

This Malaria Operational Plan has been endorsed by the President's Malaria Initiative (PMI) 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 2008**

**06 September 2007**

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## **EXECUTIVE SUMMARY MALAWI YEAR TWO**

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 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% 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 and over 85% of malaria infections are due to *Plasmodium falciparum*. The Ministry of Health (MOH) in Malawi estimates that there are approximately eight million episodes of malaria per year and it accounts for 40% of all outpatient visits. Malaria is the number one cause of hospital admissions among children under five.

The 2006 Multiple Indicator Cluster Survey (MICS) provides the most up to date information on Malawi's coverage of key malaria control and prevention activities. According to this survey 35% of households own one ITN and 23% of children under five slept under an ITN the previous night. In the treatment of malaria in pregnancy, 79% of women received one dose of sulfadoxine-pyrimethamine (SP) but only 46% of women received two doses. As ACTs have not been implemented, the availability of ACTs remains very low and is not at all available in government health facilities.

Outside the PMI, the majority of the funding for malaria activities in Malawi comes from the Global Fund to Fight AIDS, Tuberculosis and Malaria Round 2 grant, World Bank, and donor funds pooled through the sector-wide approach (SWAp). Malawi's Global Fund grant was approved for \$22.8 million of which over 95% has been dispersed for the procurement and distribution of ITNs. Malawi submitted a proposal for Round 7 to support malaria case management, specifically the procurement of artemether-lumefantrine. The World Bank has also designated Malawi a Malaria Booster country and has provided \$5 million for improvements in the health information management system. Finally, malaria control programs are supported by the basket fund which provides funding for those activities that are considered part of the essential health package.

The following table shows the targets proposed in Year 1 and the rapid implementation of activities supported by PMI in during this initial year:

Proposed Year 1 Targets (PMI and partners)	Expected Results after 1 Year of Implementation (March 2008)
985,000 ITNs distributed	As of September 2007, over 185,000 ITNs had been distributed, an additional 800,000 have been procured and will be distributed in January.
125,000 residents living in 25,000 houses protected by IRS on district	IRS will commence in the Nkhotakota district of Malawi in October with a target of spraying 25,000 households
ACTs will be implemented in all MOH health facilities	As of Oct 2007, the first shipment of ACTs has arrived in Malawi and the new policy will be implemented in November.
IPTp will be fully implemented in all MOH districts (all partners), increasing coverage of at least 2 doses of IPTp to 60%	Sufficient stocks of SP already in country. As of September 2007, PMI is planning to support the dissemination of proven tools to increase the second dose of IPTp.

Malawi has made considerable progress scaling-up key malaria prevention and treatment activities. Malawi was also one of the first countries in Africa to implement intermittent preventive treatment of malaria in pregnancy (IPTp). The Ministry of Health is currently transitioning from SP to artemisinin-based combination therapies (ACT) as the official first-line treatment policy. To support this, in January 2007 the MOH established a Drug Change Plan Task Force. The Task Force established an implementation timeline for all activities. In addition, Malawi has strong existing sentinel sites for monitoring and evaluation of malaria control activities.

A team consisting of representation from the U.S. Agency for International Development (USAID), the Centers for Disease Control and Prevention (CDC), United Nations Children’s Fund (UNICEF), and World Health Organization (WHO) conducted the year two planning mission to develop the Year 2 Malaria Operational Plan. This plan was developed in close consultation with the National Malaria Control Program (NMCP) and with the active participation of nearly all national and international partners involved with malaria prevention and control in the country. Planning for Year 2 PMI activities was done in the context of Malawi’s submission for Global Fund Round 7 funding, much of which seeks to provide funding for ACTs. Planning took into account that if Malawi does not receive Global Fund Round 7 funding then the NMCP will look to the PMI and partners to procure ACTs.

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 second year of the Initiative:

**Insecticide-treated nets:** Malawi has had considerable success scaling up ITNs over the past few years through the used of community and antenatal clinic (ANC) distribution. In 2006, Malawi revised its ITN policy to improve its ability to rapidly scale-up ITN coverage. The new policy includes free distribution of ITNs through the expanded program on immunization and ANC and in response to emergencies, and to newborns in health facilities and the “poorest of the poor” households. In Year 1, PMI supported this policy by distributing 185,000 LLINs and procuring an additional 800,000 to be distributed in January 2008.

In Year 2, PMI will procure approximately 800,000 LLINs for distribution through the channels EPI and ANC to support the NMCP goal of achieving 85% coverage of children under five and pregnant women by the end of 2010. Although household ownership of ITNs is rising in

Malawi, usage rates remain low; therefore, PMI will support a national and community-based information, education, and communication/behavior change communication (IEC/BCC) campaign to increase demand for, and correct usage of, LLINs. Year 2 targets for PMI aim to achieve increasing the level of ITN ownership to 65%, and the rates of ITN usage for pregnant women and children less than 5 years to 75%.

**Indoor residual spraying:** IRS is not widely used in Malawi, and until recently, was only a tool employed by the private sector on estates and by the police and military in barracks. In Year 1, PMI supported a pilot of IRS in conjunction with the Dwangwa Sugar Estates in Nkhoswe District of Malawi that covered 25,000 households. In Year 2, PMI proposes to conduct an expanded second round of spraying in Nkhoswe district, covering 50,000 households. PMI will support the NMCP in expanding monitoring, surveillance and vector assessments in NMCP sentinel districts to monitor both ITN and IRS interventions.

**Case management:** Malawi is currently in the midst of changing its first-line malaria drug from sulfadoxine-pyrimethamine to the artemisinin-based combination therapy (ACT) artemether-lumefantrine (AL). To aid this process, in Year 1 the PMI supported the initial procurement and distribution of AL as well as pharmaceutical and logistical management support and IEC/BCC. The PMI will procure over 4 million doses of AL, beginning with the first shipment of 2.6 million doses which arrived in September 2007. To ensure that these ACTs are distributed and used properly, PMI invested heavily to strengthen the Central Medical Stores, specifically aiding in the development of the distribution schedules, upgrading storage facilities, and developing a consumption tracking plan.

In Year 2, the PMI will continue to supply Malawi with AL and will commit to an 18-month supply including both FY07 and FY08 funding. PMI will also provide refresher training for health workers on the proper use of AL and continue to invest in pharmaceutical management strengthening. To ensure the appropriate use of ALs, PMI intends to support the strengthening of diagnostic capacity through the training of laboratory technicians and improve provider confidence in laboratory results. Finally, the PMI will increase its support in the area of pharmacovigilance, monitor adverse drug reactions and conduct post market surveillance for counterfeit drugs in the private sector. Through these efforts, it is expected that 45% of health facilities will have ACTs available at the end of PMI Year 2.

**Intermittent preventive treatment of malaria in pregnancy:** Despite high IPTp coverage levels, the recent MICS showed substantial gaps in two-dose IPTp coverage among poorer women and women in rural areas. In order to increase demand for IPTp in these areas, PMI Year 1 supported the strengthening of focused ANC in districts by continuing to scale-up proven job aids and other tools that lead to an increase in IPTp delivery and uptake. The PMI also funded IEC/BCC efforts that encourage early ANC attendance and that will increase the demand for IPTp. Year 2 will continue to support and scale-up these same activities towards achieving a PMI Year 2 target of 75% of pregnant women receiving two doses of SP for IPTp.

**Monitoring and evaluation:** The PMI includes a strong monitoring and evaluation component to measure progress toward the project goal and targets and to identify and correct problems in program implementation. The PMI monitoring and evaluation plan will be coordinated with the NMCP and other partners to share resources, ensure that critical gaps are being filled, and standardize data collection and reporting. In Year 1, PMI conducted an anemia/parasitemia study in eight districts to track ITN ownership as well as usage, household socioeconomic markers, anaemia and parasitemia biomarkers on children 6-30 months of age, and history of febrile

illness and promptness and effectiveness of treatment in children under five years. PMI will also use Year 1 funds to strengthen the health information management system and support the existing ten sentinel sites.

In Year 2, the PMI in Malawi will continue its efforts to strengthen the sentinel sites including an expansion to the community level using village registers. This will increase the HMIS's ability to provide high quality malaria-related mortality and morbidity information. The PMI will also support the next annual anemia/parasitemia and Indicator household survey to allow for PMI to monitor progress and adjust programs based on the results of the survey.

**Building NMCP capacity:** To achieve PMI targets for coverage of ACTs, ITNs, IPTp, and IRS, the PMI will work with other partners to strengthen the capacity of the MOH/NMCP at the central, zonal, and district levels to plan, conduct, supervise, monitor and evaluate malaria prevention and control activities. Efforts will be focused on improving coordination/communication between the MOH/NMCP and partners.

### **Budget**

The total amount of PMI funding requested for Malawi is \$18 million for FY 2008. Of this amount, 32% will support procurement and distribution of ITNs, 49% improved case management and 5% IRS. Approximately 3% will support malaria in pregnancy activities and 3% will support monitoring and evaluation. Approximately 65% of the total budget focuses on commodities.

