This Malaria Operational Plan has been endorsed by the U.S. Global Malaria Coordinator and reflects collaborative discussions with the national malaria control programs and partners in country. If any further changes are made to this plan, it will be reflected in a revised posting.

PRESIDENT'S MALARIA INITIATIVE

Malaria Operational Plan (MOP)

MALAWI

FY 2010

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ABBREVIATIONS

ACT	artemisinin-based combination therapy
ANC	antenatal clinic
AQ	amodiaquine
AL	artemether-lumafantrine
BCC	behavior change communication
c- IMCI	community level integrated management of childhood illness
CBO	community-based organization
CDC	Centers for Disease Control and Prevention
CHAM	Christian Health Association of Malawi
CMS	Central Medical Stores
DfID	United Kingdom Department for International Development
DHS	demographic and health survey
FY	fiscal year
EPI	Expanded Programme on Immunization
Global Fund	Global Fund to Fight AIDS, Tuberculosis, and Malaria
GTZ	German Development Agency
HMIS	health management information system
HSA	health surveillance assistant
IEC	information, education, communication
ICC	Interagency Coordinating Committee
IMAD	Improving Malaria Diagnostics
IMCI	integrated management of childhood illness
IPTp	intermittent preventive treatment of malaria in pregnancy
IRS	indoor residual spraying
ITN	insecticide-treated net
LLIN	long-lasting insecticide-treated net
M&E	monitoring and evaluation
MICS	Multiple Indicator Cluster Survey
MIS	Malaria Indicator Survey
MOH	Ministry of Health
MSP	Malaria Strategic Plan
NGO	non-governmental organization
NMCP	National Malaria Control Program
PEPFAR	President's Emergency Plan for AIDS Relief
PMI	President's Malaria Initiative
PSI	Population Services International
RBM	Roll Back Malaria
RDT	rapid diagnostic test
SADC	Southern Africa Development Community
SP	sulfadoxine- pyrimethamine
SPS	Strengthening Pharmaceutical Systems
SWAp	health sector-wide approach
TWG	technical working group
UNICEF	United Nations Children's Fund

USAID	U.S. Agency for International Development
USG	United States Government
WHO	World Health Organization

EXECUTIVE SUMMARY

In June 2006, the United States Government announced that Malawi was 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 global goal of the President's Malaria Initiative (PMI) is to reduce malaria-related mortality by 50% in vulnerable groups—children under five years of age, pregnant women, and people living with HIV/AIDS. This will be accomplished by achieving 85% global coverage of groups at risk of malaria with four key interventions: artemisinin-based combination therapy (ACT), intermittent preventive treatment (IPTp) for malaria in pregnancy, insecticide-treated mosquito nets (ITNs), and indoor spraying with residual insecticides (IRS).

Malaria is a major public health problem in Malawi. It is endemic in 95% of the country with over 85% of malaria infections due to *Plasmodium falciparum*. Although progress in malaria prevalence reduction is being detected, the Ministry of Health (MOH) in Malawi estimates that the disease accounts for 33%[1] of all outpatient visits and remains the number one cause of hospital admissions among children under five.

The 2006 Multiple Indicator Cluster Survey (MICS) provides the most recent national information on Malawi's coverage of key malaria control and prevention activities. According to this survey, 35% of households owned one or more ITNs and 23% of children under five slept under an ITN the previous night. Coverage of IPTp is relatively high for the region; 80% of women received one dose of sulfadoxine-pyrimethamine (SP), but only 46% of women received at least two doses. As ACTs were only introduced in late 2007, no national-level data is available on prompt treatment of children under five with ACTs. Additionally, before the PMI-supported IRS campaign in Nkhotakota District in late 2007, no large-scale IRS campaign had been carried out in Malawi for many years.

Other than PMI, the majority of the funding for malaria activities in Malawi comes from the Global Fund to Fight AIDS, Tuberculosis, and Malaria (Global Fund) and donor and government funds pooled through the health sector-wide approach (SWAp). Malawi combines supports from a Global Fund consolidated Round 2 and 7 grant with pooled donor and government funds to pay for ongoing national malaria control activities; the Global Fund grant supports the procurement of the ACTs and ITNs.

The Year 4 Malaria Operational Plan for Malawi was based on the progress and experiences of the first two years and was developed during a planning visit in March 2009 by representatives from the United States Agency for International Development (USAID), the Centers for Disease Control and Prevention (CDC) and the Malawi National Malaria Control Program (NMCP). This Plan was developed in close consultation with nearly all national and international partners involved with malaria prevention and control in the country and seeks to fill gaps in funding from other major donors. Based on these discussions and further meetings with the NMCP, the planning

team concluded that the following major activities/expected results will be supported in the fourth year of the Initiative:

Indoor residual spraying: In 2007 and 2008, PMI supported two initial spray rounds in Malawi, covering about 27,000 houses in the northern section of Nkhotakota District. In 2009, PMI will support a third round of spraying to cover Nkhotakota District. Based on the success of these efforts, the Malawi Ministry of Health has proposed greatly expanding IRS to a total of seven districts, covering 500,000 houses and an estimated 2.5 million people. PMI's role in 2010 in this expansion of IRS will be to spray the entirety of Nkhotakota District (approximately 53,000 houses) and adjacent Salima District for a total of two of the seven districts scheduled by the NMCP. In addition, PMI will provide technical assistance to the NMCP for the planned expansion of IRS to five additional districts in coming years and will continue entomological monitoring and surveillance. This support will include entomological monitoring activities such as vector assessments and insecticide resistance testing in designated NMCP IRS scale-up districts.

Insecticide-treated nets: Malawi has had considerable success scaling up ITNs in the recent past through the use of health clinics and mass campaigns. Malawi's ITN policy includes the free distribution of ITNs through the expanded program on immunization (EPI) and antenatal care (ANC) clinics, together with periodic mass campaigns in rural areas. In Years 1 to 3, PMI supported this policy by procuring approximately three million long-lasting insecticide-treated nets (LLINs), of which 1.6 million have already been distributed.

In Year 4, PMI will procure an additional 1.5 million LLINs for distribution through EPI and ANC channels to support the NMCP's upcoming policy change to universal bednet coverage. Although household ownership of ITNs is rising in Malawi, consistent behavior change messaging is integral to ensuring continued usage throughout the year. Therefore, PMI will support a mass media community-based information and education (IEC) campaign, in addition to a behavior change communication (BCC) campaign to increase demand for and teach/promote correct usage of LLINs.

Intermittent preventive treatment of pregnant women: Despite high coverage with one dose of IPTp, the most recent national health survey showed a substantial gap in two-dose IPTp coverage, especially among poorer women and women in rural areas. In order to increase coverage of IPTp in these areas, PMI Years 1 to 3 supported the strengthening of focused ANC at the district health facility level by providing job aids and other tools that have led to an increase in IPTp delivery and uptake. PMI also funded IEC efforts encouraging repeated ANC attendance, which will increase the opportunity for delivering the second IPTp dose. In Year 4, PMI will continue to support these activities with the goal of ensuring that at least 70% of pregnant women receive at least two doses of SP for IPTp.

Case management: In 2007, Malawi changed its national first-line malaria treatment from SP to the ACT artemether-lumefantrine (AL). In Years 1 and 2, PMI supported the initial procurement and distribution of AL to the public sector, along with pharmaceutical

and logistical management support and IEC around the new treatment policy. To date, PMI has procured and distributed approximately nine million AL treatments to nearly 600 public health facilities. To ensure that the AL was properly distributed, PMI invested heavily in building the capacity of the Ministry of Health Central Medical Stores, with support for the development of distribution schedules, upgrading storage facilities, forecasting, and strengthening of reporting throughout the supply chain.

Beginning in Year 3, the consolidated Round 2 and 7 Global Fund grant will fund ACTs for the facility- level, allowing PMI to focus on ensuring prompt and effective treatment at the community level. To this end, PMI will support the scale- up of community-based distribution of AL in hard-to-reach areas throughout the country. The model will use the community-based integrated management of childhood illness approach to supply AL to children under five who have limited access to formal public health facilities. Funding in Year 4 will allow the scale- up of the community AL distribution model to an increased number of hard-to-reach areas by procuring AL and providing training and supervision to health workers. In addition, PMI will continue to provide technical assistance in supply chain management to Central Medical Stores and the Ministry of Health.

Monitoring and evaluation: PMI's monitoring and evaluation plan is coordinated with the NMCP and other partners to share resources, ensure that critical gaps are being filled, and standardize data collection and reporting. In Years 1 through 3, PMI conducted an anemia/parasitemia study in children 6-30 months of age in eight districts to track ITN ownership and usage, household socioeconomic markers, anemia and parasitemia biomarkers, and treatment of febrile illness. These surveys have demonstrated a significant reduction in anemia rates among children under five in areas where IRS and ITN use is high. To access national progress in malaria control, a Malaria Indicator Survey will be conducted in 2011. Ongoing support to sentinel sites at health facilities will also provide longitudinal data on malaria mortality and morbidity.

Building NMCP capacity: To achieve PMI targets for coverage of ACTs, ITNs, IPTp, and IRS, PMI will work with partners to strengthen the capacity of the MOH and the NMCP at the central, zonal, and district levels to plan, conduct, supervise, monitor, and evaluate malaria prevention and control activities. To assist in these efforts, PMI will continue to support an M&E Advisor seconded to the NMCP.

