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PRESIDENT'S MALARIA INITIATIVE

Malaria Operational Plan (MOP)

MALAWI

Year Five -- FY 2011

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ABBREVIATIONS and ACRONYMS

ACT	artemisinin-based combination therapy
ANC	antenatal care
BCC	behavior change communication
CBO	community-based organizations
CCM	community case management
CDC	U.S. Centers for Disease Control and Prevention
CMS	Central Medical Stores
DfID	Department for International Development (United Kingdom)
DHMT	District Health Management Team
DHS	Demographic and Health Survey
EHP	Essential Health Package
EPI	Expanded Program on Immunization
FANC	Focused Antenatal Care
FY	Fiscal Year
GHI	Global Health Initiative
Global Fund	Global Fund to fight AIDS, Tuberculosis and Malaria
HMIS	Health Management Information System
HSA	health surveillance assistant
IDSR	integrated disease surveillance and response
IEC	information, education, communication
IMaD	Improving Malaria Diagnostics Project
IPTp	intermittent preventative treatment for pregnant women
IRS	indoor residual spraying
ITN	insecticide-treated mosquito net
LA	artemether-lumefantrine
LLIN	long-lasting insecticide-treated nets
MAC	Malaria Alert Centre
MACEPA	Malaria Control and Evaluation Partnership in Africa
MICS	Multiple Indicator Cluster Survey
MIS	Malaria Indicator Survey
MoH	Ministry of Health
MOU	Memorandum of Understanding
NGO	non-governmental organization
NMCP	National Malaria Control Program
PEPFAR	U.S. President's Emergency Plan for AIDS Relief
PMI	President's Malaria Initiative
PMTCT	prevention of mother-to-child transmission (HIV)
RBM	Roll Back Malaria Partnership
RDT	rapid diagnostic test
SC4CCM	Supply Chain for Community Case Management project
SP	sulfadoxine-pyrimethamine
SWAp	sector-wide approach
USAID	U.S. Agency for International Development
WHO	World Health Organization

EXECUTIVE SUMMARY

Malaria prevention and control is a major foreign assistance objective of the U.S. Government (USG). In May 2009, President Barack Obama announced the Global Health Initiative (GHI), a six-year, comprehensive effort to reduce the burden of disease and promote healthy communities and families around the world. Through the GHI, the United States will invest \$63 billion over six years to help partner countries improve health outcomes, with a particular focus on improving the health of women, newborns and children. The GHI is a global commitment to invest in healthy and productive lives, building upon and expanding the USG's successes in addressing specific diseases and health related issues.

The President's Malaria Initiative (PMI) is a core component of the GHI, along with HIV/AIDS, maternal and child health, tuberculosis, and neglected tropical diseases. PMI was launched in June 2005 as a 5-year, \$1.2 billion initiative to rapidly scale up malaria prevention and treatment interventions and to reduce malaria-related mortality by 50 percent in 15 high-burden countries in sub-Saharan Africa. With passage of the 2008 Lantos-Hyde Act, funding for PMI has now been extended through FY 2014.

Malawi became a PMI focus country in 2006. Malaria is endemic in more than 95 percent of the country with 98 percent of malaria infections due to *Plasmodium falciparum*. Large-scale implementation of ACTs and IPTp began in 2007 and has proceeded rapidly with support from PMI and other partners, in spite of the country's weak health infrastructure. Although progress is being seen, the Ministry of Health (MOH) estimates that malaria still accounts for more than 30 percent of all outpatient visits and remains the number one cause of hospital admissions among children under five.

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). The Global Fund consolidated Round 2 and 7 grant and the new Round 9 grant supports the majority of the ACT and ITN procurements, while pooled donor and government funds pay for the balance national malaria control activities.

The FY 2011 PMI Malaria Operational Plan for Malawi was developed based on the progress and experiences of the previous four years. It 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. In addition to supporting efforts to control malaria, the team sought to increase integration with other GHI programs, and expand efforts in strengthen systems. Based on these discussions and further meetings with the NMCP, the planning team proposes to support the following major activities. The total amount of PMI funding requested for Malawi in FY 2011 is \$26 million.

Indoor residual spraying (IRS): In the first four years of PMI, Malawi expanded its IRS program from a pilot of 27,000 houses in part of Nkhotakota district in 2007 to two

full districts and 152,000 houses in 2010, protecting a total of 700,000 residents. Based on the success of the initial pilot, the Malawi Ministry of Health is launching IRS in five additional districts in 2010, which will cover a combined 650,000 structures and an estimated 2.7 million people. In addition to spraying Nkhotakota and adjacent Salima District, PMI is working with the NMCP to improve their capacity to implement IRS particularly in the areas of microplanning, logistics, insecticide management, and environmental management. Assuming that this scale-up of IRS is successful, with FY 2011 funding, PMI will continue to support IRS in two districts, in conjunction with the NMCP IRS program.

Insecticide-treated nets (ITNs): Malawi has had considerable success scaling up ITN in ownership and use the recent past with distribution through health clinics and mass campaigns. According to the recent MIS survey, nearly 60 percent of households owned one or more ITNs and 55 percent of children under five and 49 percent of pregnant women slept under an ITN the previous night. 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 its first four years, PMI supported this policy by procuring approximately 4.5 million long-lasting ITNs (LLINs), all of which have been or will be distributed for free through routine systems. As a result of these and other LLINs being procured through the Global Fund, Malawi should reach universal coverage, defined as two people per net, in 2011. Along with LLIN distribution, Malawi has a robust behavior change communications (BCC) strategy, which includes mass media, community media and interpersonal communication.

With FY 2011 funding, PMI will procure an additional 900,000 LLINs for free distribution through routine channels to maintain this high coverage in Malawi. Although household ownership of ITNs is rising in Malawi, consistent behavior change messaging is integral to ensuring continued usage throughout the year and correct care and repair of nets. Therefore, PMI will continue to support a mass media community-based BCC campaign to increase demand for and teach and promote the correct usage of LLINs.

Intermittent preventive treatment of pregnant women (IPTp): Despite the impressive 60 percent coverage of pregnant women with two doses of IPTp in Malawi, the 2010 MIS showed considerably lower rates among poorer women and those in rural areas. PMI has worked to achieve these high rates of coverage nationally in Years One to Four by strengthening focused ANC at the district health facility level and by providing job aids and other relevant tools. PMI has also funded information, education, and communication (IEC) efforts encouraging early and repeated ANC attendance, which will increase the opportunity for delivering the second IPTp dose. With FY 2011 funding, PMI will continue to support these activities with a particular emphasis on rural areas with the goal of ensuring that at least 70 percent of pregnant women receive at least two IPTp treatments.

Case management: In 2007, Malawi changed its national first-line malaria treatment from SP to the ACT, artemether-lumefantrine (AL). To facilitate this transition, between 2007 and 2009, 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 nearly 15 million AL treatments through the public health supply chain to more than 600 health facilities. To ensure that the AL was properly distributed, PMI has invested heavily in building the capacity of the Ministry of Health's Central Medical Stores, including developing distribution schedules, upgrading storage facilities, drug forecasting, and strengthening of reporting throughout the supply chain.

The NMCP is now focusing on the roll-out of rapid diagnostic tests (RDTs) and strengthening malaria microscopy. PMI will provide substantial support to this roll-out and improving microscopy in conjunction with similar efforts ongoing within the HIV and tuberculosis control programs by jointly developing a quality assurance system for microscopy and training of laboratory technicians.

With funding in FY 2011, PMI will support prompt and effective treatment of malaria at the community level through the scale-up of community-based distribution of AL to children under five in hard-to-reach areas throughout the country. The model, which is fully integrated with the Malawi child health platform, uses the community-based integrated management of childhood illness approach to reach children under five who have limited access to formal public health facilities for treatment of major childhood diseases. FY 2011 funding will allow the continued scale-up of the community model to an increased number of hard-to-reach areas by procuring AL and providing training and supervision to health workers on the treatment of basic childhood illnesses.

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 One through Three, PMI conducted annual anemia and parasitemia studies 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. PMI has also provided considerable support for entomological monitoring of IRS and ITNs, as well as funded health facility surveys to determine the effectiveness of the case management strategies. With FY 2011 funding, PMI will continue to support entomological surveillance while monitoring the roll-out of RDTs nationally and the appropriate case management of severe malaria.