## ABBREVIATIONS

ACT –	artemisinin-based combination therapy
ADB –	African Development Bank
ANC –	antenatal clinic
AQ –	amodiaquine
AL -	artemether-lumafantrine
ARC –	American Red Cross
AS –	Artesunate
BCC –	behavior change communication
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
DHMT –	District Health Management Team
DHS –	demographic and health survey
DOT –	directly observed therapy
FBO –	faith-based organization
FY-	fiscal year
EPI -	Expanded Programme on Immunization
EU –	European Union
EHP –	essential health package
GDA –	Global Development Alliance
GDP -	gross domestic product
Global Fund –	Global Fund to Fight AIDS, Tuberculosis, and Malaria
GOM –	Government of Malawi
HCWs –	health care workers
HF –	health facility
HH –	household
HMIS –	Health Management Information System
HPLC –	high-pressure liquid chromatography
HSA –	health surveillance assistant
IEC –	information, education, communication
IMCI –	integrated management of childhood illnesses
IPTp –	intermittent preventive treatment in pregnancy
IPTi -	intermittent preventive treatment of malaria in infants
IRS –	indoor residual spraying
ITN –	insecticide-treated net
IVVC-	Innovative Vector Control Consortium
JICA –	Japanese International Cooperation Agency
LLIN –	long-lasting insecticide-treated net
MDGs –	Millennium Development Goals
MICS –	multiple indicator cluster survey
MIS –	malaria indicator survey
MOH –	Ministry of Health
MOU –	memorandum of understanding
MSH –	Management Sciences for Health
NGO/FBO –	non-governmental organization/faith-based organization



NMCP –	National Malaria Control Program
NMTC –	National Malaria Technical Committee
NPAC –	National Policy Advisory Committee
NSO –	National Statistical Office
PMI –	President’s Malaria Initiative
PMPB –	Pharmacy, Medicines, and Poisons Board
POW –	program of work
PSI –	Population Services International
RBM –	Roll Back Malaria
RDT –	rapid diagnostic test
SADC –	Southern Africa Development Community
SIDA –	Swedish International Corporation Agency
SP –	sulfadoxine-pyrimethamine
SWAp –	sector-wide approach
UNICEF –	United Nations Children’s Fund
USAID –	U.S. Agency for International Development
USG –	United States Government
VHC –	village health committee
WHO –	World Health Organization

## **PRESIDENT’S MALARIA INITIATIVE (PMI)**

In July 2005, the United States Government (USG) announced a new, five-year, \$1.2 billion initiative to rapidly scale-up malaria prevention and treatment interventions in high-burden countries in sub-Saharan Africa. The goal of this Initiative is to reduce malaria-related mortality by 50%. This will be achieved by reaching 85% coverage of the most vulnerable groups—children under five years of age, pregnant women, and people living with HIV/AIDS—with proven preventive and therapeutic interventions. These include artemisinin-based combination therapies (ACTs) for treatment of those with malaria, insecticide-treated bed nets (ITNs) to prevent transmission, intermittent preventive treatment of pregnant women (IPTp) with an anti-malarial drug to protect the mother and child, and indoor residual spraying (IRS) to prevent transmission.

The President’s Malaria Initiative began in FY06 in three countries, Angola, Tanzania, and Uganda; four other countries, Malawi, Rwanda, Senegal, and Mozambique were added for FY07. The PMI received \$30 million in FY06, and received \$135 million from the U.S. Congress in FY07. The projected budget in FY08 and FY09 is \$300 million with a projected increase to \$500 million in FY10. The aim is to cover a total population of 175 million in up to 15 countries by 2010.

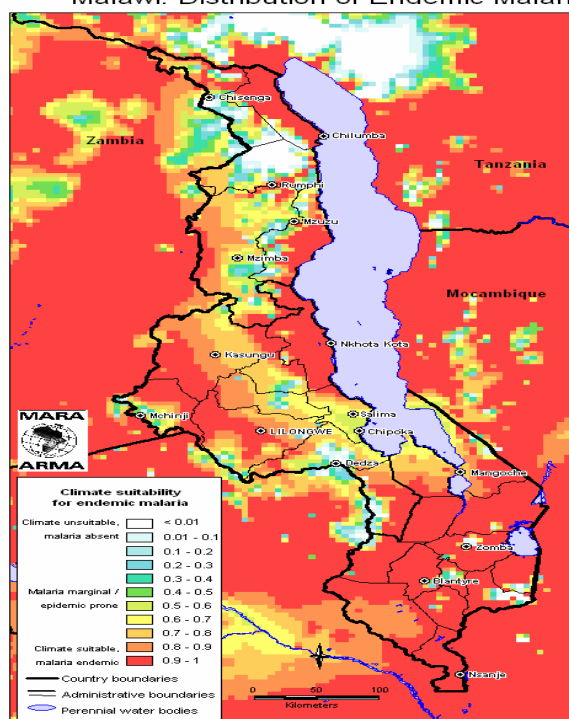
In implementing the PMI, the USG will work closely with host governments in the context of their national malaria control strategies and plans. PMI efforts will be coordinated with other national and international partners including: the Global Fund to Fight AIDS, Tuberculosis, and Malaria (Global Fund), Roll Back Malaria (RBM), the World Bank Malaria Booster Program and non-governmental and private organizations and institutions to ensure that investments are complementary and that RBM and Millennium Development Goals (MDGs) are achieved.

This document, developed in collaboration with the Government of Malawi (GOM) and other stakeholders, presents a detailed implementation plan for the second year of the PMI in Malawi. It briefly reviews the status of malaria control policies and existing interventions supported by all partners in Malawi, identifies challenges and unmet needs to reach the targets of the PMI and the NMCP and provides a description of proposed Year 2 (FY 08) PMI activities.

## **MALARIA SITUATION IN MALAWI**

Malawi is a land-locked country in southern Africa with an estimated population of 13.6 million persons in 2008. It is one of the poorest countries in the world with a gross domestic product (GDP) per capita estimated at US \$600 per year. Malawi faces many health problems including a recent famine in 2005 that resulted in rampant malnutrition in as much as 35% of the population. In 2007, the life expectancy was approximately 43 years.

## Malawi: Distribution of Endemic Malaria



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 (IMI) / Special Programme for Research & Training in Tropical Diseases (STRIP), 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.igoc.org/amt/sdis/maps/ads/ads\\_idx.htm](http://www.igoc.org/amt/sdis/maps/ads/ads_idx.htm)

Malaria is a major public health and economic problem in Malawi. Malaria is a disease that affects the poorest and keeps them poor. Adults lose an average of 25 working days per year, which results in significant lost family income. In addition, the cost of drugs to treat malaria can easily overwhelm family resources, especially those in the lowest income categories. In Malawi, it is estimated that low-income families spend more than one quarter (28%) of their yearly income to treat malaria<sup>1</sup>. Children under five, pregnant women and those living with HIV/AIDS represent the most at-risk populations for malaria-related morbidity and mortality. It is estimated that there are approximately 680,000 pregnant women and 2.31 million children under five in Malawi. The peak transmission season in Malawi follows the rainy season and lasts from December to May.

The Ministry of Health (MOH) estimates that there are approximately eight million episodes of malaria per year, accounting for 40% of all outpatient visits. Over 85% of malaria infections in Malawi are due to *Plasmodium falciparum*. According to the 2003 Health Management Information System (HMIS) report, health facilities reported 250,000 - 350,000 malaria outpatient cases monthly throughout the country. Malaria is the number one cause of hospital admissions and the leading cause of death among children under five. Malaria accounts for 39% of causes of in-patient admissions, while severe anaemia, most of which is attributable to malaria, accounts for an additional 11%. The malaria inpatient death rate is 2/1000 in under five as compared to 0.3/1000 in those over five. The figure in under fives showed an increase from 1.3/1000 over the previous year. This is quite concerning especially as the overall mortality among children under the age of five years has dropped from 189 to 133/1000 live births (2004 DHS data).

<sup>1</sup> Source: National Malaria Control Programme Strategic Plan 2005-2010.

## NATIONAL MALARIA CONTROL PLAN AND STRATEGY

The National Malaria Control Program (NMCP) functions under the Directorate of Preventive Health Services in the MOH. Four staff members at the national level manage the program. They set policies, establish strategies, coordinate activities, and provide technical guidance for the program. Five zonal officer positions, with three filled, are responsible for overseeing malaria activities in their respective zones. A District Malaria Control Coordinator directs malaria control activities at that level.

A new *Malaria Strategic Plan 2005-2010, Scaling-Up Malaria Control Interventions*, was developed and approved by the Malawi MOH in June 2005. This strategy is in line with the sector-wide approach's (SWAp) Programme of Work (POW) that the MOH, in collaboration with donor partners, is implementing. It is consistent with the Malawi Essential Health Package (EHP), also developed by the MOH. This strategy guides allocation of resources and outlines three key areas for scale-up: case management for treatment of malaria cases, IPTp and mosquito vector control (ITNs and IRS). These major interventions are discussed below:

*Case Management:* In 2006, the MOH selected artemether-lumefantrine (AL) as the first-line drug and selected amodiaquine-artesunate (AQ/AS) as the second-line ACT, reserving quinine for the treatment of severe malaria cases and for the management of malaria in pregnancy. The introduction of these drugs is in line with the WHO recommendation to use artemisinin combination therapies (ACTs) in order to improve malaria treatment and prolong therapeutic life of anti-malarial drugs. The new drug policy will be implemented in November of 2007 with PMI support.

*IPTp for malaria in pregnancy:* As part of a comprehensive antenatal care (ANC) package, Malawi's policy on IPTp recommends the provision of at least two doses of SP to pregnant women during the second and third trimester as a way to prevent malaria infection. The policy states that the treatments should be at least one month apart and given under direct observation.

*ITNs for mosquito vector control:* Malawi adopted a new ITN policy in 2006 which includes free distribution of ITNs for newborn children born in health facilities, children attending their first EPI visit (if an ITN was not received at birth), and pregnant women at first visit to an antenatal clinic. The new policy supports time-limited, national, free distribution campaigns every 2-3 years targeting the most vulnerable populations in rural Malawi. Additionally, the program is supportive of donors and NGOs in developing other innovative distribution models to fill gaps in rural communities in collaboration with District Health Offices as additional funding is made available by these donors. Long-lasting ITNs are the preferred ITN for scaling-up coverage nationally.

*IRS for household mosquito vector control:* The new malaria strategic plan explores the feasibility of introducing IRS as a malaria prevention strategy in rural Malawi. It includes limited pilot IRS activities to determine the cost and operational feasibility in four rural sites. Two rural sites were established in 2005/2006 with funding from the African Development Bank. The second and final round of spraying has been completed. The PMI pilot of IRS in 25,000 households in Nkhotakota District in collaboration with the Dwangwa Sugar Estates in 2007 will provide a much larger activity to document the real operational, logistical, and human resource requirements to scale-up IRS in rural Malawi.

*Cross Cutting issues:* The Malaria Strategic Plan (2005-2010) also addresses the need to develop human resource capacity, strengthen information, education and communication (IEC) and advocacy for malaria control, improve communications and logistics, support operational research and develop 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 district health system with the district health office as the MOH's coordinator of all health matters at district level. The private sector, specifically the Christian Health Association of Malawi (CHAM), is also involved in malaria control. CHAM provides 37% of the health care services in Malawi and is a crucial service delivery partner.

