOH programs, health donor partners, and civil society – is the main consultative policy-making body in health (including malaria). Decisions from this group are sent to the Senior Management Committee and the Top Management Team, chaired by the Minister of Health, for approval. Technical working groups report directly to HPAC. Malaria is part of the Communicable Diseases Committee under the Basic Care Package Working Group, however, this Committee meets infrequently.

Since 2000, the Sector Wide Approach has served as one of the coordinating mechanisms for development partners, and includes both project and direct budget support via contributions through the Ministry of Finance. Most development partners, including the United Kingdom Department for International Development (DFID), World Bank, the Danish International Development Agency, the Swedish International Development Coordination Agency, Irish Aid, the United Nations Children’s Fund (UNICEF), WHO, Norwegian Agency for Development Cooperation, Italian Development Cooperation, Japanese International Cooperation Agency (JICA), and the African Development Bank, channel a large portion, if not all of their aid, into budget support. The United States Agency for International Development (USAID) and the USG continue to provide project support rather than direct budget support.

Several joint coordination, review, and monitoring structures and mechanisms are in place including the Technical Working Groups, Health Donor Partners Group, HPAC, Senior Management Committee, and Top Management Team. There are joint district monitoring/supervisory visits, joint review missions for evaluation purposes on certain indicators, and bi-annual National Health Assemblies. The government and partners jointly agree on sector priorities, performance targets and the budget framework. Funds are disbursed by the Ministry of Finance, Planning, and Economic Development to the MOH and districts for implementation of agreed-upon work plans. While there are many different groups and committees, the malaria community is still quite fragmented and there is poor coordination of malaria partners.

Although quarterly meetings between the NMCP and implementing partners have been infrequent over the past six months due primarily to a gap between PMI implementing partners, PMI is again supporting coordination of such meetings through a new partner. PMI also continues to support coordination of malaria-related activities among NGOs in Uganda. For example, PMI supports an annual workshop for NGOs involved in malaria activities, coordinated through the Malaria and Childhood Illness NGO Secretariat. The workshop provides a platform for all malaria stakeholders to share ideas and collaborate on malaria-related activities. This year, more than 180 people participated, including representatives from the MOH and NMCP, district health officials,

multilateral and bilateral development partners, national and international NGOs, CBOs, research organizations, and the media.

The Global Fund remains a major partner in and external source of financing for malaria control in Uganda. In funding Rounds 2, 4 and 7, grants amounting to \$212,100,635 over five years were awarded to Uganda for malaria control. The Round 2 Phase 1 Global Fund grant for \$23 million contributed to scaling up of home-based management of fever (HBMF) to all districts in the country, organization of a first round of subsidized ITN distribution to children under five and pregnant women through a voucher scheme and free net re-treatment, and start up of an IRS program in eleven epidemic-prone districts (primarily the southwest). The HBMF program began in Uganda in 2002 and 19 of the 77 districts had implemented HBMF using chloroquine and sulfadoxine-pyrimethamine at the time the Round 2 proposal was submitted. As of February 2008, more than \$21 million had been dispersed under Round 2 Phase 1, and results included nationwide implementation of HBMF and distribution of over 980,000 net retreatment kits. However, only 1% of the targeted population was covered by IRS, and no nets were distributed through the voucher scheme.<sup>1</sup> Due to poor performance under Round 2 Phase 1, the request for Phase 2 funding was not approved.

Global Fund grant Round 4 Phase 1 (\$66 million) was completed in February 2008. Over 19 million treatments of ACT were procured and distributed and all districts received training in the use of ACT, supply chain management, and pharmacovigilance. In addition, six districts piloted the use of rapid diagnostic tests (RDTs) and over 1,000 community medicine distributors (CMDs) were trained in the use of ACTs for HBMF.<sup>2</sup> Global Fund grant Round 4 Phase 2 is \$71 million, of which \$37 million is for procurement of ACTs. This supply should cover the public sector in its entirety (including the HBMF program) until 2011 and 7.5% (6 of 81 districts) of the private sector. This grant also provides RDTs and training of health workers in RDT use in 21 districts. Round 4 funds were anticipated to arrive in mid-2008. The administration of this grant has been delayed and, to date, no ACTs have been procured.

A proposal for \$125 million for Round 7 was submitted and approved in 2007 and signed in August 2008, with a request to purchase 17.7 million LLINs over five years. The disbursement of funds from Round 7, however, is still pending. Fortunately, significant progress in removing blockages has been made over the past quarter, and the GOU submitted a distribution plan for Phase 1 to provide 7.2 million nets to cover 75% of the target population. As soon as the first batch of LLINs arrive and are distributed in Uganda, the GOU hopes to reprogram Phase 2 funds to provide the remaining 10.5 million nets. Uganda recently submitted a proposal for Round 9 that includes a massive expansion of IRS and additional purchasing of ACTs and RDTs.

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<sup>1</sup> Grant Performance Report for Uganda UGD-202-G02-M-00, August 21, 2007. The Global Fund. [http://www.theglobalfund.org/grantdocuments/2UGDM\\_287\\_218\\_gpr.pdf](http://www.theglobalfund.org/grantdocuments/2UGDM_287_218_gpr.pdf)

<sup>2</sup> Grant Performance Report for Uganda UGD-405-G05-M, March 13, 2008. The Global Fund. [http://www.theglobalfund.org/grantdocuments/4UGDM\\_828\\_370\\_gpr.pdf](http://www.theglobalfund.org/grantdocuments/4UGDM_828_370_gpr.pdf)

# UGANDA NATIONAL MALARIA CONTROL PLAN AND STRATEGY

## Uganda Malaria Control Strategic Plan 2009/10 – 2014/15

The Uganda National Malaria Control Strategic Plan is based on the principles and aims of the global RBM partnership, the Abuja Declaration, and the Millennium Development Goals and serves as a framework for a broad partnership between the MOH, line ministries, civil societies, non-governmental organizations, development partners and the private sector in order to achieve the set objectives and targets. The Plan complements the broader five-year Health Sector Strategic Plan, which features malaria as a high priority health and poverty issue. The Strategic Plan was amended this year to reflect changes in vector control policy (mainly universal coverage of LLINs). A new Strategic Plan is currently being drafted to cover the period 2010/11 to 2014/15. Through implementation of this draft plan, the NMCP's goals are to eliminate malaria as the major cause of illness and death in Uganda, ensure families received universal access to malaria prevention and treatment, and reduce all-cause mortality rate for children under five years of age.

To accomplish these goals, the major core interventions and their specific objectives, as articulated in the Plan, include:

### 1. Prevention (Vector Control)

- Achieve scale up and sustain universal coverage with long-lasting insecticide-treated nets (LLINs) with more than 80% usage.
- Establish and sustain high quality IRS services that will that cover, at least annually, no less than 85% of all targeted structures, in epidemic-prone areas and others.

### 2. Case Management

- Ensure universal access to ACTs including those accessing treatment through the private sector.
- Enhance the prompt treatment of children under five within 24 hours of fever onset through the provision of home-based management of malaria fever using ACT.
- Reduce the case fatality of severe malaria by establishing a system to provide highly effective pre-referral treatment (e.g. rectal artesunate) and improve the management capacity for severe malaria at health facilities and hospitals.
- Increase the proportion of malaria cases confirmed by high quality clinical and parasitological diagnosis guided by feasibility and cost effectiveness.

### 3. Malaria in Pregnancy

- Provide access to all pregnant women attending ANC to at least two doses of IPTp
- Emphasize the prevention of malaria with ITNs among pregnant women by including distribution mechanisms suitable for this target group and promote the regular and correct use of the nets.

### 4. Malaria Epidemics

- Strengthen the system of prediction, early detection, and prompt response in epidemic prone areas.

## 5. Advocacy, Information, Education and Communication (IEC) and Social Mobilization

- Raise the profile of and demand for malaria control interventions through targeted, well-designed advocacy and communication campaigns and activities with special emphasis on the biologically and economically vulnerable.
- Support active community participation in malaria control activities.

## 6. Health Systems

- Strengthen the leadership role of the NMCP to promote partnership and coordination for malaria control at all levels of the health system.
- Contribute to the strengthening of a decentralized health system that can deliver quality services and effectively manage supplies.
- Strengthen the role of RBM partnerships in malaria control activities.
- Strengthen capacity of regulatory bodies such as National Drug Authority (NDA) and the National Bureau of Standards to monitor the quality of malaria medicines, supplies and commodities used for malaria control.

## 7. Monitoring & Evaluation and Research

- Strengthen data and information management within the NMCP for decision making.
- Strengthen coordination of national malaria research priorities.

Uganda has several policy and strategy documents that support this Strategic Plan including the following: Malaria in Pregnancy Control (2000); Home-Based Management of Fever (2005); Policy and Strategy for Insecticide-treated Nets (2006); The Use of ACTs at the Community Level Implementation Guidelines for the HBMF Strategy, 2nd ed. (2006); Management of Uncomplicated Malaria, a Practical Guide for Health Workers, 3<sup>rd</sup> ed., (2005); the Policy and Strategy for Indoor Residual Spraying (2006); as well as the National Malaria Prevention and Control Monitoring and Evaluation Plan 2008-2010 and the new draft National Malaria Control and Prevention Policy and Guidelines (which cover all aspects of malaria control and prevention).

## **Overview of the Health System**

The formal health system in Uganda is stratified into the following categories: hospitals (national, regional referral, and district levels), health centers (HCs) IV (health sub-district level), HCs III (sub-county level), and HCs II (parish level). Although not physical structures, HCs I are recognized as the community level system where volunteers provide health services as part of village health teams.

Due to decentralization, districts are directly responsible for the delivery of health services and the implementation of health programs. In each district, the District Health Officer (formerly called the Director of Health Services) oversees all facilities in the district, including those operated by not-for-profit organizations (mainly faith-based organizations) and the private sector. The district makes its own health plans and budgets and receives financial support through a variety of mechanisms directly from the Ministry of Finance, Planning and Economic Development. The role of the MOH, therefore, is policy development, strategic planning and orientation, technical support, guidance and supervision, monitoring and evaluation (M&E), quality assurance, and interventions in case of epidemics and emergencies.

Health care is also available through more informal channels that are not under the purview of the MOH. Private for-profit pharmacies and drug shops play a significant role in the delivery of health services. The traditional and complementary medicine practitioners are also an active segment of the health system and their importance varies regionally and with respect to the diseases they treat. According to a 2005 USAID study, there are an estimated 4,639 health facilities in Uganda, of which 46% are private, for-profit facilities. An estimated 12,775 staff are employed in the private, for-profit sector and 54% of doctors working in the private sector also work in the public sector. Interestingly, unlike doctors, 90% of nurses, midwives, and nursing aides who work in the private sector work exclusively in that sector.<sup>3</sup>

The Service Provision Assessment (SPA) of 2007, a nationwide survey of health care services, found that: (1) health facilities in Uganda are struggling--fewer than 10% of facilities have regular water and electricity supplies and only half provide a full package of basic services (outpatient care, sexually transmitted infections, family planning, antenatal care, immunization and child growth monitoring); (2) while all facilities offer malaria treatment services, laboratory diagnostic capacity is available in only one quarter of health facilities (mostly hospitals and HCs IV); (3) first-line antimalarials were available in 8 out of 10 facilities; (4) 75% of facilities had ITNs, but only a small proportion of ANC health care workers were seen offering these to ANC clients; and (5) all children diagnosed with malaria received an antimalarial, but only 70% received a first-line antimalarial (artemether/lumefantrine or artesunate plus amodiaquine).<sup>4</sup>

## CURRENT STATUS OF MALARIA INDICATORS

The 2006 Demographic and Health Survey (DHS) provides the most up-to-date information on the status of malaria control efforts. At the time the survey was conducted (April - August 2006), ACT implementation had only just begun and IRS was not yet being used for malaria control in Uganda. Consequently, this survey does not provide information on these indicators. A combined AIDS/Malaria Indicator Survey (MIS) was initially scheduled for November 2008. Due to disagreement over the survey population, costs of logistics, and funding shortfalls, however, it was delayed for over a year. This past quarter (last quarter FY08), the Permanent Secretary of the Ministry of Health agreed to separate the AIDS Indicator Survey from the MIS, and the MIS is now scheduled for November 2009. The MIS should provide a more accurate description of the status of malaria indicators, including parasite prevalence, in Uganda.