Health systems strengthening and capacity building: In response to the GHI, PMI has increased its efforts to strengthen health systems, integrate with other programs, and build capacity. To achieve NMCP and PMI targets for coverage of ACTs, ITNs, IPTp, and IRS, PMI works closely 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. With funding from FY 2011, PMI will continue to support an M&E advisor seconded to the NMCP whose role will be to work

to improve malaria reporting within the health management information system. PMI will also work in collaboration with other program areas, such as maternal and child health and HIV/AIDS, to support building leadership, policy, finance, and management capacity at the district, zonal, and central levels through the use of performance-based financing and supervision strategies, which will include regular surveys to monitor availability of commodities at health facilities.

INTRODUCTION

Global Health Initiative

Malaria prevention and control is a major foreign assistance objective of the U.S. Government (USG). In May 2009, President Barack Obama announced the Global Health Initiative (GHI), a six-year, comprehensive effort to reduce the burden of disease and promote healthy communities and families around the world. Through the GHI, the United States will invest \$63 billion over six years to help partner countries improve health outcomes, with a particular focus on improving the health of women, newborns, and children. The GHI is a global commitment to invest in healthy and productive lives, building upon and expanding the USG's successes in addressing specific diseases and issues.

GHI aims to maximize the impact the United States achieves for every health dollar it invests, in a sustainable way. The GHI's business model is based on:

- implementing a woman- and girl-centered approach;
- increasing impact and efficiency through strategic coordination and programmatic integration;
- strengthening and leveraging key partnerships, multilateral organizations, and private contributions;
- encouraging country ownership and investing in country-led plans and health systems;
- improving metrics, monitoring, and evaluation;
- and promoting research and innovation.

President's Malaria Initiative

The President's Malaria Initiative (PMI) is a core component of the GHI, along with HIV/AIDS, maternal and child health, and tuberculosis. The PMI was launched in June 2005 as a 5-year, \$1.2 billion initiative to rapidly scale up malaria prevention and treatment interventions and reduce malaria-related mortality by 50 percent in 15 high-burden countries in sub-Saharan Africa. With passage of the 2008 Lantos-Hyde Act, funding for PMI has now been extended through FY 2014 and, as part of the GHI, the goal of the PMI is now to reduce malaria-related mortality by 70 percent in the original 15 countries by the end of 2015. This will be achieved by reaching 85 percent coverage of 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 nets (ITNs), intermittent preventive treatment of pregnant women (IPTp), and indoor residual spraying (IRS).

Malawi became a PMI focus country in 2006. Large-scale implementation of ACTs and IPTp began in 2007 and has progressed rapidly with support from PMI and other partners, in spite of the country's weak health infrastructure.

This FY 2011 Malaria Operational Plan presents a detailed implementation plan for Year Five of PMI in Malawi, based on the PMI Multi-Year Strategy and Plan and the National Malaria Control Program's (NMCP's) Five-Year Strategy. It was developed in consultation with the Malawian NMCP, with participation of national and international partners involved with malaria prevention and control in the country. The activities that PMI is proposing to support fit well within the 2005-2010 National Malaria Control Strategy. This builds on investments made by PMI and other partners to improve and expand malaria-related services in the country. This document briefly reviews the current status of malaria control policies and interventions in Malawi, describes progress to date, identifies challenges and unmet needs if the targets of the NMCP and PMI are to be achieved, and provides a description of planned FY 2011 activities.

MALARIA SITUATION IN MALAWI

Malawi is a landlocked country in southeastern Africa that borders Zambia, Tanzania, and Mozambique. It has a population of 13.1 million (2008 population census), of which 51 percent are women and 17 percent are children under age five, and the vast majority (86 percent) reside in rural settings. Malaria is endemic in Malawi, where greater than 97 percent of the population is at risk of infection. Transmission is perennial, though increased during Malawi's rainy season, which spans from November through April. Higher malaria transmission occurs along the lakeshore of Lake Malawi and the lowland areas of the lower Shire valley.



Epidemiology

Malaria remains a leading cause of morbidity and mortality in Malawi. According to Health Management Information System (HMIS) registry data (which documents mostly clinical cases at health facilities alone), malaria is the primary cause of outpatient visits in the country. In 2008, over six million cases were captured through this system. Together malaria and anemia are estimated to be responsible for about 40 percent of all hospitalizations among children under five and 30 percent of all hospital deaths in children less than five years of age. Preliminary results from Malawi's first Malaria Indicator Survey (MIS) completed in April 2010 showed that 70 percent of children surveyed had mild anemia (Hb<11g/dl) and 43 percent had parasitemia. Ninety-eight percent of malaria infections in Malawi are caused by *Plasmodium falciparum*.

Entomology

Anopheles funestus, *A. gambiae*, and *A. arabiensis* are the primary malaria vectors, though *A. arabiensis* does not play a significant role in malaria transmission. In Malawi, vector abundance tracks seasonal rainfall, and transmission also follows this cycle.

National Malaria Control Plan Strategy

The NMCP is nearing the end of implementation of its 2005-2010 Strategic Plan. In preparation for development of the new Strategic Plan (2010-2015) the program is undertaking a Malaria Program Review in collaboration with the WHO and the RBM partnership. This comprehensive program review, in combination with results from the MIS, will guide the focus for the coming years.

Global Fund and Other Partners

Funding for malaria control other than that provided by PMI comes mainly from the Health Sector-wide Approach (SWAp). The SWAp 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, the World Bank, and the European Union. These partners support malaria control either through pooled “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 are providing a total of \$55 million in funding over the two-year Phase 1 period. The initial disbursement of funds for this consolidated grant occurred in December 2008 and will end in late 2010.

The Phase II period of the consolidated Rounds 2 and 7 grants has a ceiling of \$44 million and should become operational in early 2011. Malawi also received initial approval of a Global Fund Round 9 malaria grant, which will award an additional \$33 million over the Phase I period, and \$91 million over the full five years. The proposal designated the MoH as the Principal Recipient, and negotiations with the Global Fund Secretariat are in the final stages of completion. However, it is unclear when the grant will be signed, creating uncertainty as to when Round 9 funding will begin.

The Global Fund grants focus on case management at the facility level with artemether-lumefantrine (AL) and commodity procurement and distribution of LLINs and RDTs. An LLIN mass distribution campaign is planned in 2011 with a goal of universal coverage to reach an average of two people with one net. An additional aim with Global Fund support is to provide parasitological confirmation of malaria for all suspected fever cases for all persons beginning in 2011.

Global Fund Malaria Grants in Malawi

Round	Phase I Amounts	5-year Funding Maximum
2	17,957,714	36,773,714
7	36,545,312	61,992,635
2 & 7 (consolidated)	\$ 54,503,026	\$ 98,666,349
9¹	\$ 32,536,086	\$ 91,945,450
Total	\$ 87,039,112	\$ 190,611,799

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

¹ Malawi’s Global Fund Round 9 Malaria grant was still in negotiations at the time of writing and is expected to be signed by the end of 2010.

\$19 million for the care of orphans and vulnerable children in Round 5. In addition, Malawi has one of the only three Health Systems Strengthening grants globally, which supports approximately half of the country's community-level health workers, also known as Health Surveillance Assistants (HSAs). To support tuberculosis control, the Global Fund awarded Malawi a Round 7 grant, totaling \$7.8 million.

Malawi is also a President's Emergency Plan for AIDS Relief (PEPFAR) non-focus country, receiving \$73 million in FY 2010 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. The PMI team works closely with the USG PEPFAR and the USAID Health Team to identify ways to further coordinate activities.

NATIONAL MALARIA CONTROL PROGRAM AND STRATEGY

The NMCP functions under the Directorate of Preventive Health Services in the MOH. Two 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 Malaria Officers responsible for overseeing activities in each of their respective zones, and 28 District Malaria Coordinators to direct activities in each district. The Program Manager position was filled in late 2009 after a two-year vacancy. Three of the zonal officer positions have been filled, but two of the officers have dual responsibilities at the national level within the NMCP.

Malawi's National 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 development 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 the four previously mentioned key malaria control interventions for scale up – ITNs, IRS, case management with ACTs, and IPTp – and addresses cross-cutting issues. The NMCP is currently in the process of revising its strategic plan with the help of the PMI and 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 visit under the Expanded Program on Immunization (EPI) (if an ITN was not received at birth), and pregnant women at their first visit to an antenatal care (ANC) clinic. 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 under five attending health facilities. Malawi aims to achieve universal coverage with LLINs, defined as one net for every two people. This new strategy sets a goal of 90 percent 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.