## **DONOR COORDINATION**

In December 2004, the Government of Malawi signed a memorandum of understanding with a number of donors to establish a SWAp program for the health sector. The SWAp was established at a time of increasing global support to control infectious diseases including malaria that witnessed a proliferation of new multilateral and bilateral activities in these areas. It aims to promote better coordination among donors in support of a government-led national program and was an attempt to reduce transaction costs in planning, implementing, and monitoring health programs designed to address agreed-upon priority problems. The Government of Malawi, together with interested parties and stakeholders of national policies and strategies, developed the basis of this program.

As part of the SWAp, some donors pool their money in a common "basket" in support of program priorities developed through an annual consultative planning process. The funds from the "pooled" donors are drawn down by the national health program in support of agreed-upon activities in an annual POW. Other donors, including the United States, for policy and other reasons do not program their funding through the common "basket". These "discrete" donors (the U.S. being one) may earmark all or portions of their funds for specific purposes, and provide their funding through different financing mechanisms. However, the discrete donors still participate in the SWAp planning and review process. All partners agree on a set of common indicators and targets that are tracked and reported to all stakeholders.

The GOM has a strong commitment to controlling malaria in the country because of its contribution to poverty and the major disease burden placed on families, especially on children under five and pregnant women. The GOM understands the impact that an effective malaria control program can have on achieving the goals of the SWAp as well as the Millennium Development Goals (MDGs). The formerly vertically-funded NMCP now receives funding from the SWAp since 2004. Systemic issues facing the NMCP are now handled through the SWAp mechanism using the same approach as the ten other health interventions that constitute the SWAp essential health package. The new Malaria Strategic Plan (2005-2010), with an estimated cost of \$78.6 million, is now part of the program of work. It builds on the achievements of the previous five-year plan and it aims to cut malaria mortality and morbidity in half by 2010.

Through the SWAp mechanism and the annual POW, the NMCP works in collaboration with strong partnerships established in malaria control. The major stakeholders for malaria control are the Global Fund to Fight AIDS, Tuberculosis, and Malaria (Global Fund), UNICEF, World Health Organization (WHO), Japanese International Cooperation Agency (JICA), the Government of Norway, USAID/CDC, DFID, the World Bank, and the European Union (EU).

These partners support malaria control through “basket funding” or as discrete donors. As listed in the table below, approximately \$20.8 million was available for malaria control through the SWAp from June 2004-2005.

	Actual		Planned		Estimated			
	2005	2006	2007	2008	2009	2010	2011	2012
<b>Total Domestic Funding available (including Global Fund Resources)</b> <sup>2</sup>	18,142,857	21,428,571	22,499,999	23,624,999	24,806,249	26,046,150	25,500,000	25,000,000
UNICEF	5,000,000	2,000,000	1,200,000	500,000	500,000	500,000	500,000	500,000
WHO	150,000	150,000	100,000	100,000	100,000	100,000	100,000	100,000
USAID and President’s Malaria Initiative	2,125,000	3,100,000	15,000,000	18,000,000	18,000,000	18,000,000	TBD	TBD
World Bank Booster Program				1,000,000	1,000,000	1,000,000	-	-
<b>Total Sources of Donor funding for Malaria control</b>	7,275,000	5,250,000	16,300,000	19,600,000	19,600,000	19,600,000	600,000	600,000
<b>Total Resources available for Malaria Control</b>	<b>25,392,857</b>	<b>26,678,571</b>	<b>38,799,999</b>	<b>43,249,999</b>	<b>44,405,849</b>	<b>45,646,150</b>	<b>26,100,000</b>	<b>25,600,000</b>

A major source of malaria funding in the SWAp comes from a Round Two Global Fund malaria grant that was signed in 2005 for \$18 million over two years. This grant aims to increase the availability of ITNs, ensure that people suffering from malaria have prompt access to treatment, increase access to IPTp, build capacity of district systems to detect and respond to increased seasonal malaria, strengthen IEC on prevention of malaria and help build the capacity of the national health system. To date, \$6.4 million of the Round Two Global Fund grant has been disbursed. This primarily facilitated the procurement of 1.2 million nets co-packaged with insecticide treatment kits of which 660,000 were distributed for free to households with children

<sup>2</sup> The Global Fund resources are included in the SWAP.

under five and pregnant women in the “poorest of the poor” households of rural Malawi. The NMCP should receive the second disbursement of \$9 million shortly and it will fund 1.5 million conventional nets or a reduced number of LLINs, microscopes, health worker supervision, and other related activities.

Neither the existing Global Fund Round Two grant nor under the SWAp funds ACTs; hence, there is a gap between the need and the current commitment of resources to sustain the drug change policy beyond 2008.

The World Bank Malaria Booster program has provided a \$5 million five-year grant to support malaria control in Malawi beginning in FY07. The grant should specifically contribute to the NMCP five-year strategic plan and help implement a robust and sustainable monitoring and evaluation (M&E) plan for malaria control.

Outside of malaria control, Malawi has a very strong HIV/AIDS control program. Currently Malawi has one of the largest Global Fund grants, receiving in Round One a grant for \$170 million for HIV/AIDS treatment, and in Round 5, \$19 million for the care of orphans and vulnerable children. Malawi is also a President’s Emergency Plan for AIDS Relief (PEPFAR) non-focus country, receiving approximately \$15 million from the USG for the prevention, care, and treatment of HIV/AIDS. The PMI team has engaged in discussions with the USG PEPFAR team to identify ways to coordinate activities.

### RECENT ESTIMATES OF MALARIA INDICATORS<sup>3</sup>

Indicator	Estimated national coverage based on 2006 MICS or 2004 DHS
Proportion of households with at least one ITN	35.0 % (MICS)
Proportion of children under five years old with fever in the last two weeks who received treatment with ACTs within 24 hours of onset fever.	Not available
Proportion of children under five years old who slept under an ITN the previous night.	23.0% (MICS)
Proportion of pregnant women who slept under an ITN the previous night.	14.7% (DHS)
Proportion of women who received two or more doses of IPTp during their last pregnancy in the last two years (IPTp)	46.5% (DHS)
IRS coverage nationally	Not available

### GOAL AND TARGETS OF THE PRESIDENT’S MALARIA INITIATIVE (by 2010)

<sup>3</sup> Source: Malawi 2004 DHS and Malawi Malaria National Evaluation

Note: The DHS 2004 was conducted during the dry season and the National Survey 2004 was conducted during the peak rainy season. Based on other Household survey data, we believe both national results are accurate for the time of the year.

## **Goal**

The goal of the PMI is to reduce malaria-associated mortality by 50% compared to pre-initiative levels in all PMI countries.

## **Target**

By the end of 2010, PMI will assist Malawi to achieve the following targets in populations at risk for malaria:

- >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 protected by IRS\*;
- 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 onset of their symptoms.

\*Timeframe after spraying is defined by each country team based on insecticide used, typical house construction, and seasonality of transmission and resistance patterns.

## **EXPECTED RESULTS – YEAR TWO**

### **Prevention:**

- Approximately 3.0 million LLINs/ITNs will have been distributed by partners (of which PMI will contribute 800,000) to pregnant women, children under one year old and other households to increase the level of nationwide household ownership of ITNs to approximately 65%.
- Continued support for a mass media and community-based IEC/BCC campaign will raise the percent of children under five and pregnant women who have slept under an ITN the previous night to approximately 75%.
- At least 85% of the 50,000 houses in geographic areas targeted for IRS during Year 2 will have been sprayed.

### **Case Management:**

- Approximately 6.3 million treatments of ACT will have been purchased and used to maintain supply of ACTs to health facilities nationwide and 45% of health facilities will be dispensing ACTs.
- Focused antenatal care (FANC) will have been strengthened, increasing the proportion of women receiving two or more doses of IPTp to approximately 75%.

### **Other:**

- A nationwide IEC/BCC campaign will have been conducted to support year round usage of LLINs/ITNs as well as coverage of at least 2 treatment doses of SP for IPTp and increased prompt treatment-seeking behavior through mass media outreach and community efforts.



## **INTERVENTIONS: PREVENTION**

### **Insecticide-Treated Nets**

#### **Progress to Date/Challenges and Needs**

Malawi's ITN distribution program is one of the more successful in Africa in terms of coverage and results in recent years. As the major malaria prevention measure, the GOM has adopted the strategy of scaling-up the distribution of ITNs, particularly for children under five and pregnant women. ITN ownership, defined as "at least one net per household," in Malawi is estimated to be 50% nationally-based on household survey data from 2006 and the number of nets brought into the country since then. There are major coverage and usage differences between urban and rural areas. Recent population-based data on net coverage is available from the a) 2006 MICS survey, b) 2004 Malawi demographic and health survey (DHS), c) 2004 survey by the University of Malawi Centre for Social Research, and d) 2005, 2006, and 2007 anemia and parasitemia and indicator household surveys in eight districts. The MICS found that 1) 35% of households own an ITN, 2) 49.5% of households have at least one net of any kind, and 3) ITN ownership was higher in urban areas, the Northern Region, and among the wealthy. Coverage data from the 2004 NMCP/UNICEF/CDC national study showed that net ownership of at least one net per household was reported to be 43% with 34 % owning at least one ITN. Green rectangular nets (those distributed through health facilities and the community at the highest subsidies) were the most prevalent (74%); blue/conical nets (private sector) were owned by 23% of those surveyed. Although ITN coverage and usage has continued to increase, the additional resources becoming available can now provide for more rapid scale-up for impact.

#### **Summary of 2006 Malawi MICS**

	<b>Rural</b>	<b>Urban</b>	<b>Total</b>
Households with at least one Net	46.5 %	72.2 %	49.5 %
Households with at least one ITN	32.6 %	53.8 %	35.0 %
% of children under five who slept under an ITN the proceeding night	20.6%	42.9 %	23.0%

In 2006, Malawi revised its ITN policy to improve its ability to rapidly scale-up ITN coverage. Prior to these revisions, ITN distribution in Malawi was organized through three national distribution channels. The first channel provided highly subsidized ITNs (MK50/\$0.33 per net) through ANC and clinics treating children under age five with the health staff retaining MK10 as an incentive to sell the ITNs. The second channel was a revolving fund initiative involving village health committees, NGOs, and community-level health personnel that provided subsidised ITNs at a cost of MK100/\$0.66 per net with the committees/NGOs managing a revolving fund to support continued distribution. With the third channel, nets were sold through the commercial sector to the general populace (mainly in urban areas) without any subsidy at K550-780/\$3.86-\$5.20 per net. This ITN strategy was implemented via a partnership between the NMCP (oversight, planning and management), UNICEF (ITN procurement agent), PSI (primary distributor and social marketer), the Malawi Health Sector SWAp (financing), and WHO, Management Sciences for Health (MSH) and CDC (technical assistance). All of the ITNs procured were untreated nets bundled with treatment kits. The ITN distribution model delivered more than two million nets in the past two years. The majority (77%) of ITNs were delivered through the first channel which was the clinic for children under five and the antenatal clinic

(ANC) model. It is estimated that the total number of nets “in circulation” since national scale-up in November 2002 through August 2006 is 3.5 million. While this policy was very successful, the revised policy focuses on rapidly scaling-up nets to achieve high coverage, particularly in children under one year of age and pregnant woman.

