

PRESIDENT'S MALARIA INITIATIVE

UGANDA

Malaria Operational Plan (MOP)

FY 2008

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ABBREVIATIONS

ACT	artemisinin-based combination therapy
AED	Academy for Educational Development
AL	artemether-lumefantrine
ANC	antenatal care
AQ	amodiaquine
AS	artesunate
BCC	behavior change communication
CBOs	community based organizations
CDC	Centers for Disease Control and Prevention
CDD	community drug distributors
CPHL	Central Public Health Laboratory
CSO	community service organizations
DANIDA	Danish International Development Agency
DDT	dichloro-diphenyl-trichloroethane
DFID	United Kingdom Department of International Development
DHS	Demographic and Health Survey
DOT	directly observed treatment
DRH	Division of Reproductive Health
DSS	demographic surveillance system
EARN	East Africa Roll Back Malaria Network
ESR	epidemic surveillance and response
FANC	focused antenatal care
FBOs	faith-based organizations
GFATM or Global Fund	Global Fund to Fight AIDS, Tuberculosis, and Malaria
GOU	Government of Uganda
HBMF	home-based management of fever
HIPC	Highly Indebted Poor Countries
HMIS	health management information system
HPC	Health Partners in Communication
HSSP	health sector strategic plan
IDI	Infectious Disease Institute
IDP	internally displaced person
IEC	information, education and communication
IMCI	integrated management of childhood illnesses
IPTp	intermittent preventive treatment in pregnancy
IRS	indoor residual spraying
ITN	insecticide-treated net
JICA	Japanese International Cooperation Agency
JSI	John Snow International
JUMP	Joint Uganda Malaria Program
LLIN	long-lasting insecticide-treated net
MEMS	Monitoring and Evaluation Management Systems
MERG	Monitoring and Evaluation Reference Group
MoFPED	Ministry of Finance, Planning and Economic Development
MOH	Ministry of Health
NDA	National Drug Authority
NGO	non-governmental organization
NMCP	National Malaria Control Program

NMS	National Medical Stores
PAF	Poverty Action Fund
PEPFAR	President's Emergency Plan for HIV/AIDS Relief
PMTCT	prevention of mother to child transmission (of HIV)
RBM	Roll Back Malaria
RDT	rapid diagnostic test
RH	Reproductive Health
RTI	Research Triangle Institute
SP	sulfadoxine-pyrimethamine
UCSF	University of California, San Francisco
UDHS	Uganda Demographic and Health Survey
UMSP	Uganda Malaria Surveillance Project
UNICEF	United Nations Children's Fund
UPHOLD	Uganda Program for Human and Holistic Development
USAID	United States Agency for International Development
USG	United States Government
VCU	Vector Control Unit
WHO	World Health Organization
WHOPES	World Health Organization Pesticide Evaluation Scheme

EXECUTIVE SUMMARY
UGANDA
YEAR 3

In June 2005, the United States Government announced that Uganda had been selected to be included in 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 the President’s Malaria Initiative (PMI) is to reduce malaria-related mortality by 50% in vulnerable groups—children under five, and pregnant women. This will be accomplished by achieving 85% coverage of these groups with four key interventions: indoor residual spraying (IRS), insecticide-treated mosquito nets (ITNs), intermittent preventive treatment of malaria in pregnancy (IPTp), and artemisinin-based combination therapy (ACT).

Malaria is responsible for more illness and death than any other disease in Uganda. Nearly all of Uganda’s residents are exposed to medium or high levels of transmission. As such, the burden of malaria can be felt throughout the health care system. One-quarter to one-half of all outpatient visits to health care facilities are due to malaria. Children under five are most affected by malaria, which causes half of inpatient pediatric deaths.

The 2006 Demographic and Health Survey (DHS) contains the most current information on national coverage of malaria indicators in Uganda and serves as the PMI baseline. According to the DHS, household ownership of at least one ITN remains low at 16% and usage among children under five and pregnant women is even lower at 10%. Although antenatal clinic attendance is high, only 18% of attendees completed the recommended two-dose regimen of IPTp . The DHS also reported that, of the more than 40% of children presenting with fever in the two weeks preceding the survey, only 29% had taken an antimalarial drug the same or next day.

Uganda is the recipient of two malaria grants from the Global Fund to Fight AIDS, Tuberculosis, and Malaria (Global Fund). The Global Fund Round Two grant has dispersed \$21 million of Uganda’s approved \$23 million mainly for the procurement and distribution of ITNs. Uganda’s Round Four grant, of which \$79 million of its approved \$89 million has been dispersed, funded the procurement and implementation of ACTs. Uganda has requested additional funds through Round 7 for scaling-up ITN procurement and distribution.

The following table outlines some of PMI’s accomplishments in Year 2:

Proposed year one targets (PMI and Partners)	Expected status
IRS in seven epidemic-prone and endemic districts in Uganda targeting 600,000 households	PMI sprayed 121,000 households in the epidemic-prone districts of Kabale and Kanuagu. In partnership with WHO and DFID, PMI sprayed almost 200,000 households in IDP camps in Kitgum and Padar and is currently spraying IDP camps in the adjacent districts of Amuru and Gulu. Over 85% of targeted households were sprayed. In January, 2008, PMI will spray the highly endemic district of Apac.
Distribution of 1.1 million free ITNs to pregnant women and children under five	PMI distributed over 580,000 free LLINs to pregnant women and children under five in partnership with Malaria No More. PMI has also distributed over 230,000 additional LLINs through ANC clinics.

Provide training in focused-antenatal care to increase IPTp uptake	Sufficient stocks of SP are in country. PMI supported the development and distribution of 3,000 wall charts and gestational wheels through health mentors during support-supervision visits to health facilities.
Train and provide supportive supervision to health workers implementing the new ACT drug policy	6,191 health workers received on-the-job training on ACTs and 1,204 health workers were assessed for appropriate clinical management of malaria patients.

