

Additional funding for the President's Malaria Initiative has been allocated under a Continuing Resolution from Congress for the remainder of FY07. USAID Malaria Programs were allotted \$248 million (\$25 million above the President's 2007 request) to allow the Agency to expand its bilateral global malaria initiative activities from the current 3 countries to 7. Country programs will expand access to long-lasting insecticide treated bednets and indoor residual spraying, promote and support effective malaria treatment through the use of proven combination therapies; and increase prevention efforts targeted to pregnant women. With the additional funding FY 2007 Malaria Operational Plans (MOPs) will be updated. Revised MOPs will be posted soon.

PRESIDENT'S MALARIA INITIATIVE

Malaria Operational Plan (MOP)

MALAWI

FY 2007

December 4, 2006

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EXECUTIVE SUMMARY

Malaria is a major public health threat 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.

Malawi has made considerable progress scaling-up key malaria prevention and treatment activities. Because of its three-tiered insecticide-treated net (ITN) distribution strategy scaled-up nationally in 2002, 60% of households in Malawi own at least one ITN. It was also one of the first countries in Africa to implement intermittent preventive treatment of malaria in pregnancy (IPTp) and over 45% of pregnant women receive two doses of SP during pregnancy. The Ministry of Health is currently transitioning from SP to artemisinin-based combination therapy as the official first-line treatment policy. In addition, Malawi has strong existing sentinel sites for monitoring and evaluation of malaria control activities.

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%. In Malawi, the President's Malaria Initiative (PMI) will support existing National Malaria Control Program (NMCP) strategies and will coordinate closely with international and national partners to complement their funding and efforts. To achieve the goal and targets of the PMI in Malawi, the following major activities will be supported in year one of the Initiative:

1. Distribution of LLINs to vulnerable groups through ANC and under 5 clinics, community venues, and immunization clinics to increase net coverage. This will be accompanied by mass media and community-based interventions to increase correct use of ITNs;
2. Conduct IRS with effective insecticides in 20,000 households in Nkhosakota District;
3. Scale-up IPTp by providing additional training, job aids, and supportive supervision to ANC workers;
4. Support ACT policy implementation by strengthening logistics and distribution systems, retraining health workers, developing guidelines, and providing IEC;
5. Procure a one year supply of ACTs;
6. Conduct a nationwide malaria indicator survey to establish the PMI baseline; and
7. Improve the health management information system and the functionality of the sentinel sites.

The PMI will include a strong monitoring and evaluation component to measure progress against project goals and targets, to identify problems in program implementation, to allow modifications to be made efficiently if and when they are needed, and to confirm that those modifications are having their desired effect. This plan will be coordinated with the NMCP, the Global Fund for AIDS, Tuberculosis and Malaria, and other partners to standardize data collection and reporting.

This document presents a detailed one-year implementation plan for the first year of the PMI in Malawi. It briefly reviews the current status of malaria control policies and interventions in Malawi, identifies challenges and unmet needs if the targets of the PMI are to be achieved under the PMI. The MOP was developed in cooperation and consultation with the National Malaria Control Program and other stakeholders in a series of meetings between June – September 2006.

ABBREVIATIONS

ACT – artemisinin-based combination therapy
ADB- African Development Bank
ANC – antenatal clinic
AQ – amodiaquine
ARC – American Red Cross
AS – artesunate
BCC – behavior change communication
CDC – Centers for Disease Control and Prevention
CHAM – Christian Health Association of Malawi
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
EU – European Union
EHP – Essential Health Package
GDA – Global Development Alliance
The 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
IRS – indoor residual spraying
ITN – insecticide-treated net
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
NMTCC – 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
RHU – Reproductive Health Unit
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 2006 in three countries, Angola, Tanzania, and Uganda; four other countries, Malawi, Rwanda, Senegal, and Mozambique were added for the FY07. The PMI received \$30 million in FY06, and has requested \$135 million from the U.S. Congress in FY07. The projected budget in FY08 and FY09 is \$300 million and is \$500 million in FY10. The aim is to cover a total population of 175 million in up to 15 countries by 2010.

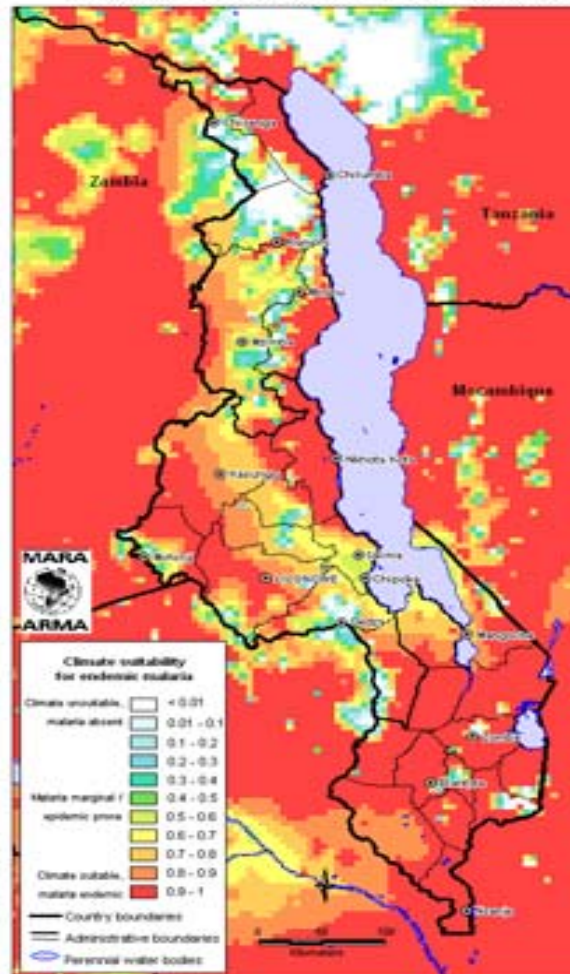
In implementing the PMI, the USG will work closely with host governments in the context of national malaria control strategies and plans. Efforts will be coordinated with other national and international partners, including the Global Fund to Fight AIDS, Tuberculosis, and Malaria (Global Fund), Roll 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 are achieved.

This document presents a detailed implementation plan for the first year of the PMI in Malawi, which was developed in collaboration with the Government of Malawi (GOM) and other stakeholders. 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 provides a description of proposed Year 1 (FY 07) PMI activities.