Budget

The total amount of PMI funding requested for Malawi in FY 2010 is $27 million. Of this amount, 42% will support malaria prevention through the promotion and procurement of LLINs, 20% will support improved case management interventions including procurement of ACTs with supportive health systems strengthening activities, and 19% will support the IRS campaign. Approximately 4% will support malaria in pregnancy activities and 8% will support monitoring and evaluation. Forty-five percent of the total budget will be used to purchase and distribute commodities.

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% after three years of full implementation in each country. This will be achieved by reaching 85% coverage among the most vulnerable groups---children under five years of age and pregnant women ---with proven preventive and therapeutic interventions, including artemisinin-based combination therapies (ACTs), insecticide-treated bed nets (ITNs), intermittent preventive treatment of pregnant women (IPTp), and indoor residual spraying (IRS).

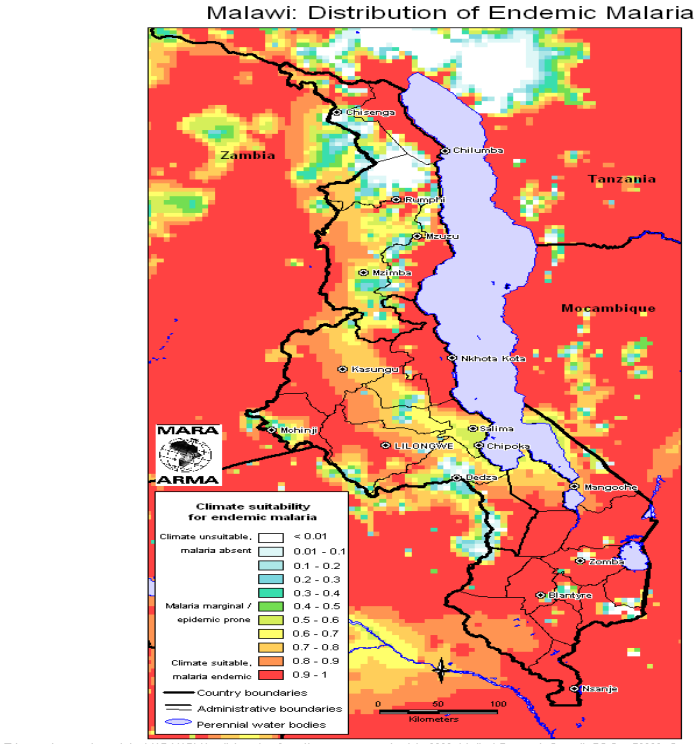
The President's Malaria Initiative (PMI) began in three countries in 2006: Angola, Tanzania, and Uganda. In 2007, four countries were added: Malawi, Mozambique, Senegal, and Rwanda. In 2008, eight additional countries were added to reach a total of 15 countries covered under PMI. Funding began with $30 million in Fiscal Year (FY) 2006 for the initial three countries, increased to $135 million in FY 2007 and to $300 million in FY 2008 and FY 2009, and will reach $500 million in 15 countries by FY 2010.

In implementing this Initiative, the U.S. is committed to working closely with host governments and within existing national malaria control plans. Efforts will be coordinated with other national and international partners, including the Global Fund to Fight AIDS, Tuberculosis, and Malaria (The Global Fund), Roll Back Malaria (RBM), the World Health Organization (WHO), the World Bank Malaria Booster Program, and the non-governmental and private sectors, to ensure that investments are complementary and that RBM and Millennium Development goals are achieved. Country assessment and planning sessions for PMI, as well as subsequent evaluations, will be highly consultative and held in collaboration with the National Malaria Control Program (NMCP) and other partners.

This document presents a detailed one-year implementation plan for the FY 2010 year of PMI in Malawi. It briefly reviews the current status of malaria control and prevention policies and interventions, identifies challenges and unmet needs if the goals of the PMI are to be achieved, and provides a description of planned Year Four activities under PMI. The document was developed in close consultation with NMCP and with the participation of many national and international partners involved in malaria prevention and control in the country. The total amount of FY 2010 PMI funding requested for Malawi is $27 million.

MALARIA SITUATION IN MALAWI

Malaria is the leading cause of mortality and morbidity in Malawi. WHO estimates that in 2006, approximately six million episodes of malaria occurred, accounting for more than 33% of all outpatient visits. Malaria and anemia (usually attributable to malaria) are estimated to be responsible for about 40% of all under-five hospitalizations and 30% of all hospital deaths in under-five children. *Plasmodium falciparum* is the most common species, accounting for 98% of the infections and almost all severe disease and deaths.



This map is a product of the MARA/ARMA collaboration (http://www.mara.org.za). July 2002, Medical Research Council, PO Box 70380, Overport, 4067, Durban, South Africa
CORE FUNDERS of MARA/ARMA: International Development Research Centre, Canada (IDRC); The Wellcome Trust UK; South African Medical Research Council (MRC); Swiss Tropical Institute, Multilateral Initiative on Malaria (MIM) / Special Programme for Research & Training in Tropical Diseases (TDR), Roll Back Malaria (RBM).
Malaria distribution model: Craig, M.H. et al. 1999. Parasitology Today 15: 105-111.
Topographical data: African Data Sampler, WRI, http://www.igc.org/wri/sdis/maps/ads/ads_idx.htm

Other species, including *P. malariae* and *P. ovale*, account for up to 2% of cases. *P. vivax* is very rare.

The peak transmission season in Malawi follows the rainy season (October through April) and lasts from December to May. *Anopheles gambiae, A. funestus* and *A. arabiensis* are the most common malaria vectors in Malawi, and it is estimated Malawians receive between 30 and 50 infective bites per year. Although no systematic surveys have been conducted to determine malaria endemicity, Malawi can be generally divided into three zones based on location, topography and human activities:

- Lakeshore zone — covering Karonga, Nkhata Bay, Nkhotakota, Salima, Dedza, and Mangochi districts.
- Highland zone — covering Chitipa, Rumphi, Mzimba, Kasungu, Mchinji, Lilongwe, parts of Dedza, parts of Ntcheu, Blantyre, central parts of Zomba, central parts of Thyolo, and northwest parts of Mwanza.
- Lowland zone — covering Balaka, eastern parts of Ntcheu, southeastern parts of Mwanza, Chikwawa, Nsanje, parts of Thyolo, parts of Mulanje, part of Blantyre, and parts of Zomba.

Funding for Malaria Control

Funding for malaria control other than from PMI comes mainly from the Health Sector-wide Approach (SWAp). The SWAp mechanism provides a coordination mechanism to allow the Ministry of Health (MOH) to work more effectively with its partners,

particularly Global Fund, the United Nations Children's Fund (UNICEF), WHO, the German Development Agency (GTZ), the USG, the United Kingdom Department for International Development, World Bank, and the European Union. These partners support malaria control either through "basket funding" or as discrete donors, with the USG being the largest discrete donor in the health sector.

The main source of malaria funding in the SWAp comes from the Global Fund. Malawi has two approved Global Fund Grants from Rounds 2 and 7, which were consolidated in 2008 and will provide a total of $36.5 million in funding over five years. The initial disbursement of funds for this new grant occurred in December 2008.

Outside of malaria control, Malawi has very strong HIV/AIDS and tuberculosis control programs. Currently Malawi has one of the largest Global Fund HIV/AIDS grants, receiving $170 million for treatment in Round 1 and $19 million for the care of orphans and vulnerable children in Round 5. Malawi is also a President's Emergency Plan for AIDS Relief (PEPFAR) country, receiving approximately $45 million from the USG for the prevention, care, and treatment of HIV/AIDS. PEPFAR and PMI share several implementation partners working on integrated or common platforms to support improved health outcomes in Malawi. To support tuberculosis control, Malawi was awarded a Round 7 Global Fund grant totaling $7.8 million. The PMI team works closely with the USG PEPFAR and tuberculosis teams to identify ways to further coordinate activities.

NATIONAL MALARIA CONTROL PLAN AND STRATEGY

The NMCP functions under the Directorate of Preventive Health Services in the MOH. Three positions at the national level are designated to manage the program along with four additional junior staff. The NMCP sets policies, establishes strategies, coordinates activities, and provides technical guidance for the program. The management structure is comprised of five zonal officers responsible for overseeing malaria activities in each of their respective zones, and 28 District Malaria Control Coordinators to direct malaria control activities in each of the districts. The Program Manager post is vacant; however, the Deputy Program Manager is assuming the responsibilities of the Program Manager until the position is filled. All of the zonal officer positions have been filled, but several of the officers have dual responsibilities at the national level within the NMCP.

The Malawi Malaria Strategic Plan for 2005-2010, entitled "Scaling Up Malaria Control Interventions", was developed and approved by the MOH in June 2005. This strategy is in line with the SWAp Program of Work that the MOH, in collaboration with donor partners, is implementing. It is also consistent with the Essential Health Package (EHP) developed for the SWAp, similarly developed by the MOH. This strategy guides allocation of resources and outlines four key areas for scale up: mosquito vector control (ITNs and IRS), case management, IPTp and cross-cutting issues. The NMCP is currently in the process of revising its strategic plan with the help of the RBM Partnership, as their national current plan expires in 2010. The major interventions are discussed below.