### Baseline Malaria Indicators

Indicator	Baseline (2006 DHS) <sup>5</sup>
Percentage of households that own at least one ITN	16%
Proportion of children under five years of age sleeping under an ITN the previous night	10 %

<sup>3</sup> Mandelli, Andrea, Lennie Bazira Kyomuhangi, and Susan Scribner. September 2005. *Survey of Private Health Facilities in Uganda*. Bethesda, MD: The Partners for Health Reformplus Project, Abt Associates Inc.

<sup>4</sup> Ministry of Health (MOH) [Uganda] and Macro International Inc. 2008. *Uganda Service Provision Assessment Survey 2007*. Kampala, Uganda: Ministry of Health and Macro International Inc.

<sup>5</sup> Uganda Demographic Health Survey, 2006.

Proportion of pregnant women sleeping under an ITN the previous night	10%
Percentage of houses targeted for IRS that have been sprayed	N/A
Proportion of pregnant women who receive at least two doses of IPTp during antenatal care	16%
Percentage of districts nationwide where malaria treatment with ACTs is implemented in health facilities	0%

## **GOALS AND TARGETS OF THE PRESIDENT’S MALARIA INITIATIVE**

The goal of PMI is to reduce malaria-related mortality by 50% by the end of implementation of FY 2010 programs. Results are based on the projection that all development partners in Uganda (Global Fund, UNICEF, WHO, DFID, JICA etc.) are able to fully contribute to the plan. By the end of 2010, PMI will assist Uganda in achieving the following targets among at-risk populations for malaria:

1. 85% of households will own at least one ITN;
2. 85% of households with a pregnant woman and/or children under five will own at least one ITN;
3. 85% of children under five will have slept under an ITN the previous night;
4. 85% of pregnant women will have slept under an ITN the previous night;
5. 60% of children under five with suspected malaria have received treatment with an antimalarial drug in accordance with national malaria treatment policies within 24 hours of the onset of their symptoms;
6. 60% of pregnant women will have received two or more doses of IPT during their pregnancies;
7. 85% of houses targeted for IRS will have been sprayed; and
8. 85% of pregnant women and children under five will have slept under an ITN the previous night or in a house that has been sprayed with IRS in the last six months.

## **EXPECTED RESULTS – YEAR FIVE**

### Prevention:

- Through PMI, approximately 1.1 million LLINs will be procured and distributed nationally to pregnant women through ANC clinics and NGOs/CBOs; this effort, combined with 17.7 million LLINs programmed from Global Fund Round 7, would increase national household ownership of ITNs from 16% to about 85%.
- Support for a mass media and community-based IEC/behavior change communication (BCC) campaign to promote bed net usage will continue; this effort, together with the increase in ITN ownership, is expected to raise the percentage of children under five and pregnant women who have slept under a net from about 10% to 85%.
- At least 85% of houses in geographic areas targeted for IRS (approximately 700,000 houses in six districts) during Year 5 will be sprayed and at least 85% of people living in those areas will be protected.

- Focused antenatal care (FANC) will be strengthened to increase the proportion of women receiving two or more doses of IPTp from 16% to 60%. IPTp services will be expanded by integrating them into prevention of mother-to-child transmission of HIV (PMTCT) services in both public and private sector facilities.

#### Case Management:

- PMI will continue to support the use of ACTs in health facilities with improved diagnostics, supportive supervision, and capacity development of the National Medical Stores (NMS) for better forecasting, quantification, distribution, and quality assurance. If problems related to procurement of ACTs can be resolved, all ACT needs are anticipated to be met by Global Fund. These efforts are expected to increase the number of health facilities using ACTs to 100% nationwide.

#### Other:

- A nationwide IEC/BCC campaign, through mass media and community outreach through the VHT system, will be conducted to support year round usage of LLINs/ITNs, indoor residual spraying, attendance at ANC clinics to receive at least two treatment doses of sulfadoxine-pyrimethamine (SP) for IPTp, and increased prompt treatment-seeking behavior, including definitive diagnosis.

## **INTERVENTION - PREVENTION**

### **Indoor Residual Spraying**

#### Background

The Uganda National Malaria Control Strategic Plan recognizes IRS as one of the major malaria prevention and control interventions. The NMCP's policy and strategy for IRS emphasizes use of IRS in epidemic-prone areas, high transmission settings, and high-risk situations, such as internally displaced persons camps and refugee settings. Prior to PMI, the NMCP had not conducted large-scale spray campaigns since the 1960s. The NMCP Strategic Plan of 2005-2009 aimed to target 15 epidemic-prone districts, and the current draft Plan aims to target an additional 24 highly endemic districts.

Implementation of IRS in Uganda has and continues to face three major challenges. First, malaria transmission is intense and perennial in nearly every region of Uganda. Interrupting transmission when conditions are suitable up to 10 months of the year may require more than one round of spraying per year, or the use of DDT, which has a longer residual action than most insecticides<sup>6</sup>. Use of DDT in the Lango region (including Apac and Oyam), however, was banned in 2008 by a court injunction launched by organic farmers. Although the court injunction was recently lifted, an appeal has been filed in the constitutional court.

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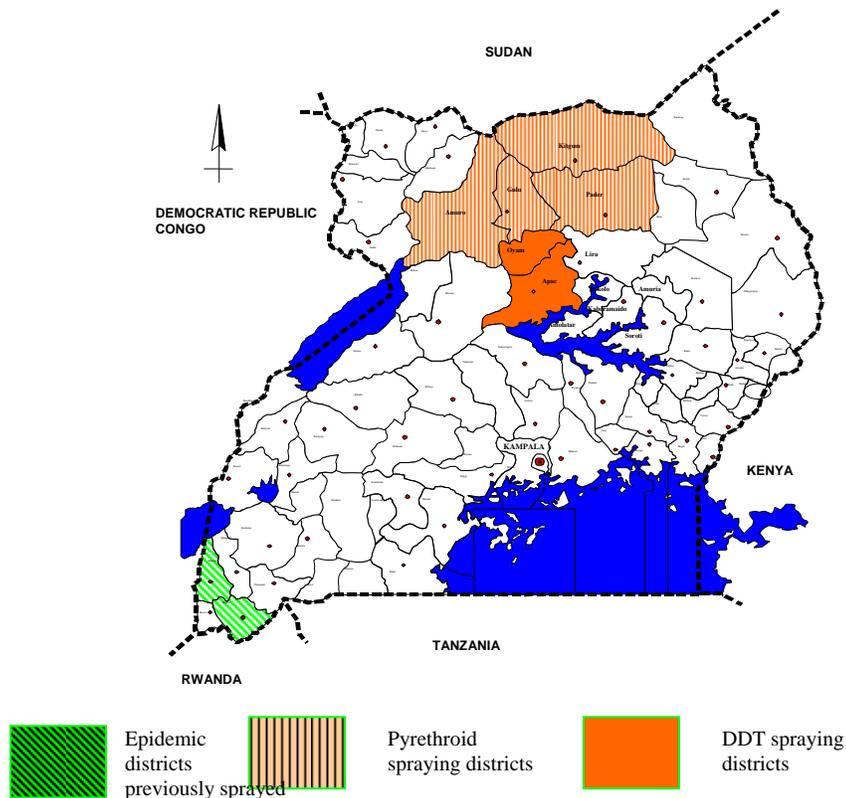
<sup>6</sup> According to WHOPEs, the residual efficacy of DDT is greater than six months, whereas the residual efficacy of all other WHOPEs-recommended insecticides is up to six months.

Second, vector resistance to insecticides is recognized in Uganda and is creating a challenging environment for the overall vector control program. Both pre- and post-IRS resistance monitoring in Apac and Oyam districts in 2007/2008 indicated low to moderately high levels of DDT and pyrethroid resistance. Unfortunately, entomologic surveillance, including insecticide susceptibility, has not been routinely performed in Uganda and results to date have been inconsistent.

Third, the NMCP has limited capacity to oversee and coordinate large-scale IRS operations. Oversight and coordination of IRS are critically important to ensure and standardize high-quality and safe IRS operations among all implementers, including PMI implementing partners, NGOs (two or three began spraying in eastern districts of Uganda last year), and potential Global Fund partners.

Despite these challenges, the NMCP continues to pursue a scale up of the IRS program in Uganda, as evidenced by both the draft Strategic Plan and inclusion of IRS in the Global Fund Round 9 proposal. PMI will continue to support the NMCP in promotion of IRS as a major vector control strategy, yet will do so at a pace that takes into account the operational challenges and requirements necessary to ensure safe and high-quality spraying.

### Map showing IRS districts



### Progress to Date

The first ever large-scale pilot IRS campaign was introduced in the epidemic-prone highland district of Kabale in 2006 with PMI support. The following year, PMI supported selective spraying in Kabale and the neighboring district of Kanungu, targeting only high-risk sub-counties, and blanket spraying in the northern Ugandan districts of Kitgum, Pader, Amuru, and Gulu, all highly endemic districts with large populations of internally displaced persons. In 2008, the NMCP, using PMI-procured insecticides, conducted subsequent rounds of IRS in epidemic-prone sub-districts of Kabale and Kanungu. PMI supported a second round of spraying in Kitgum and Pader from June to August, protecting over 1 million residents with pyrethroids.

In addition, a pilot spray campaign with DDT was conducted in Apac and Oyam districts. Although there was widespread public acceptance of IRS with DDT in these districts, as evidenced by approximately 93% coverage resulting in the protection of over 638,000 residents, there was also strong vocal opposition (predominantly from organic farmers). The court injunction precluding the use of DDT occurred near the end of the IRS operations in Apac and Oyam. It is expected that multiple rounds of IRS will be required to demonstrate a reduction in the burden of malaria in Apac and Oyam, as these districts have some of the highest entomological inoculation rates in the world.

After consultation with the NMCP, PMI scaled back support of IRS in Kabale and Kanungu and decided to focus resources on the highest transmission areas as opposed to low-transmission, epidemic-prone districts. However, with PMI-procured insecticide, the MOH carried out an additional round of IRS in sub-districts of Kabale and Kanungu.

In 2009, PMI is supporting IRS in Kitgum and Pader (fourth round), and Apac, Oyam, Amuru and Gulu (second round). In order to best inform the NMCP's vector control program, PMI is supporting insecticide resistance monitoring in six different eco-epidemiological zones across Uganda. To develop Uganda's capacity to expand and sustain IRS operations, PMI is investing in capacity development to provide appropriate supervision and oversight of IRS activities, including technical quality, entomological and environmental monitoring, and accountability. Current IRS operations are managed by a USAID implementing partner with some technical support from the NMCP, National Environmental Management Authority, and district governments. Before other donor funds (e.g., Global Fund) can be effectively utilized to expand IRS, however, the Government of Uganda must have the capacity to oversee these operations, as well as NGO and other private sector operations. The initial phase of this activity is targeting district health officers, environmental officers, vector control officers, and NMCP staff with focused, integrated training on IRS oversight issues.

Massive community sensitization and education drives are conducted before, during, and after house spraying in each spray round. These include district leader sensitizations, sub-county leader awareness programs, parish level community meetings, cinema programs, radio announcements, spots(?) and radio talk shows. In addition, "Frequently Asked Questions" facts sheets on IRS for spray personnel and community leaders are distributed. PMI is currently supporting development of a toolkit and guidance document, including a video on IRS for community education and sensitization.

Proposed PMI FY 2010 activities: (\$14,837,500)

PMI will prioritize spraying in areas of highest transmission and in areas that have been previously sprayed to maintain coverage. PMI will continue supporting the NMCP to implement biannual IRS in six districts, covering approximately 700,000 houses and protecting more than 2.6 million residents.

A detailed spraying schedule through May 2012 is provided below:

District	Spray Date	Total Cost* (in Millions)	Spray Date	Total Cost* (in Millions)	Spray Date	Total Cost* (in Millions)
Kitgum	Nov-Dec 10	\$1.6	June-July 11	\$1.3	Nov-Dec 11	\$1.3
Pader	Nov-Dec 10		June-July 11		Nov-Dec 11	
Apac	Dec 10-Feb 11	\$1.9	Aug-Sept 11	\$1.9	Dec 11-Feb 12	beyond FY 2010 funding
Oyam	Dec 10-Feb 11		Aug-Sept 11		Dec 11-Feb 12	
Amuru	Apr-May 11	\$1.4	Oct-Nov 11	\$1.4	Apr-May 12	
Gulu	Apr-May 11	\$1.6	Oct-Nov 11	\$1.6	Apr-May 12	

\*All costs are approximates, based on expenditures in previous rounds of IRS.