The new guidelines needed to implement the policy are being finalized and trainings are being completed in all districts to support the implementation and provide tools for monitoring and evaluation. The new policy, to be fully implemented by late 2007, has five major components: free distribution of ITNs through EPI and ANC, free distribution to the “poorest of the poor” households in time-limited campaigns, free distribution as emergency response, distribution through community venues by community groups/NGOs with donor support, and distribution through the commercial sector by the private sector.

The first component is the free distribution of LLINs to the following groups:

- ◆ Pregnant women at first visit for antenatal services at the health facilities
- ◆ Newborn children at delivery in health facilities
- ◆ Children at first EPI visit, if he/she did not receive an ITN at birth, determined by clinic card.

The second channel is the free distribution to the “poorest of the poor” households in rural areas, with a focus on the most vulnerable groups as a safety measure to fill gaps. Free ITNs are to be distributed approximately every two to three years to the “poorest of the poor” households with emphasis on children under age five and pregnant women. The third approach is free distribution as an emergency response measure during a period of a disaster such as flooding.

The fourth channel is distribution of ITNs through community venues in order to achieve high coverage and usage especially where community groups, with additional donor support, detect gaps in coverage. The LLINs procured using PMI Year 1 funds will arrive in country in late 2007 and will be distributed through the first method (through ANC clinics and health facilities). In order to implement LLINs through the community venues, including non-governmental organizations (NGOs) and community-based organizations (CBOs), additional supplies of LLINs will be needed from the government or donor community.

The ITN policy endorses LLINs as the preferred net type for national distribution. The MOH plans to phase in the use of LLINs over time as a more efficient way of providing longer-lasting protection. This avoids the need for initial and annual re-treatment to maintain net effectiveness and eliminates factors that serve as barriers to correct treatment/re-treatment. Cost continues to be the major constraint that prevents the MOH from switching completely to LLINs. The Global Fund Round Two grant has 4.1 million conventional nets approved for procurement. Untreated nets cost \$2 to \$3 and treatment kits costs around \$0.67. A long-lasting treatment costs \$1.50 to \$2.00 and LLINs cost \$5 to \$7. However, the additional cost of the LLINs will be offset by the effort and cost of the initial treatment and annual re-treatment campaign. Evidence from Malawi shows that conventional nets are not always treated properly. Many households do not use the proper amount of water or follow the correct procedure for drying the ITNs. This compromises the effectiveness of the treatment of conventional nets.

#### *ITN usage:*

A PSI survey found that correct and consistent use of nets was also an area of concern: 71% of households with nets reported that their children slept under nets during the rainy season as compared to only 18% who reported that their children under five slept under a net year-round.

The coverage versus consistent usage differences have been well documented in multiple household surveys conducted in both rainy and dry seasons including the 2004 national survey in rainy season, 2004 MDHS in dry season, the 2005, 2006, and 2007 anemia and parasitemia and indicator household survey in rainy seasons, and 2006 MICS household survey in dry season.

Each of these surveys highlights the needs for IEC/BCC efforts necessary in promoting LLIN/ITN usage year-round. The NMCP wants to expand the use of community-based approaches through IEC/BCC campaigns to increase the correct and consistent use of ITNs. In year one, the PMI supported the development of a small grants program to use NGOs and FBOs for community mobilization surrounding ITNs program. This program has not yet commenced but the RFA is currently under development.

*Net Needs:*

Between August 2007 through September 2008, approximately 4.0 million nets are expected to be available for distribution: 2.7 million conventional nets bundled with KO-Tab from the Global Fund Round Two grant, 178,000 donated by the German Development Agency, 50,000 from Plan (an NGO), and approximately one million from PMI Year 1. Of the one million LLINs, the PMI has distributed over 185,000 and has procured the remaining. These LLINs should arrive in country by the end of 2007. Combined, these LLINs should raise household ownership of at least one ITN to over 80%.

To sustain this high coverage and continue to provide nets to the new cohort of pregnant women and newborn children, there is an estimated need for approximately 1.4 million nets based on an estimated 680,000 pregnancies a year (1 LLIN for the pregnant women and one for the infant). Through Global Fund Round 2, there are plans to procure either 600,000 LLINs or 1.2 million conventional nets in March 2008. As of now, a decision has not been made on which type of net will be procured. The Ministry and partners preference is to purchase LLINs, but the most crucial issue at this time is the quantity available to achieve coverage and usage targets and scale-up rapidly. The Global Fund Round 2 proposal was submitted four years ago, and which time funds were approved and made available to support the purchase of conventional nets with treatment kits. Therefore, since the initial cost of LLINs is approximately twice as much as conventional nets, the funds available will only support the purchase of approximately 600,000 LLINs for the last Global Fund Round 2 procurement. Additionally based on the distribution of ITNs distributed over the past five years, it is estimated that approximately one million nets will wear out and come out of the current coverage pool during 2008. Thus, approximately three million LLINs/ITNs are needed during the 2008 period to supply the new policy needs, replace the ITNs that are wearing out, and to address the gaps and higher coverage targets needed for rapid scale-up. The estimated gap of LLINs needed for the 2008 period is 2.4 million if the Global Fund Round 2 funds available are used to purchase LLINs. The MoH and partners would like to implement a time-limited free distribution campaign of approximately one million LLINs in rural areas and then continue to rely on the new distribution guidelines to sustain and further increase high coverage and usage through routine systems.

Proposed USG Component: (\$5,740,000)

After 2007, Malawi is likely to achieve higher levels of household coverage of ITNs. This is due in part because of the large contribution of PMI Year 1 LLINs. However, under the new policy there is a continued need to supply nets to cover the new cohort of 1.4 million pregnant women and children less than one year of age, replace nets that are wearing out, and supply the more remote rural areas where gaps exist in order to maintain this high coverage. In addition, correct

and consistent net usage continues to be a problem. The PMI will contribute to increased ownership and correct usage of nets by:

- Procuring approximately 800,000 LLINs for distribution through the ANC/EPI program, particularly in rural areas and agreed upon time-limited and community-based venues and to areas targeted for the IRS pilot. (\$4,645,000)
- Supporting the distribution of these nets, including the provision of transportation to health facilities at approximately \$0.62 per LLIN. (\$495,000)
- Supporting a national IEC/BCC campaign to increase the demand for, and the correct and consistent use of, ITNs among the targeted populations through radio and TV ads, print media, and community interpersonal approaches such as community drama (integrated campaign covering ITNs, ACTs, and IPTp). (\$400,000)
- Supporting a small grants program to NGOs and FBOs that work at the community-level through interpersonal and community-based approaches to encourage the correct and consistent use of LLINs (integrated campaign covering ITNs, ACTs, and IPTp). (\$200,000)

### **Indoor residual spraying (IRS)**

#### **Progress to Date/Challenges and Needs**

Until recently, IRS had not been considered a viable vector control strategy in rural Malawi where the burden of disease is the highest year round. The 2002 *Malaria policy* for Malawi states, “IRS is only used in a selective manner and is the method of choice for preventing and containing malaria epidemics in well-defined or high-risk situations. IRS requires large human and financial resources, selects for vector resistance to insecticides, carries some risks to the environment, and will seldom be relevant in Malawi.” Until the introduction of PMI, IRS activities in Malawi were limited to the private sector on estates growing agricultural products and in two small activities funded by the African Development Bank.

The current *Malaria Strategic Plan 2005-2010* proposes the introduction of IRS in well-defined rural areas to determine feasibility, document resources needed, and train teams in the appropriate response to malaria outbreaks. The African Development Bank supported two small-scale pilot studies with a focus on the operational costs and feasibility of IRS in rural areas using a pyrethroid insecticide (lambda-cyhalothrin; ICON<sup>®</sup>). Spraying was conducted in about 30 villages in areas south of the Vwaza Marsh and near Maloma, consisting of approximately 1,700 and 400 households, respectively. This small-scale project found that IRS is both feasible and effective on a small scale in Malawi.

Building on the African Development Bank experience, under the Year 1 plan, one round of IRS was planned for October 2007 in rural areas north and south of the Dwangwa Sugar Estates in Nkhotakota District to demonstrate applicability and feasibility, document costs, and determine personnel, management, administrative, and supervisory needs of IRS on a larger scale. This activity will be in partnership with the sugar estates and will include approximately 25,000 households (approximately 125,000 residents). The PMI will support the spraying of approximately 22,000 households and the sugar estate will spray the remaining approximately 3,000 households. The Nkhotakota District area was chosen based on the intensity of malaria transmission and burden of disease, as well as the potential applicability to other rural areas in Malawi. The district was previously used for vector assessments, has distinct boundaries including Lake Malawi on the east and the national forest on the west, and has included IRS as a proposed activity in its District Implementation Plan. In addition, the sugar estate, which already

has an IRS and ITN program for employees, would provide an opportunity to establish a formal public-private partnership.

Planning for this activity is currently underway with the NMCP, District Health Management Team, WHO, PMI, and other partners. In May 2007, RTI began its initial environmental assessments and preparations for the October campaign. Logistics planning will take place in June-July of 2007 with actual spraying scheduled to take place in October-November 2007. As part of Year two planning, a second round of IRS is proposed in the same area. Lambda-cyhalothrin will be the insecticide used in the spray campaign for 2007. Alternative insecticides will be considered for 2008 as additional data on cost of each insecticide and the status of insecticide resistance in mosquito populations becomes available.