PMI/Uganda will build and expand on its programs and successes in the first two years. In July 2007, a planning team comprised of representatives from USAID, the Centers for Disease Control and Prevention, and the Uganda National Malaria Control Programme (NMCP) conducted stakeholder interviews to determine the progress, identify emerging challenges and opportunities, and ultimately develop the Year 3 plan. PMI will continue to support existing NMCP strategies and plans and coordinate with international and national partners to complement funding and efforts. The following activities will be supported in FY08:

Indoor residual spraying

The PMI will support an IRS strategy that prevents malaria outbreaks in epidemic-prone regions, IDP camps, and endemic districts while continuing to build the capacity of the Ministry of Health to manage and conduct IRS campaigns. In Year 1, PMI sprayed over 100,000 households in the Kabale district. In Year 2, PMI significantly expanded IRS to cover seven districts, both in the epidemic-prone southwest and the highly endemic conflict-ridden north. To date, the IRS campaign and associated activities has covered 600,000 households and trained over 1,500 local spray personnel.

Building on experience from the first two years, PMI will support spraying in the low elevation areas of three epidemic-prone districts (Kabale, Kanunugu, and Rukungiri). In May of 2008, PMI will spray approximately 33,000 households in nine subcounties in Kabale, 50,000 households in nine subcounties in Kanugu, and 50,000 households in nine subcounties in Rukungiri. PMI will spray a second round in the northern conflict districts of Kitgum, Gulu, Pader, Amoro, Apac, and Lira in early 2008, covering over 330,000 households. Finally, PMI will expand its spraying efforts to include 350,000 households in the neighboring northern districts of Kokolo, Amolatar, Kabermaido, Amuria, and Soroti. PMI expects to achieve at least 85% coverage of the 800,000 households targeted for spraying.

Insecticide-treated nets:

With the support of PMI and other donors, Uganda has made considerable progress in scaling-up prevention and treatment activities. Since 2006, 725,000 free long-lasting ITNs have been distributed by PMI to children under-five, pregnant women and people living with HIV/AIDS; by the end of September, another 102,000 nets will have been distributed. These LLINs have been distributed through both antenatal clinics and community-based organizations and as part of a mass campaign in partnership with Malaria No More and the Global Fund. To complement increasing net ownership, PMI also funded the development and airing of radio talk show programs to raise awareness about ITNs and proper usage.

In Year 3, PMI will procure 750,000 LLINs for free distribution to target populations through mass campaigns, faith-based and community-based organization partnerships, and antenatal clinics. To strengthen the private sector, PMI will continue to develop local net manufacturing capacities and increase the Uganda Bureau of Standards' ability to monitor net quality. To address the challenge of improper usage of nets, PMI will continue to support mass media and community mobilization strategies to increase awareness of the need to use ITNs correctly and consistently. As a result of these combined efforts, it is expected that PMI will increase the percentage of children under five and pregnant women sleeping under an ITNs will rise to 40%.

Intermittent preventive treatment of pregnant women):

Although IPTp has been national policy since 1998, the 2006 DHS found that only 18% of women received two doses of sulfadoxine-pyrimethamine (SP). To increase the uptake of IPTp, Years 1 and 2 of PMI supported the development and distribution of 3,000 wall charts and gestational wheels to health mentors during support-supervision visits to health facilities. In 2007, PMI supported a nationwide information, education and communication campaign to increase awareness of the importance of IPTp during pregnancy and improve attendance at antenatal clinics. PMI will provide supportive supervision to antenatal care workers and registers to improve record keeping in antenatal clinics. Safe water will be provided so that women can take SP under direct observation at the clinics. PMI expects to increase the percentage of pregnant women receiving two doses of SP to 40% in Year 3

Case management:

Diagnosis: Diagnostic capacity in Uganda remains weak due to inadequate training for laboratory technicians and a shortage of equipment, supplies and human resources for laboratory services. During Year 2, PMI began to support a comprehensive diagnostic training program for laboratory technicians and health care workers in malaria microscopy. PMI will continue to fund this program in Year 3 and will also train teams of health care workers and technicians on malaria diagnosis in 96 health centres nationwide.

Pharmaceutical Management: As in many other African countries, poor pharmaceutical management continues to hinder the distribution and administration of ACTs. In Years 1 and 2, PMI supported technical assistance to implement the new ACT drug policy. As a result, Uganda was able to rapidly distribute an emergency order of three million treatments of ACTs and improve the quantification of ACT needs to regularize ordering. In Year 3, PMI will continue to provide technical assistance to update the quantification of ACTs and other key antimalarials. PMI will also provide support to the NMCP to establish and implement a computerized malaria commodities information acquisition system that provides accurate, reliable, and timely information on use and availability of malaria medicines at the district, regional, and national level.

Treatment: Over the last two years, Uganda successfully implemented ACTs with PMI support. In Year 2, PMI assisted NMCP staff to conduct supportive supervision in 48 districts. A total of 6,191 health workers from 1,730 health facilities received on-the-job training. Clinical management was assessed from the perspective of both providers and patients: 1,204 health workers were assessed for knowledge of clinical management of malaria, and 1,077 clients completed exit interviews on perception of service delivery. Finally, PMI supported the development and distribution of 6,000 job aids to 40 districts.

In Year 3, PMI will help the Ugandan NMCP begin the transition to community-based distribution of ACTs. To support this transition, PMI will provide funding for the training, supportive supervision and incentives for community drug distributors. Meanwhile, PMI is continuing to provide supportive supervision of health care workers and help train private providers on the new drug policy. To address severe malaria cases, PMI will procure antimalarial drugs for the treatment of severe malaria and train personnel in their use. To improve diagnostic capacity and pharmacovigilance nationwide, PMI will continue to train laboratory technicians and provide technical assistance to the National Drug Authority to improve post-market surveillance of ACTs. At the end of Year 3, it is expected that 40% of children under five with fever will receive antimalarial drugs within a day of developing a fever.

Epidemic Response and Surveillance:

PMI will provide technical assistance to improve the NMCP's ability to detect and respond to epidemics in the fifteen epidemic-prone districts in Uganda in Year 3. This includes support for the investigation of suspected outbreaks and coordinated response through WHO. PMI will also fund the procurement of commodities such as ITNs to enable the NMCP to respond effectively to an outbreak.