PMI support will include purchasing insecticide, spray pumps, spare parts, and personal protective equipment, and renting vehicles and storage facilities. The NMCP has requested assistance for IRS planning, personnel management, environmental and human health safety and logistics management, including forecasting and procurement of insecticide, on-the-job training of spray personnel, and mapping and stratification of areas for IRS. PMI will support these efforts as well. The NMCP has also requested support for developing capacity and coordination for NGOs/private sector organizations (PILGRIM- Katwaki district; Plan International- Luwero district; World Vision- South-Western; MSF- Holland- Northern districts and; Eco-Nation- Kasese district) that are currently engaged in small- to medium-sized and scattered spraying campaigns.

With assistance from PMI, the NMCP, with the Vector Control Division (VCD), intends to scale up entomological surveillance in line with recommendations from the “National Policy Guidelines for Malaria Entomology Surveillance.” Because IRS and LLINs are priority vector control interventions for the MOH, the NMCP intends to conduct routine entomologic surveillance to both quantify the extent of vector resistance and measure the impact of vector control strategies. The NMCP is also considering rotating insecticides to slow the development of resistance.

Planned activities with FY 2010 funds are as follows:

- **Support for IRS in northern Uganda districts:** PMI will support IRS for 18 months in IDP camps, urban areas, and newly settled villages in Pader, Kitgum, Gulu, Amuru, Apac, and Oyam Districts. The cost for IRS includes all components of IRS: procurement of insecticides, spray pumps, and other logistics required for spray operation; the necessary environmental assessments; monitoring; and IEC/BCC activities specific to IRS (\$14,000,000);

- **Entomologic surveillance and monitoring:** PMI will continue building local entomological capacity by assisting the NMCP/VCD at the central level. The VCD will be supported to conduct comprehensive vector surveillance and assess resistance and other indicators of IRS impact including vector taxonomy and density, vector behavior, vector infection rates, and insecticide decay rates. Indicators will be measured in eight locations targeted for IRS/ITN campaigns. The cost will be approximately \$50,000 per district, which includes training, field costs, procurement of equipment, and sample analysis. PMI will also support a central-level insectory and finalization of “National Policy Guidelines for Malaria Entomology Surveillance” (\$475,000);
- **Environmental monitoring oversight:** Independent environmental monitoring oversight to monitor the safe use of insecticide and to guide the PMI program under 22 CFR 216 (\$37,500);
- **Develop local capacity to expand and sustain IRS:** PMI will continue to build the capacity of the public sector to oversee quality IRS programs, particularly focusing on technical quality and accountability, in anticipation of future funding availability for IRS through the Global Fund or other donors (\$300,000); and
- **2 TDYs from CDC-Atlanta:** CDC staff to provide technical support to planning and monitoring IRS activities (\$25,000).

### Insecticide-Treated Nets

#### Background

Long-lasting insecticide-treated bednets (LLINs) remain one of NMCP’s key prevention interventions in malaria control. Since 2006, over six million LLINs have been distributed by all partners nationwide. The Global Fund Round 7 Phase 1 grant will provide 7.2 million nets to vulnerable populations (pregnant women and children under five). If successful, the GOU will likely reprogram Phase 2 from coverage of vulnerable populations to universal coverage (defined in Uganda as one net per two people), advancing Uganda towards the Abuja targets. PMI will continue to support these efforts and provide supplementary LLINs to maintain high rates of coverage.

Based on the 2006 DHS, the percentage of children under five and pregnant women who sleep under ITNs was only 10%, and national household coverage (households owning one or more ITNs) was 16%. Ownership varies by geographic region. In the north, where there have been major efforts to distribute ITNs, ownership at household level was found to be the highest at 28%, while ownership in the central regions was the lowest at 8%. Given the large influx of LLINs from PMI and other sources, a model produced by the Malaria Consortium has estimated that the proportion of households owning one or more ITNs at the end of 2007 was approximately 40%. The upcoming MIS will provide updated information on ITN ownership and use.

Evidence exists to suggest that ITN usage is increasing. In October – December 2007, a net retention and use evaluation was conducted in Gulu district at four health facilities where LLINs had been distributed through ANCs. The evaluation showed that use of LLINs received at the ANC by pregnant women was 89%; use of any ITN by pregnant women was 96%; and use of LLINs by

anyone in the household was 99%.<sup>7</sup> These use rates are comparable to a previous evaluation carried out on LLIN distributions in Kitgum district, which found that 94% of pregnant women reported that they had slept under an ITN the previous night and 89% slept under the LLIN received at an ANC. Both evaluations show it is possible to achieve high LLIN usage by pregnant women through ANC distribution in Uganda.

Uganda has a five-pronged strategy for LLIN distribution:

- Sale of LLINs at full cost through the commercial sector
- Sale of subsidized LLINs through the private sector
- Free distribution to vulnerable groups through mass campaigns
- Free distribution through ANC/Expanded Program of Immunization (EPI) clinics
- Community distribution using community-based organizations (NGO Net Facility)

### Overview of Uganda distribution program

<b>Approach</b>	<b>Target population</b>	<b>Target areas</b>	<b>Funding partner</b>
Commercial	Those who can afford to purchase nets	Urban, semi-urban centers	Commercial partners with PMI support
Subsidized nets through private sector	Those who can afford to purchase nets	Urban areas	PMI
Mass distribution	Pregnant women and children under five years; universal coverage*	Sub-counties as determined by NMCP	PMI, UNICEF, JICA and Global Fund
Malaria in pregnancy/ANC distribution	Pregnant women	ANC clinics in the 24 northern districts	PMI and UNICEF
Community distribution through NGOs/CSOs (NGO Net Facility)	Pregnant women and children under five years	Sub-counties as determined by NMCP	PMI

\*Defined in Uganda as one net per two people.

<sup>7</sup> Malaria Consortium: Net Retention and Use Study.

## Progress to Date

PMI has supported all five LLIN distribution channels in Uganda. To complement distribution of free LLINs, PMI resources have supported the LLIN private sector through local retail and wholesale ITN distributors. As a result, the commercial for-profit sector sells approximately 700,000 ITNs per year in urban centers, and there are eight private ITN wholesale distributors in Uganda. PMI has also supported the sale of nearly 120,000 LLINs at a highly subsidized price. In FY 2009, PMI ceased financial support for the private ITN sector, as it was felt that the market had matured sufficiently.

### *Mass community-level net distribution and sensitization campaigns*

Mass campaigns are the predominant distribution strategy for LLINs in Uganda. In total, more than 2.9 million LLINs have been distributed through mass campaigns since 2007. The first large-scale LLIN distribution campaign was held in 2007, when 1.8 million LLINs were distributed to pregnant women and children under five years of age in 26 districts using Global Fund Round 2 funds. PMI supported distribution of nearly 1.1 million of these nets through this mechanism.

Using the model the NMCP established in 2007 with Global Fund support, PMI continues to support rolling mass campaigns to distribute LLINs at the sub-county or district level. PMI has supported two large-scale campaigns: a 2007 campaign (also supported by Malaria No More) distributed 592,000 LLINs to children under five and pregnant women; and a 2008-2009 campaign distributed another 560,000 LLINs to households with children under five and pregnant women, focusing on the 12 eastern region districts. It is expected that all households with vulnerable populations in the target districts/sub-counties will own at least one LLIN following these campaign efforts. To complement the campaign in the eastern region, PMI is supporting a Red Cross post-LLIN distribution “hang-up” project in eight districts. The Red Cross project is utilizing two interventions to ensure high LLIN usage: in rural, high-density areas, volunteers carry out house-to-house visits to ensure that nets received during the distribution campaign are correctly hung over sleeping spaces, and in urban and peri-urban areas, the project supports expanded IEC/BCC. In 2009, PMI plans to distribute an additional 75,000 LLINs through mass campaigns.

### *Distribution of free LLINs through ANC/EPI clinics*

The NMCP’s other major LLIN distribution channel is through ANC and EPI clinics during routine visits. With PMI support, LLINs have been provided to pregnant women through ANC clinics in 24 districts in Northern Uganda and, since 2005, over 734,028 LLINs have been distributed through this approach. With FY 2009 funds, another 825,000 LLINs will be distributed in Northern Uganda and other selected districts in this manner. ANC workers have also been trained to explain the benefit of LLINs and demonstrate proper use. The NMCP is interested in expanding this strategy to more districts as a means to maintain high ITN ownership.

### *NGO Net Facility*

As part of the campaign approach, PMI supported the development of an LLIN NGO net facility to provide free LLINs to NGOs and CBOs for distribution to pregnant women and children under five in selected districts. CBOs working at the community level often have funding for malaria prevention advocacy but not for LLIN procurement. By providing LLINs for use in their projects, PMI was able to capitalize on their close interaction with the community and engage them in malaria prevention and control. From 2007 to 2008, 28 NGOs were selected to provide 224,416

LLINs to target populations through their projects. Under NMCP direction, the LLIN facility aims to geographically complement the areas covered through the campaigns and in 2009, PMI will distribute approximately 20,000 LLINs through the NGO net facility. In addition, PMI supported distribution of 119,998 subsidized LLINs through private sector providers.

#### *IEC for ITNs*

Although a few small studies point to an increase in net usage, the low net utilization rate from the 2006 DHS shows that a great need exists for comprehensive and sustained national IEC/BCC campaigns on the correct and consistent use of ITNs. PMI continues to support efforts to conduct comprehensive IEC/BCC campaigns around ITNs, including development of IEC materials tailored to community medicine distributors (CMDs) on the correct and consistent use of LLINs and a series of radio spots discussing ITNs and distribution of the “Everyday Health Matters” newsletter on malaria. PMI resources also support a marketing strategy for private sector LLINs that include the popular “Squito” cartoon strip, road shows, mobile promotion units, and brand-specific campaigns to promote use of ITNs. While these efforts have been positive, the need to harmonize messages across partners and with the MOH remains. Also, the mass campaigns need to not only raise awareness about ITNs, which is high in Uganda, but also address behavior change so that ITNs are used correctly and consistently.

#### Proposed PMI FY 2010 (\$8,033,500):

Due to the expected influx of 17.7 million LLINs over the next three years, PMI resources will support maintenance of high net ownership. Based on the projected needs calculated by the NMCP, and considering the potential contribution from the Global Fund Round 7, the following activities are planned for 2010:

- **Procurement of LLINs:** PMI will procure approximately 1 million LLINs for distribution through three mechanisms listed below (\$5,958,500):
  - **Distribution through the Malaria Communities Programs and the NGO Net Facility:** PMI will provide 350,000 free LLINs to Malaria Communities Programs (MCP) and the NGO Net Facility (mode/target of distribution will be determined based on status of Global Fund-supported distributions in the MCP areas) (\$700,000);
  - **Distribution of free LLINs through ANC clinics:** PMI will target pregnant women for free distribution of 650,000 LLINs via ANC clinics (\$1,300,000); and
  - **Matching funds for free net distribution in private sector companies:** PMI will provide 75,000 LLINs to private sector companies for free distribution to company employees, their family members, pregnant mothers, and neighboring communities; in return, these private sector companies will use their own funds (e.g., social responsibility funds) to provide, at minimum, an additional 75,000 LLINs (\$75,000).

*Note: The above LLINs distribution programs include budget for all components of LLINs program, including conducting necessary IEC/BCC and monitoring and evaluation activities specific to LLINs.*

## **Intermittent Preventive Treatment**

### **Background**

The MOH advises pregnant women with a normal pregnancy to make four visits to an ANC clinic where they will receive focused antenatal care (FANC) services prior to delivery. The 2006 DHS showed that approximately 96% of pregnant women in Uganda attended ANC at least once during their pregnancies and 90% attend at least twice; 79% of pregnant women visit ANC for the first time during their second or third trimester (median months pregnant at first visit is 5.5 months). The original IPT policy was adopted in 1998 to cover all of Uganda's districts. This policy is included in the Reproductive Health Unit (RHU)'s FANC policy and within the NMCP strategy. Both the NMCP and the RHU are responsible for training, supportive supervision, M&E, operational research, and provision of IPTp services at health facilities and IEC campaigns at the community level.