MALARIA SITUATION IN MALAWI

Malawi is a land-locked country in southern Africa with a population of about 12 million persons. It is one of the poorest countries in the world, with a gross domestic product (GDP) per capita estimated at US\$590 per year. Malawi faces many health problems, most notably, a recent famine in 2005 that resulted in rampant malnutrition in as much as 35% of the population. In 2005, the life expectancy was only 37.5 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 (MIM) / Special Programme for Research & Training in Tropical Diseases (TDR), Roll Back Malaria (RBM).
 Malaria distribution model: Craig, M.H. et al. 1999. Parasitology Today 15: 105-111.
 Topographical data: African Data Sampler, WRI, http://www.igc.org/wri/sdis/maps/ads/ads_idx.htm

Malaria is a major public health and economic problem in Malawi. Malaria is a disease that affects the poorest and keeps them poor. It prevents adults from working an average of 25 days per year, resulting 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 malaria¹.

The Ministry of Health (MOH) in Malawi estimates that there are approximately eight million episodes of malaria per year and this disease accounts 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. Anaemia, most of which can be attributed to malaria, is estimated to be responsible for about 40% of hospitalizations and hospital deaths in children under five

¹ Source: National Malaria Control Programme Strategic Plan 2005-2010.

(World Bank report 2000). Malaria is the number one cause of hospital admissions and the leading cause of death among children under five.

Children under five, pregnant women and those living with HIV/AIDS represent the most at-risk populations for malaria-related mortality. It is estimated that there are approximately 600,000 pregnant women and 2.14 million children under five in Malawi.

Malaria is transmitted throughout Malawi by the female anopheles mosquito. The peak transmission season follows the rainy season and is from December to May.

NATIONAL MALARIA CONTROL PLAN AND STRATEGY

The National Malaria Control Program (NMCP) was established 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 new 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, and is consistent with the Malawi Essential Health Package (EHP) that was 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: The current malaria treatment policy is to treat presumptively with SP (the first-line drug) all children under five and pregnant women with signs and symptoms of malaria. Since laboratory capacity is limited nationally regardless of age, most episodes of suspected malaria are treated presumptively in both the public and private sectors. Recently, the NMCP proposed to change the drug treatment policy for uncomplicated malaria from SP, which has become increasingly ineffective, to an ACT that has proven effective in many African countries.² Malawi implemented a drug change process plan in January 2005, which included drug efficacy studies of candidate combination treatments in order to obtain locally acquired evidence. The GOM will implement the new malaria drug policy countrywide in the fall of 2007.

IPTp for malaria in pregnancy: 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 as part of a comprehensive antenatal care (ANC) package. The policy states that the treatments should be at least one month apart and given under direct observation.

² While it has not been formally announced, it is expected that the first-line ACT will be artemether-lumefantrine

ITNs for individual mosquito vector control: Malawi supports an ITN delivery model with three distribution channels: highly subsidized distribution managed by health personnel through the antenatal health facilities for pregnant women and children under five (50MK/US\$0.33 per net), community-based distribution managed by District Health Management Teams (DHMT) for all family members (100MK/US\$0.66 per net), and private sector distribution through commercial channels for those with an ability to pay full price (MK550-780/\$3.86-5.20 depending on the net).

The health facility distribution channel began as a demonstration project in Blantyre District by the MOH, the U.S Centers for Disease Control and Prevention (CDC), and Population Services International (PSI), and was then adopted as a national model in 2002 in partnership with the MOH, The United Kingdom Department for International Development (DFID), the United Nations Children's Fund (UNICEF), the World Health Organization (WHO), the United States Agency for International Development (USAID), and other partners. ITNs are procured through UNICEF with DFID and Global Fund Round 2 financing (now provided through the SWAp basket funding mechanism beginning in 2005), distributed and marketed by PSI, and supported at district level by the District Health Management Teams. In addition to the model described above, Malawi is implementing a time-limited distribution of 660,000 free ITNs funded by the GF Rd. 2 in rural areas in order to increase access and coverage for the "poorest of the poor", under five children, and pregnant women.

As of September 2006, the ITN policy has changed to include long-lasting ITNs (LLINs). Available funding will determine how quickly Malawi can move to exclusive procurement and distribution of LLINs.

IRS for household mosquito vector control: The new malaria strategic plan includes exploring the feasibility of introducing IRS as a malaria prevention strategy. It includes limited IRS to determine the cost and operational feasibility in four rural sites. The African Development Bank is currently piloting a small-scale (approximately 2100 households) operations research study on the feasibility of IRS in two rural areas using pyrethroid insecticides. In addition, some private companies working on agricultural estates have been implementing IRS for some time in its workers' villages.

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 are 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.

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, and a proliferation of new multilateral and bilateral activities in these areas. It was created 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. This program is based on national policies and strategies developed by the Government of Malawi (GOM) together with interested parties and stakeholders.

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 US being one) may earmark all or a portion 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 out 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 5 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-run NMCP was integrated into the SWAp in 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 EHP. The new Malaria Strategic Plan (2005-2010), which has been costed at \$78.6 million, is now part of the POW. 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, 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.

Summary of Malaria Funding in 2004 (\$000)

| Source (2004) ³ | Program Mgmt (\$000) | Vector Control (\$000) | Case Mgmt (\$000) | Malaria in Pregnancy (\$000) | ESR ⁴ (\$000) | IEC (\$000) | M&E (\$000) | Total (\$000) |
|----------------------------|----------------------|------------------------|-------------------|------------------------------|--------------------------|-------------|-------------|---------------|
| MOH/MOF | 100 | | 10,900 | | | | | 11,000 |
| WHO | 75 | 10 | 25 | | 30 | 10 | | 150 |
| UNICEF | 154 | 4,140 | 415 | 163 | 20 | 70 | 62 | 5,024 |
| JICA | | 2,500 | | | | | | 2,500 |
| USAID/CDC ⁵ | 0 | 917 | 514 | 259 | | | 435 | 2125 |
| Total | 329 | 7,567 | 11,854 | 422 | 50 | 80 | 497 | 20,799 |

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, increase 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, mainly for the procurement of 1.2 million nets co-packaged with insecticide treatment kits of which 660,000 will be distributed for free to under five children and pregnant women in the “poorest of the poor” households. The rest of the planned activities have not yet commenced.

Artemisinin-based combination therapies are not funded in the existing Global Fund Round Two grant or under the SWAp, hence there is a gap between the need and the current commitment of resources to implement the drug change by November 2007.

The World Bank Malaria Booster program will provide 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.