Monitoring of the IRS and ITN/LLIN activities will be coordinated among the NMCP, CDC, RTI, the College of Medicine and the Innovative Vector Control Consortium (IVCC). Monitoring will include sentinel sites for entomological surveillance of mosquito populations both within and just outside the targeted IRS area as well as in seven other sentinel districts and will include annual surveys in these same districts to measure rates of parasitemia and anemia and collect data on other indicators. Resistance monitoring will be done by live collections of larval and adult mosquitoes during the rainy season. These M&E activities are incorporated in the M&E section under “malaria entomology assessments and monitoring”.

Currently, the Malawi government does not recommend dichloro-diphenyl-trichlorethane (DDT) for IRS because of concerns regarding operational controls to prevent leakage into the agricultural sector and ground water including proper disposal requirements of the residual waste containers. Therefore, any PMI supported IRS program in Malawi will use WHOPES-approved insecticides until Malawi changes the current policy regarding DDT use and has the proper controls in place. Discussions with MOH personnel will take place to determine if limited field studies are warranted to determine the longevity, cost, and efficacy of different insecticides in the Malawi IRS program.

Proposed USG Component: (\$850,000)

A second round of IRS is planned as a follow-up to this year’s campaign. Ongoing planning for future IRS activities should be based on the evidence of the efficacy, cost-effectiveness of the intervention, operational feasibility in rural Malawi as well as the impact of other interventions (e.g. ITNs) that are implemented concurrently. PMI will work with the IVCC to expand and enhance entomological and epidemiological surveys in and around the targeted IRS area as well as other selected sentinel sites in Malawi.

- Conduct a second round of IRS in 50,000 households in the targeted IRS area in Nkhosonko district in partnership with the Dwangwa Sugar Estates. This amount will cover additional expenses from the first round and the complete cost for the second round of IRS. (\$850,000)

### **Intermittent preventive treatment (IPTp)**

#### **Progress to Date/Challenges and Needs**

Malawi has been at the forefront of policy development and implementation in the use of anti-malarial drugs for intermittent preventive treatment in pregnant women (IPTp) since the late

1980s. The national policy on IPTp was established in 1994 and most recently revised in 2002; it now states, “All pregnant women should receive at least two treatment doses of SP at least one month apart at the ANC under direct 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 Malawi DHS 2004, the percentage of pregnant women receiving one dose of SP was 79%, but only 46% of pregnant women received at least two doses or more of SP despite high ANC attendance rates (95% of women attend at least once, and 57% attend at least four times).

Several factors have resulted in lower coverage of the second dose of SP. Currently, national guidelines state that at least two doses of SP should be given during the 2<sup>nd</sup> and 3<sup>rd</sup> trimester one month apart but not administered after the 28<sup>th</sup> week of pregnancy. Because some women attend ANC clinics late in their pregnancies, and due to the current guideline to not provide SP after 28 gestational weeks, the ability to administer at least two or more doses is compromised. Studies in Blantyre District found that important additional reasons for this relatively low coverage were: lack of clarity among health workers regarding proper timing of the second dose; lack of available water and cups to take SP under direct observation; concerns about providing SP on an empty stomach; concerns about providing a “strong drug” during later pregnancy; and stock-outs of SP. An intervention to simplify the policy, provide job aides such as gestational wheels, simplify correct dosage timing, and develop IEC materials for both staff and patients resulted in an increase in the proportion of women receiving at least two doses of IPTp with SP from 48% to 69% (79% when facilities with stock-outs of SP were excluded from the analysis).

In Year 1, PMI began addressing these issues by scaling-up the provision of already developed IPTp job aides such as gestational wheels to simplify correct dosage timing, providing cups and water for directly observed therapy, and developing IEC materials for both staff and patients, in order to increase coverage of IPTp. This project has an approved workplan and is just now beginning implementation. To encourage women to attend ANC earlier, the PMI is initiating an IEC campaign both at the community, using small grants to FBO and NGOs, and at the mass-media level. Funding for these activities will continue in Year 2.

Support will also be provided in Year 1 to Health Surveillance Assistants (HSAs), Malawi’s form of community health workers, to help them educate their villages in general and pregnant women specifically about the importance of ANC attendance and IPTp and active referrals. The NMCP has most recently adopted the strategy of using HSAs to actually deliver IPTp and are currently developing training tools and materials to implement the strategy. HSAs will continue to promote early ANC attendance and to stress the importance of focused-ANC. The PMI will not support this approach because it is feasible to achieve high coverage of IPTp without resorting to community-based distribution of SP via HSAs. The NMCP has other funds to implement this activity.

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 assessment to inform any needed policy changes in the future. The PMI Year 1 plan is supporting drug efficacy monitoring of SP for IPTp in sentinel sites. Monitoring such as this will enable the assessment of placental infection rates in relation to number and timing of doses of IPTp with SP. The results, which will be available later this year, should be used to review and re-formulate, if necessary, the existing policy.

Currently, sufficient supplies of SP are available. Last year, the NMCP purchased a two-year supply of SP through the Central Medical Stores (CMS) through the SWAp, which should cover the national need through 2008. However, the distribution of these drugs continues to be a problem and stock outs plague the system. Through Year 1 support to build the capacity of CMS (see case management section), PMI is working to help reduce the number of stock outs of essential drugs such as SP.

In addition to strategies aimed at preventing malaria in pregnancy through IPTp, intermittent preventive treatment in infancy (IPTi) with SP has been piloted in multiple countries. The preliminary results of this novel preventive strategy have been promising and it is hoped that a consensus statement and recommendation will be forthcoming in the near future. The two pilot IPTi sites in Malawi focus on program implementation aspects of providing SP during EPI visits. UNICEF has supported these sites and have funding for the operational implementation until December 2007 and funding to support data analysis and dissemination beyond 2007. Unfortunately, there is no funding to support implementation after December 2007.

Proposed USG Component: (\$600,000)

During Year 2, the PMI will continue to focus on scaling up proven tools and approaches that have been found to increase IPTp uptake at the health facility level and to expand the implementation of focused antenatal care. Given that IPTp is already high, these efforts should help increase the uptake of the second dose. This effort will be complemented by a continuing mass media and community-level campaign to encourage women to go to clinic as early as possible. Finally, PMI will help position Malawi to implement IPTi by continuing to support the pilot program that will provide important information on how to scale-up this intervention.

- Support the ongoing nationwide scale-up of IPTp and focused antenatal care at health facilities and strengthening of ANC services by providing job aides, training, training materials, and supplies such as cups and potable water. The national scale-up of IPTp will also be partially supported by available funding from the NMCP and the Global Fund Round 2 grant. (\$200,000)
- Continue support for national IEC/BCC campaign and continue support for HSA outreach activities to increase ANC attendance and the demand for SP. (\$100,000)
- Continue support for NGO/CBO outreach activities through small grants to increase ANC attendance and the demand for IPTp. (\$150,000)
- Maintain activities at the UNICEF pilot IPTi sites during transition to possible scale up of strategy. (\$150,000)

## **INTERVENTIONS – CASE MANAGEMENT**

### **Malaria Diagnosis**

#### **Progress to Date/Challenges and Needs**

The national policy is to treat children under five and pregnant women with signs of malaria presumptively with the first-line therapy within 24 hours of onset of fever. Microscopic

diagnosis of malaria is recommended only among children older than five, non-pregnant women, and men who present with signs of uncomplicated malaria at a facility with laboratory diagnostic capabilities. However, in reality, many if not most of these cases (particularly at the health center level) are also treated presumptively, even if the laboratory findings are negative. The GOM also promotes microscopic diagnosis in these groups when they present with a second episode of fever within seven days of the first presumptive treatment.

Currently, the ability to diagnose malaria is limited in most health facilities. National hospitals, all district hospitals, and an estimated 10% of health centers are equipped to perform microscopic diagnosis for malaria. There is a need to train more laboratory technicians and supply more microscopes for use in health centers. The strategic plan for 2005 – 2010 calls for an increase to 60% of health centers capable of performing laboratory diagnosis for malaria. Under the Global Fund Round Two, UNICEF has procured an additional 56 microscopes and the necessary reagents to increase diagnostic capacity at the health center. The College of Health Services is also training more microscopists, which is still an under-resourced cadre. Six technicians were trained in recent years as microscopy trainers and to monitor quality at the health center level, but many of these technicians have been moved and quality assurance activities have been on an ad hoc basis. In addition, clinicians' disregard of negative microscopic results has been an ongoing problem and this issue will have to be addressed and corrected in the expansion of this service and in the training of both microscopists and clinicians.

Over the next year, the NMCP plans to evaluate whether rapid diagnostic tests (RDT) are appropriate for use at the health facility level in Malawi. The National Reference Laboratory, CDC, and the College Medicine are currently developing a protocol for this evaluation. Based on the outcome, the NMCP and partners will determine the appropriate use of RDTs in Malawi and the most appropriate way to include them in the diagnostic algorithm. Once the RDTs have been evaluated, further dialogue will be needed to determine if their use is a cost-effective approach to help ensure more appropriate use of the much more expensive ACTs, especially in light of the cost of the RDT itself. In Year 1, PMI provided limited support to RDTs, supporting only the procurement of approximately 100,000 RDTs. Currently, the Global Fund Round 7 proposal contains a request to fund the procurement and scale-up of RDTs in Malawi.

Proposed USG Component: (\$400,000)

As ACTs are implemented in Malawi, it will be important to strengthen in-county diagnostic capacity to ensure that the new drugs are used rationally and appropriately. Consequently, efforts need to be made to increase the capacity to accurately diagnose malaria, particularly in adult populations where presumptive treatment is not recommended, and to ensure that these diagnoses are used to make treatment decisions.

- Provide technical assistance to improve malaria diagnostic capacity at the health facilities by increasing quality assurance measures and by providing supportive supervision and training to laboratory technicians. Also, educate health care workers on the validity of malaria microscopy and encourage them to use these test results to make treatment decisions. (\$400,000)

## **Malaria Treatment**

### **Progress to Date/Challenges and Needs**



Malawi was the first country in Africa to change from chloroquine to SP as its first-line drug for the treatment of uncomplicated malaria. Resistance of the malaria parasites to SP has been increasing and data from six sentinel sites collected in 2004 showed resistance to SP ranging from 25 – 31% among children under five years of age. This was reconfirmed in candidate drug efficacy studies in 2005. Thus, the most important issue for malaria case management in Malawi today is the urgent need to implement the drug change plan announced in October 2006. Quinine is reserved for use in cases of treatment failures of the first-line drug and for severe management in the new guidelines.