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 completed with PMI support in Nkhotakota District from 2007 to 2009. In 2010, the government

integrated lessons learned from the pilot into an expanded IRS program, to cover seven high prevalence districts along the lakeshore and in the Shire Valley and a total population of approximately 2.7 million people living in about 650,000 structures. If the program is successful, spraying will be repeated in the same seven districts in 2011.

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 parenteral quinine for the treatment of severe malaria and oral quinine for 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 Case Management (CCM) program, with a focus on 4,000 hard-to-reach villages. By mid-2010, nearly 3,000 hard-to-reach communities had been reached.

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 given under direct observation at least one month apart, beginning before the 36th week. Malawi has shown great progress scaling up this intervention. Preliminary results from the country's first MIS show that 60 percent of women received at least two doses of IPTp during their pregnancy.

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. Additionally, the Plan notes gaps in logistics, support for operational research, and the development of systems to strengthen monitoring and evaluation so that it is possible to track progress and measure results. In the public sector, malaria control interventions are carried out using the decentralized health system with the district health office as the coordinating center of all health matters at the district level. The Christian Health Association of Malawi operates approximately 40 percent of the public-designated health facilities in Malawi and receives public sector resources for malaria control.

RECENT STATUS OF MALARIA INDICATORS

The most up-to-date information on the status of malaria control in Malawi comes from preliminary results of a national household survey assessing coverage of key malaria interventions and measuring malaria-related burden. This Malaria Indicator Survey (MIS) was completed in April 2010 and reached approximately 3,500 households.

Malaria indicators based on preliminary 2010 MIS results

Indicator	National coverage based on 2010 MIS
Percentage of households with at least one ITN	60%
Percentage of children under five who slept under an ITN the previous night.	55%

Percentage of pregnant women who slept under an ITN the previous night.	49%
Percentage of women who received two or more doses of IPTp during their last pregnancy leading to a live birth within the previous two years.	60%
Percentage of children under five with malaria parasitemia	43%
Percentage of children under five with severe anemia (Hb<8gm/dl)	12%
*Targeted houses adequately sprayed with a residual insecticide in the last twelve months.	91%

*From End of Spray Report, 2009

GOALS AND TARGETS OF THE PRESIDENT’S MALARIA INITIATIVE

The goal of PMI is to reduce malaria-associated mortality by 70 percent compared to pre-Initiative levels in PMI countries by 2014. By the end of 2011, PMI will assist Malawi to achieve the following targets in populations at risk for malaria:

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

EXPECTED RESULTS – YEAR FIVE

The expected results for Year Five are as follows:

Prevention

- Procurement and distribution of approximately 900,000 LLINs through routine channels (ANC and EPI clinics) to support Malawi's goal to reach and maintain universal coverage, with a target of one LLIN per two persons
- Continued support for malaria in pregnancy interventions at the health facility level through IEC, training, job aides, and supportive supervision to achieve an increase in the percentage of women receiving the second dose of IPTp
- Spraying 500,000 structures, which will protect 2.7 million people in seven districts through continued PMI-supported IRS activities in Nkhotakota and Salima Districts and the provision of technical assistance for NMCP's planned IRS in five additional districts

Diagnosis

- Completion of a national malaria diagnostics policy
- Procurement of RDTs destined for health facilities and assistance in initiating laboratory confirmation of suspected malaria cases

Treatment

- Procurement of AL treatments for the health facility and community level so that all children under five presenting with malaria symptoms receive ACTs
- Increased access to ACTs for children under five in up to 4,000 remote villages through community case management programs
- Continued strengthening and consistent monitoring of the drug and diagnostics supply chain to ensure the stockout rate does not exceed 10 percent

Monitoring and Evaluation

- Support for a Malaria Indicator Survey (MIS) in 2012 to provide up-to-date information on the coverage and usage of the key malaria interventions
- Continued entomological surveillance of IRS programs
- Support to in-vivo efficacy evaluation of anti-malarial drugs
- Operational research activities completed to assess severe malaria case management and assessment of clinician adherence to RDT results

Health Systems Strengthening

- Support for the development of a decentralized supervision structure to ensure good quality of care
- Support to a collaborative effort to enhance health outcomes via performance-based financing schemes
- Strengthen pharmaceutical management systems in country in conjunction with the PEPFAR, TB, and MCH programs to ensure that the appropriate medical drugs and supplies are available where needed

- Support to end use verification tools to assess appropriate malaria case management at the facility level

PREVENTION ACTIVITIES

Insecticide-Treated Nets

Background:

The current NMCP guidance calls for universal coverage of ITNs, defined as one net per two people. To achieve this, the NMCP supports a three-pronged approach to ITN distribution: 1) routine distribution of free LLINs through ANC and EPI clinics, 2) periodic mass campaigns covering the entire population, and 3) traditional social marketing through private sector outlets. Under the routine distribution channel, the policy states that a pregnant woman should receive a free LLIN either during her first ANC visit or at childbirth if her newborn is delivered in a health facility. In addition, a child less than five years receives a free LLIN at his/her first EPI visit. In addition, the NMCP has plans for the next mass campaign in 2011. The lowest volume channel for ITNs is the private sector, which sells approximately 170,000 LLINs annually, mainly in urban areas.

The PMI and the Global Fund are the dominant funders of ITNs in Malawi. From 2006 to 2007, the Global Fund provided more than 1.8 million ITNs bundled with insecticide re-treatment kits, which were distributed through ANC and EPI clinics and mass campaigns. The consolidated Round 2 and 7 grant has funds to buy 750,000 LLINs in 2009 and 2010. Additionally the new, not yet signed, Round 9 grant will provide 3.2 million nets for distribution via a universal coverage campaign in 2011. Finally, Phase Two of Round 2 and 7, if it is approved, will buy an additional one million LLINs in 2012. Other donors such as UNICEF, the Red Cross, and the Anglican Church may contribute another 250,000 LLINs in 2010-2011. Below is a summary of the planned LLIN procurements for Malawi in 2010-2012.

Summary of Projected LLIN Procurement 2010-2012

FY 2010				
	<u>Source</u>	<u>Sold</u>	<u>Free</u>	<u>Totals</u>
	Commercial Blue (to date)	108,922		108,922
	GF Rds 2/7 (arrived November 2009)		750,000	750,000
	Red Cross*		111,000	111,000
	UNICEF		125,000	125,000
	PMI		1,030,000	1,030,000
	Anglican Church		48,000	48,000
	GF Rd 2/7(likely to arrive December 2010)		797,000	797,000
	FY 2010 Total	108,922	2,861,000	2,969,922
FY 2011 Projected				
	<u>Source</u>	<u>Sold</u>	<u>Free</u>	<u>Totals</u>
	Commercial Blue			0

	GF Rd 9		3,177,000	3,177,000
	UNICEF		40,000	40,000
	PMI		1,500,000	1,500,000
	FY 2011 Total	108,922	4,717,000	4,717,000
FY 2012 Projected				
	Source	Sold	Free	Totals
	Commercial Blue			0
	GF Rds 2/7		1,000,000	1,000,000
	FY 2012 Total	108,922	1,000,000	1,000,000

Until recently, both PMI and the MOH shared one distribution partner. However, in late 2009 the MOH awarded the tender for the distribution of Global Fund LLINs to a large Malawian firm. This firm is now tasked with distributing Global Fund-financed nets, both through the routine system and as part of any campaigns for a period of two years. PMI will continue to distribute its LLINs through its existing partner.

Progress to Date:

In the last two years, 3.7 million ITNs have been distributed in Malawi. Of these, PMI procured 1.65 million, all of which were distributed for free through ANC and EPI clinics. Using FY 2010 funds, PMI will procure another 1.5 million LLINs; these nets will likely be divided between the routine system and the planned universal coverage campaign in 2011.

Preliminary results from the 2010 MIS in Malawi reports that ITN ownership and use in Malawi is rising. It shows that net usage among children and pregnant women has increased to 55 percent and 49 percent, respectively as compared to 25 percent and 26 percent in the 2006 MICS. A PMI-supported anemia and parasitemia survey conducted in April of 2009 in eight districts found that among households that owned an ITN, 88 percent of children less than five years had slept under a net the previous night, indicating that this vulnerable group is preferentially sleeping under the ITN. Similarly, the MIS results showed that 81 percent of children under five in households that owned a net had slept under it the previous night. Ownership of ITNs is rising and a culture of using ITNs is developing.