ITNs: Malawi adopted an ITN policy in 2006 that includes free distribution of ITNs for children born in health facilities, children attending their first Expanded Program on Immunization (EPI) visit (if an ITN was not received at birth), and pregnant women at their first visit to an antenatal clinic (ANC). The policy supports time-limited, national, free distribution campaigns every two to three years and targets the most vulnerable populations in Malawi. In February 2008, this policy was amended to include distribution to all children less than five years attending health facilities. Also, the NMCP decided that all future procurements would be for long-lasting ITNs (LLINs), in line with global recommendations. Malawi is currently considering a policy of universal coverage with LLINs, defined as one net for every two people. This new strategy sets a goal of 90% usage of LLINs by 2015. To complement this strategy, the NMCP is encouraging donors and non-governmental organizations (NGOs) to develop other innovative distribution models to fill gaps in rural communities.

Mosquito vector control with IRS: The 2005-2010 malaria strategy specifies the implementation of an IRS pilot to document operational, logistical, and human resource requirements for IRS scale up. A successful pilot was carried out with PMI support in Nhkotakota District in 2008. Consequently, the proposed new strategy includes a plan for introducing large-scale IRS as a malaria prevention measure in seven high prevalence districts along the lakeshore and in the Shire Valley. Starting in 2010, the government plans to integrate these lessons into an expanded IRS program expanding to the additional districts, covering a total population of approximately 2.5 million.

Case management: In 2006, the MOH selected artemether-lumefantrine (AL) as the first-line drug for the treatment of uncomplicated malaria and amodiaquine-artesunate as the second-line ACT, reserving quinine for the treatment of severe malaria and the management of malaria in the first trimester of pregnancy. As part of the 2007 launch of this policy, PMI provided all stocks of AL (approximately nine million treatments), as well as significant technical support to build the capacity of the drug management system and train and supervise health workers. The MOH is now working to expand the availability of ACTs into the community through its community integrated management of childhood illness program (c-IMCI). The c-IMCI initiative, coordinated by the Integrated Management of Childhood Illnesses Program, is targeting 4,000 hard-to-reach communities.

Malaria in pregnancy: As part of a comprehensive, focused antenatal care package, Malawi's policy on IPTp recommends the provision of at least two doses of sulfadoxine-pyrimethamine (SP) to pregnant women during the second and third trimester. The policy states that the treatments should be at least one month apart, beginning no later than the 36 weeks, and given under direct observation. Malawi has shown great progress scaling up this intervention, however, coverage of women receiving the second dose remains low.

Cross-cutting issues: The 2005-2010 Malaria Strategic Plan also addresses the need to develop human resource capacity, strengthen information, education, and communication

(IEC) efforts and advocate for malaria control. In addition, the Plan notes gaps in logistics, support for operational research, and the development of systems to strengthen monitoring and evaluation to track progress and measure results.

In the public sector, delivery of malaria control interventions is carried out using the decentralized health system with the district health office as the coordinator of all health matters at district level. The Christian Health Association of Malawi provides 37% of the health care services in Malawi and receives public sector resources for malaria control.

RECENT STATUS OF MALARIA INDICATORS

The most recent information on the current status of malaria control comes from the nationally-representative UNICEF Multiple Indicator Cluster Survey (MICS) conducted in the dry season of 2006. A total of 22,994 children under the age of five, 26,259 women aged 15–49, and 7,636 men aged 15–49 were interviewed in 30,553 households in 26 districts of Malawi. As the MICS was conducted prior to the introduction of ACTs, the results do not reflect the current status of ACT coverage. However, 25% of children with a fever in the last two weeks received any antimalarial drug. Indicators relating to IRS were not measured.

Indicator	Estimated national coverage based on 2006 MICS
Proportion of households with at least one ITN	38 %
Proportion of children under five years old with fever in the last two weeks who received treatment with ACTs.[2]	0.2 %
Proportion of children under five years old who slept under an ITN the previous night.	25%
Proportion of pregnant women who slept under an ITN the previous night.	26%
Proportion of women who received two or more doses of IPTp during their last pregnancy leading to a live birth within the previous two years.	47%
Targeted houses adequately sprayed with a residual insecticide in the last twelve months.	Not available[3]

GOAL AND TARGETS OF THE PRESIDENT'S MALARIA INITIATIVE

The goal of PMI is to reduce malaria-associated mortality by 50% compared to pre-Initiative levels in PMI countries. By the end of 2010, PMI will assist Malawi to achieve the following targets in populations at risk for malaria:

[2] At the time of the MICS, the new ACT drug policy had not been implemented

[3] Data on IRS are not routinely collected in the MICS and there was no IRS program in Malawi when the 2006 MICS was conducted.

- More than 90% of households with a pregnant woman and/or children under five will own at least one ITN;
- 85% of children under five will have slept under an ITN the previous night;
- 85% of pregnant women will have slept under an ITN the previous night;
- 85% of houses in geographic areas targeted for IRS will have been sprayed;
- 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;
- 85% of women who have completed a pregnancy in the last two years will have received two or more doses of IPTp during that pregnancy;
- 85% of government health facilities will have ACTs available for treatment of uncomplicated malaria; and
- 85% of children under five with suspected malaria will have received treatment with ACTs within 24 hours of the onset of their symptoms.

EXPECTED RESULTS – YEAR FOUR

In November of 2009, Malawi will be conducting a Demographic and Health Survey (DHS) that will include a malaria module. The results will provide current information on the status of the above targets and the expected results.

The expected results for Year Four are as follows:

Prevention:

- Procure and distribute 1.5 million LLINs to contribute to Malawi reaching universal coverage, with a target coverage for 2010 of 80% household ownership.
- Continue to support malaria in pregnancy interventions at the health facility level through IEC, training, job aides, and supportive supervision. This is expected to increase coverage of the second dose of IPTp to increase the uptake of the second dose of IPTp to 70%.
- Protect 300,000 people in Nkhotakota District and one adjacent district (population at least 300,000) through the scale up of IRS activities.

Treatment:

- Increase access to ACTs for children under five in up to 4,000 remote villages through the c-IMCI.
- Continue to strengthen and monitor the drug supply chain to ensure that the stock-out rate is less than 10%.

Diagnosis:

- Finalize a national malaria diagnosis policy and scale-up refresher training and supervision of diagnostic testing.

Monitoring and Evaluation:

- Ensure that sentinel sites are operational and accurately measuring malaria morbidity.
- Complete a Malaria Indicator Survey (MIS) to provide up-to-date information on the coverage of the key malaria interventions.

INTERVENTIONS – PREVENTION

Insecticide-Treated Nets

Background:

The NMCP strategy, currently being revised, calls for universal coverage of ITNs.[4] To achieve this, the NMCP supports a three-pronged approach: 1) routine distribution of free LLINs through ANC and EPI clinics, 2) periodic mass campaigns, and 3) traditional social marketing through private sector outlets. Under the routine distribution channel, the policy states that pregnant women should receive a free LLIN either during her first ANC visit or at childbirth if their newborn is born in a health facility. In addition, children under five receive a free LLIN at their first EPI visit. This approach is supplemented with periodic (approximately every three years) national, mass, free distribution campaigns targeting rural areas. The lowest volume channel for ITNs is the private sector, which sells only 100,000 LLINs annually, mainly in urban areas.

The President's Malaria Initiative and the Global Fund are the dominant funders of ITNs in Malawi. From 2006 to 2007, Phase 1 of the Global Fund provided more than 1.8 million ITNs bundled with insecticide, which was distributed through ANC and EPI clinics and mass campaigns. The consolidated Round 2 and Round 7 grant has funds to buy 750,000 LLINs annually for three years beginning in 2009. The first order was placed in March 2009 and should arrive later in the year. The NMCP has not yet decided whether these LLINs will be used for routine distribution or will be distributed through a campaign.

Progress to date:

Since PMI started in Malawi two years ago, more than 4.5 million ITNs have been distributed in Malawi. Of these 4.5 million, PMI has contributed approximately two million LLINs, and an additional one million LLINs will be delivered in late 2009.

The majority of two million PMI-funded nets have been channeled through the ANC and EPI LLIN program, comprising 90% of the total ITNs delivered through this avenue.

[4] While a formal decision has not been made, the NMCP will likely define universal coverage as one-net per two people.

Using FY 2009 funds, PMI procured another one million LLINs in March 2009, which should arrive in Malawi before the end of 2009 to sustain the ANC and EPI program through 2010. The demand for LLINs through this channel remains high, and currently almost 100,000 LLINs are distributed monthly. Based on the estimates of pregnant women and children under five, fully supplying this channel would require approximately three million LLINs annually. As distribution costs are just under $.70 per LLIN, this remains an efficient and successful approach.

The NMCP has recently used mass campaigns as a way to reach the poorest of the poor and other households missed through routine distribution channels. Last year, the NMCP implemented its largest campaign to date, which successfully distributed over 1.1 million nets bundled with treatment kits, procured with Global Fund Round 2 funds, and distributed with support from GTZ. As the NMCP has requested that PMI support the routine ANC/EPI channel, PMI did not contribute to this campaign.

The 2006 MICS survey, which serves as the baseline for PMI, estimated that 38% of households own an ITN and 51% of households have at least one net of some kind. Usage of ITNs by vulnerable groups was lower than expected. Only 24.7% of children under five and 25.6% of pregnant women had slept under an ITN the previous night. While no nationally representative survey has been conducted since 2006, two sub-national surveys provide encouraging data about ITN ownership and use. A recent Population Services International (PSI) Tracking Results Continuously Survey of households with a child under five[5] found that 64% of households owned an ITN, and 48% of children less than five and 50% of pregnant women had slept under an ITN the previous night. In households that owned an ITN, 73% of children less than five and 76% of pregnant women had slept under an ITN the previous night, indicating that these vulnerable groups are preferentially sleeping under the ITN. A PMI-supported anemia and parasitemia survey, conducted in April of 2008 in eight districts, found that 51% of all households owned an ITN and 48% of all children under five had slept under an ITN the previous night. Among households that owned an ITN, 88% of children under five had slept under a net the previous night. Both surveys indicate that ITN ownership is rising and that a culture of using ITNs is developing.