Although the policy has been in place for more than ten years, the 2006 DHS data indicated that only 37% of pregnant women received one dose of SP and only 16% received two doses. Studies now show that IPTp coverage varies in different parts of the country, ranging from 71% to 89% for IPTp first dose (IPTp1), and 36% to 52% for IPTp second dose (IPTp2).<sup>8,9</sup> Given that 90% of women make at least two visits to the ANC and that the median first ANC visit is at 5.5 months, IPTp rates should be much higher. One reason for this low rate is the observation that pregnant women in Uganda have shown some unwillingness to take SP due to fear of its effect on the fetus (a fear sometimes fostered by health workers).<sup>10</sup>

Recently, questions have emerged about the efficacy and benefit of using SP for IPTp across sub-Saharan Africa.<sup>11</sup> Evidence from other countries with SP resistance suggests that SP for IPTp does

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<sup>8</sup> Kiwuwa MS, Mufubenga P (March 2008). "Use of antenatal care, maternity services, intermittent presumptive treatment and insecticide-treated bed nets by pregnant women in Luwero district, Uganda," *Malaria Journal*. 7:44.

<sup>9</sup> Ndyomugenyi R, Tukesiga E, Katamanywa J. "Intermittent preventive treatment of malaria in pregnancy (IPTp): participation of community-directed distributors of ivermectin for onchocerciasis improves IPTp access in Ugandan rural communities," *Transactions of the Royal Society of Tropical Medicine and Hygiene* (Article in Press)

<sup>10</sup> Barker J, Payes R, (2007). "Overview of Programmatic Interventions for Communication for Indoor Residual Spraying (IRS), Insecticide-treated Nets (ITNs), Case Management and malaria in Pregnancy." USAID.

<sup>11</sup> Tagbor, H., Bruce, J., Ord, R., Randall, A., Browne, E., Greenwood, B & Chandramohan, D. (2007). Comparison of the therapeutic efficacy of chloroquine and sulphadoxine-pyrimethamine in children and pregnant women. *Tropical Medicine and International Health*, **12**, 1288-1297.

Brabin, B.J., Wasame, M., Uddenfeldt-Wort, U., Dellicour, S., Hill, J and Gies, S. (2008). Monitoring and evaluation of malaria in pregnancy-developing national basis for control. *Malaria Journal*, 7 (Suppl 1); S6doi: 10.1186/1475-2875-7-S1-S6

Anders, K., Marchant, T., Chambo, P., Mapunda, P. Reyburn, H. (2008). Timing of intermittent preventive treatment for malaria during pregnancy and implications of current policy on early uptake in north-east Tanzania. *Malaria Journal*, 7: 79

Coulibaly, S.O., Nezein, D., Traore, S., Kone, B., Magnussen, P. (2006). Therapeutic efficacy of sulphadoxine-pyrimethamine and chloroquine for the treatment of uncomplicated malaria in pregnancy in Burkina Faso. *Malaria Journal*, 5: 49.

remain effective,<sup>12</sup> but the need exists to evaluate its effectiveness in pregnant women in Uganda. As in other sub-Saharan African countries, after the national policy for treatment of uncomplicated malaria was changed from CQ+SP to ACTs in Uganda, there was a nationwide public education campaign encouraging health workers to no longer prescribe SP and for individuals to no longer take SP for malaria.

Traditionally, the level of SP resistance has been assessed by monitoring its *in vivo* efficacy for treatment of uncomplicated malaria in children under five years of age. Parasite resistance to SP, however, has compromised its efficacy in young children, and SP is no longer a first-line recommended treatment for malaria in Uganda. Although SP currently appears to remain effective for IPTp in pregnant women (most likely because they have more immunity than young children), it is important to monitor SP effectiveness in this population. Characterizing SP resistance through *in vivo* and molecular methods in pregnant women may be useful to predict whether to continue a policy of IPTp with SP.

### Progress to Date

During the first three years of implementation, PMI's support of IPTp resulted in development and provision of FANC training manuals, training and on-the-job supervision of 1,693 health workers on IPTp, provision of 3,000 malaria in pregnancy wall charts, gestational wheels as job-aids, and adoption of an MOH nationwide advocacy plan for IPTp. Support has also focused on integrating IPTp services with PMTCT.

### Proposed PMI FY 2010 (\$1,250,000):

- **Provision of comprehensive IPTp services at ANC clinics:** Building on the trainings conducted during the first four years of the PMI program, PMI will support a package of services including the following: provision of clean water and cups to facilitate direct observation of IPTp; provision of ANC registers for medical records; enhanced IEC/BCC to support district health education units in collaboration with the NMCP; and community-level advocacy to encourage pregnant women to attend ANCs and complete their IPTp doses. PMI will also assist integrated supervision for ANC health workers (with emphasis on IPTp, ITNs, and appropriate case management of pregnant women). PMI will support integration of service delivery with PMTCT in facilities where this service is provided (\$800,000);
- **Provision of comprehensive IPTp services at ANC clinics in private sector companies:** PMI will support trainings and service delivery on comprehensive IPTp services and case management using matching funds with private sector companies (\$150,000); and
- **SP efficacy for IPTp:** PMI will support a study to evaluate the efficacy of SP for IPTp. The results of this study will be used by the Ugandan NMCP to evaluate the current policy of using SP for IPTp. This study will also contribute towards an international effort led by WHO to align priorities and methodologies in gathering data on the efficacy of SP in IPTp

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<sup>12</sup> Ter Kuile, F, van Eijk, A, Filler, S (2007). "Effect of Sulfadoxine-Pyrimethamine Resistance on Efficacy of Intermittent Preventive Therapy for Malaria Control During Pregnancy: A Systematic Review." *JAMA*, 297:2603-2616.

in the face of increasing SP resistance, thus providing data to inform IPTp policy at the global level (\$300,000).

## **INTERVENTION - TREATMENT**

### **Malaria Diagnosis**

#### **Background:**

The March 2009 draft Uganda National Malaria Control Policy states that parasitological diagnosis with either microscopy or a rapid diagnostic test (RDT) should be part of malaria case management at all health facilities. The choice between microscopy and RDTs depends on the level of health care and availability of trained staff with necessary equipment and supplies.

More specifically:

- Hospitals and Health Centers (HC) IV, and IIIs that have a microscope and a microscopist should use microscopy for malaria diagnosis;
- HCs II and III that do not have microscopes or microscopists should use RDTs;
- HRP-2 type RDTs should be used in Uganda when RDTs are used for malaria diagnosis; and
- Presumptive treatment of malaria for children under five with a fever remains the standard.

In spite of these policies, most malaria diagnosis in health facilities in Uganda is still based on clinical symptoms since many facilities lack laboratory diagnostic capacity. Even in those facilities with malaria microscopy, many clinicians lack confidence in the results and may disregard them when making a diagnosis. Among older children and adults, and among all age groups in areas of low-to-moderate transmission, improper diagnosis based on symptoms alone often results in fevers being presumptively treated for malaria, resulting in the overuse of ACTs.

The 2007 Uganda Service Provision Assessment showed that laboratory diagnostic capacity for malaria (by microscopy and, to a much smaller extent, RDTs) exists in only 26% of all health facilities. Approximately 80% of hospitals and HCs IV have laboratory malaria diagnostic capacity, compared with 36% of HCs III and only 11% of HCs II. Fifty percent of private facilities have malaria laboratory capacity in comparison to just 18% of public facilities. The Central Public Health Laboratory is mandated to coordinate, monitor, and supervise all HCs III and IV laboratories, but it is grossly understaffed and supervision is irregular. PEPFAR is supporting the renovation of the Central Public Health Laboratory and has funded the purchase of a large number of microscopes in 2006, but even this increase meets just 35% of the national requirements. Global Fund Round 4 Phase 2 includes the purchase of 350 microscopes and a three-year supply of reagents.

A Quality Assurance (QA)/ Quality Control (QC) system for diagnostics is being developed by the National Malaria Control Program with support from the Foundation for Innovative New Diagnostics (FIND). Currently, they are piloting a QA program in six districts. PMI's partners conducting diagnostic training will use this QA/QC system for their programs and are contributing to the development of the national system.

## Progress to Date

In FYs 2007 and 2008, PMI funded the Joint Uganda Malaria Training Program (JUMP), a program that was initially supported by Exxon-Mobil and implemented by the Infectious Disease Institute (IDI) and the Uganda Malaria Surveillance Project (UMSP). The JUMP model was an integrated, comprehensive malaria training targeting all relevant personnel in a health facility (i.e., laboratory personnel, clinicians, nurses, and data managers). Through this innovative team approach, in which laboratory personnel, clinicians, and data managers are trained together, the program aimed to improve malaria diagnosis, strengthen case management of malaria, and further develop the malaria surveillance record keeping and reporting to the HMIS. JUMP implemented nine training courses in 2007/2008 with a total of 272 health care workers trained (170 clinical staff; 39 lab staff; 52 staff and 11 trainers). A post-training evaluation of this program at eight facilities found that integrated team-based training was associated with significant improvements in malaria case management. Most significantly, there was an increase in the proportion of patients with suspected malaria being referred for microscopy and a decrease in the proportion of those with negative blood smears being prescribed antimalarial therapy.

The JUMP training was a five- to six-day training that took place at a central location. As such, it took many, if not all, staff away from their health facility for a week. This had the obvious drawback of denying services to the population during this week of training and the added difficulty of scaling up nationwide due to its length and intensity. As such, the NMCP, with PMI support, developed a shorter course to be implemented at the health facility level. Currently, PMI supports the NMCP three-day training on RDTs for laboratory staff and clinicians and a three-day microscopy training for laboratory staff only. These trainings are conducted at the facility level in order to limit the interruption of service provision. Facilitation of communication between the different health professionals at the facility level is now achieved through supportive supervision visits and in-service training.

The NMCP has received funding to purchase RDTs and train health workers on their use under the Global Fund Round 4 Phases 1 and 2 grants. The NMCP's strategy is to first introduce RDTs into HCs III in low transmission, epidemic-prone areas and later scale up to HCs III in 21 districts (adding highly endemic districts).

With PMI support, a total of 358 health workers in five districts have been trained on the use of RDTs in 148 health facilities. At present, there are adequate stocks of RDTs at National Medical Stores for distribution to all districts where training has taken place. These stocks are expected to last until March 2010. In 2009, PMI is supporting RDT and microscopy training through UMSP and STOP Malaria projects. However, the timing of the RDT trainings is dependent on the availability of this commodity.

## Proposed PMI FY 2010 Activities (\$1,062,500):

FY 2010 PMI funds will continue to support training for RDT and microscopy to improve parasitological-based diagnosis at all levels in the health system. Additional funds from Global Fund Round 4 are expected to support the training of health workers in the use of RDTs at HCs II and III with no microscopy capability in 21 districts; the Round 9 proposal requests funding for training on RDTs in the remaining districts.

- **Support integrated malaria diagnostic trainings and roll out of RDTs at Health Centers II and III:** PMI will continue to support the roll out and use of RDTs at HCs II and III and microscopy training at HCs III and IV and referral hospitals. This support will be aligned with the MOH guidelines on use of RDTs and microscopy. All trainings will be offered to public and private sector health facilities (\$1,000,000);
- **Support improved diagnostics in the private sector:** PMI will support training on the use of RDTs in the private sector through existing partnerships with companies providing health care for their employees and surrounding communities. Companies targeted for this training will provide matching contributions (\$50,000); and
- **TDY from CDC-Atlanta:** CDC staff to provide technical support to laboratory diagnostics (\$12,500).

## **Pharmaceutical Management**

### **Background**

The pharmaceutical management system in Uganda is extremely weak. National Medical Stores (NMS) is responsible for the procurement and distribution of all essential medicines and health supplies for the public sector in Uganda. Within the not-for-profit private sector, Joint Medical Stores has similar responsibilities. Although quantification of antimalarial drug needs seems proficient, delays in procurements are common. Over the past three years, there have been three major national stock outs of the first-line drug (artemether-lumefantrine or AL, an ACT) for the treatment of uncomplicated malaria. These stock outs, due primarily to administrative bottlenecks in Global Fund procurement, lasted for much of 2008 and early 2009. In December 2008, PMI made an emergency procurement of AL to fill the gap by re-programming money meant for procurement of severe malaria drugs. A more recent stock out from April – June 2009 was covered by WHO using balances from Global Fund money from previous rounds and some quantities from Quality Chemicals (a new Ugandan pharmaceutical company) purchased with GOU funds. The current stock of ACTs is expected to last through September 2009.

During the last two years, the supply system for ACTs within Uganda has been changed from a push system to a pull system. Instead of receiving standard drug kit quantities in accordance with the number of patients reported in the previous three months, districts and health sub-districts now order from the essential drugs and commodities list based on actual demand. (In 2000, cost sharing at government health facilities was abolished and all medicines now are free of charge.) The change from a push system to a pull system has been difficult. This change, combined with limited storage capacity for commodities at district level and a weak drug distribution system, have led to irregular supplies and frequent stock outs of AL at the health facility level, even when the drug is available centrally. In fact, the 2007 Service Provision Assessment revealed that about 80% of health facilities experienced stock outs at some time during the six months preceding the survey. Problems with inventory control at the NMS have also resulted in rumored “stock outs” of AL; investigating such rumors has required a great deal of PMI advisors’ time and energy.