Much of this rise in ITN ownership is due to the PMI-supported routine ANC/EPI systems providing free LLINs to pregnant women and children. The demand for LLINs through these channels remains high and on average 100,000 LLINs are distributed monthly. As distribution costs are just under \$0.75 per LLIN, this remains an efficient and successful approach.

In 2011, the NMCP plans to conduct a national universal coverage campaign with the 3.2 million LLINs currently planned for procurement with the Global Fund Round 9 grant. When accounting for the existing ownership of nets, combined with LLINs from Global Fund Rounds 2 and 7 grants, Malawi should have a sufficient number of LLINs to achieve the goal of one LLIN per two persons. However, at this point it is unclear if operational funds are sufficient to support the requisite micro-planning at the district and village level and the necessary follow-up activities to ensure use.

ITN Gap for FY 2011 to FY 2012

a. Total ITNs needed in Malawi to achieve 100% universal ownership (1 ITN per 1.8 people, accounts for population growth)	7,277,778
b. Total ITNs projected in country by the end of FY 2010	6,671,970
c. Total ITNs needed to replace nets distributed in FY 2007 and FY 2008	3,702,000
d. Total requirement for ITNs to reach universal coverage in FY 2011 to FY 2012 (a-b+c)	4,307,808
e. Number of ITNs in FY 2009 to FY 2011 from Global Fund*	4,724,000
f. PMI contribution for ITNs in FY 2010	1,500,000
g. Other contributions in 2009	40,000
h. Remaining ITN gap for FY 2011 to reach universal coverage* [d-(e+f+g)]	0
i. Need for new cohort of infants and pregnant women in FY 2012 to maintain universal coverage	900,000

*Assumes that Round 9 is signed and these LLINs are in country by 2011

The table above shows that by FY 2011, Malawi should have achieved universal coverage of ITNs. As Line b. in the table shows, it is estimated that by the end of FY 2010, 6.6 million ITNs will be in Malawi. Based on the planned procurement of LLINs through the Global Fund and PMI, over 9 million LLINs will be in Malawi as of the end of FY 2011.

Summary of ITN Gap in Malawi

Despite the likely achievement of universal coverage with LLINs in 2011, this high coverage will need to be maintained through routine systems. In 2012, there will likely be a gap in the number of LLINs available to cover the new cohort of pregnant women and children expected to attend ANC and EPI. Malawi will need an additional 900,000 LLINs to fill this gap. This gap is based on 70 percent attendance at ANC, and an assumption that 5 percent of the population (600,000 women are pregnant at any given time), thus equaling 900,000 LLINs.

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 has been investing in nationwide print and mass media campaigns emphasizing year-round use among vulnerable groups. Several radio spots aired through local radios stations have contained these messages. In light of the rising net coverage and the shift to universal coverage, it is now time to reevaluate the current campaign and modify it so that it emphasizes the use of LLINs every night by all members of the household, in addition to vulnerable populations.

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, and proper care and repair of nets. To date, twelve grants in seven districts 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 and repairing nets. A recent independent evaluation of the small grants program found that it was an effective way to reach the community and should be scaled-up nationally.

Planned Year Five Activities: (\$6,400,000)

Malawi is likely to achieve close to universal coverage by mid-2011 following a national universal coverage campaign and several years of consistent LLIN distribution through the routine system. However, operational funds, as well as technical assistance, are needed to ensure the campaign is conducted successfully and reaches every household. Also, there may not be sufficient nets to ensure maintenance of these high levels of coverage through the routine system in 2012. As LLIN ownership increases, it will also be important to reinforce a “culture of net usage” with messaging about the correct and consistent use, as well as proper care and repair of ITNs through both community-based activities and national-level mass media campaigns.

In FY 2011, PMI will:

- Procure approximately 900,000 LLINs for free distribution through the ANC and EPI programs (\$4,200,000)
- Support the cost of distributing these nets from the central level to the health facilities, as well as provide technical assistance and operational support for distribution of LLINs during the planned 2011 Universal Coverage Campaign (\$1,400,000)
- 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) (\$200,000)
- Continued support for a small grants program to fund at least 15 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) (\$600,000)

Indoor Residual Spraying (IRS)

Background:

The Malawi National Malaria Control Strategic Plan 2010-2015 recognizes IRS as a key malaria prevention strategy. The program will expand to seven districts along the lakeshore and the Shire valley by 2011. The NMCP is tasked with coordinating and managing the IRS program nationally, while District Health Management Teams (DHMTs) will be responsible for implementation in their districts.

Progress to Date:

PMI supported the first pilot IRS campaign in the northern part of Nkhosha in November/December of 2007, with subsequent spray rounds in 2008 and 2009. During the first spray round, the campaign used lambda-cyhalothrin, and targeted 42,801 structures in partnership with the Dwangwa Sugar Estates.

Summary IRS data from 2007 to 2009

District	Period of operation	Total Structures sprayed (% coverage)	Total population protected	Total number of less than five years protected by IRS
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2007				
Nkhotakota (northern 40%)	Nov 27 – Dec 28	28,227 (93%)	130,506	27,814
2008				
Nkhotakota (northern 40%)	Oct 16 – Nov 28	42,044 (98%)	211,019	299,744
2009				
Nkhotakota	Sept 22 – Nov 29	74,772 (91%)	299,744	66,136

The NMCP, PMI, and partners worked together to conduct entomological surveillance both within and just outside the targeted IRS area. This included mosquito population density monitoring through live collections of adult mosquitoes and testing the persistence of the insecticide on the walls of the structures sprayed. Results from 2008 showed a significant reduction in the vector population following IRS.

Based on the success of IRS in Nkhotakota District, the NMCP developed plans to expand IRS activities to seven highly endemic districts along the lakeshore and in the Shire Valley, covering 650,000 structures and an estimated population of 2.7 million people. The districts to be sprayed in 2010 under the NMCP IRS scale-up plan include Nkhotakota, Karonga, Nkhata Bay, Salima, Mangochi, Chikwawa, and Nsanje Districts. To prepare these districts, beginning with PMI's Year Two 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 oversee the implementation of IRS in their own districts beginning in 2010.

In 2010, PMI will finance and oversee the spraying of the entirety of Nkhotakota District (approximately 82,000 structures) and adjacent Salima District (approximately 81,000 structures), while the NMCP will support the other five districts they have designated for IRS activities. In addition, PMI will provide technical assistance to the NMCP for expansion to these five new districts, particularly in district-level planning, training, supervision, and environmental monitoring, and will continue to support entomological monitoring and surveillance. The supported entomological monitoring activities include vector assessments and insecticide resistance testing in designated NMCP IRS scale-up districts. In May and August 2010, entomological surveillance results documented evidence of resistance to pyrethroids and carbamate classes, thus the 2010 spray round in the PMI-supported districts will use pirimiphos-methyl.

Proposed Year Five Activities: (\$3,800,000)

In line with the NMCP's malaria strategy for IRS, PMI will continue supporting the MOH's implementation of IRS in Nkhotakota and Salima Districts. Additionally, PMI will support technical assistance and entomological monitoring of the IRS program in all seven IRS districts.

In FY 2011, PMI will:

- Continue supporting IRS operations and spray 152,000 structures (houses) in Nkhotakota and Salima Districts (\$3,550,000)
- Continue to support the NMCP's capacity for IRS at the central level. (\$250,000)

Intermittent Preventive Treatment in Pregnancy (IPTp)

Background:

Malawi's national policy on IPTp states, "All pregnant women should receive at least two treatment doses of SP at least one month apart at the ANC clinic 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 recently completed MIS, the percentage of pregnant women receiving one dose of SP was 83 percent, with 60 percent received at least two doses or more of SP. With high ANC attendance rates (97 percent of women attend at least once and 92 percent attend more than once), Malawi continues to strive toward 85 percent coverage with two or more doses of SP.

Progress to Date:

In Years One through Three, PMI began to address the causes of the low uptake of the second dose of IPTp by disseminating 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-Antenatal Care (FANC) more broadly, PMI, in partnership with the NMCP and the Reproductive Health Unit, has conducted zonal trainings for District Malaria and Reproductive Health Coordinators on FANC and IPTp. The MOH has also modified ANC registers to record IPTp doses administered, which was reinforced by ANC worker trainings. Despite these efforts, the uptake of IPTp continues to be hampered by poor health worker performance and pregnant women's delayed attendance at ANC clinics. In addition, there are continued issues with the quality and the availability of SP at the clinics.