Summary of ITN Gap in Malawi

a. Total ITNs needed in Malawi to achieve 100% universal ownership (1 ITN per two people)*	7,289,166
b. Total ITNs in country as of FY09	4,505,857
c. Total ITNs needed to replace nets distributed in FY07-FY09	3,549,425
d. Total requirement for ITNs to reach universal coverage in FY10-11 (a-b+c)	**6,332,734**
e. Number of ITNs in FY09-FY11 from Global Fund	2,250,000

[5] According to the 2006 MICS, approximately 55% of Malawi households have a child under five

f. PMI contribution for ITNs in FY09	1,030,000
g. Other contributions in 2009	325,853
h. Remaining ITN gap for FY10 to reach universal coverage* d- (e+f+g)	**2,726,881**

*** NMCP has not yet adopted a universal coverage policy**

The table above describes the total projected ITN gap in Malawi in 2009. As line 2 in the table shows, it is estimated that there are 4.5 million ITNs already in Malawi. Based on the planned procurement of LLINs through the Global Fund, PMI, and other contributions, an additional four million LLINs will be distributed in the next two years. To achieve universal coverage, the need for 2.7 million LLINs remains.

Although usage of ITNs is rising, the need still exists to reinforce messages concerning the correct and consistent use of ITNs. To this end, PMI continues to invest in nationwide print and mass media campaigns. Three primary messages have been emphasized: malaria is a deadly disease; nets can protect you from malaria; and nets should be used every night, year-round by children under five and pregnant women. Several radio spots, posters, music videos, and public service announcements reflecting these messages have been developed and disseminated nationally. As the country moves toward universal coverage, these messages may need to be modified to encourage net usage by all.

To complement the mass media campaign, PMI is supporting a small grants program to use NGOs and community-based organizations (CBOs) for community mobilization activities that promote behaviors around malaria control, including ITN ownership and use. To date, six grants in seven districts, with an additional four grant awards signed in August 2009, have been awarded to Malawian NGOs to work with local communities to change behaviors through interpersonal communication approaches such as local dramas, health education talks, and community events. The NGOs will also work with communities to assist in hanging ITNs in homes. To have national coverage, however, this program needs to be scaled up to all districts.

Planned Year 4 Activities: ($11,325,000)

Malawi is likely to achieve close to 85% ITN ownership among households with vulnerable groups toward the end of 2009; however, the need for additional nets continues as the country strives to reach universal coverage. As ITN ownership increases, it will be important to reinforce a "culture of net usage" with messaging about the correct and consistent use of ITNs through both community-based activities and national-level mass media campaigns. In FY 2010, PMI will:

- Procure approximately 1,500,000 LLINs for distribution through the ANC and EPI programs. This will fill approximately 55% of the gap to reach universal coverage. ($9,500,000)

- Support the cost of distributing these nets from the central level to the health facilities at approximately $0.70 per LLIN. ($1,250,000)
- Support a national communications campaign to increase the demand for, and the year-round use of ITNs among all populations through radio and TV ads, print media, and community approaches such as community drama (integrated campaign covering ITNs, ACTs, and IPTp). ($250,000)
- Support a small grants program to fund at least fifteen NGOs and CBOs that work at the community- level through interpersonal and community-based approaches to encourage the year-round use of LLINs (with integrated messaging on ITNs, malaria treatment, and IPTp). ($325,000)

Insecticide Residual Spraying (IRS)

Background:

Beginning in 2007, the Malawi Government, with PMI support, explored the feasibility of introducing IRS as a malaria prevention strategy in Nkhotakota District. PMI has successfully piloted two rounds of spraying in Nkhotakota District in 2007 and 2008. The pilot study has helped to determine the cost and operational feasibility of using pyrethroid insecticides (lamda-cyhalothrine). On the basis of the successful pilot operation, the MOH is planning to scale-up IRS implementation to six highly endemic districts along the lakeshore and in the Shire Valley.

Progress to date:

PMI supported a second round of IRS with the NMCP in October/November of 2008 in the northern part of Nkhotakota District, spraying a total of 24,764 houses in partnership with the Dwangwa Sugar Estates. Lessons learned included inadequate geographical reconnaissance in the spray area, low community awareness regarding the importance and effectiveness of IRS, and technical difficulties with data management. The active involvement in planning and implementation of the District Health Management Team and training of ten MOH staff from five additional districts was identified as a major strength in building NMCP capacity for the planned national IRS scale-up in the near future.

The NMCP, PMI, and the Innovative Vector Control Consortium worked together to conduct entomological surveillance of mosquito populations both within and just outside of the targeted IRS area. This included mosquito population density monitoring through live collections of adult mosquitoes and durability testing of the insecticide on the walls of the structures sprayed. Sentinel sites were also established in selected health facilities to assist in the monitoring of malaria cases. Preliminary results show a significant reduction in the vector population following IRS, but analyses of these insect collections are not yet completed.

A third round of IRS with a pyrethroid insecticide is underway and will cover the entire district of Nkhotakota (approximately 62,000 houses), again in partnership with the Dwangwa Sugar Estates. Lessons learned from the second IRS spray round will be implemented to improve the overall quality of the spray operation.

Given the growing experience and lessons learned from the 2007 and 2008 campaigns, the NMCP hopes to dramatically scale up its IRS program to a total of seven districts nationally in 2010 with funding from the SWAp pooled funds.

The districts to be sprayed under the NMCP IRS scale-up plan include Nkhotakota, Karonga, Nkhata Bay, Salima, Mangochi, Chikwawa, and Nsanje and contain approximately 500,000 houses with a population of approximately 2.5 million people. These districts were chosen based on their intensity of malaria transmission and burden of disease. During the PMI Year 2 IRS campaign in Nkhotakota District, representatives from the other six districts participated in spray activities to build their capacity to manage spray operations in their respective districts. These workers will eventually oversee the scale-up plans and activities as IRS is scaled up.

As part of this expansion of IRS, PMI has agreed to expand spraying to cover one of the six target IRS-designated districts, most likely Salima District. This scale up will involve an increase in PMI-supported spraying from 62,000 houses to 134,000 houses (62,000 houses in Nkhotakota and 72,000 houses in Salima). WHO will provide technical assistance in the areas of planning, management, and implementation for the NMCP's IRS program. The need remains for technical assistance in the entomological monitoring, logistics, planning, mapping, environmental monitoring, and evaluation with support from PMI.

Proposed Year 4 Activities: ($5,200,000)

To support the NMCP's expansion of IRS in Malawi, the PMI will scale up its IRS activities to cover the entire Nkhotakota and one adjacent district. Additionally, PMI will support the entomological monitoring of the IRS program in partnership with the Innovative Vector Control Consortium. WHO has been given the mandate to provide technical assistance for the overall IRS operation; however, PMI will provide additional technical support as needed. In FY 2010, PMI will:

- Support IRS operations and spray 134,000 houses (structures) in Nkhotakota and one additional district. ($4,500,000)
- Continue entomological and insecticide resistance monitoring in and around the targeted IRS area as well as other sites in Malawi for addressing both ITN and IRS needs. ($250,000)
- Support NMCP by providing technical assistance for all aspects of IRS (entomological monitoring, logistics, planning, mapping, environmental monitoring, and evaluation) in the scale-up districts. ($200,000)
- Scale up of community sensitization for IRS as part of a comprehensive communications package. ($200,000)

- Environmental monitoring of the programmatic use and disposal of pesticides. ($50,000)

Intermittent Preventive Treatment in Pregnancy

Background:

The national policy on IPTp now states, "All pregnant women should receive at least two treatment doses of SP at least one month apart at the ANC under directly-observed therapy." Intermittent preventive treatment is given free of charge by ANC workers in health facilities under direct observation; administered doses are recorded in ANC registries maintained in the clinic and on cards ("health passports") carried by the pregnant women. According to the 2006 Malawi MICS, the percentage of pregnant women receiving one dose of SP was 81%, but only 46% of pregnant women received at least two doses or more of SP despite high ANC attendance rates (97% of women attend at least once and 92% attend more than once). All SP needs are being provided by the MOH as part of the Essential Health Package.

Progress to Date:

In Years 1 and 2, PMI began to address the causes of the low uptake of the second dose of IPTp by disseminating previously developed IPTp job aides such as gestational wheels to simplify correct dosage timing, providing cups and safe water vessels to aid directly-observed therapy, and developing IEC materials for both staff and patients to increase understanding of the importance of receiving two doses of IPTp. In order to ensure health workers received appropriate training and supportive supervision on IPTp specifically and Focused- ANC more broadly, PMI, in partnership with the NMCP, have conducted zonal trainings for District Malaria and Reproductive Health Coordinators on focused-ANC and IPTp. Additionally, regular supportive supervisory visits have followed the trainings.

To encourage women to attend ANC for the recommended number of visits and at the appropriate times during pregnancy, PMI has conducted community mobilization activities through small grants to CBOs and NGOs. PMI has also sponsored a communications campaign at the national level using radio and other mass media. Through the small grants program, CBOs and NGOs received funding to encourage women to attend ANC earlier in their pregnancy and to go for all scheduled visits. Also included in their messaging is information on the importance of receiving at least two doses of SP at the appropriate times during pregnancy. These messages are being delivered as part of an integrated package addressing all malaria interventions.