## Progress to Date

In Years 2, 3 and 4, PMI provided technical assistance to help the NMS, the NMCP, and the district health programs to improve their quantification of AL for uncomplicated malaria and severe malaria drugs. To date, over 350 health workers in Northern Uganda have been trained on logistics, drug quantification, ordering and storage. Unfortunately, regardless of PMI's efforts and those of other partners who support logistics management, significant challenges remain in the drug supply system in Uganda. As these challenges affect many different diseases and programs that are supported by U.S. government funds, USAID/Uganda has developed a new, integrated initiative to address the problems of pharmaceutical management. This new initiative will provide technical assistance to the NMS, National Drug Authority, and the Ministry of Health to improve supply chain management for all essential medicines, including antimalarials. The focus will be on improving technology to ensure timely and accurate product registration and distribution, capacity building of staff, and strengthening the supply chain system to achieve greater performance and cost-effectiveness.

## Proposed PMI FY 2010 Activities (\$400,000):

- **Strengthen pharmaceutical supply chain management:** PMI will continue to provide technical assistance to help the NMS and NMCP/MOH update the quantification of ACTs and other antimalarial drugs based on consumption data. PMI will also provide support to the NMS to establish and implement its computerized malaria commodities information acquisition system that will be used to provide accurate, reliable, and timely information on use and availability of malaria medicines at the district, regional, and national level. In addition, PMI will provide further support for delivery of drugs from district stores to health facilities, and rational drug use in health facilities (\$400,000).

## Case Management

### Background

Artemether-lumefantrine (AL; brand name Coartem<sup>®</sup>) was adopted as the first-line treatment for uncomplicated malaria in 2004, replacing chloroquine+SP. In implementing that change, the MOH sensitized leaders and local residents and trained more than 30,000 health workers in the new treatment policy. Quinine is the recommended drug for patients with uncomplicated malaria who have failed to respond to AL and parenteral quinine is the drug of choice for the treatment of severe malaria. Artesunate suppositories are recommended for the treatment of severe malaria at the community level where parenteral therapy is not possible.

To ensure prompt treatment of children under five with suspected malaria in areas where health facilities are not readily accessible, Uganda became one of the first countries in Africa to actively promote home-based management of suspected malaria (frequently referred to as home-based management of fever or HBMF) through volunteer CMDs. The MOH policy on HBMF requires each village to select two people trusted by the community to be trained as CMDs. The CMDs are supervised by workers from the nearest health facility and are required to make monthly reports on the number of children with fever treated and/or referred. The unpaid CMDs are trained to identify children with fever and, based on the age of the child, provide an appropriate dose of antimalarial

drugs. When this effort began, pre-packaged chloroquine+SP (known as “Homapak”) was the recommended treatment for HBMF. In April 2007, the NMCP changed its treatment policy for HBMF to AL due to increasing resistance of *P. falciparum* to chloroquine+SP, but this policy was only approved for selected districts. Since early 2009, the use of AL for HBMF has been national policy, although implementation of this policy has been seriously hampered by repeated shortages of AL at the district and health facility level. As a result, the HBMF program has effectively ceased to exist.

Although the Uganda National Malaria Control Strategy states that everyone in need of malaria treatment should receive ACT within 24 hours of the onset of their illness, ensuring the availability of AL has been a major challenge in recent years. Administrative and policy differences with the Global Fund and attendant delays in procurement have led to frequent national stock outs of ACTs over the last two years. Even when stocks of ACTs were made available through emergency purchases by PMI and WHO, the weak delivery and supply chain systems in the country severely limited availability of ACTs in health facilities and districts throughout the country.

While the NMCP has plans to roll out a new HBMF program nationwide, an ongoing policy debate within the MOH is focused on three possible options: (1) implementing HBMF at the village level as a stand-alone activity through use of two CMDs per village; (2) community-based malaria treatment as part of integrated community case management (ICCM) (to include treatment of pneumonia and diarrhea); or (3) HBMF through a village health team (VHT) model using five to ten VHT members per village, two of whom are CMDs. It now appears that the ICCM model will be followed using the five- to ten-person VHTs with two CMDs providing treatment for pneumonia, diarrhea, and malaria.

The private sector plays a major role in malaria treatment in Uganda. As of 2009, approximately 600 pharmacies and over 6,200 drug shops licensed by NDA<sup>13</sup> provide a wide range of antimalarial drugs, including AL, at prices between \$5 and \$10 per treatment. In addition to pharmacies and drug shops, private clinics run by different cadres of health workers including doctors, clinical officers, nurses, midwives, and nursing assistants are often the first point of contact between families and the health system. More than half of patients with suspected malaria first seek treatment through the private sector. In late 2008, with support from PMI, the National Drug Authority finalized the declassification of AL as an over-the-counter drug to allow its sale by drug shops.

### Progress to Date

With commodity and other support from PMI, WHO initially piloted the use of AL in HBMF in three districts in northern Uganda. The results from the WHO pilot districts and a PMI-supported evaluation of community ACT provision in Kiboga district indicate several problems with the change in treatment to AL. These include unreliable supplies of AL for CMDs, the difference in packaging of drugs for different age groups (e.g., three formulations for the under-five age group), the need to provide incentives to CMDs, and the need for continuous supportive supervision. From 2007-2008, about 40,000 CMDs were trained by the NMCP in the proper use of ACTs at the village

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<sup>13</sup> Direct communication with the National Drug Authority. July 2009.

level with funds from the Global Fund grant, but about 60,000 remain to be trained and supported. Most of those trained have been without a reliable supply of ACTs.

During the past year, due to the repeated stock outs of ACTs, PMI's support to HBMF activities in nine conflict-affected districts in northern Uganda focused primarily on supporting BCC/IEC functions of the CMDs rather than on malaria treatment. In 2009, PMI will continue to support CMDs in their BCC/IEC activities, but will halt all training activities for HBMF until there is a reliable supply of ACTs.

The NMCP is working to improve the treatment of severe malaria and recently developed treatment guidelines. In FY 2007, PMI supported development of a training manual for health workers on the management of severe malaria and funded training of 329 health workers. The following year, PMI helped the NMCP quantify needs for severe and pre-referral malaria drugs. In 2009, PMI continues to support improved case management for severe malaria through supportive supervision and provision of job aides. The Round 4 Phase 2 Global Fund grant will fund the purchase of drugs for severe malaria and training of health workers.

The NMCP is striving to make ACTs affordable through the private sector and combat counterfeit drugs and monotherapies. During FYs 2008 and 2009, PMI trained 2,870 private sector providers on the new NMCP malaria policy and developed and distributed job aides on ACT treatment. Medicines for Malaria Venture conducted a study in nine districts in Uganda in 2007 to get a better understanding of the market for antimalarials. This study found that only 50% of public health facilities had any first-line antimalarials (AL); AL was found to be up to sixty times as expensive as other non-artemisinin based medicines in the private sector; only 50% of patients purchased a full course of any antimalarial treatment at one time; and AL is too expensive for most households to purchase.<sup>14</sup> Building on the pilot mentioned above, Uganda hopes to increase access of ACTs to the general population, through the acceptance of its application to the Affordable Medicines Facility for Malaria (AMFm) venture. If the goals of the AMFm pilots are successful, there should be widespread availability of inexpensive ACTs in the private sector.

#### Proposed PMI FY 2010 Activities (\$4,025,000):

With continued uncertainty about supplies of AL through the Global Fund, training of CMDs on case management will be suspended until AL is consistently available. Questions also remain about whether partners will continue to support emergency purchases of ACTs to respond to national stock outs. Therefore, in FY 2010, PMI will support the following:

- **Procurement of malaria commodities:** PMI will support the procurement of drugs, diagnostics and supplies for the treatment of malaria (\$2,500,000);
- **Strengthening of VHTs programs for IEC/BCC for malaria prevention and control:** PMI will help the NMCP strengthen the role of VHTs to carry out household and community IEC/BCC for malaria prevention and control. Support will be extended to health

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<sup>14</sup> Medicines for Malaria Venture. August 2008. *Understanding the Antimalarials Market: Uganda 2007 – an overview of the supply side. A study by Medicines for Malaria Venture, in collaboration with Ministry of Health Uganda, HEPS and WHO.*

facility staff and sub-county-based health assistants to provide support supervision to the VHTs. Health assistants will arrange quarterly meetings with VHTs to discuss progress and update skills, share job aids, and collect quarterly data on the numbers of households reached with IEC/BCC messages for malaria prevention and control. The model of support will depend on the plans for ICCM currently being developed by the MOH (\$700,000);

- **Strengthening of case management in health facilities:** PMI will provide funds for supportive supervision of case management, in collaboration with the MOH, for both public and private health facilities. This will include in-service trainings and if appropriate, could extend to the community level (\$700,000);
- **Supportive supervision for severe malaria:** PMI will continue to provide supportive supervision and job-aids to health care workers on the proper use of severe malaria drugs (\$100,000); and
- **Peace Corps work on malaria at community level:** PMI will support Peace Corps Volunteers working at the community level with VHTs to strengthen IEC/BCC for malaria control and prevention and small grants for malaria projects (\$25,000).

## **Drug Resistance Monitoring and Drug Quality**

### **Background**

The National Drug Authority (NDA) is in charge of monitoring drug quality. The NDA aims to address drug quality of antimalarials through registration of pre-marketed medicines, inspection of factories that manufacture antimalarial drugs, licensing of drug outlets, and post-marketing surveillance. Circulation of fraudulent drugs has become a well known problem within East Africa, especially antimalarial drugs.

Antimalarial drug resistance remains a major concern. The NMCP traditionally relies upon the Uganda Malaria Surveillance Project (UMSP) for drug efficacy surveillance of antimalarials. The most recent surveillance of drug efficacy in Uganda (2008, UMSP through non-PMI funding) demonstrates that AL remains effective. However, it is critical to continue surveillance for the early identification of the emergence of resistance to first- and second-line antimalarials and to ensure that the current treatment policy is effective.

### **Progress to Date**

To address the issue of drug quality, PMI provided the NDA with equipment (e.g., a high performance liquid chromatography machine, gas chromatography and mini-labs), technical assistance, training, and other support to improve the pre-market inspection of antimalarials and to help establish post-marketing surveillance sites. In FY 2007, PMI supported the provision of five mini-labs and training of 25 technicians to operate them. In FYs 2008 and 2009, another five mini-labs were provided to cover all NDA regional centers to act as sentinel post-marketing surveillance sites. Between January and March 2009, 217 samples of antimalarials were tested. Only 14 samples

failed the test, giving a success rate of 93.5%. The NDA follows up failed test results to identify pharmacies involved in the sale of fraudulent drugs, seize fraudulent procurements, and potentially order closure of the businesses involved. NDA receives funding from multiple sources, including Global Fund Rounds 4, 7 and potentially, Round 9, to strengthen its capacity to monitor drug and insecticide quality. As such, PMI will not provide support to NDA in FY 2010.

Proposed PMI FY 2010 Activities: (\$100,000)

- **Monitor drug resistance (efficacy) of antimalarial drugs:** PMI considers it appropriate to monitor drug efficacy on a biennial basis. As such, PMI will support drug efficacy testing of first-line and second-line antimalarials in two sites across the country to inform policy decisions. (\$100,000).

## **INTERVENTION - EPIDEMIC PREPAREDNESS AND RESPONSE**

### Background

Epidemic malaria transmission occurs in approximately 15 districts in the southwest and eastern regions of Uganda. For this reason, the NMCP includes early detection and rapid containment of malaria epidemics as one of its objectives, and has adapted guidelines from WHO. Thresholds for what is considered to be an epidemic are established for each district based on the past three to five years of case data. If the number of malaria cases exceeds expected seasonal transmission thresholds, an investigation and response (if necessary) are initiated immediately. The Epidemic Surveillance Department of the MOH provides weekly updates on district reporting cases of epidemic-prone diseases, including malaria.

Districts are often unable to implement epidemic control recommendations. This is due in part to reliance on the troubled HMIS system. Two factors minimize the utility of the HMIS system: (1) delayed reporting, as the majority of districts use non-electronic means of communications; and (2) delayed or no analysis of the reports submitted. In addition, districts are also limited in their capacity to respond due to lack of funds for fuel, personnel, diagnostic capacity, and stocks of commodities.