The MOH has selected artemether/lumefantrine (AL) as the new first-line anti-malarial drug and artesunate/amodiaquine as the new second-line treatment with these drug changes scheduled to be implemented in November 2007. The year delay in implementation allows sufficient time to identify funds, procure the drugs, re-train health workers on the new drug policy, and improve pharmaceutical management systems. In the first year of change, only PMI has made funding available for the procurement of ACTs. Funds have been made available through the SWAp to train health workers in preparation for implementation of the new drug policy, support its roll out throughout the country, and fund the second-line ACT artesunate/amodiaquine, and severe management with quinine.

In January 2007, the MoH established a Drug Change Plan Task Force. The Task Force established an implementation timeline for all activities and established three sub-groups to address the following issues: 1) case management policy and guideline changes as well as training materials and planning for a cascade training plan necessary for the national roll-out of the new drug policy; 2) IEC/BCC strategies for change implementation; and 3) pharmaceutical management, logistics, and pharmacovigilance. The cascade of training began in July 2007 and all materials - including revised policy, treatment guidelines, and training manuals - have been revised. All health workers will be trained and prepared for the November introduction of ACTs.

To ensure that children are treated for malaria within twenty-four hours of the onset of their illness, community-based treatment will be necessary as soon as operationally possible. The MOH is exploring ways to strengthen this priority intervention. Currently, the MOH is piloting the community-Integrated Management of Childhood Illness approach (c-IMCI) in ten districts. HSAs will receive drug boxes that include essential drugs such as SP, cotrimoxazole, ORS, etc. The operational feasibility of c-IMCI using ACTs is unclear and still needs to be explored. Work in this area is expected to begin in FY09 once ACTs have been fully implemented at the facility level.

No funding has been secured yet for the procurement of the ACTs after the first year PMI commitment. Approximately 6.3 million treatments of AL will be needed in Year 2 based on current HMIS data and assumptions made by the Drug Change Plan Task Force. The NMCP requested that PMI support a full year's supply of ACTs during the first year beginning in November 2007. The Year 1 plan currently provides \$5.9 million in funding, which will provide about 75% of the first year ACT need. The table below shows the quantification of the number of AL treatments needed and drug costs. Because of the inaccuracies of the existing consumption data for SP, this quantification was based on fever cases in the HMIS.

<b>WEIGHT (kg)</b>	<b>TREATMENTS</b>	<b>UNIT COST (\$)</b>	<b>TOTAL COST (\$)</b>
5-14	2,946,245	.45	1,325,810.20

15-24	448,242	.90	403,417.80
25-34	406,228	1.35	548,407.80
>34	2,592,492	1.80	4,666,485.60
<b>Total</b>	<b>6,393,207</b>	<b>1.09</b>	<b>6,944,121.40</b>

The first order for the ACTs (2.6 million treatments/ \$3.1 million) has been placed and the drugs arrived in country on Sept 24th. They are in the process of being distributed to Regional Medical Stores so that they can be in place at the health facilities when the policy is launched in November. The second order will be placed later in December.

Currently, Malawi is submitting a Global Fund Round 7 application, much of which is to provide funding for ACTs. If this application is successful, funds will be available to procure ACTs beginning in late 2008. If the application is not successful, the NMCP can request funding through the SWAP which would become available in late 2008. Thus, to provide sufficient overlap to ensure that there is a consistent supply of ACTs, the NMCP would like PMI to provide an 18 months stock through mid 2009.

*Pharmaceutical Management:*

Malawi's pharmaceutical management system has been plagued with serious problems. Stock-outs of SP and other 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 is currently only able to supply 60% of the national requirement for drugs. Because of this, programs such as the HIV/AIDS program and the EPI program have chosen to outsource the distribution of antiretrovirals (ARVs) and vaccines through UNICEF.

Due to these recurrent problems with inadequate drug supply, several efforts have been made to improve the capacity of CMS. A Chicago-based firm, Glocoms, was contracted in May 2006 to help CMS in addressing both current management issues as well as to prepare CMS in becoming a semi-autonomous trust. This trust will operate a revolving drug fund with district health assemblies buying drugs using government money. It is still too early to determine whether the introduction of Glocoms has addressed the inventory management problems faced by CMS which hamper the drug supply chain. PEPFAR's DELIVER program and other USAID programs have also been working with CMS to strengthen the procurement and logistics systems.

Because of the problems with CMS, an outsourced system was considered for ACTs, similar to the one developed for ARVs and EPI vaccines. However, it has since been determined that, with careful monitoring and support, CMS should have the ability to distribute the ACTs. The PMI has decided to distribute the first delivery of the ACTs through CMS, provided they improve their storage facilities, documentation and information system, transportation capacity, security systems and logistics management system. RPMplus and DELIVER conducted a joint assessment of the system in August and developed a course of action to develop the capacity of CMS prior to the implementation of the ACTs in November 2007. RPMplus and DELIVER, to ensure that the implementation is successful, will be renting and/or upgrading storage facilities, renting vehicles for distribution, supporting the staff at CMS, and providing general technical assistance. This support, as well as the tracking of benchmarks of success, will be continued in Year 2.

*Pharmacovigilance:*

The expected change in drug policy will also require increased quality assurance and post-market surveillance of the ACTs. The Pharmacy, Medicines, and Poisons Board (PMPB) is a semi-autonomous government parastatal responsible for the registration of drugs and medical items entering the country. It is also responsible for performing laboratory tests for pharmaceuticals coming through the public sector. There is no post-marketing surveillance being done nor does the PMPB have powers to confiscate items found to be substandard. The lab has two high-pressure liquid chromatographs and an ultra-violet spectrophotometer. Post-shipment testing to assure quality of drugs is not routinely done. Customs officers have no mandate to stop any consignments of drugs coming into the country except if they are taxable. Items coming in under United Nations organizations, NGOs and diplomatic missions are often not checked. The PMPB was in the formative stages of the registration stage with suppliers only notifying all products on the market to be registered.

Malawi is interested in continuing to work with partners in establishing a well-organized pharmacovigilance system to monitor for any adverse effects. This will ensure that new ACTs are of good quality, safe, effective, and used rationally. This approach will also benefit other disease prevention and control efforts by establishing a strong system in which other programs can participate.

Proposed USG Component: (\$8,450,000)

The PMI is committed to supporting the implementation of ACTs in Malawi. In Year 2, the PMI will supplement the AL being supplied with Year 1 funds and provide another 9 months of ACTs for a total of 18 months between FY07 and FY08. To ensure that the AL is delivered to the health facilities, PMI will continue to work to strengthen CMS and support the distribution costs of the drugs through an outsourced interim system. In addition, refresher trainings will be provided to health care workers after the implementation so that they are well-versed on the proper use of ACTs. Due to limited staffing within the NMCP, technical assistance will be provided by the Malaria Alert Center, who will assign staff to work directly with the NMCP on training and supervision. Finally, PMI will continue to support the development of a pharmacovigilance system to track adverse drug reactions. The PMI proposes to support the MOH's request to fund an additional nine months of the second year need for the first-line ACT, AL. Combined with funding from FY07, this will provide Malawi with a continuous supply of ACTs through mid-2009. (\$6,450,000)

- Continue providing technical assistance to strengthen existing pharmaceutical management system through CMS. Both the Rational Pharmaceutical Management Project and DELIVER will provide this package. (\$750,000)
- PMI will provide support to CMS to pay for the cost of the distribution of the ACTs. (\$500,000)
- To ensure that ALs are being properly used and administered by health care workers, the PMI will support refresher training on ACTs. This will serve as a follow-up to the training that they will receive in 2007 prior to the implementation of ACTs. (\$400,000)
- Continue to implement both a NGO/FBO based and mass media-based integrated malaria IEC campaign (described in other sections) to educate communities on the new drug policy, and how to appropriately take ACTs. (\$250,000)

- Support the development of a pharmacovigilance and drug quality system to monitor adverse drug reactions and improve post-market surveillance for counterfeit drugs in the private sector. (\$100,000)

## **HIV/AIDS AND MALARIA**

### **Progress to Date/Challenges and Needs**

The HIV/AIDS epidemic in Malawi poses a significant burden with approximately 14.1% of the adult population ages 15 to 49 living with HIV/AIDS (UNAIDS, Report on the Global AIDS Epidemic, 2006). Malawi received \$16.2 million dollars for FY06 from the President's Emergency Plan for AIDS Relief (PEPFAR) to support activities in the provision of HIV counseling and testing services, antiretroviral treatment, prevention of mother-to-child transmission services, laboratory infrastructure and services, and to strengthen monitoring and evaluation capacity. The clinical interactions between HIV and malaria have been emphasized in recent literature, and highlight the importance of seeking opportunities to integrate malaria interventions into HIV programs. Persons with HIV/AIDS are at greater risk for developing severe malaria, experiencing potentially worse malaria treatment outcomes, and require more aggressive preventive measures. The programmatic areas where malaria and HIV/AIDS interventions can be integrated include the consideration of IPTp in ANC clinics providing Prevention of Mother to Child Transmission services, the distribution of ITNs in clinics providing antiretroviral treatment (ART) or care for opportunistic infections, laboratory diagnostics services (especially for parasitic diseases including malaria), and strengthening of distribution systems for medications and commodities.

In Malawi, IPTp is provided at all ANC clinics. In 2007, an ARV clinic piloted the provision of free LLINs as part of the "ARV care package". Based on the success of this pilot, it is recommended that this effort be scaled up all ARV sites in Malawi. Additionally, home-based care programs are being considered for inclusion of LLINs as a component of the basic homebased care kit and discussions are underway to consider the best way to include LLIN access through HIV testing venues. Malawi PMI team members are working on the interagency HIV/AIDS task force to integrate, where appropriate, malaria and HIV/AIDS programs.

## **CAPACITY BUILDING WITHIN THE NATIONAL MALARIA CONTROL PROGRAM**

### **Progress to Date/Challenges and Needs**

The NMCP was established under the Directorate of Preventive Health Services within the Ministry of Health and is housed at the Community Health Sciences Unit (CHSU) in Lilongwe along with other disease-specific control programs.

Four officers at the national level form the core management and coordination team. The Programme Manager reports to the Director of Preventive Health Services. There are an additional five zonal officer positions, with three currently filled, who are also responsible for their respective districts in each of the zones. At the district level, the District Malaria Control Coordinator oversees district-based malaria control activities under a District Health Officer.