Sulfadoxine-pyrimethamine still appears effective for IPTp in Malawi and elsewhere. However, given widespread *P. falciparum* resistance to SP for treatment in children, this situation requires close monitoring to inform any needed policy changes in the future. PMI is supporting drug efficacy monitoring of SP for IPTp in pregnant women. This study will be harmonized with international efforts to monitor this intervention. Should

SP be found to have reduced efficacy, policy decisions will be needed to implement an appropriate alternative regimen for IPTp.

Proposed Year 4 Activities: ($1,000,000)

During Year 3, PMI will continue to focus on scaling up proven tools and approaches that have been found to expand the implementation of focused ANC and to increase IPTp uptake at the health facility level by ensuring that health workers provide IPTp to all eligible women presenting for antenatal care. This will include the distribution of gestational wheels to ensure that ANC workers understand when to give SP, training, and supportive supervision, as well as safe water vessels for directly-observed therapy. Given that IPTp coverage is relatively high, these efforts should help increase the uptake of the second and potentially third dose. This effort will be complemented by a continuing mass media and community-level campaign to encourage women to go to a clinic as early as possible in their pregnancy.

- Support for national mass media campaign to promote IPTp and to encourage early visits to the ANC. ($250,000)
- Support the ongoing nationwide scale-up of IPTp and focused ANC at health facilities by continuing to provide health worker trainings, commodities to facilitate directly-observed therapy, and ongoing supportive supervision. ($400,000)
- Support for NGO and CBO community mobilization activities through small grants to increase ANC attendance and the demand for IPTp (integrated campaign with ITN and prompt, effective therapy promotion). ($350,000)

INTERVENTIONS – CASE MANAGEMENT

Malaria Diagnostics

Background:

Malawi's national policy calls for persons greater than five years of age with fever to undergo a diagnostic test before malaria treatment is provided. Children less than five years of age still receive presumptive treatment for fever. This policy is currently being revisited, with some advocating diagnostic testing for all those with suspected malaria, regardless of age.

Despite this dialogue at the national level, the majority of malaria treatment is still provided presumptively because of poor access to diagnostic testing at most lower-level health centers. Little progress has been made towards achieving the goal set forth in the National Malaria Strategic Plan (2005-2010)--that 60% of health centers have the capacity to perform diagnostic testing for malaria.

Even where diagnostic testing for malaria is available, malaria microscopy is the only diagnostic test available. Laboratory hours are limited and patient loads can be overwhelming, with more than 200 fever cases being seen each day. In addition, a recent assessment by the Strengthening Pharmaceutical Systems (SPS) Project demonstrated that 75% of patients with a negative diagnostic test for malaria were still prescribed treatment for malaria.

Notwithstanding these challenges, some progress is being made towards strengthening diagnostic testing. PEPFAR has invested significantly in strengthening laboratory services, although primarily at the referral level. PEPFAR has supported Howard University to work with the MOH's Community Health Sciences Unit to implement a pre-service training course for laboratory technicians, develop a laboratory fellows program, and support zonal laboratories around the country.

Progress to Date:

Two comparative assessments of selected rapid diagnostic test (RDT) kits have recently been completed. Results of both studies, one under the auspices of the Community Health Sciences Unit and the other by the Malaria Alert Centre (MAC) are being finalized. These studies, despite their limitations, and in conjunction with the April 2009 WHO report of Results of Malaria RDTs: Round 1 (2008) will inform the choice of RDT to be procured with Global Fund consolidated Round 2/Round 7 support. Funds are available to purchase 3.1 million RDTs over the lifetime of this grant.

In March 2009, a team from the Improving Malaria Diagnostics (IMaD) Project conducted an assessment of laboratories in nine hospitals and five health centers in Southern and Central Malawi. This assessment found that lab technicians in these facilities had very heavy workloads due to large numbers of patients presenting with fever (often more than 200 patients per day). The lab technicians were highly accurate at differentiating positive and negative blood films, but lacked skill in species identification and in quantification of parasite density. Based on the results of this assessment, IMaD will be supporting the NMCP and key partners to develop a national policy on malaria diagnosis. This policy will include guidance on when and where it would be appropriate for laboratories to use microscopy and RDTs.

USAID DELIVER also is scheduled in late 2009 to conduct an assessment of the logistics needs for diagnostic supplies and test kits. This information will be essential for both the scale up of RDTs and for ensuring a consistent supply of needed diagnostics commodities.

Proposed Year 4 Activities: ($800,000)

Based on the findings of the assessments of diagnostic testing and laboratory supply logistics, PMI's FY 2009 support will focus on developing a national malaria diagnosis policy, accompanied by standard operating procedures and training materials, and pilot implementation of supervision for laboratory and other personnel involved in malaria

diagnostic testing. In FY 2010, PMI will expand this funding to support the scale up and strengthening of diagnostic testing services in Malawi. Specifically, PMI support will be provided in the following areas:

- Implementation of the outcomes of the diagnostic assessment: This support will be directed towards strengthening the skills of laboratory and clinical staff on the correct conduct and use of diagnostic tests through training and supervision, and strengthening and expansion of existing quality assurance activities. Whenever feasible, these activities will be implemented in coordination with other lab strengthening activities, including those supported by PEPFAR and USAID Tuberculosis funds. ($400,000)
- Procurement of supplies and equipment for diagnostic testing: Based on the outcome of the policy dialogue planned for the coming year and in coordination with other lab strengthening activities, PMI will provide support for procurement of needed equipment and supplies. This could include microscopes, laboratory reagent kits, and possibly some RDTs. ($400,000)

Pharmaceutical and Supply Chain Management:

Background:

Malawi's pharmaceutical management system has been plagued with serious problems. Stock outs of SP and other essential drugs occur regularly due to issues related to quantifications of need, ordering, tendering, receipt, storage, and the logistics of distribution. Currently, Central Medical Stores (CMS) handles the procurement, storage, and distribution of most drugs to all government health facilities. Because of budget constraints, procurement issues, and management problems, CMS has not able to procure a full supply of the national requirements for drugs.

There is significant pressure from the Global Fund and other donors to reform CMS. The MOH is in the process of converting CMS to a public trust with a private sector model of doing business. This conversion will allow CMS to hire staff outside the MOH staff structure and to enforce results-oriented management practices. The process of conversion is expected to be completed during 2009.

Progress to Date:

With Years 1 and 2 funding, PMI procured the initial 18-month supply of the first-line therapy, AL, to cover the gap between the policy change and implementation of the successful Global Fund Round 7 grant. Although the USG is no longer procuring AL for the health facilities, PMI has been and will continue to work closely with the Global Fund and MOH to ensure a continuous supply of AL.

PMI distributed the ACTs it procured through CMS under the stipulation that CMS would improve its storage facilities, documentation and information system, transportation capacity, security systems, and logistics management system. Although

CMS was able to physically distribute the drugs to the health facilities with reasonable accuracy, difficulties in record keeping and an inability to warehouse the commodities continue to plague the system and highlighted key barriers to maintaining a strong supply chain both within and external to CMS. These difficulties in record keeping have reduced CMS's ability to collect accurate data on the consumption of AL. Accurate data retrieved from the supply chain system is needed for the quantification team to forecast needs with minimal wastage and stock outs.

To address these issues, PMI has been working to improve the supply chain with a focus on data flow and quality of information to improve drug management and evidence-based decision making. In particular, PMI has concentrated on rational drug use, addressing provider behavior pertaining to drug dispensing, managing drug stocks at the health facility level, and monitoring consumption patterns through regular supportive supervision and training. PMI also supports the Malawi Government-operated Pharmacy, Medicines, and Poisons Board's efforts to regulate the private sector drug market, with a focus on quality assurance. Because of these efforts, ACT stock out rates have stayed below 10% in 2009, one of the lowest rates in Africa. Also the systems put in place to manage the ACT supply have improved the overall distribution of essential drugs.

Proposed Year 4 Activities: ($1,600,000)

In the coming year, PMI will continue to support routine pharmaceutical systems strengthening activities, including end-use verification of commodities, monitoring and supervision and strengthening of national pharmaceutical regulation. PMI will maintain support to CMS, the District Health Officers, and the Pharmacy, Medicine and Poisons Board, in addition to support for the restructuring of the MOH's Pharmaceutical Department as indicated in the Global Fund and MOH's joint Pharmaceutical Roadmap for Malawi.

A particular focus of supply chain management activities in the coming year will be support to the community IMCI program (see Case Management section). In order to ensure accurate quantification and adequate supply of AL to the community drug boxes, PMI will work to extend the Logistics Management Information System's reporting structure to include the c-IMCI intervention. Monitoring of community drug use will also be integrated into these activities.

PMI will continue to support the MOH in the strengthening of the pharmaceutical management system. Efforts will be made at all levels of the system, from the central level up to the Regional Medical Stores and health facilities. In FY 2010, PMI will:

- Continue providing technical assistance to strengthen the existing pharmaceutical management system through CMS to ensure a consistent supply of AL. This includes ongoing support for pharmaceutical management, stock management, inventory control, and capacity building. ($700,000)
- Continue providing technical assistance and training to the MOH to strengthen pharmaceutical management at the health facility level. This includes training

health workers, helping with quantification, and providing assistance on quality control and post market surveillance. ($700,000)

- Provide technical assistance to strengthen the supply chain system at the community level in support of the community IMCI program (see Malaria Treatment Section). ($200,000)

Malaria Treatment

Background:

As described above, in November 2007, Malawi successfully launched its new malaria treatment policy, with AL as the prescribed first-line treatment. The launch included cascade training on the new drug policy, which was largely implemented throughout the country. With PMI support, refresher training for health workers and supportive supervision are being carried out. To increase awareness about the new policy, communications materials were developed and mass communications campaigns implemented. PMI also supported six CBOs by providing them with small grants for community mobilization activities in six districts. Despite these efforts, the need for increased awareness on the usage of AL continues.