Currently, the components of the NMCP's malaria epidemic preparedness that require strengthening include the following:

1. Ensuring the surveillance system is based on timely recording and reporting and that the data are analyzed and interpreted promptly.
2. Improving malaria diagnosis in targeted sites in hospitals and HCs IV in epidemic-prone districts.
3. Ensuring adequate supplies at all treatment facilities so that prompt care can be provided in the event of an outbreak.
4. Ensuring preventive measures (e.g., IRS and/or LLINs) can be put in place once an outbreak is identified.

### Progress to Date:

With support from PMI in FYs 2007 and 2008, the malaria-specific guidelines and algorithms incorporated into the Integrated Disease and Surveillance Response (IDSR) Guidelines have been revised and updated. Staff members at health centers in four districts have been trained to establish center-specific malaria thresholds, and to improve data management and use for decision-making and rapid response. These health centers have also been provided with the necessary tools to track malaria cases in their facility. IDSR task force teams in these districts have been revitalized by sensitizing the district leadership and updating the skills of the teams to respond to malaria epidemics.

In addition to the above progress, the following strategies are being considered:

- At the national level, epidemic surveillance, investigative and response efforts that were previously established by WHO and the National Task Force will be reconstituted and participants will be mandated to meet regularly, and
- Support for epidemic response will be provided. This may include commodities, transportation, diagnostic support through RDTs or microscopy, supplies and equipment for malaria epidemic containment, and IEC materials required for rapid community response.

Proposed PMI FY 2010 Activities (\$100,000):

- PMI will continue to support the malaria epidemic surveillance and response program in FY 2010. Training in health facilities located in epidemic-prone regions will continue and PMI will continue supporting the National Task Force and district task forces to meet regularly, evaluate data in a timely manner and respond to suspected/confirmed outbreaks (\$100,000).

## **PRIVATE HEALTH SECTOR SUPPORT**

### Background

The private health sector in Uganda includes private not-for-profit health providers, private for-profit providers, and traditional and alternative medicine practitioners in urban and rural settings. Private health practitioners, who provide services outside the not-for-profit sector, encompass all cadres of health professionals and offer a wide range of services from primary level to tertiary level referral and specialist services. A study in 2006, in collaboration with the Public-Private Partnership for Health Desk of the Ministry of Health, found that 46% of health facilities in Uganda are private.<sup>15</sup> The private sector employs about 12,800 health workers, while the GOU and private not-for-profit providers together employ about 30,000 health workers. In the private sector, around 45% of the health practitioners belong to a professional association, such as the Uganda Private Medical Practitioners Association, the Uganda Private Midwives Association, and the Drug Shop Owners Association.

Uganda health policy makers recognize the role and contribution of the private sector and the need to strengthen their capacity to contribute to the government's efforts to provide comprehensive healthcare services. Up to 82% of households first seek care from small drug shops, private clinics,

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<sup>15</sup> Mandelli, Andrea, Lennie Bazira Kyomuhangi, and Susan Scribner. September 2005. *Survey of Private Health Facilities in Uganda*. Bethesda, MD: The Partners for Health Reformplus Project, Abt Associates Inc.

and private-not-for-profit health providers. Most private providers in low-income countries do not receive guidance on diagnosis and treatment from the MOH, instead relying on information from pharmaceutical companies.<sup>16</sup> Studies have shown, however, that training medicine sellers on approved drugs increases the number of patients receiving an effective drug at the correct dose.<sup>17</sup> For instance, in Luwero District, after participating in education sessions the proportion of sellers providing appropriate drugs increased from 2% to 73% and correct dosing increased from 0% to 50%.<sup>18</sup>

To improve malaria prevention and treatment services provided by the private sector, PMI has supported small- to medium-sized companies and worked with large private corporations to leverage additional funds for malaria prevention interventions. These corporations provide free or subsidized health services to their employees and the surrounding communities, often in areas that are underserved by government facilities.

### Progress to Date

With PMI support, ACTs were declassified as an over-the-counter drug in 2008. As a result, ACT supplies should become more available in private drug shops, providing patients an alternative if MOH facilities stock out of ACTs. Since the declassification, PMI has supported training of private health practitioners in the new antimalarial drug policy, which were often combined with sessions on HIV/AIDS, family planning, and child survival. To date, nearly 3,000 private health practitioners have received training in malaria treatment and prevention.

PMI is also working with small, medium, and large companies on a cost-sharing basis. In FY 2009, PMI will work with 25 companies, up from 10 in FY 2008, to provide IEC/BCC on malaria prevention and treatment; IPTp and cups and water purification; promotion, procurement, and distribution of LLINs; and RDTs and microscopy for diagnosis.

### Proposed PMI FY 2010 Activities (\$750,000):

PMI will focus on 30 priority districts where the program is currently operating targeting private clinics, midwiferies, drug shops, and pharmacies to improve the interventions offered through the private sector in both urban and rural areas. Malaria prevention and treatment services will be integrated into existing private clinics offering services and products for HIV, family planning, and child survival. PMI will work to increase networking within the private sector and bring private health practitioners into the district health system for coordination, supportive supervision, monitoring, and evaluation of their work. In addition, these networks will be linked to regulatory authorities such as the NDA. Currently, USAID Uganda is supporting services and products for the non-malaria activities listed above through the Uganda Health Marketing Group and health initiatives in the Private Sector.

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2).Mills, A., Brugh, R., Hanson, K., McPake, B. What can be done about the private health sector in low-income countries? *Bulletin of the World Health Organization*, 2002, 80(4)

<sup>17</sup> Goodman, C., Brieger, W., Unwin, A., Mills, A., Meek, S., Greer, G. Medicine sellers and malaria treatment in sub-Saharan Africa. *Am J Trop Med Hyg.* 2007 Dec; 77(6 Suppl): 203-218.

<sup>18</sup> Tawfik Y, Nsungwa-Sabitii J, Greer G, Owor J, Kesande R, Prysor-Jones S. Negotiating improved case management of childhood illness with formal and informal private practitioners in Uganda. *Trop Med Int Health.* 2006;11:967-73.

The proposed activities are as follows:

- **Support malaria prevention and case management in the private sector** through the following four sub-activities (\$750,000):
  - **Mobilize the private sector into networks and increase the roll of district health officials in providing support and supervision:** PMI will work with professional associations such as the Uganda Private Medical Practitioners Association, Uganda Private Midwives Association, and Drug Shop Owners Association to facilitate networking among their members and to provide them with training, supervision, and regulation. District-level task forces will be organized to support regulation, supportive supervision, and data collection (\$150,000);
  - **Case management:** PMI will focus its private sector training on prompt and accurate diagnosis and treatment of malaria. Laboratory staff in the private clinics will be trained to use RDTs (\$225,000);
  - **Promoting intermittent presumptive treatment during pregnancy:** PMI will support the promotion of IPTp through training of private health workers in clinics and midwiferies. The training will enable private health workers to promote a comprehensive package for IPTp and early detection of malaria during pregnancy, and offer directly-observed treatment (\$200,000); and
  - **IEC/BCC:** Communication with service providers, their clients, and the community will be essential to ensure the success of the private sector approach. PMI will support the use of existing communication channels to increase awareness about the need for proper diagnosis before initiating treatment for malaria. Patients will be encouraged to ask for laboratory testing before being asked to purchase expensive ACTs (\$175,000).
- **Support to large corporations:** PMI will support an increase in the number of large companies it works with, from 25 to 40 companies, and will increase the number of beneficiaries reached by this project to 500,000 people in 50 districts (including 50,000 pregnant women and 450,000 children under five). PMI funds will be leveraged on a 1:1 basis with private sector funds, where appropriate, to expand the impact of malaria prevention and treatment activities and encourage the entry of large companies into the mix of key malaria stakeholders. (Costs for these activities are included under the ITNs, IPTp, and Case Management and Diagnosis sections.)

## MONITORING AND EVALUATION

### Background

PMI and its implementing partners support the principle of the “Three Ones,” which includes one national coordinating committee, one national malaria control plan, and one national M&E plan.

Monitoring and evaluation capacity remains a significant weakness in the NMCP. A new national malaria M&E plan was launched in early 2009 with the goal of coordinating M&E efforts for all malaria partners. The malaria indicators in this plan are closely aligned with those of the Monitoring and Evaluation Reference Group of RBM. While the NMCP has increased its human resources for M&E, it still has limited tools and equipment for performing its activities.

In the NMCP M&E plan, the MIS, DHS, Multiple Indicator Cluster Survey, and HMIS will be used to monitor coverage of the four key interventions (ACTs, ITNs, IPTp, and IRS). Additional malaria morbidity and mortality information will be gathered using verbal autopsies, DSS sites, and sentinel site surveillance.

Implementation of the national M&E plan remains a significant challenge. At the facility level, the importance of accurate and timely data collection is not recognized as facilities are understaffed and overworked, and no reports (and often, no actions) are produced from the data that are submitted. At the district level, again, accuracy and timeliness of reporting are problems and no feedback is provided from the central level. At the central level, among other obstacles, little motivation exists to analyze poor quality and late data and report back to districts and facilities that appear uninterested. However, the NMCP is very eager for national-level data and is working towards improving data collection from the public and private sector as well as from implementing partners in malaria control. They also recognize the importance of improving the HMIS as a key step in motivating staff to provide quality care at all levels.

PMI Uganda uses the following three major tools to measure the impact of its program performance:

- The 2006 Uganda DHS: This survey provided baseline information for PMI activities in Uganda.
- The 2007 Uganda Service Provision Assessment Health Facility Survey: This survey provided information on the availability and quality of health services.
- Malaria Indicator Survey: This survey is planned to begin in November 2009, after the rainy season. The MIS will show population-level coverage and impact data on the four major malaria interventions as well as biomarkers for anemia and parasite prevalence in children under five years of age.

### Progress to Date

#### *Verbal autopsy survey and validation study*

PMI supported the Uganda Bureau of Statistics to conduct verbal autopsies of deaths in children under five that occurred in the three years prior to the 2006 DHS using the new WHO verbal autopsy tool. This study shows the leading causes of death in children under five years to be malaria (32%), peri-natal and early neonatal conditions (18%), meningitis (10%), pneumonia (8%), and HIV/AIDS (6%). In children 29 days to five years old, 41% of the deaths are attributable to malaria. Forty-nine percent of children under five die at home, 39% at health facilities, and the remaining in

other places. Most children received some form of treatment before their death (80%), with 94% of those children receiving care in formal facilities (public and private health centers).<sup>19</sup>

PMI has been supporting a study to examine the validity of verbal autopsies in three different epidemiological settings in Uganda. Because the sensitivity of verbal autopsy for establishing malaria-associated mortality may vary with transmission intensity, the need exists to validate verbal autopsy procedures in different epidemiologic settings. In addition, a plan is underway to develop and evaluate expert-derived algorithms for reviewing verbal autopsy data, building on prior algorithms, and utilizing the expertise of the physicians involved in the review of the verbal autopsy questionnaires. The verbal autopsy validation study results are expected in late 2009.

#### *Sentinel site surveillance activities*

Sentinel sites were first established by UMSP and the MOH in 2001 to determine the efficacy and safety of antimalarial drugs in epidemiologically-different sites. With support from PMI and the MOH, nine sentinel sites are now in operation in eight districts (Kabale, Kanungu, Iganga, Tororo, Apac, Oyam, Masindi, Mubende, and Jinja). One site was dropped in 2008 due to poor reporting. The focus of work on sentinel sites from 2007-2009 has been to increase the quality of data management and analysis, ensure high quality laboratory diagnosis, and improve health worker performance. These sites have the capacity to monitor and collect reliable data on malaria morbidity indicators from outpatient departments. These sites have trained laboratory personnel and UMSP performs quality assessment visits on a routine basis. Currently, the data from the sentinel sites are available online and provide almost real-time information.

#### *Uganda Service Provision Assessment (SPA), 2007<sup>20</sup>*

The SPA is a nationwide facility-based survey designed to collect information on facility infrastructure, resources and management systems, and the availability of services for child health, family planning, maternal health (i.e., ANC, delivery care), and selected infectious diseases such as malaria, HIV/AIDS, tuberculosis, and sexually transmitted diseases. Information was collected from 491 public, private, and not-for-profit health facilities throughout the country. The sample of facilities was designed to allow for national and regional conclusions on key indicators. For malaria, it provided estimates for diagnostic and treatment capacity and quality of care (for example, ANC clinic visits were observed, including IPTp and ITN services).