Planned Major Donor Funding for 2006-2008

| | 2006 | 2007 | 2008 |
|--------------------------------------|------------------------|--------------------------|------------------------------|
| PMI | USAID only (2,045,000) | Year 1 (\$15 M-proposed) | Year 2 (TBD) |
| GFATM Rd 2 | Year 1 (\$9,844,244) | Year 2 (\$8,971,566) | Year 3 (If Phase 2 approved) |
| GOM/SWAp | \$21,428,571 | \$22,499,999 (planned) | \$24,624,249 (planned) |
| Other External Donors (UNICEF, WHO,) | \$2,150,000 | \$1,300,000 (planned) | \$900,000 (planned) |

³ Note: the Global Fund Round 2 Grant is not reflected in this table because disbursements did not begin until 2006.

⁴ ESR- Epidemic Surveillance and Response

⁵ USAID and CDC are discrete donors and they provide project support.

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 Five, \$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 leverage resources.

CURRENT STATUS OF MALARIA INDICATORS⁶

| Intervention | Estimated national coverage based on DHS 2004 | Estimated national coverage based on Household Malaria Survey 2004 |
|--|---|--|
| % of households with at least one net | 41.9 % | 43 % |
| % of households with at least one ITN | 27.4 % | 34 % |
| % of children under five receiving artemisinin-based combination therapy (ACT) | <1-2% | <1-2% |
| % of children under five who slept under an ITN the preceding night | 14.8% | 35.5% |
| % of pregnant women who slept under an ITN the preceding night | 14.7% | 31.4 % |
| % of pregnant women who received two doses of Intermittent preventive treatment (IPTp) | 46.5% | 46.8% |
| IRS coverage nationally | <1-2% | <1-2% |

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

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;

⁶ 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.

- 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 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 to be defined by each country team based on insecticide used, typical house construction, seasonality of transmission and resistance patterns.

EXPECTED RESULTS – YEAR ONE

Prevention:

- 50% of households with a pregnant woman and/or children under five will own at least one ITN.
- 50% of children under five will have slept under an ITN the previous night.
- 50% of pregnant women will have slept under an ITN the previous night.
- 60% of pregnant women will be receiving two or more doses of IPTp during their pregnancies.
- 85% of houses targeted in the IRS rural activity will have been sprayed and operational feasibility and total per household cost disseminated to the Ministry and PMI Interagency Committee for decision-making.

Treatment:

- Policy and guidelines, and training materials for the new first-line ACT drug will be developed and staff re-trained nationwide.
- ACTs for first-line treatment will be available in all health facilities in all districts nationwide during year one of the drug change plan implementation.

INTERVENTIONS – PREVENTION

Insecticide-treated nets (ITNs)

Background:

Malawi's ITN distribution program is one of the more successful in Africa in terms of coverage and results in recent years.

The GOM has a clearly articulated policy on ITNs. The key features of this policy include; 1) a commitment to increase access to ITNs for the most vulnerable populations (children under five years of age and pregnant women); 2) promotion and support for multiple distribution channels such as under-five and ANC clinics, community-based distribution and commercial outlets; and 3) regulation of the insecticides used to treat the nets through the Pharmacy, Medicines and Poisons Board (PMPB).

The MOH provides leadership and oversees policy formulation and implementation through the NMCP. Major partners that provide policy input, technical assistance and support include UNICEF, MSH, WHO, USAID, DFID, CDC, and PSI. Population Services International provides distribution and promotion of ITNs through MOH health facilities, as well as tracking and ensuring accountability and improving training capacity through existing government infrastructure. Management Sciences for Health works with the MOH to improve community distribution of subsidized nets through improved accounting, tracking, distribution, and promotion activities.

The GOM developed guidelines in 2002 for the distribution and management of ITNs. Under these guidelines, net distribution in Malawi is organized through three national distribution channels. The first provides highly subsidized ITNs (MK50/\$0.33 per net) through ANC and under five clinics with health staff retaining MK10 as an incentive to sell the ITNs. The second is a revolving fund initiative involving village health committees and community-level health personnel to provide subsidised ITNs at a cost of MK100/\$0.66 per net with the committees managing a revolving fund to support continued distribution. Thirdly, nets are 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 is 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, MSH, and CDC (technical assistance).

Malawi currently distributes conventional, untreated nets that are packaged (bundled) with K-O tab (brand name for deltamethrin insecticide by Bayer) insecticide treatment kits. Those targeted for ANC, under 5 clinics, and community channels are green, rectangular, and a bit larger than commercial nets. Those nets designated for commercial distribution are blue, conical, and a bit smaller than the subsidized nets. In a recent PSI survey, 77% of the ITNs found in the survey population were green nets purchased via the clinics and community distribution systems.

Malawi has also worked to improve net ownership among people living with HIV/AIDS. The Malawi Red Cross integrated distribution of LLINs into its HIV/AIDS home-based care programs in 2 Districts, and plans to involve 4,000 Red Cross volunteers in this activity during national scale-up. The Ministry of Health's malaria and HIV programs, National AIDS Commission, and CDC started implementing, as a pilot, the provision of free long-lasting ITNs at selected anti-retroviral sites in 2006 as part of the care package for clients. The next phase planned includes the expansion to other ARV sites,

the inclusion in home-based care kits, and provision through HIV counseling and testing sites. The National AIDS Commission and MOH HIV programme have committed to obtaining the funds for LLINs for this expansion.

Malawi has also explored distributing nets through routine childhood vaccinations. Beginning in 2006, a multi-agency partnership (Ministry of Health, Malaria Alert Centre, CDC, PSI, and the Red Cross) began to distribute free LLINs to children < 1 year who complete their recommended vaccination series, to mothers at immunization clinics who say their children are not currently sleeping under an ITN, and to pregnant women through ANC in two rural districts. This program was developed to test new methods of distribution to increase net coverage and usage among high-risk groups, particularly in rural areas and among the poor.

The GOM, as part of Southern Africa Development Commission (SADC) Malaria week, organizes yearly national re-treatment campaigns in November of each year prior to the peak malaria transmission season. Re-treatment is provided free to the general population. ITN re-treatment has increased from 7% (of all nets estimated in use) in 2002 to 61% in 2004 (NMCP 2004) and 59% in 2005. (NMCP 2005) The annual free re-treatment campaign is a good model for the re-treatment of conventional nets and offers an opportunity for health worker interaction with net users. Despite this campaign, approximately 40% of all the nets remain untreated.

In 2006, the NMCP modified the ITN policy to endorse LLINs for national distribution. The MOH plan is 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 addresses some of the behavioral factors that are barriers to correct treatment/re-treatment. Cost continues to be the major constraint that prevents MOH to move 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 longer lasting treatment costs \$1.50 to \$2.00 and LLINs cost \$5 to \$7. However, the additional cost of the LLINs may 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 initially. Many households do not use the proper amount of water and the correct procedure for drying the ITN is not followed, thus compromising the effectiveness of the treatment.