Building on the success of the launch of AL at the facility level, the Integrated Management of Childhood Illness (IMCI) Program of the MOH has begun implementing a plan to roll out community IMCI (c-IMCI) to 4,000 hard-to-reach villages across Malawi with a catchment area of approximately 10% of the population. With the support of WHO, UNICEF, the Canadian International Development Agency, the Bill and Melinda Gates Foundation, and USAID Maternal Child Health funding, the c-IMCI program will utilize Health Surveillance Assistants (HSAs) to provide case management services to sick children at the community level. HSAs will be trained in community case management and equipped to presumptively diagnose and treat acute respiratory infection, diarrhea, eye infections, and malaria using standardized algorithms.

To date, the MOH has procured 1,400 drug boxes for remote villages. They will be stocked with cotrimoxazole, oral rehydration therapy, choramphenicol eye ointment, and paracetamol. Initially, these drug boxes also contained SP, but this was removed following the national policy change to AL as first-line treatment for malaria. Lacking sufficient stocks of AL to fill both the needs of facilities and the c-IMCI program, HSAs have not been provided with AL to treat malaria. Patients presenting with fever or other symptoms of malaria must be referred to the nearest health facility.

Thus far, over 432 HSAs have received a six-day training in c-IMCI. Funding is available for further trainings, but these have been put on hold until sufficient AL is available to supply these HSAs. Further challenges to scale-up of the c-IMCI program include the lack of standardized reporting forms and overly complex job aides. A piloting of a somewhat simplified standard register is planned for late 2009/early 2010, although

the proposed register remains rather complicated, an issue which must be addressed. In addition, no standardized system for monitoring AL consumption or forecasting need for the c-IMCI program currently exists.

Progress to Date:

With PMI Year 1 and Year 2 support, 144 health facilities out of approximately 600 have received supervisory visits and 1,383 health workers posted at those health facilities have been provided refresher training as of March 2009. Communications materials on the new drug policy have been developed, printed, and distributed to health facilities throughout the country. Radio spots were played on multiple national and local radio stations. At the community level, six CBOs conducted community mobilization activities on malaria, including messaging on the new drug policy and adherence with treatment, in seven districts. These activities are now being extended to another five districts.

With PMI Year 3 funding, PMI is procuring more than 300,000 treatments of AL to support the scale-up of the c-IMCI program. President's Malaria Initiative funding will also supplement USAID maternal and child funding support for supervision of HSAs and for development and piloting of improved tools and reporting forms for the c-IMCI program.

In the last quarter of 2009, PMI will also conduct a study assessing the effectiveness of different interventions to improve adherence to AL. This study will inform future communications and behavior change activities promoting correct use of malaria treatment.

Proposed Year 4 Activities: ($3,760,000)

In Year 4, PMI will support further scale-up of the c-IMCI program to cover many of the 4,000 hard-to-reach villages in Malawi. Support for procurement of AL will be increased from Year 3 levels. Additional support will be provided for dissemination and training in the improved tools and reporting forms for c-IMCI developed in Year 3. Also, support will be continued for training and supportive supervision of facility-level health workers, and for mass communications and community mobilization activities focused on promoting prompt and correct use of AL for the treatment of malaria.

Specifically in FY10, PMI will:

- Procure ACTs for children less than five for use in c-IMCI in 4,000 hard-to-reach villages. ($1,~~,~~900,000)
- Provide technical assistance to train, supervise, and monitor the scale-up of c-IMCI to ensure better access to prompt and effective malaria treatment. ($700,000)
- Expand community-mobilization activities to promote prompt and effect treatment of fever and adherence to treatment. ($260,000)
- Implement a mass media campaign to promote prompt and effective treatment of fever and adherence to treatment (integrated campaign with ITN and IPTp

promotion). ($200,000)

- Continue to provide technical assistance for training and supportive supervision of health workers at health facilities. ($700,000)

HIV/AIDS AND MALARIA

Background:

Approximately 12% of the adult population ages 15 to 49 in Malawi is living with HIV/AIDS. Malawi received nearly $42 million dollars for FY 2009 from PEPFAR to support HIV counseling and testing services, antiretroviral treatment, prevention of mother-to-child transmission services, and laboratory infrastructure and services, and to strengthen monitoring and evaluation capacity. The clinical interactions between HIV and malaria are well described in the literature and highlight the importance of seeking opportunities to integrate malaria interventions into HIV programs. Persons living with HIV/AIDS are at increased risk of severe malaria and poor treatment outcomes and therefore require aggressive preventive measures.

Progress to Date:

To date, PMI has provided free LLINs to all HIV-positive women and children under five through ANC and EPI clinics, which covers a significant portion of the HIV-positive population vulnerable to malaria. Significant investments have been made to strengthen the supply chain (see case management) for essential drugs; many of these investments have been done in conjunction with PEPFAR funds. In Year 3, these efforts will continue and will be complemented by leveraging resources from the two initiatives to strengthen basic laboratory services essential for malaria and opportunistic infection diagnostics.

Proposed Year 4 Activities: (No additional cost to PMI)

The PMI team will continue to address issues of malaria in people living with HIV/AIDS in several areas. In terms of tangible contributions, all HIV-positive pregnant women and children under five will have access to a free LLIN through routine visits to health facilities. In addition, PMI will work with PEPFAR in Malawi to provide technical support for the distribution of LLINs through home-based care kits for people living with HIV/AIDS and antiretroviral treatment clinics. PMI will also work to capitalize on other opportunities to distribute LLINs through programs working on both HIV and malaria prevention and care (such as the Peace Corps/ Malawi).

PMI will continue partnering with PEPFAR in health system strengthening activities, which benefit both malaria and HIV disease control interventions. Both Initiatives are currently engaged in strengthening of the supply chain which affects the availability of drugs for routine opportunistic infection treatment. Efforts will also be made to coordinate support to strengthening laboratory services and integrating focused antenatal care interventions.

CAPACITY BUILDING WITHIN THE NATIONAL MALARIA CONTROL PROGRAM

Background:

The NMCP was established under the Directorate of Preventive Health Services within the Ministry of Health. The program has seven positions at the national level to form the core management and coordination team, including three zonal officers who split their time between the district and the national team. The Program Manager reports to the Director of Preventive Health Services who serves as the head of the Community Health Services Unit. At the district level, the District Malaria Control Coordinator oversees district-based malaria control activities under the District Health Officer.

Progress to Date:

In 2008, PMI supported a detailed review of NMCP capacity to assess the strengths and weaknesses of the program and to lay out a framework for support. The review found that while the NMCP is staffed with hard working, dedicated people and is a well-structured framework for malaria control, it has been severely understaffed. Furthermore, the existing staff have had limited training in management and the NMCP lacks access to an adequate operational budget. Over the last five years, the NMCP has increased its staff from two to seven members. However, the recently departed NMCP Program Manager held multiple positions in the MOH and it can be assumed that the next Program Manager will also likely hold more than one full-time position within the MOH structure. To address the staffing issue, the review recommended three to four of the following seven positions should be established: Monitoring and Evaluation (M&E) Specialist, Case Management Specialist, IEC Specialist, Administrative Officer, Data Management Specialist, Pharmacologist, and Global Fund Grant Manager.

Furthermore, the NMCP Capacity Review suggested working to increase the management capacity among existing staff as a way to increase the productivity of the existing team. There is a need for training in management to help the NMCP direct and coordinate the activities of donors, technical working groups, and other partners. The lack of an operational budget for the NMCP contributes to its inability to manage partners and programs. Although the SWAp has increased resources for malaria control, the concurrent process of decentralization has resulted in fewer resources at the central level. In addition, as Global Fund resources are managed through the SWAp, funds that would otherwise be dedicated solely to the program are difficult to track and do not always reach the intended recipient. As a result, planned malaria activities such as trainings, supervisions and technical meetings often do not occur due to an inability to access central funds.

In Year 3, in the area of staffing and management, PMI will support short- and medium-term technical assistance to the NMCP. Specifically, PMI is providing a full time technical assistant to focus on monitoring and evaluation (M&E). This M&E officer will be seconded through a PMI partner and will sit at the NMCP full time. While the

individual will act as an NMCP staff member, performance assessments will be conducted by the partner in collaboration with the NMCP. PMI is also sponsoring short-term technical assistance to work with the NMCP on-site to increase their capacity for time and project management.

Proposed Year 4 Activities: ($300,000)

The Malaria Subcommittee of the Essential Health Package Technical Working Group needs ongoing strategic support to function in their crucial support role to the NMCP. In addition, the districts need support to plan and prioritize malaria control activities within their budget. Funds will be provided for relevant technical meetings to facilitate their regular occurrence. Partner budgets will also include funding to include NMCP and relevant MOH partners on monitoring and evaluation and supervision trips to facilitate the NMCP's continuing involvement.