#### *Strengthening data management*

The MOH uses the HMIS to monitor the performance of the health sector strategic plan and provide routine morbidity and mortality data from health facilities across the country. The NMCP also uses HMIS for its program monitoring. Information currently used from HMIS for informational markers include:

- the number of outpatient clinical malaria cases
- the number of malaria blood tests

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<sup>19</sup> Uganda Bureau of Health Statistics (UBOS), Macro International Inc., and MEASURE Evaluation. 2008. *Uganda Verbal Autopsy Study 2007*. Calverton, Maryland, USA: UBOS, Macro International Inc. and MEASURE Evaluation.

<sup>20</sup> Ministry of Health (MOH) [Uganda] and Macro International Inc. 2008. *Uganda Service Provision Assessment Survey 2007*. Kampala, Uganda: Ministry of Health and Macro International Inc.

- the number of malaria-positive blood tests
- the number of ANC first visits
- the number of pregnant women with malaria
- the number of pregnant women receiving IPTp-1 and IPTp-2
- stock out of AL or quinine at time of form's completion and duration of stock out
- a reminder to complete the normal channel graph for that month.

As LLINs are now distributed through ANC clinics, the NMCP plans to contribute to the revision of the HMIS to include ANC LLIN distribution. In addition, PMI is supporting the development of national databases to track key malaria interventions and program indicators.

*Monitoring and Evaluation Management Services (UMEMS)*

The UMEMS Project serves as the central data collection point for all USAID/Uganda implementing partners, including those supported by PMI. This project assists partners in developing performance management plans and ensuring they are harmonized with the Uganda USAID Performance Monitoring Plan. The project also assists partners with collecting project data and information, conducting data quality assessments, and providing compiled data and quarterly reports to USAID. UMEMS also assists in producing the PMI annual report.

Proposed PMI FY 2010 Activities: (\$1,925,000)

- **Strengthen sentinel sites:** Support for maintaining the existing sentinel sites and expanding the scope of a selection of these sites to include inpatient data. Inpatient data will be collected on the following indicators: total number of patients admitted to the hospital; total number of patients with severe malaria; total number of deaths attributed to malaria; total number of blood transfusions given; and malaria case fatality rate (\$500,000);
- **Program monitoring and tracking system development - NMCP:** Support for developing databases for NMCP for tracking programmatic progress in key malaria intervention areas (e.g., data on ITN distribution, IRS spray campaigns) (\$100,000);
- **Program monitoring and tracking system development – districts:** Support for M&E activities at the district level (e.g. data management, analysis) (\$450,000);
- **PMI data collection and reporting:** The UMEMS Project will continue to serve as the central data collection point for all USAID implementing partners. PMI will make use of this mechanism to conduct data quality assessments and analyze progress (\$100,000);
- **DHS 2011:** Support for the planning of the DHS with a malaria module scheduled for 2011. As in 2006, PMI will also support the incorporation of a verbal autopsy study (\$650,000);
- **End user verification tool implementation:** PMI has developed a new tool to assess and monitor on a three- to six-month basis the availability of commodities for malaria in

a sample of health facilities. A pilot was conducted in Tanzania; this tool will now be rolled out to other PMI countries (\$100,000); and

- **2 TDYs from CDC-Atlanta:** CDC staff to provide technical support for M&E activities including the MIS, sentinel sites, and operations research projects (\$25,000).

## **HIV/AIDS AND MALARIA INTEGRATION**

### Background

UNAIDS estimates that there are about 940,000 people living with HIV/AIDS in Uganda, including 480,000 women and 130,000 children. HIV infection increases the risk and severity of malaria and decreases the response to antimalarial treatments. Malaria can increase the viral load in HIV-positive people, which further suppresses their immune system. Malaria and HIV co-infections have a disproportionate effect on pregnant women and children, the target populations of PMI and PEPFAR. Integration of malaria and HIV/AIDS activities primarily occurs through existing programs, including support of ANC services to ensure prompt and effective case management of malaria in pregnancy and integrating IPTp services with PMTCT, distribution of LLINs, and prompt and effective treatment of children with fevers. Health system strengthening, capacity building, and supply chain management activities benefit both malaria and HIV/AIDS programs.

### Proposed PMI FY 2010 Activities (no additional funding):

- Malaria activities that are integrated with HIV/AIDS programs in Uganda include HIPS (public-private partnerships), SURE (pharmaceutical management), and Capacity Project (human resource management and capacity building). In addition, integrated support supervision activities at central and district level also include malaria, tuberculosis, maternal and child health, and HIV/AIDS. This work will continue in FY 2010.

## **CAPACITY BUILDING WITHIN THE NMCP**

### Background

The NMCP is responsible for policy development, establishment of best practices, and planning, organizing, and overseeing all malaria control and prevention activities in the country. It also coordinates all malaria-related activities with key staff from the Community Health Department, Pharmacy Department, Epidemiology Surveillance Division, and with NGOs, donors, and other partners. The NMCP links with the Child Health and Reproductive Health Sections to incorporate malaria prevention and treatment into the integrated management of childhood illnesses and antenatal care services and works with the Health Education Section to develop and implement communications and behavior change activities for malaria.

The District Health system is a self-contained segment of the National Health System. Given the model of decentralization in Uganda, districts have clearly articulated mandates and responsibilities as laid out in the 1995 Constitution, the Local Government Act of 1997 amended in 2001, and

specific to health in the National Health Policy. The key responsibilities remain: planning, budgeting, additional resource mobilization, and allocation for health services; recruitment and management of personnel for district health services; passing by-laws related to health; and health service delivery. The health sub-districts (HSD) is a particular innovation of the health sector that provides for further decentralization of operational planning and management of services delivery lower than the district, to an estimated population of 100,000 that is equivalent with the constituency. A total of 80 districts were operational in FY 2007/08 compared to 56 in FY 2004/05 – the final year of the HSSP-I. The municipality (numbering 13) and town council levels have continued to gain prominence.<sup>21</sup>

In general, the health workforce is insufficient to deliver the government's health programs, training output does not keep up with losses, and the distribution of the available workforce is inequitable. One of the key challenges with the decentralized health system in Uganda is the lack of well-trained, motivated, and competent health workers at many points of health services delivery, particularly in rural areas. Those in place are over-worked and ill motivated. Delay in the recruitment process has also created difficulties in attracting competent health workers. This is particularly challenging for district and community-based malaria control program implementation.

Strong and effective leadership by the NMCP and the district malaria focal person is critical to the success of malaria control and prevention efforts in Uganda. The NMCP currently has 16 staff members: a Program Manager; a senior entomologist; a senior health educator; an environmental health coordinator; four senior medical officers/epidemiologists assigned to provide oversight and supervision to IPTp, HBMF, case management, M&E, and research; a laboratory technician; a health educator; a vector control officer; a medical officer; an administrator; a data manager; and two support staff members. Since 2008, the NMCP has increased its staff to include two full-time MOH M&E staff (one position of which is funded through the Global Fund). However, the M&E unit of the NMCP still lacks critical equipment (computers and accessories, scanners, and photocopiers) to adequately operate and fulfill its functions. With FY 2008 funding, PMI has supported the NMCP by equipping it with computers and accessories, scanners, and photocopiers, and has also provided an M&E specialist to provide on-the-job training to the the NMCP. The NMCP agreed to turn this position into a permanent position by 2011.

At the regional and district levels, malaria focal persons (diploma holders in vector control and/or specialists in parasitology and entomology) are appointed to oversee all malaria-related activities within their respective region or district health management teams under the supervision of District Health Officers. At the sub-county level, health inspectors or health assistants are responsible for implementation and supervision of public health activities, including malaria. At district and sub-district levels, however, capacity in human resources is limited due to a lack of funds, a shortage of qualified staff, and inadequate staff supervision.

### Progress to Date

Two PMI Senior Technical Advisors (CDC and USAID) and the Malaria Program Management Specialist have been critical in supporting NMCP activities in Uganda. The advisors have played key roles in the country's malaria technical working groups, the mechanism by which the NMCP coordinates with its partners. For example, in collaboration with all malaria partners, the advisors

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<sup>21</sup> Health Sector Strategic Plan 2005/06 to 2009/10, Midterm Review Report, April 2008, Ministry of Health

have contributed to the production of a draft NMCP National Malaria Policy that will be finalized soon.

To reach the NMCP targets for coverage with ACTs, ITNs, IPTp, and IRS, PMI and other partners will need to work together to strengthen the capacity of the NMCP and other collaborating departments and sections at the central, regional, and district levels to plan, conduct, supervise, monitor, and evaluate malaria prevention and control activities. This will require the improvement of working and communication facilities, logistical support, and strengthening human capacity at the NMCP through training, supervision, and mentoring.

Proposed PMI FY 2010 Activities: (\$600,000)

- **Capacity building support to NMCP:** PMI will provide equipment and technical advice (seconded staff) and will support NMCP activities geared at strengthening its coordination role with the various NGOs and donors involved in malaria control. This will include facilitating for support supervision, coordination meetings, and public symposia where different malaria updates and lessons learned can be shared with all partners (\$150,000);
- **Capacity building – District level:** PMI will support a USAID/Uganda led sector-wide initiative to develop the capacity of the health workforce in order to improve delivery of malaria-related services through the USAID/Capacity project in selected districts where PMI-supported activities are intense and human resources are limited. This will be accomplished in collaboration with central ministries (MOH/ Finance Ministry/Public Service Commission) and district administrative bodies (District Council/ Chief Administrative Officers/ District Public Service Commission) through assistance on strategic planning for health care human resources, speedy recruitment, and proper placement of health care workers. It also aims to enhance performance-based health workforce development, and systems development to improve work out puts, workforce retention, and job satisfaction. The target of this support will include the district (malaria focal persons, district vector control officers, sub district level health assistants, district health educators, DHT team, and health facility staff) as well as the central levels (NMCP). As with the other USAID/Uganda sector-wide initiative, a malaria point person and other malaria related field/facility based staff will be identified to ensure malaria-specific activities are accomplished. The final objective of this activity is to make available a sufficient, well placed, motivated and dedicated health workforce at the district and central level in order to enhance the effectiveness of malaria control activities. PEPFAR and the other USAID-funded programs will also provide funding for this project (\$400,000); and
- **Building local capacity for malaria program management through an on-the-job internship program:** PMI will support strengthening national capacity for program planning, management, and monitoring through a practical field placement of recent graduates in well-performing malaria programs where they can be mentored by experienced and senior program managers (both government/partners/NGOs) and receive on-the-job training. Five interns will be selected based on their academic performance as well as their desire to join the program. The interns will be supported to

work at the host institutions/field for a period of one to two years depending on the job to which they are assigned. The final outcome of this activity is to create a cadre of well trained and experienced future malaria control managers for Uganda (\$50,000).

## **STAFFING AND ADMINISTRATION**

The PMI staff in Uganda is comprised of two Malaria Technical Advisors (one from CDC and the other from USAID) who provide oversight to all PMI-related activities in Uganda, and a Project Management Specialist hired by USAID who supports the management and administration of PMI activities. One additional Project Management Specialist is expected to be hired in late 2009/early 2010. All PMI staff members are part of a single interagency team led by the Health Team Leader and supervised by the USAID Mission Director. All staff members report to the Health Team Leader. The CDC Senior Malaria Technical Advisor is supervised by CDC, both technically and administratively. Locally-hired staff to support PMI activities either in Ministries or in USAID must be approved by the USAID Mission Director.

The PMI team is responsible for the development and implementation of PMI strategies and work plans, the coordination of malaria activities with national authorities, the management of PMI-funded collaborating agencies, and the supervision of day-to-day PMI-related activities. The PMI team also oversees all technical and administrative aspects of PMI in Uganda, including finalizing details of the project design, managing and overseeing malaria prevention and treatment activities, monitoring and evaluation of outcomes and impact, and reporting of results. All technical activities are undertaken in close coordination with the MOH/NMCP and other national and international partners, including the WHO, UNICEF, the Global Fund, and private stakeholders.

Staff members from CDC and USAID headquarters provide additional technical support to the Uganda-based PMI team and, when needed, provide on-site technical assistance.

Because of the need to adhere to specific country policies and USAID accounting regulations, any transfer of PMI funds directly to Ministries or host governments will need to be approved by the USAID Mission Director and Controller.

### Proposed PMI FY 2010 Activities: (\$1,916,500)

- **Management of PMI:** Support two PMI Malaria Technical Advisors (one CDC and the other USAID) based at the USAID Mission in Kampala, including all work-related expenses (e.g., travel, supplies), and two Project Management Specialists (\$1,916,500).