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. Information on the importance of receiving at least two doses of SP at the appropriate times during pregnancy is also included in their messaging. These messages are being delivered as part of an integrated package addressing all malaria interventions.

There is no direct evidence that SP is losing its effectiveness for IPTp in Malawi. 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 ongoing drug efficacy monitoring of SP for IPTp in pregnant women. This study has been harmonized with international efforts by the Malaria in Pregnancy Consortium to monitor this intervention. Should the study find reduced efficacy of SP, Malawi will need to revise national policy to implement an appropriate alternative regimen for IPTp.

Proposed Year Five Activities: (\$1,400,000)

During Year Five, PMI will continue to focus on supporting the implementation of FANC 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. Because of concerns about the quality and availability of SP, PMI will support the procurement of quality-assured SP. In addition, PMI, in partnership with USAID's MCH program, will continue supportive supervision of FANC services including IPTp. Given that IPTp coverage is relatively high, these efforts should help increase the uptake of the second and potentially a third dose. This effort will be complemented by a continuing mass media and community-level campaign to encourage women to attend ANC as early as possible in their pregnancy.

In FY 2011, PMI will:

- Procure quality-assured SP for distribution through Central Medical Stores (\$200,000)
- Support the ongoing implementation of IPTp and focused ANC at health facilities by continuing to provide commodities to facilitate directly-observed therapy and ongoing supportive supervision in partnership with USAID's MCH program (\$400,000)
- Provide support for a national mass media campaign to promote demand for IPTp and to encourage early visits to ANC clinics (\$200,000)
- Provide small grants to NGO and CBOs for community mobilization activities that increase ANC attendance and the demand for IPTp (integrated campaign with ITN and prompt, effective therapy promotion) (\$600,000)

CASE MANAGEMENT

The Malawi health system operates in a decentralized context, where many programming decisions are made at the district level. The majority of health services in Malawi are provided through the Ministry of Health and the Christian Health Association of Malawi, which operates approximately 40 percent of designated government health facilities nationwide. Services are delivered through hospitals, health centers, and salaried HSAs at the community level.

Rural populations' access to health facilities is generally good. Within a five kilometer radius, accessibility is estimated at 54 percent. Using the eight kilometer standard and including urban populations, accessibility is 84 percent nationally.² Despite having reliable access to health services, the utilization of these services is mixed.

Malaria Diagnostics

Background:

Malawi's national policy calls for persons more than five years of age with fever to undergo a diagnostic test before malaria treatment is provided. Children less than five years of age are to receive presumptive treatment. This policy is currently being reviewed, with some advocating for adherence to the revised WHO guidelines calling for parasitological confirmation of all suspected malaria cases, regardless of age. Although no firm policy changes have been made, Malawi's Global Fund Round 9 proposal includes provisions for universal diagnosis of all malaria cases.

² Malawi National Health Facilities Development Plan 1999 - 2004

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. Malawi is far from achieving the goal set forth in the National Malaria Strategic Plan (2005-2010) that 60 percent of health centers have the capacity to perform diagnostic testing for malaria. Even where diagnostic testing for malaria is available, microscopy is currently the only method available. Laboratory hours are limited and patient loads can be overwhelming, with some facilities seeing more than 200 fever cases each day. In addition, data from sentinel sites indicate that more than half of patients with a negative diagnostic test for malaria were still prescribed treatment with antimalarials, suggesting that health workers have little faith in laboratory test results.

Progress to Date:

Malawi has begun planning for the implementation of RDTs while concurrently attempting to improve microscopy. The current plan is to target health facilities without existing malaria diagnostic services and high volume health facilities that cannot provide adequate malaria diagnostic services. The NMCP is in the process of finalizing RDT guidelines, standard operating procedures, training materials, and training plans. Also, there has been a recent assessment of the laboratory and diagnostics supply chain to inform a plan to ensure the continuous supply of RDTs and other diagnostic supplies.

To determine which RDT Malawi will procure, two partner organizations undertook comparative assessments of selected malaria rapid diagnostic test (RDT) kits in 2009. The results of both studies, as well as the April 2009 WHO report of "Results of Malaria RDTs: Round 1 (2008)," have been used to select a RDT. The Global Fund will support the purchase of 3.0 million RDTs in FY 2010. In 2011 the Global Fund consolidated Rounds 2 and 7 grants will only provide support for 800,000 RDTs and the additional 2.3 million RDTs will be funded through Round 9. However, as of this writing, Round 9 has not yet been signed. As such, it remains unclear when Global Fund Round 9 RDTs will be available in country, although they are not expected to arrive until the middle of FY 2011.

Summary of Projected RDT Procurement 2010 to 2012

FY 2010		RDT Procurement
	Global Fund Rounds 2 and 7 (Phase I)	3,000,000
	Total	3,000,000
FY 2011 Projected		
	Global Fund Rounds 2 and 7 (Phase II)	800,000
	Global Fund Round 9 (Phase I)	2,339,872
	Total	3,139,872

In addition to RDT scale-up, Malawi is also working to improve the quality of existing microscopy services. In March 2009, PMI 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 heavy workloads due to large numbers of patients presenting with fever (often more than 200 patients per day). The 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, PMI has begun implementation of a work plan to strengthen existing microscopy services through outreach training and supportive supervision. This work will serve as a platform for future RDT quality assurance and quality control programs.

Proposed Year Five Activities: (\$2,750,000)

PMI's FY 2010 support will focus on assisting with RDT implementation, including reviewing standard operating procedures and training materials. In addition, it will support supervision for laboratory and other personnel involved in malaria diagnostic testing to build a solid platform for a future RDT quality assurance program. Lastly, with the increased flow of diagnostics commodities, PMI will assist with the supply chain management of RDTs and other diagnostic supplies. In FY 2011, PMI will expand this funding to further support the scale-up and strengthening of diagnostic testing services in Malawi. Specifically, PMI will provide support in the following areas in FY 2011:

- Technical assistance for malaria diagnostic services to guide RDT implementation, provide on-site training and supervision of laboratory staff, and strengthen and expand existing quality assurance activities, especially for RDTs (\$750,000)
- Procure supplies and equipment for diagnostic testing including RDTs (\$2,000,000)

Pharmaceutical and Supply Chain Management

Background:

Malawi's pharmaceutical management system has been plagued with problems. Stockouts of SP and other essential drugs occur regularly due to issues related to quantification of need, ordering, tendering, receipt, storage, and the logistics of distribution. Currently, the Malawian parastatal 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 been able to procure a full supply of essential drugs.

The MOH is receiving significant pressure from the Global Fund and other donors to reform CMS and is in the process of converting CMS to a public trust with a private sector business model. This conversion will allow CMS to hire staff outside the MOH staff structure and to enforce results-oriented management practices. The process of conversion has been ongoing for several years, with key actions stalled at the highest levels of government.

Progress to Date:

With Years One and Two 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 Rounds 2 and 7 grants. Although the USG is no longer responsible for procuring AL for health facilities, PMI has been and will continue to work closely with the Global Fund and MOH to ensure a continuous supply of AL nationally.

Since the roll-out of AL, PMI has distributed its ACTs through CMS, under the stipulation that CMS improve its storage facilities, documentation and information management system, transportation capacity, security, and logistics management system. Although CMS was able to 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 highlight

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 and other essential drugs. In order to accurately quantify and forecast needs with minimal wastage and stockouts, accurate data is needed from the supply chain system.

To address these issues, PMI has been working to improve the supply chain with a focus on data flow and quality of information to promote 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. Because of these efforts, ACT stockout rates have remained around 10 percent, among the lowest rates in Africa. The systems put in place to manage the ACT supply have improved the overall distribution of essential drugs and provided a system into which RDTs for malaria can be introduced.

PMI supply chain support has also been extended to community-level service delivery in the areas of community integrated management of childhood illnesses and family planning. The Gates Foundation-funded project, Supply Chain for Community Case Management (SC4CCM), has recently begun activities in Malawi and will work closely with PMI-supported efforts to ensure strong supply chain activity at the community level. While PMI procured commodities are mainly for the community, they may be directed to either the facility or the community level based on need at the instruction of the NMCP.