Specifically, FY 2010 funding will ensure that PMI can:

- Continue to provide support for the Secretariat needs of the NMCP for the technical committees and task forces to convene policy and guideline review meetings. Also to continue operational support for NMCP staff involvement in monitoring, supervision, and evaluation activities of PMI-supported activities. ($50,000)
- Continue to second an M&E specialist who will assist NMCP in collection and use of data to inform programmatic monitoring and decision making. This will be the second and final year that PMI will support this position. PMI will work with the MOH to ensure that they are able to take over this position once PMI funding ends. (Costs covered in the M&E section.)

COMMUNICATION AND COORDINATION

Background:

Coordination of partner involvement in malaria control, including financial support, is done through the Interagency Coordinating Committee (ICC). The ICC is the major body responsible for resource mobilization to supplement the resources made available for activities funded through the SWAp.

Progress to Date:

Technical inputs are discussed and coordinated through the Technical Working Groups with sub-committees on various technical areas of malaria control and pharmaceutical logistics. The National Malaria Policy Advisory Committee, reporting to the Essential Health Package TWG, is responsible for advising the MOH on malaria policy issues. The NMCP is currently serving as secretariat to all of these committees with partner assistance from the WHO, UNICEF, PMI, and MAC.

Proposed Activities: (No additional cost to PMI)

- The PMI in-country technical team will provide support to the NMCP by participating in these committees and task forces.

PRIVATE SECTOR PARTNERSHIPS

Background:

The NMCP and PMI collaborate with the Dwangwa Sugar Estates in the implementation of IRS. The Dwangwa Sugar Company has been supporting an IRS program in their estate community since 2001.

Progress to date:

The NMCP and PMI have collaborated with the Illovo (Dwangwa?) Sugar Estates in the implementation of IRS during both pilot spray rounds in Nkhotakota District.

Proposed Year 4 Activities: (No additional cost to PMI)

As described in the IRS section, PMI will continue its collaboration with the Illovo Sugar Estate to implement IRS.

MONITORING AND EVALUATION PLAN

Background:

In 2007, the NMCP's M&E Technical Working Group developed a comprehensive M&E plan for malaria in Malawi. The National Malaria Monitoring and Evaluation Plan 2007-2011 covers a broad range of issues including drug quality surveillance, strengthening of sentinel site surveillance for monitoring of impact indicators, vector assessments for IRS and ITN program monitoring, household and facility surveys (including the collection of biomarkers), and post-market surveillance, pharmacovigilance, and drug resistance testing following the introduction of AL. The M&E strategy complements the Malawi Five-Year Strategic Plan and will assist in mapping and coordinating operational research and M&E activities of all malaria prevention and control partners.

The PMI's monitoring and evaluation approach in Malawi fits within the framework of the MOH's National Malaria Monitoring and Evaluation Plan for 2007 to 2011. Specifically, PMI supports regular population-based surveys such as the MIS and the DHS to provide estimates of the status of key malaria indictors, is developing sentinel sites to monitor trends in malaria at the health facility level, and supports key operations research needed to help guide the program.

Progress to Date:

Population-based surveys:
The most recent national-level population-based survey conducted in Malawi is the 2006 UNICEF MICS. This survey, conducted just prior to the launch of PMI, serves as the baseline for PMI's program. The upcoming 2009 DHS, supported in Year 3, will provide results in 2010 and will be the key mid-term evaluation of PMI intervention scale up and impact. In Years 1 to 3, PMI supported annual sub-national anemia and parasitemia surveys in eight districts (six of which are also districts that have a sentinel site). Data collected includes ITN ownership and usage, history of febrile illness and promptness and effectiveness of treatment in children less than five years of age, household socioeconomic markers, and anemia and parasitemia biomarkers for children 6-30 months of age. The 2007 and 2008 anemia and parasitemia surveys found a significant reduction in anemia in children 6-30 months in the one IRS target area; the prevalence of anemia decreased from 27.1% in 2007 to 12.2% in 2008. Comparatively, in the non-IRS area, anemia decreased from 29.1% to 27.4%.

Results from the Anemia and Parasitemia Surveys*

Indicator	**2005 (%)**	**2007 (%)**	**2008 (%)**
Prevalence of anemia (Hb<8g/dl) in children 6-30 months	18.4	10.5	15.4
Prevalence of parasitemia in children 6-30 months	18.9	15.0	16.9

*Data include six non-IRS districts.

These survey data are available since 2005 and provide a unique opportunity to monitor the scale up of interventions, view early trends in coverage and usage of key interventions for both rural and urban populations during the rainy season, and evaluate the outcome and impact of PMI-supported IRS activities. IRS has been implemented in one of the eight survey districts; the other districts serve as control areas for this evaluation. The survey was repeated in Year 3 and included indicators on IPTp.

Sentinel Sites:
Data from the DHS, MICS, and other national surveys are needed for evaluating progress on a national level. However, reliable monthly data from the health facilities on malaria mortality are critical for making sound programmatic decisions and helping to identify areas for programmatic improvements. In Years 1 to 3?, PMI established a framework for data collection at up to ten sentinel sites in eight districts, with data currently being collected at four health facilities. These sites will monitor malaria mortality and morbidity, as well as other indicators of care, at the health facility level. Clinical staff at each site receives training on data collection, use of data for decision-making, and supportive supervision. In Year 4, PMI will continue to support the sentinel sites with an emphasis on outpatient morbidity and data quality improvement. The data from these

four initial sites have provided valuable information regarding staffing shortages, laboratory capacity, and patterns of diagnosis and treatment.

Additional M&E activities:

In 2007, a PMI-supported assessment of the management capacity of the NMCP highlighted the lack of program staff to oversee monitoring and evaluation activities. In response, PMI allocated resources to hire an M&E Advisor with Year 3 funding. The advisor will work with the NMCP, MOH, and other partners to strengthen routine malaria surveillance, assist in planning national population-based surveys, and support sentinel site implementation and strengthening.

As the PMI program matures in Malawi, the need for targeted evaluations of case management activities persists. In Year 4, PMI will support efficacy studies of AL to ensure effective treatment for malaria is available in Malawi. This will complement the AL adherence study being implemented in Year 3. The rapid scale up of c-IMCI will require routine monitoring and evaluation as the program is implemented to provide reliable data on the program's challenges and successes. These data should guide future investments by PMI and other donor groups in this important area. End-of-year project evaluations will also be conducted to ensure that successes and challenges are well documented to inform future programming decisions.

Proposed Year 4 Activities: ($2,285,000)

In the absence of reliable routine health information systems, monitoring of PMI's activities will rely on a combination of household surveys and data collection at sentinel sites. With FY 2010 funds, PMI will provide support for an MIS to be conducted in FY? 2011; results from the survey will measure PMI progress in Malawi. PMI will continue to support sentinel surveillance in selected health facilities and will also continue to support technical assistance to the NMCP to strengthen M&E capacity (see capacity building section). The following proposed PMI activities are in accordance with the national M&E plan.

- Continue to support the implementation of sentinel site surveillance ($250,000)
- Support an MIS in 2011 to obtain data on coverage of key interventions and assess possible impact on febrile illness and under-five mortality. ($1,400,000)
- Support the evaluation of the community distribution of ACTs through the c-IMCI program in hard-to-reach areas. The evaluation will assess the quality of malaria case management, ACT stock-out rates, and overall logistics of the program in selected hard-to-reach areas. This activity is planned for early FY 2011, approximately 2 years after the program launch. ($200,000)
- Support therapeutic efficacy surveillance to evaluate the first-line anti-malarial drug AL using the standard WHO-endorsed protocol. ($125,000)

- Contribute to the BASICS evaluation, an end-of-project evaluation to document lessons learned and formulate recommendations for future maternal and child health implementing projects. This evaluation is predominately supported with Maternal and Child health funds and will look at the implementation of the small grants program, the c-IMCI program and the IPTp program. ($60,000)
- PMI will continue to second an M&E specialist to the NMCP to assist in strengthening routine malaria data collection and the data's use to inform programmatic monitoring and decision making. This will be second and final year that PMI will support this position; PMI will work with the MOH to ensure that they are able to support this position once PMI funding ends. ($250,000)
- Continue to work with the NMCP and technical partners, especially WHO, UNICEF, and the Malaria Alert Centre, and the M&E TWG to implement the comprehensive M&E plan for malaria described above. (No additional costs to PMI)

STAFFING AND ADMINISTRATION

One health professional representing USAID has been hired as a Resident Advisor to oversee the PMI in Malawi. The former long-term CDC PMI advisor has returned to the U.S. and a replacement has been recruited. In addition, one FSN has been hired to support the PMI team. All PMI staff members are part of a single inter-agency team led by the USAID Mission Director and his designee in country. 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 these positions (whether initial hires or replacements) 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 individual agency.

These two PMI professional staff work together to oversee all technical and administrative aspects of PMI, including finalizing details of the project design, implementing malaria prevention and treatment activities, monitoring and evaluation of outcomes and impact, and reporting of results. Both staff members report to the USAID Mission Director or his designee. The CDC staff person is supervised by CDC/Atlanta both technically and administratively. All technical activities are undertaken in close coordination with the MOH/NMCP and other national and international partners, including WHO, UNICEF, the Global Fund, World Bank, and the private sector.

Locally-hired staff members to support PMI activities either in Ministries or in USAID are 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 also need to be approved by the USAID Mission Director and Controller.