Monitoring and Evaluation (M&E):

PMI includes a strong monitoring and evaluation component to measure progress against project goal and targets, and help identify and correct problems in program implementation. In Years 1 and 2, PMI helped strengthen the network of sentinel sites and supported a demographic surveillance site to monitor the progress of malaria interventions.

The Year 3 M&E plan includes support for a Malaria Indicator Survey to track mid-term progress towards PMI goals. PMI will continue to provide support for Iganga demographic surveillance system site, and maintain the 14 existing sentinel sites to measure malaria-related mortality. The monitoring and evaluation plan will be coordinated with the NMCP, Global Fund, and other partners to ensure resource-sharing and standardize data collection and reporting.

Building NCMP Capacity:

In Years 1 and 2, PMI technical advisors provided assistance to the NMCP to aid in planning, monitoring and evaluation and policy development. In Year 3, PMI will begin to provide direct support to the NMCP. This will include the provision of equipment and computers and part time seconded staff in the areas of entomology and monitoring and evaluation, as well as support for the supervision of district programs.

Budget:

The FY 2008 PMI budget for Uganda is \$22 million. Of this amount, 39% will be used for IRS, 26% will support the procurement and distribution of ITNs/LLINs, 4% will be spent on IPTp, 14% on diagnosis and malaria treatment, 8% for M&E and 40% overall will be allocated toward the purchase of commodities.

THE PRESIDENT'S MALARIA INITIATIVE

In June 2005, the United States Government (USG) announced a new 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%. This will be achieved by reaching 85% coverage of the most vulnerable groups: children under five years of age, pregnant women, and people living with HIV/AIDS, with proven preventive and therapeutic interventions, including artemisinin-based combination therapies (ACT), indoor residual spraying (IRS), intermittent preventive treatment for malaria in pregnancy (IPTp) and long-lasting insecticide-treated nets (LLINs).

The President's Malaria Initiative (PMI) began in three countries in 2006 (Angola, Tanzania, and Uganda). In 2007, four countries were added (Malawi, Mozambique, Senegal, and Rwanda). In 2008, eight additional countries (Benin, Ethiopia (Oromia Region), Ghana, Kenya, Liberia, Madagascar, Mali, and Zambia) were added to reach a total of 15 countries with PMI funding. Funding began with \$30 million in Fiscal Year (FY) 06 for the initial three countries, \$135 million in FY07, will increase to \$300 million in FY08 and FY09, and reach \$500 million by FY10.

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

This document, developed in collaboration with the Government of Uganda and other stakeholders, presents a detailed implementation plan for the third year of the 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 the PMI, and provides a description of proposed Year 3 (FY08) PMI activities.

MALARIA SITUATION IN UGANDA

In most parts of Uganda, temperature and rainfall are sufficient to allow a stable, year round (perennial) malaria transmission at high levels with relatively little seasonal variability. Malaria ranks as the number one reported disease, causing high morbidity and high economic and social impact. It is estimated that a single case of malaria in Uganda costs a sum equivalent to ten working days. Malaria is highly endemic in 95% of the country, representing approximately 90% of the population of 29.4 million. The remaining 5% consists of seasonal epidemic-prone malaria transmission areas in the highlands of the southwest, midwest, and along the eastern border with Kenya and northeastern border of Sudan, and represents approximately 10% of the population.

- Achieve maximum synergy between malaria control and health system development as well as other programmes within the Health Sector Strategic Plan II;
- Apply an evidence based approach to the further development and improvement of malaria control interventions; and
- Document progress and use successes to secure resources for the future.

Uganda has several policy and strategy documents that support treatment and prevention of malaria including: 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 second edition: 2006); Management of Uncomplicated Malaria, a Practical Guide for Health Workers, 3rd Edition, (2005), and the Policy and Strategy for Indoor Residual Spraying (2006).

PMI fully supports the Ministry of Health (MOH)/ National Malaria Control Program (NMCP) guidance on implementation of malaria control activities through a broad RBM partnership which includes all sectors of society and which is based on the three ones: **one strategic plan** under which all partners work and contribute, **one coordination mechanism** to ensure maximum synergy and avoidance of duplications, and **one M&E plan** to measure progress and assess the impact. The MOH through the NMCP has the leading role in the coordination of efforts with an improved Interagency Coordination Committee and its Technical Working Groups as the major tool.

Overview of the Health System

The formal health system in Uganda is stratified into the following categories: hospitals (at the district, regional, and national levels), health center IV (at the health sub-district level), health center III (at the sub-county level), and health center II (at the parish level). In each of districts, the Director of District Health Services is responsible for overseeing all facilities in the district, including those operated by not-for-profit organizations (mainly FBOs) and the private sector. Some of these responsibilities are delegated to the health sub-districts which form the lower level of health services management. According to the 2002 health facility survey, 41% of hospitals, 5% of health center IVs, 18% of health center IIIs, and 24% of health center IIs are operated by NGOs.

Private-for-profit services for provision of medicines such as pharmacies and drug shops, play an important role in the delivery of health services. 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. Although not physical structures, the health center I is recognized as the community level which provides health services through volunteers and is increasingly organized as a “village health team.”

Lack or inadequacy of human resources at health facilities has been a critical factor in the poor quality of health service delivery. Recently, however, approximately 2,900 health workers were recruited into the system, increasing the proportion of approved posts filled with trained staff from 33% to 68%.¹ According to the Resource Inventory of 2004, a total of 27,500 health workers were employed and 9,100 of these were in the not-for-profit private sector. In spite of this progress, further qualified staff is needed, particularly in the area of laboratory diagnosis.

The sources of financing for the health sector include the central government budget (counting development partner budget support); conditional as well as unconditional grants to districts, local government and parastatal entities; project support through development partners; private not-for-profit agencies; private firms and households (through insurance); and patient out-of-pocket

¹ HSSP II Volume I, MoH 2005

provided a malaria technical expert to the GOU to move the GOU's malaria programs forward. CDC has also supported U.S.-based organizations that work with Makerere University to conduct operational research and to strengthen its capacity.