Support service delivery at community level													
Support epidemic preparedness and response													
Demographic Health Survey (planning)													
Strengthen and expand sentinel sites, develop monitoring and tracking system, and support MEMS													



**MOP FY10 TABLE 2**

<b>Proposed Activity</b>	<b>Mechanism</b>	<b>Total Budget</b>	<b>Commodities</b>	<b>Description of Activity</b>	<b>Geographic area</b>
<b>PREVENTION</b>					
<b>IRS</b>					
Support for IRS in northern Uganda	Abt Associates	\$14,000,000	\$4,900,000	Two rounds of spraying in six districts of the Acholi and Lango regions	Kitgum, Pader, Gulu, Amuru, Apac and Oyam districts
Entomological Monitoring	Abt Associates	\$475,000		Establish seven entomological sentinel sites for biennial entomological surveillance and environmental monitoring	National
Environmental Monitoring Oversight	EMCAB	\$37,500		Independent environmental monitoring to oversee the safe use of insecticides	National
Develop local capacity to oversee quality IRS	Abt Associates	\$300,000		Capacity Development of GOU (NMCP, NEMA, and district government) to oversee technical quality, environmental monitoring, and accountability of IRS programs in Uganda	National
2 TDYs	CDC	\$25,000		Technical assistance visit for planning and monitoring entomological, vector control activities, and supervision of IRS activities	
<b>Subtotal</b>		<b>\$14,837,500</b>	<b>4,900,000</b>		
<b>LLINs</b>					

Procurement of LLINs	DELIVER	\$5,958,500	\$5,958,500	Procurement of approximately 1 million LLINs	National
Distribution of LLINs through MCP partners	MIHV/UHC	\$700,000		Distribution of 350,000 LLINs in collaboration with MCP partners. Costs for IEC/BCC, distribution, and M&E will come from MCP budget.	West Nile and Bushenyi Districts
Distribution of LLINs through ANC facilities	NUMAT	\$300,000		Distribution of approximately 200,000 LLINs to pregnant women through ANC. Costs include IEC/BCC, distribution, and M&E.	
Distribution of LLINs through the LLIN net facility and ANC clinics	SMP	\$1,000,000		Distribution of approximately 500,000 LLINs through ANC clinics. Costs include IEC/BCC, distribution, and M&E.	National

Matching funding for subsidized nets to private sector corporations that distribute free to end users	HIPS	\$75,000		75,000 LLINs through corporate health facilities working in partnership with HIPS, targeting pregnant women, children under five and other targeted vulnerable groups (1:1 matching).	National
<b>Subtotal</b>		<b>\$8,033,500</b>	<b>\$5,958,500</b>		
<b>IPTp</b>					
Comprehensive IPTp services at ANC facilities	SMP	\$650,000		Includes provision of safe water and cups to aid with DOT, training, IEC/BCC and support supervision.	Selected areas in Rest of Uganda (RoU)
Comprehensive IPTp services at ANC facilities	NUMAT	\$150,000		Includes provision of safe water and cups to aid with DOT, training, IEC/BCC and support supervision.	Selected districts in Northern Uganda
Support of private sector company health facilities for comprehensive IPT services	HIPS	\$150,000		Support comprehensive IPTp services through HIPS partner companies (1:1 matching).	Partner companies nationwide
SP efficacy for IPTp study	UMSP	\$300,000		Support for OR study to evaluate efficacy of SP for IPTp.	Partner companies nationwide
<b>Subtotal</b>		<b>\$1,250,000</b>			
<b>Subtotal: Prevention</b>		<b>\$24,121,000</b>	<b>\$10,858,500</b>		
<b>TREATMENT</b>					
<b>Diagnosis</b>					
Strengthen malaria diagnostic capacity	UMSP	\$500,000		Training on diagnostics in 12 districts (includes QA/QC and private sector training).	National

Strengthen malaria diagnostic capacity	SMP	\$500,000		Training on diagnostics in 12 districts (includes QA/QC and private sector training).	National
Strengthen malaria diagnostic capacity	HIPS	\$50,000		Training on diagnostics (1:1 matching funds) to private companies.	Partner companies nationwide
1 TDY	CDC	\$12,500		Technical assistance to strengthen diagnostics.	
<b>Subtotal</b>		<b>\$1,062,500</b>			
<b>Pharmaceutical management</b>					
Pharmaceutical supply chain management	SURE	\$400,000		TA to MOH, National Medical Stores, and Joint Medical Stores for improved quantification and forecasting, procurement, warehousing, distribution, LMIS and reporting.	National
<b>Subtotal</b>		<b>\$400,000</b>			
<b>Case Management</b>					
Procurement of malaria drugs and diagnostics	DELIVER	\$2,500,000	\$2,500,000	Procure drugs and diagnostics for malaria case management.	National
Strengthen role of Village Health Teams	SMP	\$600,000		VHTs to carry out household and community IEC/BCC for malaria prevention and control (and implement ACT treatment through CMDs, pending availability of ACTs).	Selected areas in RoU
Strengthen role of Village Health Teams	NUMAT	\$100,000		VHTs to carry out household and community IEC/BCC for malaria prevention and control (and implement ACT treatment through CMDs, pending availability of ACTs).	Selected districts in northern Uganda

Supportive supervision for case management (which may include community level)	NUMAT	\$150,000		Provide support supervision, in collaboration with the MoH, for case management, including in-service training.	Northern Uganda
Supportive supervision for case management (which may include community level)	SMP	\$550,000		Provide support supervision, in collaboration with the MoH, for case management, including in-service training.	Rest of Uganda (RoU)
Supportive supervision and job-aids for use of severe malaria drugs	SMP	\$100,000		Provide supportive supervision and job-aids to health care workers on the proper use of severe malaria drugs	National
Support Peace Corps work on malaria at community level	Peace Corps	\$25,000		Support for small grants for malaria projects for Peace Corps volunteers	National
Support for drug efficacy studies	UMSP	\$100,000		Support studies on drug efficacy for first line antimalarials	National
<b>Subtotal</b>		<b>\$4,125,000</b>	<b>\$2,500,000</b>		
<b>Subtotal: Treatment</b>		<b>\$5,587,500</b>	<b>\$2,500,000</b>		
<b>Other Activities</b>					
Support for epidemic surveillance and response	WHO	\$100,000		Strengthen system to detect epidemics and respond in 15 districts	Epidemic-prone districts
Private health sector support	TBD	\$750,000		Build capacity of private sector health care provision, including TA and supervision for case management and diagnostics	National
<b>Subtotal</b>		<b>\$850,000</b>			
<b>Monitoring and Evaluation</b>					

Strengthen sentinel sites	UMSP	\$500,000		Collect and monitor hospital and outpatient data on malaria-related cases and fatalities in 9 sites.	9 existing sites in Uganda
Program Monitoring and maintaining tracking system - NMCP	SMP	\$100,000		Sustain databases for NMCP to track programmatic progress in key malaria intervention areas (e.g. ITN tracking database).	National
Support to routine data systems - Districts	SMP	\$450,000		Support M&E of malaria activities in the district (includes support of data collection and analysis at facility and district levels).	National
Continued support to UMEMS	UMEMS	\$100,000		PMI data collection, dissemination, reporting, DQAs and partner meetings, etc.	National
UDHS	Measure/ DHS	\$650,000		Contribute towards 2011 DHS, including a verbal autopsy study.	National
End user verification tool implementation	SURE	\$100,000		Implement the end user verification tool.	
2 TDYs	CDC	\$25,000		Technical assistance visits for sentinel site surveillance and MIS.	National
<b>Subtotal</b>		<b>\$1,925,000</b>			
<b>Capacity Building</b>					
Capacity building support to NMCP	SMP	\$150,000		Seconded staff, equipment, coordination of partner meetings & supportive supervision.	National

Integrated supportive supervision through leadership training at district levels	TBD - New Capacity Dvpt bilateral	\$400,000		Target 20 districts chosen based on leadership capacity, performance, and scale of PMI involvement. Also support for central MOH leadership training.	National (20 model districts)
Build local capacity through internship program	TBD - New Capacity Dvpt bilateral	\$50,000		Support 5 interns to work with malaria-related partners.	National
<b>Subtotal</b>		<b>\$600,000</b>			
<b>Staffing and Administration</b>					
CDC Management	CDC	\$371,000			
USAID Management	USAID	\$1,545,500		Includes management and TDYs	
<b>Subtotal</b>		<b>\$1,916,500</b>	\$0		
<b>GRAND TOTAL</b>		<b>\$35,000,000</b>	<b>\$13,358,500</b>		

\*Rest of Uganda refers to regions outside of W. Nile, Acholi, Lango, and Karamoja, but does not imply ALL districts outside of these regions

**Table 3**  
**President's Malaria Initiative – Uganda**  
**Year 5 (FY10) Budget Breakdown by Intervention**

<b>Area</b>	<b>Commodities \$ (%)</b>	<b>Other \$ (%)</b>	<b>Total \$</b>
Indoor Residual Spraying	33%	767%	\$14,837,500
Long-lasting Insecticide-treated Nets	74%	26%	\$8,033,500
Intermittent Preventive Treatment	0%	100%	\$1,250,000
Treatment (including diagnosis, case management, pharmaceutical management, and procurement of drugs for malaria and RDTs)	45%	55%	\$5,587,500
Other Activities (including private sector support)	0%	100%	\$850,000
Monitoring and Evaluation	0%	100%	\$1,925,000
Capacity Building	0%	100%	\$600,000
Administration	0%	100%	\$1,916,500
<b>Total</b>	<b>38%</b>	<b>62%</b>	<b>\$35,000,000</b>

**Table 4**  
**President's Malaria Initiative – Uganda**  
**Year 5 (FY10) Budget Breakdown by Partner (\$)**

Table 4 PMI - Uganda Year 5 (FY 2010) Budget Breakdown by Partners			
7-Jul-09			
<b>Partner Organization</b>	<b>Geographic Area</b>	<b>Activity</b>	<b>Total Budget</b>
Abt Associates	Kitgum, Pader, Amuru, Gulu, Apac and Oyam	Procurement of IRS insecticide & equipment, training, IEC/BCC and environmental monitoring; support to NMCP IRS activities; strengthen entomologic capabilities of NMCP/VCD. Develop public sector capacity to oversee IRS.	\$14,775,000
STOP Malaria	South, not covered by NUMAT	Procurement & distribution of LLINs through ANC clinics, LLIN net facility and mass campaigns; IPT policy implementation; comprehensive IPTp services at ANC facilities; support supervision and job-aids on the use of severe malaria drugs; support to HMIS; program monitoring and tracking system development	\$4,100,000
NUMAT	Acholi and Lango regions	Distribution of LLINs through ANC clinics; comprehensive IPTp services at ANC facilities; supportive supervision to CMDs providing home-based management of fever	\$700,000
DELIVER	National	Procure severe malaria drugs and some buffer stock of ACTs, procure 2 million RDTs	\$8,458,500
HIPS	National	Subsidized nets to private sector corporations that add additional subsidies for free distribution to end users and comprehensive IPT services with PMTCT at private sector health facilities	\$275,000
EMCAB	National	Independent environmental monitoring oversight	\$37,500
SURE	National	TA to MOH, National Medical Stores, and Joint Medical Stores for improved quantification and forecasting, procurement, warehousing, distribution, LMIS and reporting.	\$500,000
TBD - New Capacity Dvpt bilateral	National	Target 20 districts chosen based on leadership capacity, performance, and scale of PMI involvement. Also support for central MOH leadership training and interns to work with malaria-related partners	\$450,000

Measure/DHS	National	Contribute towards 2011 DHS	\$650,000
UMEMS	National	PMI data collection, dissemination, reporting, DQAs and partner meetings. Also to implement the End user verification tool	\$100,000
WHO	Epidemic prone districts	Strengthen system to detect epidemics and respond in 10 districts	\$100,000
MIHV/UHC	West Nile and Bushenyi Districts	Distribution of 1,020,000 LLINs. Costs include IEC/BCC, distribution and M&E, and collaboration with MCP partner in W. Nile	\$700,000
Peace Corps	National	Support for Peace Corps volunteers in their villages to participate BCC	\$25,000
UMSP	National	Sentinel sites, diagnostic training and drug resistance monitoring	\$1,400,000
TBD	National	Support for improvement of malaria services through the private sector	\$750,000
CDC TDYs	National	TDYs	\$62,500
CDC	National	Staffing and administration	\$371,000
USAID	National	Staffing and administration	\$1,545,500
Total			\$35,000,000