TABLES (see separate attachment)

Table 1

President's Malaria Initiative – *Malawi*
Year 4 (FY 2010) Timeline of Activities

Activity	2010											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
IRS in 2 Districts												
IEC for community sensitization for IRS												
Procurement of LLINs												
Distribute LLINS to Under 5s and ANCs												
Training and Supervision of ANC workers providing IPTp												
Procure ACTs for community level distribution												
Provide technical assistance to train, supervise and monitor the community-based case management program												
Strengthen diagnostic services												
Procure diagnostic supplies												
NMCP Secretariat Support												
Strengthen Sentinel Sites for ongoing M&E activities												
MIS (Scheduled 2011)				2011								
Therapeutic efficacy study												
Evaluate community level distribution												
Contribute to BASICS evaluation												

Table 2
President's Malaria Initiative- Malawi
Planned Obligations for FY10 ($27 M)

Proposed Activity	Mechanism	Total Budget	Commodities	Geographic area	Description of Activity
Preventive Activities					
ITNs					
Procurement of LLINs	DELIVER	$9,500,000	$9,500,000	National	Procure 1,500,000 WHOPES-approved LLINs
Distribute LLINS to under 5s and ANCs	TBD	$1,250,000		National	Distribution of free LLINS to children under five and pregnant women via EPI and ANC clinics.
National IEC campaign to promote year round use	TBD	$250,000		National	National (via mass media) IEC campaign to promote correct and consistent, year round use of LLINs.
Community-based ITN hang and use campaign	BASICS	$325,000		National	Use community-based organizations to encourage correct use of ITNs through interpersonal and community level approaches.
Subtotal		***$11,325,000***	***$9,500,000***		
IRS					
IRS in two Districts	TBD	$4,500,000	$600,000	Nkhotakota and Salima	IRS in Nkhotakota and an adjacent district.
Technical assistance to NMCP	TBD	$200,000			Provide technical assistance to NMCP on IRS.
IEC for community sensitization for IRS	TBD	$200,000			Conduct IEC activities in Nkhotakota and adjacent district related to IRS activities.

Environmental monitoring	EMCAB	$50,000			Provide TA to PMI staff and/or NMCP on environmental monitoring and capacity building related to IRS activities; investigate, if necessary, incidents of non-compliance.
Entomology	MAC	$250,000			Provide entomological monitoring for IRS in Nkhotakota district and an adjacent district, as well as other areas receiving NMCP supported IRS.
Subtotal		***$5,200,000***	***$600,000***		
IPTp					
Training and supervision of ANC workers providing IPTp	BASICS	$400,000		National	Support ongoing IPTp efforts to scale-up proven approaches to increase IPTp uptake including training and supervision of health workers, job aides, gestational wheels, etc.
National IPTp IEC and mass media campaign	TBD	$250,000		National	National IEC/BCC campaign to encourage attendance at ANC and to increase awareness of the importance of IPTp as part of focused ANC
Community IPTp IEC activities	BASICS	$350,000		National	Community-based IEC/BCC campaign to increase the uptake of two doses of SP and ANC attendance by late or non-attending pregnant women.
Subtotal		***$1,000,000***	***$0***		
Case Management					
Strengthen diagnostic services	IMAD	$400,000		National	Implementation of diagnostic assessment (FY08) recommendations.
Procure diagnostic supplies	DELIVER	$400,000	$400,000		Procure supplies and equipment for diagnostic testing including microscopes, laboratory reagent kits, and possibly some RDTs.

Providing technical assistance to strengthen existing the supply chain management system through CMS	DELIVER	$700,000		National	Ongoing support for pharmaceutical management, quantification, stock management system, inventory control, capacity building, etc.
Continue providing technical assistance in training and supportive supervision at the district level in health facilities	SPS	$700,000		National	Continue to provide technical assistance the NMCP to provide supportive supervision to health workers at the health center level. Work with the Pharmacy and Poison Board to develop a post-marketing surveillance and quality control system.
Provide technical assistance to strengthen the supply chain system from health facility to community level	SPS	$200,000		National	Continue providing technical assistance to strengthen the pharmaceutical management system through CMS to ensure a consistent supply of AL both at the health facility and for the c-IMCI program.
Procure ACTs for community-level distribution	DELIVER	$1,900,000	$1,900,000	National	Drug procurement for treatments for distribution through 2500 HSAs/c-IMCI program
Provide technical assistance to train, supervise and monitor the community-based case management program	BASICS	$700,000		National	Continue providing technical assistance to strengthen the supervision and M&E for the c-c-IMCI program.
Implement a community-based and integrated case management IEC campaign	BASICS	$260,000		National	IEC material development and production to promote prompt and effect treatment of fever, and to educate communities on the new drug policy and promote regime adherence.

Implement a mass media integrated malaria IEC campaign	TBD	$200,000		National	IEC/BCC mass media campaign to promote prompt and effect treatment of fever, and to educate communities on the new drug policy and promote regime adherence.
Subtotal		***$5,460,000***	***$2,300,000***		
NMCP					
NMCP Secretariat support	SPS	$50,000		National	Assist the TWG operations via logistical and operational support
Subtotal		***$50,000***	***$0***		
M&E					
Strengthen sentinel sites for ongoing M&E activities	MAC	$250,000		8 districts and 10 health facilities	Strengthen capacity to monitor malaria indicators, morbidity, and mortality.
MIS	MACRO	$1,400,000			Support the Malaria Indicator Survey in 2011 to obtain data on coverage of key I interventions and assess possible impact on febrile illness and under-five mortality.
Evaluate community -level distribution of AL	TBD	$200,000			Support the evaluation of the community distribution of ACTs through the c-IMCI program in hard-to-reach areas.
Therapeutic efficacy study	MAC	$125,000			Support therapeutic efficacy surveillance to evaluate the first-line anti-malarial drug, AL using the standard WHO endorsed protocol.
NMCP M&E Advisor	BASICS	$250,000			Provide NMCP with LTTA for M&E Coordination

Contribute to BASICS evaluation	TBD	$60,000			Contribute to the BASICS maternal and child health evaluation, an end of project evaluation to document lessons learned and makes recommendations for future maternal and child health implementing projects.
Subtotal		***$2,285,000***	$0		
Staffing and Administration					
CDC Staffing	USAID	$500,000			
USAID Staffing	USAID	$600,000			
USAID program support costs	USAID	$520,000			
CDC Temporary Duties	CDC	$60,000			To provide technical assistance for the sentinel sites, entomology, and the therapeutic efficacy study.
Subtotal		***$1,680,000***	$0		
GRAND TOTAL		$27,000,000	$12,400,000		
Commodities represent % of total		46%			

Table 3

President's Malaria Initiative – *Malawi*
Year 4 (FY 09) Budget Breakdown by Intervention ($27 million)

Table 4: Year 4 (FY 2010)
Estimated Budget Breakdown by Intervention

Intervention	Commodities ($)	Commodities (%)	Non-Commodities ($)	Non-Commodities (%)	Total ($)	Total (% of total budget)
Insecticide-treated Nets	$9,500,000	84%	$1,825,000	16%	$11,325,000	42%
Indoor Residual Spraying	$600,000	12%	$4,700,000	87%	$5,200,000	19%
Case Management	$2,300,000	35%	$3,560,000	65%	$5,460,000	20%
Intermittent Preventive Treatment	$0	0%	$1,000,000	100%	$1,000,000	4%
NMCP Support	$0	0%	$50,000	100%	$50,000	0%
Monitoring and Evaluation	$0	0%	$2,285,000	100%	$2,285,000	8%
Administration	$0	0%	$1,680,000	100%	$1,680,000	6%
Total	**$12,400,000**	**46%**	**$14,600,000**	**54%**	**$27,000,000**	**100%**

Table 4

President's Malaria Initiative – *Malawi*
Year 4 (FY 09) Budget Breakdown by Partner ($27 million)

Partner Organization	Geographic Area	Activity	Budget
CDC/MAC	Nationwide	Entomology Strengthen Sentinel Sites for ongoing M&E activities	$625,000
		Therapeutic efficacy study	
SPS	Nationwide	Continue providing technical assistance in training and supportive supervision at the district level in health facilities Provide technical assistance to strengthen the supply chain system from health facility to community level NMCP Secretariat Support	$950,000
DELIVER TO 3	Nationwide	Procurement of LLINs Produre ACTs for community level distribution Providing technical assistance to strengthen existing the supply chain management system through CMS Procure diagnostic supplies	$12,500,000
TBD	Nationwide	Evaluate community level distribution Contribute to BASICS evaluation	$260,000
BASICS	Nationwide	Community-based ITN hang and use campaign Training and Supervision of ANC workers providing IPTp Community IPTp IEC/BCC activities Provide technical assistance to train, supervise and monitor the community-based case management program NMCP M&E Advisor	$2,025,000
Staffing and Admin	Nationwide	CDC Staffing USAID Staffng USAID program support costs CDC TDYs	$1,680,000

Diagnostics RFA	Nationwide	Strengthen diagnostic services	$400,000
PSI Follow on/TBD	Nationwide	Distribute LLINS to Under 5s and ANCs National IEC promoting year round use National IPTp IEC/BCC campaign Implement a community-based and integrated case management IEC campaign	$2,210,000
		Implement a mass media integrated malaria IEC campaign	
IRS-TBD	2 targeted districts	IRS in 2 Districts TA to NMCP IEC for community sensitizaton for IRS	$4,900,000
EMCAB	2 targeted districts	Environmental monitoring	$50,000
DHS TBD	Nationwide	MIS	$1,400,000
		GRAND TOTAL	**$27,000,000**