The ITN distribution models as described above, have together delivered more than two million nets in the past two years, the majority (77%) through the under five clinic and 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. However, it is estimated that at least 25% of these will need to be replaced in 2007. In FY 2007, approximately 1.8 million nets are expected to be available for distribution: 1.2 million from the Global Fund Round Two grant, 126,500 donated by the German Development Agency, 60,000 by Anglican Church, 20,000 by U.N. Millennium Project, 150,000 by PSI for the commercial sector, 90,000 by CDC Partnership with Malaria Alert Centre (private donor provided) and approximately 165,000 through the PMI jumpstart activity which will

be described below. It is estimated that at least an additional 300,000 nets are needed to meet both the demand for replacement nets that are wearing out and the need for new coverage nets in 2006/07.

Recent population-based data on net coverage are available from at least two sources: the 2004 Malawi DHS, and a 2004 survey by the University of Malawi Centre for Social Research funded by UNICEF for the NMCP with technical assistance and support from CDC. The DHS found that 1) 27% of households own an ITN; 2) 42% of households have at least one net of any kind 3) 34% of the households own at least one ever-treated mosquito net; 4) ITN ownership was higher among the urban areas, in the Northern Region, and among the wealthy nationally. Coverage data from the NMCP/UNICEF/CDC study were similar: net ownership of at least one net per household was reported to be 43% and 34 % with 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%.

Summary of 2004 Malawi DHS

| | Rural | Urban | Total |
|---|--------|--------|--------|
| Households with at least one Net | 39.1 % | 55.8 % | 41.9 % |
| Households with at least one ITN | 24.8 % | 40.5 % | 27.4 % |
| % of under fives who slept under an ITN the proceeding night | 12.4 % | 30.2 % | 14.8 % |
| % of pregnant women who slept under an ITN the proceeding night | 12.4 % | 29.8 % | 14.7 % |
| Green high subsidy nets (Public Sector) | NA | NA | 74 % |
| Blue commercial nets (Private Sector) | NA | NA | 21 % |
| Malawi Population Distribution | 84.1 % | 15.9 % | 100 % |

Because this data shows that rural populations may not be receiving nets (possibly due to the economic barrier posed by even the highly subsidized net sales through ANC, under five clinics, and the community), the MOH is going to use 660,000 of the 1.2 million Round Two-funded ITNs for free distribution to the poorest of the poor. PSI will distribute the balance of the Global Fund nets through the regular subsidized distribution to ANCs, under five clinics, and the community systems overseen by the district health management teams.

Gaps and Challenges:

Over the last year, approximately 1.4 million ITNs were sold through the three-tiered distribution system described above. Although 1.8 million ITNs are in the pipeline and expected to arrive in FY 2006/07, there is still a projected shortfall of at least 300,000 nets for Malawi FY 2006/07 to meet the existing demand for subsidized nets for ANC, under 5 clinics, and community distribution. This is because the 660,000 nets to be

provided by the Global Fund for free distribution to reach poor, underserved populations as noted above were originally programmed for distribution through the subsidized sales program. In addition, the SWAp has not committed to providing funding for additional ITNs.

The Malaria National 2004 survey found that only 31% of the poorest households owned at least one net while 88% of the wealthiest households owned at least one net. Among those households that owned nets, the average owned 2.5 nets. This implies that those who use nets have multiple nets and the increased distribution may not be covering only new households. In addition, approximately 25% of the ITNs in use will need to be replaced in 2007, thus this amount does not represent new coverage. The MOH is keen to explore the expansion of some of the various distribution methods listed above: i.e. free distribution to vulnerable populations and distribution through EPI clinics.

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 the net during the rainy season as compared to only 18% who reported that their children under five slept under a net year round. The NMCP wants to expand the use of community-based approaches through IEC campaigns to increase the correct and consistent use of ITNs. To date, NGOs and FBOs have not been utilized at scale to educate and mobilize communities on ITN usage.

Proposed USG Response (\$5,625,000):

1. The proposed early LLIN support activity using FY06 funds will be to procure 185,000 LLINs to supplement the distribution of 660,000 free nets from the Global Fund that will be distributed to the poorest of the poor households – targeting under five children and pregnant women. The PMI will procure LLINs to support the change from the use of conventional bundled nets to LLINs over the medium-term. The procurement of these LLINs will be funded using FY06 funding and are at no cost to PMI. PMI funding will be provided to aid the distribution of these LLINs and to further develop messages and strengthen the IEC efforts targeting proper year-round usage. (\$175,000)
2. PMI will procure approximately 810,000 LLINs in 2007 through UNICEF. These LLINs will be for distribution to the most vulnerable populations of under five children and pregnant women. They are expected to be available for distribution by October 2007 and will be distributed through ANC clinics, under five clinics, immunization clinics, and community venues. (\$4,788,800)
3. PMI will provide support for the management, distribution, and transport of the LLINs to under five children and ANC clinics, and community distribution through DHMTs and district local authorities. The PMI will support efforts to promote the correct and consistent use of ITNs through the on-going social marketing and BCC efforts now managed by PSI. The PMI will also work with the PACT NGO network to develop

additional behavior change and communication (BCC) efforts to promote proper net use through local NGOs, FBOs, and community-based organizations. (\$661,200)

4. PMI will support the MOH to test innovative approaches to strengthen LLIN distribution such as mobile distribution at scheduled community/village defined venues and through special campaigns linked to Vitamin A, de-worming and EPI activities. (No cost to the PMI)
5. PMI will support monitoring and evaluation activities related to ITN goals and ongoing vector assessments. (See M & E section for details)

Indoor residual spraying (IRS)

Background:

Until recently, IRS has 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." Current IRS activities in Malawi are limited to the private sector on estates growing agricultural products, and in two small activities funded by the African Development Bank (ADB).

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 ADB is currently supporting 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®). These ADB projects are being conducted as part of water improvement projects in two areas with high rates of malaria transmission. Spraying is being conducted in about 30 villages in areas south of the Vwaza Marsh and near Maloma, consisting of approximately 1,700 and 400 households, respectively. Spray teams were organized around health surveillance assistants (HSA), with IRS completed in 4 weeks using 12 spray teams in villages in the Vwaza Marsh area (20 structures per spray team per day), and in 2 weeks using 10 spray teams in villages near Maloma - - distance between households and early rains reduced spraying to 12 structures per spray team per day).