GOALS AND TARGETS OF PRESIDENT'S MALARIA INITIATIVE

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

1. >90% of households with a pregnant woman and/or children under five will own at least one ITN;
2. 85% of children under five will have slept under an ITN the previous night;
3. 85% of households will own at least one ITN;
4. 85% 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;
5. 85% of pregnant women will have slept under an ITN the previous night;
6. 85% 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 6 months

CURRENT STATUS OF MALARIA INDICATORS

The following table shows the baseline figures for the major PMI indicators, as estimated by the 2006 Uganda Demographic and health Survey:

Recent Estimates of Malaria Indicators: 2006 Uganda DHS	
Indicator	Estimate
Proportion of children under five years old with fever in the last two weeks who received treatment with an antimalarial according to national policy within 24 hours of onset of fever	29%
Proportion of children under five years old with fever in the last two weeks who received treatment with ACTs within 24 hours of onset fever.	1.1%
Proportion of households with at least one ITN	15.9%
Proportion of children under five years old who slept under an ITN the previous night.	21.6%
Proportion of pregnant women who slept under an ITN the previous night.	10.1%
Proportion of women who received two or more doses of IPTp during their last pregnancy in the last two years	NA
Proportion of targeted houses adequately sprayed with a residual insecticide in the last 12 months (source Activity Reports)	98.7%

EXPECTED RESULTS – YEAR THREE

By the end of Year Three of PMI in Uganda (31 March 2009), the following targets will have been achieved:

Prevention:

includes developing a plan for the timing, number and projected size of baseline and post-IRS vector collections, the types of data that will be collected during the analysis of the specimens, and the recording and analysis of the data. The contractor will also assist the NMCP and the District Vector Control Officer in providing supportive supervision for monitoring.

Proposed year three activities (\$8,520,000/approx. 795,000 households):

1. *Support second round of spraying in four IDP districts in northern Uganda:* The PMI will support the second round of spraying in IDP camps, urban areas and newly settled villages in Pader, Kitgum, Gulu and Amoro districts of northern Uganda. (\$2,000,000)
2. *Support one round of IRS in six highly endemic districts:* PMI will assist NMCP/MOH to conduct one round of IRS in Lira, Dokolo and Amolatar districts in northern Uganda and three additional districts categorized as highly endemic in eastern Uganda, namely Kabermaido, Amuria and Soroti. (\$4,400,000)
3. *Support a third round of targeted IRS in Kabale and Kanungu District:* The PMI will assist with a third round of IRS in 9 sub counties affected by malaria in Kabale (approximately 35,000 of households) and 6 sub counties in Kanungu district covering approximately 75,000 of households. (\$800,000)
4. *Support one round of targeted IRS in Rukungiri District:* The PMI will conduct one round of spraying in this highland area, which has both high transmission and epidemic-prone transmission. It is estimated that nine sub counties in the district fall within a malaria risk zone. (\$750,000)
5. *Support entomologic monitoring and evaluation:* PMI will support the IRS baseline and post intervention entomologic surveillance and conduct susceptibility, bio assays and vector bionomic studies related to IRS (\$70,000)
6. *Support the MOH in IEC/BCC/community mobilization:* Continue IEC/BCC activities specific to IRS, and support campaigns to mobilize and educate communities on what IRS is, its benefits and risks, and proper procedures for safety and community participation. (\$500,000)

Insecticide-Treated Nets

Progress to Date, Challenges and Needs

Long-lasting insecticide treated bednets (LLINs) remain one of NMCP's key intervention strategies. Based on the 2006 DHS, the percentage of children under five and pregnant women who sleep regularly under ITNs remains low. Only 9.7% of under fives and 10.1% of pregnant women slept under ITNs the previous night and national household coverage (households owning one or more ITNs) is 15.9%. Ownership varies by geographic region. In the north, where there have been major efforts to distribute ITNs, ITN ownership was found to be the highest at 28%, while the Central regions were the lowest at 8.4%.

Net Distribution Strategies:

Uganda currently has a four- pronged strategy for ITN distribution:

- Free distribution through antenatal(ANC)/expanded program on immunization (EPI) clinics
- Free distribution to vulnerable groups through campaigns

1. *Procure and distribute free LLINs through ANC clinics in Northern Uganda:* PMI will continue to procure and distribute LLINs through ANC clinics to target pregnant women. Approximately 357,000 LLINs in 24 districts will be distributed. (\$2,320,000)
2. *Procure and distribute LLINs through mass campaigns and the net facility:* PMI will continue to provide approximately 400,000 free LLINs to pregnant women and children under five through mass campaigns. LLINs will also be provided through the LLIN net facility to pregnant women and children under five through NGOs in districts with low LLIN coverage. (\$2,600,000)
3. *Support of the private sector for ITNs and monitoring net distribution:* PMI will continue to support development of the private sector net market and implement a program to expand ITN distribution to open markets in rural and peri-urban areas targeting vulnerable populations (e.g. pregnant women and children under five). Specifically, support will emphasize increased quality control by building capacity within the Uganda Bureau of Standards, and strengthening local net manufacturing capacity in Uganda. It is expected that this will be the last year of funding for this activity. (\$450,000)
4. *Continue IEC on correct and consistent use of LLINs:* PMI will continue to support behavior change at community level and mass media activities to ensure that the LLINs are correctly and consistently used. (\$380,000)

Intermittent Preventive Treatment

Progress to Date/Challenges and Needs:

The policy for IPT for pregnant women was adopted in 1998 to cover all of Uganda's districts. This policy is included in the Reproductive Health Unit (RHU)'s focused antenatal care policy and within the NMCP strategy. A focal person is responsible for malaria in pregnancy-related activities and works closely with the RHU. Both the NMCP and the RHU are responsible for the training, support supervision, monitoring and evaluation, operational research and provision of IPT services at health facilities and in the community.

Although the policy has been in place for over nine years, the 2006 DHS data indicate that only 16.2% of pregnant women receive two doses of IPT and only 36.6% of pregnant women receive just one. Given that 85% of women have at least two visits to the ANC and that the median first ANC visit to the clinic is at 5.5 months, IPTp rates should be much higher. There are several reasons for the low IPTp rates, which include: 1) intermittent drug supply with frequent stock outs of SP, 2) lack of sufficient personnel and registers to keep accurate records, 3) women preferentially attending ANC clinics of perceived higher quality which result in overburdening the system and thereby a reduction in services provided, 4) poor morale among the overwhelmed staff, 5) pregnant women presenting for the first time too late to take a second dose of SP, 6) lack of basic clean drinking water and cups for directly observed treatment of IPT, 7) the perception by some women that taking drugs during pregnancy may cause harm to the baby, 8) a poorly written policy which calls for only two doses of IPTp as opposed to monthly doses after quickening.