Proposed Year Five Activities: (\$1,600,000)

In the coming year, PMI will continue to support the following activities to ensure strong supply chain and pharmaceutical management and monitoring of malaria and other essential health commodities at all levels of the public health system:

- Routine pharmaceutical and laboratory supply chain systems strengthening through the Pharmaceuticals Department of the Ministry of Health, CMS, and the districts (\$1,600,000)

Malaria Treatment

Background:

In November 2007, Malawi successfully launched its new malaria treatment policy, with AL as first-line treatment. Building on the success of the launch of AL at the facility level, the IMCI Unit of the MOH has begun rolling out community case management of malaria (CCM) in 4,000 hard-to-reach villages across Malawi with a catchment area of approximately ten percent of the population. With the support of WHO, UNICEF, the Canadian International Development Agency, the Bill and Melinda Gates Foundation, and USAID maternal and child health funding, the CCM program will utilize existing HSA to provide case management services to sick children at the community level.

Progress to Date:

PMI has provided support for case management at both the facility and community level. In addition to the supply of AL to health facilities, PMI has supported supervisory visits and on-the-job training for health facility staff. Communications materials on the new drug policy have been developed, printed, and distributed to health facilities throughout the country. To better

understand the relationship between AL dosing adherence and other factors, including provider practices and patient beliefs, PMI supported an AL adherence study in 2009. The results of this study showed that providers' use of the medication package to explain the dosing regimen and directly observing the first dose resulted in increased AL adherence. These results will be integrated into the NMCP supervision and training package to help improve provider practices when administering AL.

Under the community case management (CCM) program, the MOH has plans to stock drug boxes with cotrimoxazole, oral rehydration therapy, chloramphenicol eye ointment, zinc, and paracetamol, and leave them with the HSAs. Lacking sufficient national stocks of AL to fill both the needs of facilities and the CCM program, in 2009 PMI stepped in to cover the cost of AL in the pilot districts, with the intention of scaling-up AL procurement to cover additional districts as needed. PMI also supported the training of HSAs in CCM and the community logistics management information system, such that they are equipped to presumptively diagnose and treat acute respiratory infection, diarrhea, eye infections, and malaria using standardized algorithms and report this data accordingly.

Thus far, nearly 3,000 HSAs have received the six-day training in CCM, with approximately 500 of those also having received community drug logistics and tracking training. With support from PMI and Child Health, USAID has led the development of these community logistics systems, which have been adopted nationally and will be supported in non-USAID districts by other donors.

With PMI Year Four funding, PMI is procuring approximately two million AL treatments to support the continued scale-up of the CCM. PMI funding will also supplement USAID's maternal and child health funding for the supervision of HSAs providing CCM services.

The small grants program continues to promote positive behaviors around malaria. With PMI support, fifteen small grants have been awarded to CBOs for community mobilization activities in 20 of Malawi's 28 districts. Despite these efforts, the need remains for increased awareness on prompt and effective treatment and compliance to AL, particularly with the upcoming introduction of RDTs.

Proposed Year Five Activities: (\$5,350,000)

In Year Five, PMI will support further scaling up of CCM program to cover additional hard-to-reach villages in Malawi. PMI funding for procurement of AL will increase from Year Four levels and the program will continue to support HSA supervision and management. In addition, PMI will support strengthening of malaria case management at the health facility and hospital levels of the health system to ensure quality of care is maintained throughout the referral system. Mass communications and community mobilization activities focused on promoting prompt and correct use of AL for the treatment of malaria will also be continued with the information gained through formative research conducted in Year Four.

Specifically in FY 2011, PMI will:

- Procure 4.8 million AL treatments for use in CCM for children less than five years old in 4,000 hard-to-reach villages (\$3,600,000)
- Provide technical assistance to supervise and monitor case management at all levels of the health system to ensure better access to prompt and effective malaria treatment and improved quality of care (\$800,000)

- Expand community mobilization activities through the use of small grants to NGOs and CBOs to promote prompt and effective treatment of fever and adherence to treatment (\$600,000)
- Implement a mass media campaign to promote prompt and effective treatment of fever and adherence to treatment (e.g., an integrated campaign with ITN and IPTp promotion) (\$350,000)

NMCP CAPACITY BUILDING AND COORDINATION WITH PARTNERS

Background:

Malaria financing in Malawi is dominated by three sources of donor funding: PMI, the Global Fund, and the Government of Malawi and other bilateral donors who pool their funding through the SWAp that is managed by the MOH. In practice, this results in two streams of financing, as the Global Fund contributes its resources through the SWAp. Malawi is one of only two countries in which Global Fund resources are contributed to the basket fund under the SWAp.

Malawi's malaria control program also receives technical assistance from UNICEF to support programmatic management and the training of clinical supervisors and district malaria coordinators, and for the development of IEC materials. UNICEF also acts as the procurement agent for Global Fund-financed commodities. WHO provides technical assistance on a variety of technical issues. The NMCP is tasked with coordinating these partners, but often lacks funds for technical working group meetings, and secretariat functions.

Progress to Date:

The Global Fund grants in Malawi continue to confront a number of implementation difficulties. The grants must address a number of time-bound "Conditions Precedent" in order to receive continued disbursements. These have included revisions to the PSM plan and reforms to CMS. Another area of longer term concern is that Malawi is currently using Global Fund resources to pay the salaries of approximately half of the country's HSAs through its Round Five grant. It is not clear how this funding will continue after the expiration of this grant in 2012 or how Malawi could continue the work of HSAs without this financing.

Since Malawi's Global Fund grants are managed through the SWAp, Malawi has also experienced unique concerns over grant expenditures and transparency due to cloudy fiscal accountability in the funding pool. Complications such as this, combined with delays in Global Fund grant disbursements, have made overall management of Global Fund grants challenging. Furthermore, Global Fund disbursement delays have made it difficult to predict when commodities will arrive in country, and have led to concerns about stockouts of critical commodities and other programmatic disruptions. The Global Fund Secretariat has cited difficulties in the Principal Recipient's completion of Procurement and Supply Management (PSM) plans and other problems in accounting for the use of funds as reasons for the delays in disbursements.

Recognizing how critical the Global Fund financing is for Malawi's health programs, the USG has invested in support of the management of the Global Fund grants by supporting the establishment of a Global Fund Liaison position within the Ministry of Health. This liaison plays an important role in helping to coordinate and champion Global Fund-related activities within the

Ministry of Health and the preparation of documents required by the Global Fund in its disbursement process, including for the malaria grants.

Proposed FY 2011 Activities: (\$125,000)

The Global Fund grants are intended to provide the bulk of commodities necessary to meet Malawi's ambitious scale-up plans for LLIN, RDT, and ACT coverage. However, partners must undertake substantial additional measures to ensure that Malawi will effectively use the commodities it is purchasing and distributing. As discussed previously, the lack of diagnostic capacity results in health workers dispensing ACTs for many non-malarial fevers. In facilities that begin to receive RDTs, training, and supervision must ensure that test results are honored with appropriate treatment.

PMI will provide support for the NMCP's donor coordination and the administration of the Global Fund grants in FY 2011 through the following measures:

- Support funding for technical working group meetings, research dissemination meetings, and donor coordination functions (\$50,000)
- Provision of technical assistance to assist with Malawi's Round 11 Global Fund malaria proposal development to sustain resources and help fill additional gaps (\$75,000)

HEALTH SYSTEMS STRENGTHENING

Background:

In Malawi, districts are the primary implementation unit for health services and have significant autonomy regarding how they allocate their health resources, as designated by Government of Malawi's decentralization policy. The five Ministry of Health Zones provide technical direction to the districts and offer a link to the central level where policies for all levels of the health system are established. Despite these established structures, the Malawi health system is affected by recurrent shortages of financial resources and uncoordinated systems of procurement, logistics, and human resource management.

As the role of MOH continues to evolve from that of direct service implementation to stewardship, capacity at the central level still needs to be enhanced to reliably formulate, enforce, and review policies, coordinate and regulate health service implementation, mobilize resources, and provide effective support to DHMTs and District Health Offices. Districts also require strengthened capacity to effectively plan, budget, manage, and effectively implement their responsibility of direct provision of services.