The NMCP at headquarters level is under-staffed and under-resourced. Over the last five years, the staff increased from two to four. However, it is estimated that a national roll out of an

expanded malaria control program would require at least six staff at headquarters. The NMCP lacks essential infrastructure including adequate and appropriate office space, and equipment. The FY06 NMCP plan with support from the Global Fund aims to recruit three additional officers, procure five vehicles, obtain training in program management, procure a mobile video van for IEC, and install telephone, fax, and local area networking at the NMCP office.

Currently, the NMCP does not manage its own operational budget. Although the MOH and NMCP have established an excellent model for collaboration, implementation, and support through the National Malaria Technical Committee (NMTC), and the National Policy Advisory Committee (NPAC), there is not a funded Secretariat and no readily available funds to convene these strategic groups when needed.

Although the SWAp has increased resources for malaria control, the concurrent process of decentralization has resulted in fewer resources at the central level. The NMCP needs an operational budget and functional office and conference/meeting room space for NMCP staff as well as the capacity to house PMI staff and other shorter-term technical assistance staff from The Malaria Alert Center and other partners. In addition, the NMCP staffing pattern needs to be strengthened to support the program plans and activities. Specifically, the following officers are needed: a) an M & E officer, b) an IEC/BCC officer, c) an administrative officer, and d) a data manager. The 2003 WHO report on technical support required to strengthen malaria monitoring and evaluation systems in Malawi recommended the recruitment of a data manager in the NMCP. PMI will provide support to the College of Medicine and the Malaria Alert Center who will provide staff support directly to the NMCP on training, M & E, epidemiology, data management and analysis, and assistance with supportive supervision. The PMI is currently providing data management and analysis support through the College of Medicine/Malaria Alert Centre (COM/MAC). PMI will continue to explore methods for encouraging the GOM to increase the staff at the NMCP as well as reconsider the establishment of an implementation letter with the NMCP to provide direct assistance.

The National Malaria Technical Committee and the National Policy Advisory Committee need ongoing and strategic support as noted above, to function in their crucial support role to the NMCP. In addition, districts need support to plan and prioritize malaria control in their budgeting process with this increase in budgetary responsibility through the decentralization process.

The M&E capacity of the NMCP is very limited. The COM/MAC has a cooperative agreement with CDC through the PMI to provide support to the MOH/NMCP for training, operational research, and monitoring and evaluation. Technical support for supervision of health workers and refresher trainings will be provided by the College of Medicine until an agreement is made for PMI to provide direct funding to the NMCP or additional staff is hired with other donor funds.

Proposed USG Component: (\$100,000)

- The PMI will continue to provide support for the secretariat needs of the NMCP. By providing this support, the NMCP will continue to receive strategic assistance in addressing the program needs of the rapid scale-up of interventions, operations research, and monitoring and evaluation activities. This support will include funding to support part-time staff, and financial support for the technical committees and task forces to convene policy and guideline review meetings. (\$100,000)

## **PRIVATE SECTOR PARTNERSHIPS**

### **Progress to Date/Challenges and Needs**

Malawi has already begun to develop a public private partnership with the Dwangwa Sugar Estates to implement IRS in Nkhotakota district. This partnership is described in more detail in the IRS section above and provides an excellent example of how PMI can leverage local resources to provide broader coverage of an intervention.

PMI is also exploring a partnership with *Malaria No More* to distribute nets to children under five and pregnant women through a time-limited campaign. This campaign would help provide “catch-up” ITNs to those children under five who have not received nets via the previous ITN distribution system through ANC distribution system.

### Proposed USG Response (No Cost to PMI) :

- PMI will continue to work with Dwangwa estates for a second round of IRS covering 25,000 households. (See IRS section)
- PMI will continue to discuss with *Malaria No More* and other potential private sector partners about a partnership to distribute 300,000 LLINs through time-limited campaigns.

## **COMMUNICATION AND COORDINATION**

### **Progress to Date/Challenges and Needs**

Coordination of partner, involvement including financial involvement in malaria control, is done through the Interagency Coordinating Committee (ICC). The ICC is the major organ responsible for resource mobilization in addition to the resources made available for activities funded through the SWAp. Technical inputs are discussed and coordinated through the Technical Working Groups with sub-committees on various technical areas of malaria control. The National Malaria Policy Advisory Committee, reporting to the Secretary for Health, 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 COM/MAC.

### Proposed USG Response: (No Cost to PMI )

- The PMI in-country technical team will provide support to the NMCP by participating in the NPAC, NMTC, ICC, and other committees and task forces.
- The PMI team is meeting and planning with the Peace Corps in-country in developing opportunities at the village level for involvement of the volunteers in malaria program efforts.

## **SURVEILLANCE, MONITORING AND EVALUATION PLAN**

### **Progress to Date/Challenges and Needs**

The MOH developed the *National Malaria Monitoring and Evaluation Plan* for 2007 to 2011. This is the first time that the Ministry has developed a comprehensive M&E guide. The *National Malaria Monitoring and Evaluation Plan* is an integral component of the Ministry of Health's Sector Wide Approach M&E system.

At the request of the NMCP, the Technical Working Group (TWG) developed a comprehensive monitoring and evaluation plan for malaria in Malawi. The M&E plan includes drug quality surveillance; strengthening of sentinel sites for on-going quality surveillance and documentation of impact indicators, vector assessments for IRS and ITN programming and monitoring; household and facility surveys, including the collection of biomarkers; and ongoing drug change monitoring and assessments, including post-market surveillance, pharmacovigilance, and resistance. The tool developed by the TWG 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.

Unfortunately, the HMIS system, which is generally a major source of information on malaria-related cases, is not reliable in Malawi. The HMIS suffers from incompleteness of reported data and lack of timeliness, inadequate data validation, inability of the system to capture data on malaria in pregnancy, and lack of data disaggregated by age and sex at the district and national level. An impact assessment will be completed with World Bank Booster funds and the World Bank plans to use much of its Booster funds to address weaknesses of the HMIS.

The DHS 2004, the national malaria indicator survey of 2004<sup>4</sup>, and the 2006 MICS represent the major household surveys conducted in Malawi over the past 3 years. The next DHS is planned for 2009 with results available in 2010. The MIS, scheduled for 2011, will serve as the final evaluative survey measuring the impact of PMI. Although the data from these periodic national surveys are needed for monitoring the progress of the malaria control strategies in Malawi over several years, reliable annual data are critical to make sound program decisions and to detect signs of program weaknesses early.

In Year 1, PMI supported the NMCP by further strengthening the 10 sentinel districts and specific health facility and village sentinel sites in these districts. This included training on data collection, supportive supervision, collection of quality data at the health facility and village levels, and use of data for decision-making.

The PMI also supported Malawi's annual anemia and parasitemia survey in Year 1. Data collected include ITN ownership as well as usage, household socioeconomic markers, anaemia and parasitemia biomarkers on children 6-30 months of age, and history of febrile illness and promptness and effectiveness of treatment in children under five years. Malawi possesses the anemia and parasitemia and indicator data for each year since 2005, has planned yearly surveys during the scale-up period, and is now positioned to rapidly scale-up interventions for impact. Anemia and parasitemia and indicator surveys serve the following purpose: to 1) monitor the rapid scale-up of interventions for impact, including new first-line treatment with ACTs; 2) provide an early window of coverage and usage successes and challenges, including the availability of the newly implemented ACTs for both rural and urban populations; and 3) evaluate the impact of the planned IRS pilot on morbidity in one of the eight sentinel districts.

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<sup>4</sup> This malaria indicator survey was slightly different from the RBM Monitoring and Evaluation Reference Group endorsed survey.

while the additional districts provide district comparisons including crucial trend data for all of the sentinel districts and regions.

Proposed USG Component: (\$500,000)

In the absence of reliable routine health information and surveillance systems, sentinel sites, linked with yearly household and health facility surveys (including anemia/parasitemia biomarkers), will provide essential information to guide malaria program management needed during scale-up of interventions. The following proposed PMI activities fill the gap for reliable routine malaria data used by the NMCP and were developed according to the national M&E plan.

- **Sentinel Sites:** An expansion and strengthening of the sentinel district and multi-site site system is crucial for the M&E system. At the community level, village registers have been approved for countrywide use in order to track community-level indicators; their consistent use and coordination with the NMCP can further enhance the M&E system. The NMCP and technical partners, with additional funding from GFATM, World Bank, and PMI are currently planning for the review of the sentinel district structure and surveillance plan and preparing for the strengthening of the districts and individual sites, including health facility and village sites. Expanded sentinel District and site support began in eight districts, as outlined in the 2007 PMI malaria Operational Plan. (\$250,000)
- **Anemia/parasitemia and indicator household survey:** PMI will continue to provide funding through CDC to the Malaria Alert Centre to conduct the Anemia/Parasitemia and Indicator Household survey. This household survey is conducted in eight sentinel districts (two north, two central, and four south) during the rainy season per recommendations by Roll Back Malaria Monitoring and Evaluation Reference Group. In addition to these activities, all-cause mortality data from DHS 2004 will be reviewed and additional baseline assessment data will be collected in selected health facilities and villages through the CDC partnership with the Malaria Alert Centre with technical assistance from CDC and WHO. (\$100,000)
- **Malaria entomology assessments, including resistance monitoring:** PMI will support entomological assessments including resistance monitoring in order to target and prioritize the appropriate mix of interventions for scale-up and monitoring and evaluation purposes. The entomology support will include support for vector assessments and entomological monitoring of the ITN/LLIN interventions and IRS pilot. This work will be conducted in the NMCP sentinel districts which also includes the district where the IRS pilot program is conducted. (\$150,000)
- PMI will 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. PMI team served on the writing and development team for the revised 2007 M&E Malaria Plan. (No additional costs to PMI – staff in-kind support and is covered under other PMI funding support categories.)



## **STAFFING AND ADMINISTRATION (\$1,360,000)**

Two health professionals have been hired to oversee the PMI in Malawi, one representing CDC and one representing USAID. In addition, one or more FSNs will be hired to support the PMI team. All PMI staff members will be part of a single inter-agency team led by the USAID Mission Director or his/her designee in country. The PMI team will share responsibility for development and implementation of PMI strategies and work plans, coordination with national authorities, managing collaborating agencies and supervising day-to-day activities.