A change in policy may help Uganda increase its IPTp uptake. Currently the Uganda policy guidelines recommend that women receive at least two doses of IPT in the second and third trimester at least one month apart. Monthly SP dosing may also be easier to implement programmatically than two-dose IPTp. The current guidelines result in confusion on the part of health providers as to when to provide IPT, and missed opportunities when a woman comes to the clinic twice in the same trimester. There is no evidence that more than three treatments with SP in

the second and third trimesters is harmful to the mother or fetus. Experience from Malawi showed that a change in policy to monthly doses instead of just two doses increased complete SP IPTp coverage to 79%. Thus, a change in Uganda's policy as listed below may result in an increase in SP IPTp coverage and may be a more successful intervention programmatically than 2-dose SP. A monthly IPT policy would implement the following:

1. Provide every woman with a dose of SP/Fansidar at every ANC visit after quickening.
2. Women who do not know their HIV status should receive at least three doses of SP IPTp.
3. Women who are HIV-infected should receive daily septrin, and should not receive SP IPTp.
4. Women who are HIV-negative should receive at least two doses of SP IPTp.
5. There is no harm in giving four or five doses of SP IPTp, for those women who come in for monthly ANC visits.
6. Women can receive SP IPTp through the last week of pregnancy without risk to the mother or baby, and in fact, both benefit from additional dosing.
7. SP IPTp should not be given if SP was given in the prior four weeks.

PMI support to Malaria in Pregnancy

Utilizing FY06 resources, PMI facilitated the adoption and printing of focused-antenatal care (FANC) training manuals, supported a FANC training for health workers, ensured adequate requisitioning of SP from medical stores, and supported an MOH IEC nationwide advocacy plan for IPT. With FY07 funds, the PMI plans to conduct national FANC training for the private sector and NGO health workers on IPTp to complement the public sector trainings, continue to strengthen IPTp through ANC clinics in Northern Uganda, and continue to support the MOH IEC district advocacy plan.

In FY07 PMI is strengthening and supporting FANC training and improved IPTp at ANC clinics, by integrating it with PMTCT, and through directly observed treatment at the community level in all areas of the country including Northern Uganda. Activities to promote IPT include advocacy, training, supportive supervision, and other activities related to the NMCP IPT strategy. The data collection unit of MOH is also being strengthened to improve collection and analysis of IPT uptake data at the district level.

Proposed Year Three Activities (\$850,000):

1. *Discussions with MOH to revise national SP IPTp guidelines:* In Uganda, the current two-dose SP IPTp strategy given in the second and third trimester may be contributing to low coverage of this important intervention. PMI will support a review of the Uganda SP IPTp guidelines. (\$25,000)
2. *Integrate supportive supervision at the district level to ANC health workers:* To build on the trainings performed using FY06 and FY07 resources, PMI will provide support for integrated supervision for ANC care front line health workers (with emphasis on IPTp, ITNs and appropriate case management of pregnant mothers). (\$450,000)
3. *Provide safe water and cups:* One remediable factor that has limited the ability of women in Uganda to take SP as a directly observed treatment has been the lack of clean water and cups at the respective points of service. PMI will provide the commodities and training necessary to enable the provision of safe water in an attempt to remove this as a barrier of IPTp uptake. (\$150,000)

drug surveillance, and further build its capacity to fulfill its regulatory functions.
(*\$200,000*)

Malaria Diagnosis

Progress to Date, Challenges, and Needs:

Most malaria diagnoses in health facilities in Uganda are based on symptoms and not microscopy. However it is well established that malaria cannot be diagnosed with certainty on clinical criteria alone. In the areas of low to moderate transmission improper diagnosis results in children often being treated for malaria when they have a fever, when the likelihood of malaria may be extremely low. Thus without laboratory diagnostic capacity of malaria it is very likely that the child that presents with a fever but without malaria may not be treated with appropriate life saving antibiotics or other supportive health care measures. With this scenario, ACTs will be used unnecessarily adding to the financial cost of the program and the pressure on the drug will increase. This may also result in unnecessary stock outs of ACTs.

Ultimately diagnosing clinical malaria falsely inflates the malaria-attributable mortality rate. Proper treatment should be given for proper diagnosis and malaria diagnosis is reliant on laboratory conformation. To ensure the proper use of antimalarial drugs and reduce the unnecessary use of these drugs that occurs when patients are presumptively-treated for malaria, accurate laboratory diagnosis is critical.

At the sub-county level, the health center level III is the lowest level in the health delivery system with a laboratory and is supposed to offer basic laboratory tests. Laboratory personnel in health center III are not required to have university training or a certificate, often rely on on-the-job-training, and do not have the academic foundation necessary for a proper slide reading.

Although in 2006 PEPFAR funded 35% of the national requirements of microscopes, a large deficit still remains. Only 346 of the 901 health center IIIs have functional laboratories – i.e. with microscopes and laboratory personnel. The Central Public Health Laboratory (CPHL) is mandated to coordinate, monitor, and supervise all the health center III and IV level laboratories but is grossly understaffed, with only three people and limited resources.

In August 2007, the NMCP adopted new recommendations for use of rapid diagnostic tests (RDT). A new policy document entitled “Policy Guidelines on the use of Rapid Diagnostic Tests in Malaria Management” is currently in circulation as well as the trainer’s guide, “Rapid Diagnostic Tests in Malaria Management.” The NMCP policy recommends use of RDTs in all health center II and IIIs where there is no microscope or microscopist. In February, 2007 a meeting of policy stakeholders resolved that:

- Hospitals, health center IVs IIIs that have microscopes and microscopists will use microscopy for malaria diagnosis.
- Health center IIs and IIIs that do not have microscopes or microscopists will use RDTs.
- HRP2 type RDTs will be used in Uganda.