Numerous analyses have identified specific issues that, if addressed, could improve the delivery of health services and help Malawi meet its malaria and child health goals and objectives. At the policy level, research suggests that the role and mandate of HSAs needs to be refined such that they have the authority to provide services at the community level, bringing regulations up-to-date with current best practices. There may be a need to elevate the level of the NMCP to a Directorate within the MOH so it is better able to advocate for resources. At the zonal and district levels, supervisory structures remain confused and duplicative. There is a need to strengthen the zonal offices so they can provide support to the district level. Finally, health financing remains limited and poorly allocated across all levels of the health system, impacting the MOH's ability to

effectively address malaria. There is also a need to improve the districts' ability to manage its own resources such that they are able to address all case management issues related to malaria and child health.

Efforts are underway to identify innovative ways to improve the performance of the health system and address a few of the issues outlined above. Norway, GTZ, and USAID (with PEPFAR and MCH funding), have recently begun discussions to pilot a performance-based financing scheme as a way to improve health worker performance in the areas of ANC and child health. As planned, the scheme will provide incentives to facilities that meet performance targets. Given that malaria constitutes a large portion of child health illness, it may be worthwhile for PMI to join this consortium of partners in the development of this pilot project.

Planned Year Five Activities: (\$725,000)

As PMI has addressed many of the malaria-specific challenges impacting the implementation of malaria control interventions, continued progress will require increased attention on strengthening the health system. Thus, PMI will work with other USG health programs to build the capacity of the Ministry of Health in the areas of policy, rationalization of human resources, improved management of resources at the district level, and innovative approaches to improve health facility performance. Malaria outcomes will be directly measured and reported on.

Specific activities for FY 2011 include:

- Strengthening zonal and other decentralized supervision structures while addressing key policy issues, such as the role of HSAs, while building leadership and management capacity at the district, zonal, and central levels (\$350,000)
- Through an integrated effort, pilot test performance-based financing schemes to document improvements in health worker performance specifically in the delivery of ANC, diagnostic, and HIV services, including prevention of mother-to-child transmission activities (PMTCT) (\$200,000)
- Support end-use verification with specific indicators aimed at evaluating appropriate case management at the facility level (\$175,000)

INTEGRATION WITH OTHER GLOBAL HEALTH INITIATIVE PROGRAMS

Building on a long tradition of USG global health leadership and unprecedented funding commitments to programs like PEPFAR and PMI, the Obama Administration announced the Global Health Initiative (GHI) in May 2009. The GHI is expected to move global health to a new level of effectiveness and collaboration, with a vision of long-term sustainability led by partner country governments.

The GHI will help partner countries improve health outcomes through strengthened health systems, with a specific focus on improving the health and well-being of women, newborns, and children. The Initiative provides strategic funding increases to programmatic areas where large health gains can be achieved, such as in the areas of HIV/AIDS, malaria, tuberculosis, family planning, nutrition, maternal, newborn, and child health (MCH), and neglected tropical diseases.

In an effort to maximize the sustainable health impact the U.S. Government achieves for every dollar invested, the Initiative will utilize a new business model based on seven core principles:

- implementing a woman- and girl-centered approach;
- increasing impact and efficiency through strategic coordination and programmatic integration;
- strengthening and leveraging key partnerships, multilateral organizations, and private contributions;
- encouraging country ownership and investing in country-led plans and health systems;
- improving metrics, monitoring, and evaluation;
- and promoting research and innovation.

Malawi has been selected as one of a subset of countries that will receive additional technical, management, and financial resources to accelerate GHI. In addition to the health systems strengthening activities described above, PMI will contribute to the goals of the GHI in the following ways (at no additional cost):

- Support community case management through the procurement of AL, supervision, and supply chain support (See case management section)
- Improve quality and use of ANC in Malawi through integrated support for focused-ANC care
- Work with the HIV/AIDS and tuberculosis programs to improve diagnostic capacity through the development of quality assurance and quality control systems, along with training and supervision
- Improve the capacity of CMS to procure, distribute and monitor drugs, support efforts to improve district level resource management, develop and strengthen supervisory structures both at the district and zonal level, and improve the technical capacity of the NMCP

MONITORING AND EVALUATION PLAN

Background:

PMI's monitoring and evaluation (M&E) framework is based on the goal of reducing malaria mortality by 70 percent and achieving 85 percent coverage targets with specific interventions by 2015. This framework is aligned with the standard methodology for evaluation of malaria programs that is promoted by the RBM Partnership.

In 2007, the NMCP's M&E Technical Working Group completed the National Malaria Monitoring and Evaluation Plan 2007–2011. This plan serves as the guide for M&E activities of all the malaria prevention and control partners in Malawi.

Progress to Date:

PMI has used several major sources of information for monitoring and evaluating its program: population-based surveys, health facility surveys, routine data collection, and operations research to answer key questions.

Population-based surveys

The Malawi MICS completed in 2006 by UNICEF provides the baseline data for PMI's program. Although it provided information on net ownership and usage, as well as IPTp uptake, it did not include any biomarker data. According to the MICS, 38 percent of households owned one or more ITNs and 25 percent of children less than five years slept under an ITN the previous night. Coverage of IPTp in this survey reported that 80 percent of women received one dose of SP, but only 47 percent of women received two doses or more. PMI-supported annual household anemia and parasitemia surveys have been conducted in eight of Malawi's 28 districts in 2007–2009. Data from the 2009 survey documented increased uptake of both interventions.

The NMCP, with assistance from the Malaria Control and Evaluation Partnership in Africa, completed the country's first MIS in April 2010 with preliminary results documenting increases in household net ownership, usage in vulnerable groups, and uptake of IPTp. Malawi's DHS began fielding activities in June 2010.

In-vivo drug efficacy studies

The rapid development and spread of antimalarial drug resistance over the past few decades has resulted in an increased need for surveillance and monitoring of drug efficacy. The NMCP, with assistance from the University of Malawi's College of Medicine, is currently conducting a single-arm drug efficacy study evaluating the first line treatment AL. Preliminary results will be available in June 2010. With FY 2010 funds, PMI will expand this single-arm evaluation to three regimens at one or more sites in the country.

Health facility surveys

In 2009, an IMCI survey was completed at 107 facilities in 18 districts of Malawi to assess the quality of outpatient child health services. Deficiencies were highlighted in terms of adherence to guidelines by health care workers (HCW). Additionally, the need for increased supervision was emphasized to effectively sustain the skills attained by HCWs. Notably, there was no significant interval improvement in key indicators observed between the 2004 IMCI health facility survey and the one completed in 2009. With a new effort to expand malaria diagnostic services through the use of RDTs and training on malaria case management, health facility surveys to assess malaria case management practices are critical to assess progress. A health facility survey will be conducted with FY 2010 funds. In Year Five, an operations research activity focused on severe case management will be completed.

Impact Evaluation

In 2009, PMI began to evaluate its progress toward its goal of reducing malaria-specific mortality by 70 percent among children less than five years across the 15 countries. An assessment using data generated in country through multiple data sources and surveys will determine if PMI efforts are associated with a reduction in all-cause mortality in children. Funding has been provided to gather and analyze this information to assess Malawi's progress.

Secondment of M&E Officer to NMCP

An M&E advisor has been recruited to spearhead M&E activities within the NMCP. Additional support provided by the MOH from the Central Monitoring and Evaluation Department is pending. The M&E focus at NMCP will be to support routine malaria surveillance, assist in planning and analysis of national population-based surveys in conjunction with the National Statistics Office, and institutionalize M&E systems to track the status of key malaria indicators.

Monitoring and Evaluation of IRS activities

To date, PMI has supported entomological monitoring activities, including vector assessments and insecticide resistance testing in Nkhotakota district, where spray operations have focused.

With FY 2010 funds and in Year Five entomological surveillance activities will extend to the PMI supported spray districts of Nkhotakota and Salima, in addition to NMCP's expanded IRS districts. Support for monitoring of the environmental effects of IRS in all districts will continue in Year Five.

Proposed Year Five Activities: (\$2,200,000)

Monitoring of PMI's activities will continue to rely on a combination of household surveys and data collected at health facilities. With FY 2011 funds, PMI will provide support for an MIS to be conducted in FY 2012. Results from this survey will measure PMI progress in Malawi and will be compared to MIS survey results from 2010 to document successes and highlight areas for continued improvement. PMI will support operational research via a health facility survey to evaluate the case management of severe malaria. With the evolution of RDT implementation on a national scale, operational research will be aimed at understanding reasons for lack of clinician adherence to test results in efforts to improve this behavior through targeted training. Continued support will be aimed at technical assistance to the NMCP to strengthen M&E capacity.