In addition, the ongoing private sector IRS program is being combined with the MOH ITN distribution model. Anecdotal information received by the assessment team indicates that IRS has been extended into some communities surrounding some of the private sector programs. There is potential to expand these efforts to other agricultural

production estates and extend coverage to more communities surrounding the estates depending on the malaria situation and private sector interest.

Currently, the Malawi NMCP does not recommend dichloro-diphenyl-trichlorethane (DDT) for IRS because of concerns regarding safety and leakage into the agricultural sector. Therefore, any PMI supported IRS program in Malawi will be based on pyrethroid insecticides until Malawi changes the current policy regarding DDT use. 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.

Gaps and Challenges :

While implementation of IRS using HSAs was successful in the pilot ADB programs, it has not been considered by the NMCP as a viable option for future spray programs because it was noted that the HSAs were unavailable to perform their core health care activities while working to support the IRS activities. However, as IRS is considered for expanded implementation, the use of community health workers recruited from their respective villages, with supervision and oversight by trained IRS staff could be considered.

The NMCP has worked with the private companies that are using IRS to protect their workers on the sugar estates. The mosquito control professionals at these companies are willing to share their experiences and participate in expanded IRS activities, including training and capacity-building with the NMCP.

Proposed USG Response (\$300,000):

1. One round of IRS is proposed in rural areas north and south of the Dwangwa Sugar Estates in Nkhosakota District to demonstrate applicability and feasibility, document costs, and determine personnel, management, administrative, and supervisory needs. This activity will be in partnership with the sugar estates and will include approximately 25,000 households (approximately 125,000 population) The PMI will support the spraying of 20,000 households and the sugar estate will spray the remaining 5,000 households. The Nkhosakota 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.

Based on this experience, the future role and any expansion of IRS as a major intervention in rural Malawi will be evaluated. The data collected from this activity will inform future decision-making on IRS. (\$ 300,000)

2. The PMI will support monitoring and evaluation activities of vector intervention assessments including the effectiveness and longevity of various insecticides on ITNs and traditional house walls, and to determine existing resistance levels. This activity is included in the M & E section.

Intermittent preventive treatment (IPTp)

Background:

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). Malawi was the site of important malaria in pregnancy studies in the late 1980s and early 1990s, and more recently in 2003-2004. These studies showed that prevention of placental malaria infection with two doses of sulfadoxine-pyrimethamine (SP) during the second and third trimester of pregnancy was linked with decreased maternal anemia and improved infant birth weight. Based on these and other studies in East Africa, which demonstrated the utility of IPTp with SP, in 1994, the NMCP introduced a policy that all pregnant women should receive two doses of SP (3 tablets as a single oral dose each time) as routine malaria prevention. The policy was last revised in 2002 and 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 (DOT)". 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.

In Malawi, most women receive their prenatal care at ANC clinics. The MOH sets policy, plans the strategy, trains health care workers, and monitors the ANC program. The NMCP supervises IPTp, including visits to CHAM facilities. CHAM delivers 30-40% of health care in Malawi but charges a fee for service and requires payment for drugs, thus potentially acting as a deterrent to access to IPTp. The GOM is in the process of signing service agreements with CHAM for provision of free EHP interventions. MSH works in eight districts in Malawi and is involved in providing support for IPTp activities, including training of ANC nursing and clinical staff, development of job aids, and procurement of basic materials such as buckets and cups for water for DOT.

MOH policy advises women to have a minimum of four ANC visits spread throughout the pregnancy. ANC attendance is high in Malawi. According to the 2004 DHS, 95% of women attend at least once and 57% attend four or more times. Similarly, a 2004 University of Malawi national survey found that 98% of women attended at least one ANC visit during their previous pregnancy, and 54% reported attending at least three times. However, only 8% of women attend in the first trimester.

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. Careful monitoring of IPTp in Malawi (and elsewhere) will be required to determine its continuing efficacy. Monitoring at sentinel sites through a sample of women delivering in health facilities will be required to assess placental infection rates in relation to number and timing of doses of IPTp with SP. The results of this monitoring should be used to review the existing policy and re-formulate it if necessary.

The NMCP and the Reproductive Health Unit (RHU) of the MOH work closely together in an integrated fashion to deliver IPTp in the ANC. The NMCP provides the training and supervision of ANC health care workers in delivery of IPTp. Training materials and job aids have been developed, but need to be produced in adequate numbers and disseminated. It was suggested by the RHU that this linkage could be improved by placing a Reproductive Health officer at the District level to work closely with district level malaria staff.

Gaps and Challenges:

Studies in Blantyre District found that important reasons for this relatively low coverage were: lack of clarity among health workers regarding proper timing of the second dose; lack of available water to take with SP as DOT; 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 to simplify correct dosage timing, and the development of 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).

National data on IPTp from the 2004 DHS show that: 1) 79% of pregnant women received one dose of SP during pregnancy; 2) 46.5% of pregnant women received at least two doses of SP through routine ANC visits; 3) most women who took SP during pregnancy received the drug during their ANC visits; 4) better educated women, urban and those living in households in the highest wealth quintile were more likely than other women to receive two doses of SP during pregnancy; and 6) the percentage of women who took at least two doses of SP during pregnancy was marginally higher in the northern Region (49 percent) than in the central and southern regions (46 percent).

The NMCP also intends to work with the HSAs, a cadre of community-based health care workers, to help encourage early ANC attendance and provide basic education on the importance of receiving IPTp during ANC visits. As of now, this activity is not part of the mandate of the HSA and would require that HSAs receive additional training.

The government through Central Medical Stores (CMS) purchases SP for IPTp. However, there have been periodic stock-outs of SP (see Case Management section) suggesting the need for improved supply chain management. While stock-outs of SP have plagued the system, the government has just procured a two-year supply of SP through the SWAp, which should ensure its availability in the short term. Although

Global Fund Round Two application requested funds for SP for IPTp, no funding was approved. Instead, the funds were reprogrammed into ITN procurement.