The NMCP has received funding to purchase and do training in RDTs under the Global Fund Round Four, Phase one and two funding. RDTs may be introduced into health center III low transmission, epidemic-prone areas as early as 2008. The NMCP is planning to do a feasibility study of diagnosis with RDTs and training of personnel in six districts. They plan to later expand to 21 districts (out of 81).

1. *Malaria Indicator Survey*: As part of the evaluation of PMI a MIS will be done at the mid-point of PMI implementation (2008) (\$1,000,000).
2. *Strengthen sentinel site surveillance*: The existing 14 sites will continue to be strengthened to provide quality data on malaria morbidity and mortality. Electronic data management systems will be established in at least one site per district that will target both the health centers IVs and hospitals in the district. Health staff will be trained in these systems and in quality data collection. Each site will receive supportive supervision three times a year, will receive assistance with internal quality control systems for health facility laboratories, and external quality assurance for laboratory diagnosis of malaria. (\$300,000)
3. *Strengthen the Iganga DSS site*: In year three, PMI will focus on strengthening the Makerere University DSS site in Iganga, which may provide opportunities to better understand all-cause mortality and malaria related mortality. From the Verbal Autopsy Survey, the child mortality rate in the Iganga site was much lower than the expected national rate, indicating that some death cases (probably in newborns) have been missed. The main areas of verbal autopsy work include: (a) the introduction of a new household survey instrument which includes a birth history questionnaire for all women in the household, and a new baseline validation study; (b) revision of VA/SA tools based on the new WHO tool; (c) introduction of revised and updated coding forms for entering mortality cause (which is based on physicians judgment) to clarify better diagnoses that were confusing (i.e. acute febrile illness, unspecified acute febrile illness, malaria etc)). (\$100,000).
4. *Program monitoring and tracking system development*: Support for developing databases for NMCP to track programmatic progresses in key malaria intervention areas (HMIS data on ITN coverage, IRS coverage and quality improvement). Assist NGOs with community monitoring and tracking of ITN distribution and utilization. (\$150,000).
5. *Continue support for MEMS*: The MEMS project serves as the central data collection point to analyze PMI progress towards the goals and allow for rapid reporting of results (\$100,000).

CAPACITY BUILDING AND SUPPORT TO THE NMCP

The M&E unit of the NMCP lacks critical human resource capacity, a malaria M&E plan, and equipment (computers and accessories, scanners, and photocopiers) to operate the unit. Currently there is no mechanism in place at the malaria control program to evaluate large-scale malaria interventions.

Proposed Year Three Activities (\$100,000):

In year three, the PMI will provide support for the NMCP. This will include seconded staff to provide M&E support and entomological support as well as support for equipment and other supplies (\$100,000).

PRIVATE SECTOR PARTNERSHIPS

In FY07, PMI partnered with Malaria No More to distribute over 500,000 LLINs to pregnant women and children under five in select districts. Other private sector donors such as Barclays of Uganda and United Way also donated a few thousand LLINs to the campaign.

In the future, the PMI will continue to foster such private sector partnerships. Other potential opportunities include continuing to work with private sector drug distributors to ensure that ACTs are distributed appropriately (see Case Management section), and that local net manufacturers prosper in Uganda (see ITN section).

STAFFING AND ADMINISTRATION

Two senior technical advisors on malaria oversee PMI in Uganda, one representing CDC, and one representing USAID. In addition, two more FSNs will be hired by USAID to support management of PMI activities. All PMI staff members will be part of a single inter-agency team led by the USAID Mission Director. The PMI team shares responsibility for development and implementation of PMI strategies and work plans, coordination with national authorities, managing collaborating agencies, and supervising day-to-day activities. Candidates for new positions will be evaluated and/or interviewed jointly by USAID and CDC, and both agencies will be involved in hiring decisions, with the final decision made by the hiring agency.

The two senior technical advisors together with the FSNs will work together to oversee all technical and administrative aspects of the PMI in Uganda, including finalizing details of the project design, implementing malaria prevention and treatment activities, monitoring and evaluation of outcomes and impact, and reporting of results. All staff members will report to the USAID Mission Director or his/her designee; the CDC staff will be supervised by CDC, both technically and administratively. All technical activities will be undertaken in close coordination with the MoH/NMCP and other national and international partners, including the WHO, UNICEF, the Global Fund, the World Bank and private stakeholders.

Locally-hired staff to support PMI activities either in Ministries or in USAID will be approved by the USAID Mission Director. 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 (\$1,950,000).

APPENDICES

**Table 1: President's Malaria Initiative – Uganda
Year 3 (FY08) Timeline of Activities**

ACTIVITY	2007	2008											
	SEP-DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
Planning													
MOP development and approval													
Micro planning of PMI interventions													
IRS and ITNs distribution planning													
Logistics													
Purchase insecticides and IRS equipments													
Purchase LLINs etc													
Purchase severe malaria drugs													
Purchase microscopes, equipment, chemicals & other supplies													
IEC/BCC													
IEC/ Social mobilization campaigns for IRS													
IEC ITN use													
IEC IPT													
IEC ACT													
IEC on Pharmacovigilance													
Training													
Entomology training													
Training spray squads													
Training on the use of severe malaria drugs													
IPT training for health workers													
Training private sector on ACT													
Training CDDs on HBMF with ACT													
Training lab technicians on malaria diagnosis													

ACTIVITY	2007	2008											
	SEP-DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
Services													
IRS in endemic districts													
IRS IDP districts													
IRS epidemic districts													
Free LLINs distribution-ANC													
LLINs distribution- net facility & mass campaign													
Improve private sector ITNs and UNBS capacity to monitor net quality													
IPT ANC/PMTCP													
Epidemic investigation/ response													
Support NMS's supply chain management													
Implement mini-lab, training and quality assurance of ACT and pharmacovigilance													
Support supervision													
Integrated supportive supervision for health workers and ANC workers													
Continued support for phased scale-up of HBMF													
Supervision to CDDs involved in c-ACT													
Monitoring & evaluation													
IRS environmental monitoring													
Base line and post entomological surveys/mapping													
Monitor adverse reactions to AMDs													
Malaria Indicator Survey													
Strengthen and expand sentinel sites													