These two PMI professional staff will work together to oversee all technical and administrative aspects of the PMI in Malawi 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 will report to the USAID Mission Director or his/her designee. CDC will supervise the CDC staff person technically and administratively. All technical activities will be undertaken in close coordination with the MoH/NMCP and other national and international partners, including the WHO, UNICEF, the GFATM, World Bank and the private sector.

The USAID Mission Director will approve locally-hired staff to support PMI activities either in Ministries or in USAID. Because of the need to adhere to specific country policies and USAID accounting regulations, any transfer of PMI funds directly to Ministries or host governments will need to be approved by the USAID Mission Director and Controller.

## **ANNEXES**

1. Table 1 - Timeline of Activities
2. Table 2 – Planned Obligations
3. Table 3 – Assumptions and Estimated Year 2 Coverage Levels
4. Table 4 – Budget Breakdown by Intervention
5. Table 5 – Budget Breakdown by Partner
6. Table 6 – List of CDC TA Visits



Table 2

**President's Malaria Initiative – Malawi  
Planned Obligations for FY08 (\$18,000,000)**

<b>Proposed Activity</b>	<b>Mechanism</b>	<b>Budget</b>	<b>Commodities</b>	<b>Geographic area</b>	<b>Description of Activity</b>
<b>PREVENTION</b>					
<b>ITNs</b>					
Purchase of LLINs	UNICEF	4,645,000	4,645,000	National	Procure 800,000 LLINs
Routine distribution of ITNs	PSI	495,000		National	Distribution of free LLINs to U5's and pregnant women via EPI and ANC clinics; time-limited campaigns, and community venues.
IEC/BCC to increase the correct and consistent use of ITNs	PSI	400,000		National	National IEC/BCC campaign to increase correct and consistent use of LLINs
Community-based ITN usage campaign	Basics	200,000		National	Community-based IEC/BCC campaign
<i>subtotal</i>		\$5,740,000	\$4,645,000		
<b>IRS</b>					
2nd round of IRS in Nkhotakota	IRS IQC	850,000	400,000	Nkhotakota District	Second round IRS of 50,000 Households in Nkhotakota district in

District					partnership with the private sector. See note
<i>subtotal</i>		\$850,000	\$400,000		
<b>IPTp</b>					
IPTp national scale-up through ANC	ACCESS	200,000		National	National scale-up of IPTp through ANC
Community IEC/BCC for scale-up of IPTp through ANC	ACCESS	100,000		National	National community-based IEC/BCC campaign to increase at least 2 dose coverage of SP and ANC attendance by late or non-attending pregnant women
National IEC/BCC campaign on scale-up of IPTp	PSI	150,000		National	National IEC/BCC campaign to increase IPTp through ANC
Small scale implementation of IPTi w/EPI	UNICEF	150,000			Continued support for IPTi implementation pilot
<i>subtotal</i>		\$600,000	0		
<b>Case Management</b>					
Improve diagnostic quality assurance and use of results (microscopy and RDTs)	New Diagnostics project	400,000		National	Strengthen malaria diagnostic quality assurance and assure that HCWs use the lab results
Procurement of ACTs	Deliver TO #3	6,450,000	6,450,000	National	Procurement of 9 months supply of first line ACTs

Supply Chain management technical support for CMS	SPS/DELIVER	750,000		National	Strengthen supply chain and logistics for malaria commodities and essential drugs, Pharmaceutical Regulatory authority
Outsourced ACT distribution	SPS/DELIVER	500,000		National	Support the distribution of ACTs through a parallel mechanism.
Refresher training and supportive supervision for health care workers	CDC/MAC	400,000		National	Work with the NMCP, health workers at health facilities to provide supportive supervision and follow-up trainings to assist with the implementation of ACTs
Community IEC/BCC for ACT usage	BASICS PSI	100,000 150,000		National	National community-based IEC/BCC campaign
Pharmacovigilance support	USP	100,000			Monitoring of adverse drug reactions and post market surveillance for counterfeit drugs in the private sector
<i>subtotal</i>		\$8,850,000	\$6,450,000		
<b>M&amp;E</b>					
Strengthen and expansion of Sentinel Sites for ongoing M & E activities	CDC/MAC	250,000		10 districts including health facilities and village sites	Strengthen SD to monitor malaria indicators, morbidity and mortality, including entomological vector assessment (including training on data collection and

					supportive supervision)
Anemia and Parasitemia indicator household survey	CDC/MAC	100,000		8 sentinel districts	Conduct an anemia, parasitemia indicator survey in 8 sentinel districts
Entomological monitoring, vector assessments, insecticide resistance monitoring	CDC/MAC	150,000			Entomological monitoring to support the NMCP sentinel district and site program
NMCP capacity building	CDC/MAC	100,000			Technical support for the NMCP for secretariat support, supervision support, and refresher trainings.
<i>subtotal</i>		\$600,000			
<b>Staffing and Administration</b>					
CDC /USAID	USAID	1,260,000			
TDY	CDC	100,000			
<i>subtotal</i>		\$1,360,000			
<b>TOTAL</b>		<b>\$18,000,000</b>	<b>11,695,000</b>	<b>65%</b>	

**Table 3**Assumptions:

Population of country (estimated 2008): 13.6 million

- Pregnant women: 5% of total population = 680,000 pregnant women
- Children <5: 17% of population = 2,312,000 children under five
- Approximate number of households = 2,720,000 households

Average number of malaria-like illnesses/treatment doses per year and LA cost per treatment

<b>Weight (kg)</b>	<b>Treatment doses</b>	<b>Unit Cost (\$)</b>	<b>Total Cost (\$)</b>
5-14	2,946,245	.45	1,325,810.20
15-24	448,242	.90	403,417.80
25-34	406,228	1.35	548,407.80
>34	2,592,492	1.80	4,666,485.60
	6,393,207	1.09	6,944,121.40

Assume one net per child under one and pregnant woman per year and additional ITNs needed to maintain high coverage in all of the under five population. 1.2 million replacement nets will be needed in 2008 to maintain high household coverage



<b>Intervention</b>	<b>Needs for 100% Nationwide Coverage over 5 Years*</b>	<b>Needs for 85% Nationwide Coverage over 5 Years*</b>	<b>Annual Needs to Achieve 100% Coverage</b>	<b>Needs to Achieve Year 2 PMI Targets</b>	<b>Year 2 Contributions</b>
IPTp (# of doses needed)	6,800,000 (# of pregnant women x 2 treatments x 5 years)	5,780,000 million SP treatments (# of pregnant women x 2 treatments x 5 years at 85 %)	1,360,000 doses needed (at 2 doses/woman)	<i>Target: 75 % of pregnant women receive 2 doses of IPT = 1,020,000 treatments</i>	No SP needed; provide support to FANC
LLINs	1.4 million LLINs per year to cover children under one and pregnant women + 1.2 million in replacement LLINs to achieve full coverage= 8.2 million LLINs	7 million LLINs (net gap x 5 years x 85 %)	3.0 million nets per year (beginning 2008)	<i>Target: 75% of children under one and pregnant women have a net 1.05 nets needed to maintain coverage</i>	PMI is providing 800,000 LLINs, other partners are contributing about 1.9 million in 2007
ACTs – children >9	# of estimated cases of malaria in children >9 per year x 5 years = 11.9 million treatments	# cases x 5 years x 85% = 10.115 million treatments	2.38 million treatments	<i>Target: 45% of children under 5 receive ACTs: 1.07 million</i>	PMI is procuring approximately 9 million doses or an 18 months supply between FY07 and FY08
ACTs – older children and	# estimated cases of malaria in older children/ year x 5 years = 15.6 million treatments	# of cases x 5 years x .85% = 13.31 million treatments	3.13 million treatments		

adults					
IRS	50,000 HH x 5 years 250,000 HHS	50,000 HHs x 5 x 85% = 212,000	50,000 HHs targeted for spraying	<i>Target: 80% of targeted HH to be sprayed = 42,500</i>	PMI expects to spray 50,000 houses through a second round of spraying in the target district of Nkhotakota District

**Table 4: Year 2 (FY08)  
Estimated Budget Breakdown by Intervention**

<b>Intervention</b>	<b>Commodities (%)</b>	<b>Non-Commodities (%)</b>	<b>Total (% of total budget)</b>
Insecticide-treated Nets	\$4,645,000 (81%)	\$1,095,000 (19%)	\$5,740,000 (32%)
Indoor Residual Spraying	\$400,000 (47%)	\$450,000 (53%)	\$850,000 (5%)
Case Management	\$6,450,000 (73%)	\$2,400,000 (27%)	\$8,850,000 (49%)
Intermittent Preventive Treatment	\$0 (0%)	\$600,000 (100%)	\$600,000 (3%)
Monitoring and Evaluation	\$0 (0%)	\$600,000 (100%)	\$600,000 (3%)
Administration	\$0 (0%)	\$1,360,000 (100%)	\$1,360,000 (8%)
<b>Total</b>	<b>\$11,495,000</b>	<b>\$6,505,000</b>	<b>\$18,000,000</b>

**Table 5****Year 2 (FY08) Budget Breakdown by Partner (\$000)**

<b>Partner Organization</b>	<b>Geographic Area</b>	<b>Activity</b>	<b>Budget</b>
UNICEF	Nationwide	Procure LLIN, support for IPTi pilot	\$4,795,000
CDC/MAC	10 Sites	Strengthen/expand sentinel sites, training and supervision, ANP survey, entomology, NMCP capacity	\$1,000,000
PSI	Nationwide	IEC/BCC campaign: nets, IPTp; ACTs, distribution	\$1,195,000
SPS	Nationwide	Pharmaceutical management; Support for ACTS	\$1,250,000
DELIVER TO 3	Nationwide	Procurement of ACTs	\$6,450,000
IRS IQC	Nkhotakota District	Support for IRS in 1 district	\$850,000
USP	Nationwide	Pharmacovigilance	\$100,000
BASICS	Nationwide	Community IEC for ITNs, IPTp and ACT	\$300,000
ACCESS	Selected districts	Introduction of FANC in selected districts	\$300,000
Staffing and Admin	Nationwide	1 USAID staff, 1 CDC staff, + CDC TDYs	\$1,360,000
Diagnostics RFA	Nationwide	QA, microscopy training, etc.	\$400,000