Proposed USG Response (\$640,000):

1. The CDC and MSH work described above showed that by simplifying the IPTp guidelines, providing job aides such as gestational wheels to simplify correct dosage timing, providing cups and water for DOTS, and developing IEC materials for both staff and patients, significantly increased coverage of IPTp. The PMI would support the scale-up of this approach. (\$300,000)
2. Support community-level BCC and outreach activities such as mass media campaigns and other community-mobilization activities to promote behavior change among pregnant women to increase earlier ANC attendance, and their understanding of the importance of IPTp. In addition, PMI will support the training of HSAs in IPTp promotion at the village level in order to increase coverage and to improve ANC attendance at the correct times. (\$300,000)
3. No SP will be procured with PMI funds, as the GOM currently has a two-year supply.
4. PMI will support drug efficacy monitoring of SP for IPTp in sentinel sites by determining peripheral and/or placental parasitemia at a defined interval after receiving SP for IPTp, or sampling women for peripheral or placental infection at the time of delivery and correlating status with IPTp history. (\$ 40,000)

INTERVENTIONS – CASE MANAGEMENT

Malaria diagnosis and treatment

Background:

Malawi was the first country in Africa to change from chloroquine to SP as its first-line drug for the treatment of uncomplicated malaria. The most important issue for malaria case management in Malawi today is the urgent need to change the first-line therapy, SP, due to parasite resistance. Quinine is reserved for use in cases of treatment failures of the first-line drug. 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.

As a result of this increasing SP resistance, the MOH has been exploring options to change the first-line treatment policy to combination therapy. Drug efficacy studies conducted in 2005 by MOH, CDC, and the Malawi Malaria Alert Centre established the efficacy of three candidate ACTs: artemether/lumefantrine , artesunate/amodiaquine, and artesunate plus chlorproguanil and dapsone (Lapdap®). The National Malaria Advisory Committee (NMAC) reviewed the data and considered other decision factors and recently made a recommendation to the MOH. Although it has not been formally

announced, it is expected that the MOH will designate artemether/lumefantrine as the new first-line anti-malarial drug with the change expected to be implemented in November 2007. The year delay in implementation is to allow sufficient time to procure the drugs, re-train health workers on the new drug policy, and improve pharmaceutical management systems. The assessment team could find no evidence that funding through the SWAp or other donor has been secured for the purchase of an ACT as the new first line drug. Furthermore, funds are needed to prepare for implementation of the new drug policy, and support its roll out throughout the country.

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 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.

In an attempt to deal with the serious shortage of health workers and to expand the availability of health services in rural areas, a new cadre of health worker, the HSA was created a number of years ago. The original target was to have one HSA serve a population of 2,000 to 2,500. Approximately 5,000 positions were authorized to be filled and funded by the GOM. Currently, 4,664 of the original HSA positions are filled and approximately 100 are vacant. There has been revived interest in this group as a means to reach out to the community, and the MOH has set a new target of one HSA to 1,000 population, or a total of about 12,000 HSAs to cover the entire country. Approved proposals for HIV/AIDS and malaria for Round Two of the Global Fund included support to recruit, train, and pay the salaries of 2,600 HSAs from the HIV/AIDS grant, and 2,400 in the malaria grant. The former will likely be occupied fully with HIV/AIDS testing and counseling at formal health facilities, but the latter will remain at the community level, and serve as generalists in community health. The GOM has been actively recruiting and training new HSAs to fill empty slots. This will bring the total number of community-based, generalist HSAs to 7,400. Another 5000 HSAs are needed to achieve the population coverage target set at the community level. There are concerns in Malawi that even with the addition of these new HSAs, they may not be able to manage all of the responsibilities in their scope of work at the community level; however in light of the severe human resource shortage, no other solutions seem feasible for large-scale expansion of community level malaria prevention and control.

Additionally, 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 proper quantifications of need, ordering, tendering, receipt, and storage, and the logistics of distribution. Currently, Central Medical Stores (CMS) handles the procurement, storage, and distribution of drugs to all government health facilities. In theory, the Christian Health Association of Malawi (CHAM) is supposed to receive drugs

from CMS. In practice, however, the lack of drugs available from CMS at central and district levels often forces CHAM to procure from the private sector. In addition, due to limited supply, drugs have been rationed to ensure that all facilities receive some amount of stock. As a result of these problems, use of historical information on drug distribution to calculate malaria disease burden is not reliable.

CMS currently is only able to supply 40% of the national requirement for drugs due to problems with management and procurement. Stocks for current tenders are expected to arrive in 2006 and will boost drug availability to 60%. Based on discussions at CMS, it is expected that a two-year supply of SP will arrive in country soon to alleviate recent drug stock-outs of the present first-line malaria treatment and to supply drugs for IPTp. Other anti-malarial drugs such as quinine are also in short supply.

Due to these recurrent problems with the drug supply, a Chicago-based firm, Glocoms, has recently been contracted to manage CMS to address both the current management issues as well as to prepare CMS to become a semi-autonomous trust. This trust will operate a revolving drug fund with district health assemblies buying drugs from it using government money. It is too early to determine whether the introduction of Glocoms will be able to address the inventory management problems currently being faced by CMS, which hamper the drug supply chain. Further efforts may be needed to support procurement, distribution, and quantification of ACTs and other malaria drugs.

Gaps and Challenges:

Limited information is available about the implementation plan for the new drug policy. In addition to planning for the procurement and distribution of the new drug throughout the country, the MOH, NMCP and its partners will need to prepare health workers and the general population for this change. The development of guidelines, training materials and job aides for health workers will be needed for the rollout of training of all front-line health workers. Health workers need to be fully cognizant of the proper use, control and oversight for the use ACTs. IEC and behavior change communication (BCC) for the community; sensitization and training for private sector pharmacies and possibly rural and urban shopkeepers on the new drug policy, proper prescribing practices, and oversight of the treatment, particularly at community levels will also be necessary. A comprehensive BCC strategy to reach the general population, with a focus on caregivers of children under five must also be developed and implemented by community-based organizations, NGOs and FBOs.

No funding has been secured yet for the procurement of the ACTs that has been chosen as the first-line drug for uncomplicated malaria. It is estimated that approximately 4.5 million treatments of artemether/lumefantrine will be needed annually in Malawi based on current consumption and morbidity data. The NMCP has requested that the PMI support a full year's supply of ACTs beginning in late 2007. The table below shows the quantification of the number of artemether/lumefantrine treatments needed.

| Annual projected artemether/lumefantrine need | | |
|--|---------------|-----------------|
| | Weight | Quantity |
| 1 tab/treatment | 5-14Kg | 631,800 |
| 2 tabs/treatment | 15-24Kg | 631,800 |
| 3 tabs/treatment | 25-34kg | 813,240 |
| 4 tabs/treatment | >34kg | 2,436,480 |

The change in treatment policy also will have implications for access to treatment. Although treatment is free in the public sector, a majority of individuals first treat fevers at home, using medicines purchased outside the formal health system. One study found that 72% of children brought to a health facility with fever had already been treated at home with either antipyretics or anti-malarials; however, only a small percentage had received both prompt and effective malarial treatment. Although pharmacies are generally found only in urban areas, the first-line anti-malarial drug (SP) is designated as an over-the-counter (OTC) product and is legally sold in many shopping centers and/or general shops in both urban and rural areas. These private sector outlets are thought to be a major source for anti-malarials taken outside the public sector. Following present policy, the new first-line anti-malarial will be designated as an OTC drug as well, but the high cost will make it too expensive for many people and likely limit its availability in the private sector, particularly in rural areas.