ACTIVITY	2007	2008											
	SEP-DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEPT	OCT	NOV	DEC
Support for Iganga DSS													
Support for ESR system													
Capacity building support to NMCP													
IRS epidemiological monitoring													
Program monitoring & tracking system development													
PMI reporting & data collection													
Staffing													
Hire two PMI FSNs													

TABLE 2: PMI - Uganda FY 2008 Budget and Activity Table

Proposed Activity	Mechanism	Budget	Commodities	Geographic area	Description of Activity
IRS*					
Support for IRS in northern conflict districts	IRS IQC	\$2,000,000	\$825,000	Kitgum, Gulu, Padar, & Amoro	Continued rounds of spraying in 4 northern districts
Support for one round of IRS in six endemic districts	IRS IQC	\$4,400,000	\$2,650,000	Lira, Dokolo, Amolatar, Kabermaido, Amuria and Soroti	Expansion of spraying to Lira and Kabermaido districts
Support third round of targeted IRS in epidemic-prone districts of Kabale and Kanungu	IRS IQC	\$800,000	\$325,000	Kabale, 9 sub counties and Kanungu, 9 sub counties	Support for IRS in select high transmission areas in epidemic-prone districts Kabale est. 35,000 HH-Kanungu, est. 50,000 HH)
Support for targeted IRS in epidemic - prone district of Rukungiri	IRS IQC	\$750,000	\$450,000	Rukungiri district, 9 sub counties	Support for IRS in select high transmission areas in epidemic-prone Rukungiri district (est. 50,000 HH)
Entomologic monitoring and evaluation	IVM IQC	\$70,000	\$25,000	All sprayed districts	Continue support for IRS entomologic surveillance and conduct susceptibility, bio assays and vector bionomic studies
Support the MOH in IEC/BCC/community mobilization for IRS	IRS IQC	\$500,000		All sprayed districts	Continue IEC/BCC activities specific for IRS and campaigns to mobilize and educate communities.
<i>subtotal*</i>		<i>\$8,520,000</i>	<i>\$4,275,000</i>		

ITNs					
Procurement and distribution of free LLINs through ANC clinics in the north	AFFORD	\$2,320,000	\$1,785,000	Northern Uganda	Procurement and distribution of approx. 357,000 LLINs for distribution through ANC clinics in the north
Procurement and distribution of LLINs through the LLIN net facility and mass campaigns	AFFORD	\$2,600,000	\$2,000,000	National	Procurement & distribution of approximately 400,000 LLINs for distribution through mass campaigns and NGO/CBO to pregnant women and children under five
Support to the private sector ITN market	Netmarkplus	\$450,000		National	Support to ITN private sector outlets, the UNBS to monitor quality of ITNs, and support to local ITN manufacturers
IEC/BCC for ITN use	AFFORD	\$380,000		National	Support for campaign to encourage the correct and consistent use of ITNs
<i>subtotal</i>		<i>\$5,750,000</i>	<i>\$3,785,000</i>		
IPTp					
IPT policy development	New RFA ⁴	\$25,000		National	Initiate dialogue with national stakeholders on IPT policy revision
Integrated supportive supervision for ANC workers	NUMAT	\$150,000		Northern Uganda	Provide supportive supervision at the district level to ANC health workers
	New RFA	\$300,000		Southern Uganda	
Provision of safe water at ANC clinics	NUMAT	\$50,000	\$25,000	Northern Uganda	Provision of safer water

⁴ All references to “New RFA” refer to the same one RFA that will be competed.

	New RFA	\$100,000	\$75,000	Southern Uganda	vessels and cups to aid DOT of IPTp
IEC/BCC on the importance of IPTp	NUMAT	\$75,000		Northern Uganda	National IEC/BCC campaign to increase demand for IPTp
	New RFA	\$100,000		Southern Uganda	
Provision of ANC registers	NUMAT	\$20,000		Northern Uganda	Print ANC registers to help track IPTp
	New RFA	\$30,000		Southern Uganda	
<i>subtotal</i>		<i>\$850,000</i>	<i>\$100,000</i>		
Case Management					
Expansion of new HBMF program with ACTs	NUMAT	\$200,000		Northern Uganda	Provide support for scale-up of HBMF with ACTs: training, supervision, and motivation of CMDs
	New RFA	\$300,000		Southern Uganda	
Integrated health worker supervision and training	NUMAT	\$75,000		Northern Uganda	Continued training and supervision on the proper use of ACTs
	New RFA	\$125,000		Southern Uganda	
NMCP policy in private sector	AFFORD	\$150,000		National	Continued training for private sector drug outlets on the use of ACTs
Procurement of severe and pre-referral malaria drugs	DELIVER TO 3	\$650,000	\$650,000	National	Procure approximately 54% of the severe drug need for Uganda
Training on the use of severe malaria drugs	New RFA	\$300,000		National	Provide training to health care workers on the proper use of severe malaria drugs
Pharmaceutical supply chain management	SPS	\$380,000		National	Pharmaceutical management including LMIS, quantification , stock management system , inventory control, capacity building, study of warehouse facilities, phasing out of Cq/sp
Pharmacovigilance	USP	\$100,000		select districts	Support to NDA and

	CDC/UCSF	\$100,000			USCF/UMSP for pharmacovigilance
Quality assurance of antimalarials	USP	\$200,000		National	Support to NDA to conduct pre- and post market surveillance on the ACT drug quality
Strengthen malaria diagnostic capacity	New RFA (to IDI)	\$100,000		National	Continued support to provide a comprehensive diagnostic training to facilities with microscopy
	CDC/UCSF	\$350,000			
<i>Subtotal</i>		<i>\$3,030,000</i>	<i>\$650,000</i>		
Epidemic Surveillance and Response					
Support for epidemic surveillance and response	WHO	\$150,000		Epidemic-prone districts	strengthen system to detect epidemics and respond in 15 districts
<i>Subtotal</i>		<i>\$150,000</i>			
Monitoring and Evaluation					
Malaria Indicator Survey (MIS)	Measure/DHS	\$1,000,000		National	Conduct malaria indicator survey in 2008
Strengthen and expand sentinel sites	CDC/UCSF	\$300,000		14 sites in Uganda	Collect and monitor hospital and outpatient data on malaria-related cases and fatalities
Support for Iganga DSS	New RFA	\$100,000		Iganga	Support DSS to collect malaria-related mortality data
Program monitoring and tracking system development	New RFA	\$150,000		National	Develop databases for NMCP to track programmatic progress in key malaria intervention areas (e.g. ITN tracking database)
Continued support to MEMS	MEMS	\$100,000		National	Information collection, dissemination, and reporting