Specifically, in FY 2011, the PMI will:

- Support the planning and implementation of an MIS in 2012 to compare interval progress of key interventions of malaria control (\$1,400,000)
- Support therapeutic *in vivo* efficacy studies to monitor for the development of antimalarial drug resistance (\$125,000)
- Support operational research via a national health facility survey to assess severe malaria case management practices (\$175,000)
- Support environmental monitoring of the programmatic use and disposal of insecticides as per 22 CFR 216 (\$50,000)
- Continued provision of entomological monitoring support in Malawi's seven IRS districts (\$300,000)
- Continued support for an NMCP M&E Advisor (\$100,000)

STAFFING AND ADMINISTRATION

Both USAID and CDC currently have a Resident Advisor in place to manage the PMI. 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 in country. All staff members report to the Health Officer and the USAID Mission Director. The CDC staff person is supervised by CDC Atlanta both technically and administratively.

The 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. The PMI team meets at least once per week and shares responsibility for developing and implementing PMI strategies and work plans, coordinating with national authorities, managing collaborating agencies, and supervising day-to-day activities. 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.

**President's Malaria Initiative - Malawi
Planned Obligations for FY 2011 (\$26 M)**

Proposed Activity	Mechanism	Total Budget	Commodities	Geographic Area	Description of Activity
Preventive Activities					
ITNs					
Procurement of LLINs	DELIVER	\$4,200,000	\$4,200,000	National	Procurement of approximately 900,000 WHOPES-approved LLINs
Distribute LLINs to under 5s and ANCs/Support for campaign and hang up	LLIN RFA	\$1,400,000		National	Distribution of free LLINs to children under five and pregnant women via EPI and ANC clinics with specific support to the NMCP efforts directed at universal coverage
National IEC campaign to promote year round use	BCC Award	\$200,000		National	National IEC campaign via mass media to promote correct and consistent year-round use of LLINs
Community-based ITN hang-and-use campaign	BCC Award	\$600,000		National	Use of community-based organizations to encourage correct and consistent use of ITNs through interpersonal and community-level approaches
Subtotal		\$6,400,000	\$4,200,000		
IRS					
IRS in two districts	IRS TO	\$3,550,000	\$500,000	Nkhotakota and Salima	IRS supported directly by PMI in Nkhotakota and Salima Districts
Technical assistance to NMCP	IRS TO	\$250,000		National	Technical assistance to NMCP for the spraying of five additional districts
Subtotal		\$3,800,000	\$500,000		
IPTp					
Procurement of quality-assured SP	DELIVER	\$200,000	\$200,000	National	Procurement of SP for distribution through Central Medical Stores
Support for FANC	SSD	\$400,000		National	Support for the strengthening of national focused antenatal care programs
National IPTp IEC and mass media campaign	BCC	\$200,000		National	National IEC/BCC campaign to encourage attendance at ANC clinics and to increase awareness of the importance of IPTp as part of focused ANC
Community IPTp IEC activities	BCC	\$600,000		National	Community-based IEC/BCC campaign to increase the uptake of two doses of SP and improve ANC attendance by late or non-attending pregnant women
Subtotal		\$1,400,000	\$200,000		

Case Management					
Strengthen diagnostic services	TBD	\$750,000		National	QA/QC for RDTs and microscopy; train/second a lab person to NMCP
Procurement of RDTs	DELIVER	\$2,000,000	\$2,000,000	National	Procurement of RDTs to be used to test suspect malaria cases over five years at health facilities
TA for supply chain management	New SCM Procurement	\$1,600,000		National	Ongoing support for pharmaceutical management, quantification, stock management system, inventory control, capacity building, etc.
Procure ACTs for community-level distribution	DELIVER	\$3,600,000	\$3,600,000	National	Procurement of ACTs to be distributed by HSAs at the community level through the c-IMCI program
Technical assistance for CCM	SSD	\$800,000		National	Provide technical assistance for improving the case management system at the facility and community level using quality improvement procedures
Implement a mass media integrated malaria IEC campaign	BCC	\$350,000		National	IEC/BCC mass media campaign to promote prompt and effective treatment of fever and to educate communities on national drug policy and the need for adherence
Community-based, integrated case management IEC/BCC campaign	BCC	\$600,000		National	IEC material development and production to promote prompt and effective treatment of fever and to educate communities on national drug policy and the need for adherence
Subtotal		\$9,700,000	\$5,600,000		
NMCP Capacity Building and Donor Coordination					
NMCP Secretariat support	HPSS	\$50,000		National	Assist the TWG operations via logistical and operational support
GF TA	HPSS	\$75,000			Support for a Global Fund manager to work with NMCP
Subtotal		\$125,000	\$0		
Health Systems Strengthening					
Support to integrated efforts to improve human resource allocation and supervision structures	HPSS	\$350,000		National	Support to integrated efforts at the central, and zonal levels to improve human resource allocation and supervision structures
Performance-Based Financing for Health Worker Performance	HPSS	\$200,000		National	Support an integrated effort to improve ANC quality through a pilot of performance-based financing schemes

End-Use Verification Tool Development and Implementation	HPSS	\$175,000		National	Support to End-Use Verification Tool to monitor facility based malaria case management
Subtotal		\$725,000		\$0	
M&E					
Malaria Indicator Survey (MIS)	MACRO	\$1,400,000		National	Support the Malaria Indicator Survey in 2012 to obtain data on coverage of key interventions and assess possible impact on febrile illness and under-five mortality
Therapeutic Drug Efficacy Evaluation	MAC	\$125,000		National	Support therapeutic efficacy surveillance to evaluate the anti-malarial drugs in addition to AL
OR on Inpatient Health Facility Survey for Severe Malaria Case Management	MAC	\$175,000		National	Inpatient and quality of care survey
Environmental monitoring	EMCAB	\$50,000		7 IRS districts	Provision of support for monitoring of the environmental effects of IRS in seven spray districts, plus capacity building related to IRS activities and investigation of non-compliance issues, if necessary
Entomology	MAC	\$300,000		7 IRS districts	Provision of entomological monitoring support in seven IRS districts
NMCP M&E Advisor	HPSS	\$100,000		National	Provide NMCP with LTTA for M&E Coordination
Subtotal		\$2,150,000		\$0	
Staffing and Administration					
CDC Staffing	CDC	\$420,000		Internal	Support CDC staffing
USAID Staffing	USAID	\$500,000		Internal	Support USAID staffing
USAID program support costs	USAID	\$700,000		Internal	Support USAID program costs
CDC Temporary Duties	CDC	\$80,000		Internal	To provide technical assistance for the sentinel sites, entomology, and the therapeutic efficacy study
Subtotal		\$1,700,000		\$0	
GRAND TOTAL		\$26,000,000		\$10,500,000	

**President's Malaria Initiative – Malawi
Year Five (FY 2011) Budget Breakdown by Partner (\$26 M)**

Partner Organization	Geographic Area	Activity	Budget
CDC/MAC	Nationwide	Entomology, health facility survey, AP survey, MIS support, therapeutic drug efficacy study, diagnostics adherence	\$1,100,000
Deliver	Nationwide	Procurement of LLINs, ACTs for community-level distribution, SP, RDTs	\$10,000,000
EMCAB	IRS districts	Environmental monitoring	\$50,000
IMaD	Nationwide	Diagnostics support	\$750,000
IRS TO	IRS districts	Indoor residual spraying activities in two districts, TA to NMCP for additional five IRS districts, IEC for community sensitization for IRS	\$3,800,000
SCM TBD	Nationwide	Strengthening of the Supply Chain Management system, support to CMS	\$1,600,000
BCC TBD	Nationwide	National IEC campaign to promote year-round ITN use, community-based ITN hang-and-use campaign, national IPTp IEC and mass media campaign, community-based IPTp and case management IEC activities, mass media malaria IEC campaign	\$2,550,000
LLIN TBD	Nationwide	Distribution of LLINs to under 5s and ANCs, hang up and use campaign with TA for LLIN policy	\$1,400,000
DHS	Select districts	MIS	\$1,400,000
SSD TBD	Nationwide	Support for FANC, TA for strengthening the national case management program through training, supervision, and monitoring	\$1,200,000
HPSS TBD	Nationwide	NMCP secretariat support, Global Fund TA, additional HSS activities, OR on performance-based financing	\$950,000