In order to ensure that children are treated for malaria within twenty-four hours of the onset of their illness, community-based treatment will be necessary. 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 who provide basic health services to the communities, 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 should be explored. It is expected that work in this area will begin in FY08.

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 is currently procuring an additional 60 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 community and health facility level in Malawi. The National Reference Laboratory, CDC, the College Medicine are currently developing a protocol for this evaluation. Based on the outcome, the NMCP and partners will determine whether they should be used, and how they can best be introduced into the system. Once the RDTs have been evaluated, further dialogue is needed to determine if their use is a cost-effective strategy to help ensure more appropriate use of the much more expensive ACTs, especially in light of the cost of the RDT itself.

The expected change in drug policy will also require increased quality assurance and post-market surveillance of the ACTs. 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 a 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. No factory audits have been done and the first audits are to be done starting in August 2006 for applicants in India.

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

Proposed USG Response (\$7,020,000):

1. The PMI proposes to support the MOH's request to fund the first 12 months of artemether/lumefantrine. The PMI agrees that this first-line drug change from SP to a highly efficacious ACT is the highest priority for 2007. (\$5,900,000)
2. Provide technical assistance to develop an ACT implementation plan; develop case management tools and training materials; provide support to re-train health workers nationally on the proper use of the new first-line drugs; and address existing pharmaceutical management issues. This package will be provided by both the Rational Pharmaceutical Management Project and CDC/Atlanta (\$620,000)

3. Support development and dissemination of IEC and BCC related to the new drug policy both via the community and through mass media. The PACT network will work with NGOs to provide community-level sensitization. PSI will conduct mass media campaigns to educate the public on the new policy. (\$ 300,000)
4. Together with the MOH and other partners, the PMI will develop a written strategy and plan for the use of RDTs at different levels of the health system and in different epidemiologic settings in the country. Based on the results of the operational evaluation, decisions will be made about procurement of RDTs and equipment and supplies for microscopy. Procure initial supply of RDTs for use in year two. (\$200,000)
5. With other partners' PMI staff will support a pharmacovigilance program for the introduction of the new first-line malaria drug. (No cost to PMI)

CAPACITY BUILDING WITHIN THE NATIONAL MALARIA CONTROL PROGRAM

Background:

The NMCP was established under the Directorate of Preventive Health Services within the Ministry of Health and is housed at the Community Health Sciences Unit (CHSU) 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 coordinates district-based malaria control activities under a District Health Officer who is the head of district health services.

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 NCMP 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.

Gaps and Challenges:

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 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 to be able to house PMI staff and other shorter-term technical assistance staff. In addition, the NMCP staffing pattern needs to be strengthened to support the program plans and activities. Specifically, the following officers are needed and should be located within the program: a) an M & E officer, b) an IEC/BCC officer, c) an administrative officer, and d) a data manager.

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 for the NMCP is very limited. The Malaria Alert Centre in partnership with the NMCP/MOH in collaboration with CDC, UNICEF, World Bank, and the WHO could strengthen this M & E capacity. The College of Medicine/Malaria Alert Centre already has a cooperative agreement with CDC for providing support to the MOH/NMCP for training, operational research, and monitoring and evaluation. This collaboration has begun but it could be strengthened with additional support. 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.

Proposed USG Response: (\$100,000)

1. The PMI will provide support to establish a secretariat to support the functions of the NMTC and the NPAC. By providing this support, the NMCP will receive better strategic guidance and will be able to provide more support to the district level to implement malaria control. This support will include direct staff support, financial support for the NMTC and NPAC to convene policy and guideline review meetings and resources to disseminate M & E and operational research findings e.g. RDT, MIS, and IRS activities. (\$100,000)
2. The PMI with other partners will assist the NMCP in documenting the NMCP space and staffing requirements. In addition, PMI will assist the NMCP in advocating for necessary funding to accomplish this unmet operational strategic need.

COMMUNICATION AND COORDINATION

Background:

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.

Proposed USG Response:

1. The PMI in-country technical team will provide support to the NMCP by participating in the NPAC, the NMTC, and the ICC. (No additional cost to PMI)

PRIVATE SECTOR PARTNERSHIPS

Background:

Several sugar and tea companies are operating vector control and malaria prevention programs in the communities on estates where their employees live. These programs are often on a small scale and just intended to cover employees working on the estates.

Potential Private Sector Partnerships:

As of now, there is no specific proposed USG private sector component to work with the PMI in Malawi; however, the PMI will explore in FY07 potential partnerships in country. Potential partnerships may include collecting more data on the extent and details of these vector control and malaria prevention programs, including the possibility of expansion to the tobacco, coffee, tea, and macadamia nut estates. The PMI team has visited Dwangwa Estates and discussed the IRS program on the estates. Dwangwa has agreed to work with Malawi PMI on possible training and expansion activities. The PMI can continue to learn details of insecticide use, costs, spraying cycles, mechanisms of delivery, and impact on malaria from the experience of these programs already in place. This will provide the opportunity to explore the possibility of entering into more formal partnerships to expand existing programs into additional communities surrounding but not actually on the estates, or offering to provide TA and ME assistance to the private programs in exchange for an agreement to expand coverage using private infrastructure. (No cost to PMI except as part of the PMI staff responsibilities)

SURVEILLANCE, MONITORING AND EVALUATION PLAN

Background:

Implementation of the current comprehensive and integrated Malawi Health Management Information System (HMIS) started in January 2002. It collects and

reports on 110 core indicators from the community, facility, district, and national levels. These core indicators have been selected in line with the implementation of the EHP, which is the centerpiece of the SWAp and the POW. Thirteen of the indicators deal directly or indirectly with malaria, including an indicator for children under five treated for malaria and two indicators on ITNs. However, there are no specific indicators for pregnant women treated for malaria, IPTp, or ITN coverage for children under five or pregnant women. HMIS previously collected IPTp data, but the quality and validity of the data was poor.