Average number of malaria-like illnesses per year and costs per treatment of AL-LUM

<u>Illnesses</u>	<u>Total Cost</u>
Children under five (\$.45/ treatment)	3 episodes per year \$8,130,297
Older children (\$1.00/ treatment)	2 episodes per year \$11,751,200
Adults (\$1.35/treatment)	1 episode per year \$23,796,180

Number of nets estimated in country: 4,920,600.00

Cost to reach 85% coverage of all children under five and pregnant women under five (assuming \$7.00 per net): \$17,995,894

Cost of spraying a household with an average of 5-6 inhabitants

Average size of house 200 M ² (new district)	\$15.00
Average size of house 200 M ² (previously sprayed district)	\$10.00
Average size of house 80 M ² (IDP district)	\$6.00

Intervention area	Annual Needs to achieve 100% coverage	Needs for 100% coverage nationwide over five years	Needs for 85% coverage nationwide over five years	Needs to achieve PMI year 3 target	Year 3 contribution
IPTp (number of SP doses needed)	No of pregnant women x 2 treatments per women	No of pregnant women x 2 treatments per women x 5 years	No of pregnant women x 2 treatments per women x 5 years *85 %	Target:60% of pregnant women receive 2 doses of IPT=	
	2,938,000	14,690,000	12,486,500	881,400	No SP needed; provide support for FANC
LLINS (see ITN section)	4,800,000.00	17,800,000	15,130,000	Target: 60% of pregnant women and children under five own a net	1.5 million LLINs will be distributed from all donors, of which 750,000 are from PMI.

ACTs in Children under five	No of children u5 x 3 episodes per year	No of children u5 x 3 episodes per year x 5 years	No of children u5 x 3 episodes per year x 5 years x 85%	Target: 60 percent of children are treated within 24 hours	
	18,067,326	90,336,630	76,786,136	8,130,297	The Global Fund is procuring sufficient ACTs for country
ACTs in children between 5-12 yrs	No of older children x 2 episodes per year	No of older children x 2 episodes per year x 5 years	No of older children x 2 episodes per year x 5 years x 85%	Target: 60% of children receive ACTs	
	11,751,200	58,756,000	49,942,600		Global fund is procuring sufficient ACTs for country
IRS for 15 districts	Number of houses targeted to be spraying in 15 districts	No of households to be sprayed X 5 years	No of households to be sprayed X 5 years 85%	Target for year three	PMI is providing total support
	1,000,000	5,000,000	4,250,000	795,000	

Table 4**President's Malaria Initiative – Uganda
Year 3 (FY08) Budget Breakdown by Intervention (\$000)**

Program Area	Commodities \$ (%)	Other \$ (%)	Total \$
Indoor Residual Spraying	\$4,275 (50%)	\$4,245 (50%)	\$8,520
Insecticide-treated Nets	\$3,785 (66%)	\$1,965 (34%)	\$5,750
Intermittent Preventive Treatment	\$100 (12%)	\$750 (88%)	\$850
Case Management	\$650 (21%)	\$2,380 (79%)	\$3,030
Epidemic Surveillance and Response	\$0	\$150(100%)	\$150
Monitoring and Evaluation	\$0	\$1,750 (100%)	\$1,750
Staffing and Administration	\$0	\$1,950 (100%)	\$1,950
Total	\$8,810 (40%)	\$13,190 (60%)	\$22,000

Table 5
Year 2 (FY 2008) Budget by Partner (\$(\$000))

Partner Organization	Geographic Area	Activity	Budget
IRS IQC (RTI)	Kitgum, Gulu, Padar, Amoro, Lira, Dokolo, Amolatar, Kabermaido, Amuria, Soroti, Kabale, Kanungu, and Rukungiri	Conduct IRS in 13 epidemic and endemic districts in Uganda	\$8,450
IVM IQC (RTI)	All sprayed districts	Continue support for IRS entomological surveillance and conduct susceptibility, bio assays and vector bionomic studies	\$70
AFFORD (JHU/CCP)	Nationwide	Procure and distribute 750,000 LLINs through ANC clinics and mass campaigns; train private sector providers in ACT use	\$5,450
New RFA (TBD)	Southern Uganda (areas not covered by NUMAT)	Support HBMF scale-up; supportive supervision for health workers; training on the use of severe malaria drugs; sub grants to local Ugandan organizations; support for IPT; support to the NMCP	\$1,730
NUMAT (JSI)	Northern Uganda	Support for HBMF scale-up; supportive supervision for health workers; support for IPTp	\$570
World Health Organization (WHO)	Surveillance	Expand and strengthen the national epidemic surveillance system	\$150
Netmarkplus	Nationwide	Support for the private sector net market	\$450
CDC/USCF	Nationwide	Train laboratory technicians. Support quality assurance/quality control system for malaria diagnostics. Procure microscopes/laboratory consumables; Support UMSP for sentinel site surveillance	\$750
SPS	Nationwide	Continue to provide support to strengthen pharmaceutical management systems	\$380
DELIVER TO 3	Nationwide	Procure drugs for severe malaria	\$650
United States Pharmacopeia (USP) DQI	Nationwide	Support drug quality control, and improve pharmacovigilance	\$300
Measure/DHS	Nationwide	Conduct a Malaria Indicator Survey	\$1,000
MEMS	Nationwide	Support the data collection and reporting for PMI	\$100
CDC	Nationwide	Staffing, TDYs and entomological monitoring	\$650
USAID	Nationwide	Staffing and Administration costs	\$1,300
Total			\$22,000