Other sources of information on malaria can be gathered from the Integrated Disease Surveillance and Response (IDSR), periodic surveys, including rapid assessments, operational research, and data collected from health facilities that have been selected as sentinel sites. The National Statistical Office (NSO) conducts the DHS every five years in Malawi; the latest DHS was completed in 2004. Other population-based surveys have also been commissioned in the past few years such as the malaria survey in 2004 funded by UNICEF, a national malaria survey, and an RBM baseline survey in 2001. In addition a Multiple Indicator Cluster Survey (MICS) is currently being conducted (July – November 2006). The MOH, with JICA's assistance, initiated a geo-referenced database on health facilities using Arc-View GIS. The database includes information on health facility and health worker distribution and some infrastructure-related information.

Intervention Coverage Reported from National Evaluation of 2004⁷

| 2004 (%) | Malawi | North | Centre | South | Urban | Rural |
|--|---------------|--------------|---------------|--------------|--------------|--------------|
| Appropriate prompt treatment of fever | | | | | | |
| Children less than 5 | 17.5 | 21.1 | 13.1 | 19.5 | 24.3 | 17.0 |
| Pregnant women | 13.5 | 21.6 | 12.5 | 11.0 | 17.5 | 12.9 |
| Use of ITNs | | | | | | |
| Children less than 5 | 35.5 | 42.9 | 31.8 | 37.1 | 54.4 | 31.9 |
| Pregnant women | 31.4 | 37.5 | 28.1 | 32.0 | 52.6 | 29.0 |
| At least 2 doses of SP for IPTp | | | | | | |
| Pregnant women | 46.8 | 42.9 | 47.9 | 46.0 | 57.2 | 44.7 |

The NMCP also has implemented a sentinel surveillance system that has monitored drug efficacy, malaria control interventions, mosquito susceptibility, and anemia and parasitemia. Six districts have been involved in the sentinel system for drug efficacy (Karonga, Lilongwe, Machinga, Mangochi, Nkhotakota, and Rumphi), eight districts have been involved in the sentinel system for monitoring malaria control indicators (Machinga, Mchinji, Mwanza, Nkhatabay, Nkhotakota, Nsanje, Ntcheu, Rumphi) six districts monitor mosquito susceptibility to insecticides (Chikwawa, Karonga, Lilongwe, Mangochi, Nkhotakota, Rumphi), and six districts are used to monitor anaemia and parasitemia in children between 6-30 months with additional malaria

⁷ Note: This was not the DHS.

intervention indicator coverage collected for household and the child (Blantyre, Chiradzulu, Lilongwe, Mwanza, Phalombe, Rumphi).

Gaps and Challenges:

The HMIS Unit of the MOH issues periodic bulletins that disseminate HMIS data and provide specific information on malaria by district. However, a number of weaknesses are noted: 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.

At the request of the NMCP, the Technical Working Group has begun to develop a comprehensive monitoring and evaluation plan for malaria in Malawi. The completion of this specific tool will complement the Malawi Five-Year Strategic Plan and assist in mapping and coordinating operational research and monitoring and evaluation activities of all malaria prevention and control partners.

It is likely that this M&E plan will include 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 PMI has adopted a general monitoring and evaluating framework that has been adapted to the context of each country. According to this framework, specific activities are monitored on a regular basis to allow in-country program managers to assess progress and redirect resources as needed. Activities within four main intervention areas, ITNs, IRS, IPTp, and case management with ACTs, will be tracked through periodic reports from groups providing commodities, health facilities, and international and local partners. Types of activities that will be monitored will include procurement and distribution of commodities, availability of commodities for prevention, diagnosis and treatment of malaria, health worker performance, IEC efforts, supervision and training for health care workers, and monitoring drug and insecticide efficacy and effectiveness.

The evaluation framework is based on the PMI goal to reduce malaria deaths by 50% and to achieve coverage targets with specific interventions over the course of the program. The framework is aligned with the standard methodology for malaria program evaluation that is being adopted and promoted by WHO Roll Back Malaria. Program evaluation will be based on coverage outcomes that will be measured at baseline, midpoint and the end of the Initiative, and impact on malaria mortality, which will be measured at baseline and the end of the Initiative. Information used to evaluate program outcomes and impact in PMI will be collected primarily through household

surveys of a representative sample of the national population. All-cause mortality and malaria-specific mortality in children under five (collected through verbal autopsies) will be interpreted together with data on anemia, parasitemia, available information on malaria cases and deaths reported from health facilities, entomological assessment findings, rainfall patterns, and PMI coverage indicators to consider changes in mortality at the population level that can be attributed to reductions in malaria over the course of PMI.

Proposed USG Response (\$565,000):

1. Malaria indicator surveys at household and health facility levels: The DHS 2004, the national malaria indicator survey of 2004, and the 2006 Multiple Indicator Cluster Survey (MICS) represent the major household surveys conducted in Malawi over the past 2 years. The next DHS may take place in 2009 with results available in 2010. The national malaria indicator survey of 2004 was planned to be conducted again in March/April 2007 at the household level in all districts, however, since the MICS is currently being completed in November 2006, it is not necessary to repeat this as previously planned. However, the biomarker household survey will be conducted as planned in a subset of sentinel districts. (\$ 115,000)

The following 2007 malaria indicator survey components will be conducted:

- a) Health Facility assessment in 8-10 districts;
- b) Anemia and parasitemia household survey and health facility survey as conducted in 2005 and 2006 in the same six districts; and
- c) Mortality data will be collected in selected districts and villages and compared to DHS 2004 all-cause mortality data. (costs in number 2 below)

The health facility assessment component A will be conducted directly by NMCP and district staff with assistance from technical partners including WHO, UNICEF, CDC, and Malaria Alert Centre. PMI will provide funding through CDC to the Malaria Alert Centre to conduct component B, the anemia, parasitemia survey in six sentinel districts, in April/May 2007 at both household and health facility levels. All cause mortality data from DHS 2004 will be reviewed and additional baseline assessment data will be collected in selected facilities and villages through the CDC partnership with the Malaria Alert Centre with technical assistance from CDC and WHO.

2. Data Collection in Sentinel Districts at both Health Facility and Community levels: An expansion and strengthening of the sentinel district and site system is crucial for the M&E system. The system would collect information on implementation of activities on malaria control and prevention, drug quality and efficacy, and vector and insecticide resistance. The strengthening of the HMIS at health facility and community levels in these sentinel sites could then be expanded to all districts as part of the overall HMIS strengthening using malaria as a focal disease. 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. Collaboration with the World Bank Booster Programme is essential. (\$250,000)

3. The PMI will support entomological assessments including mapping in order to target and prioritize the appropriate mix of interventions for scale-up and monitoring and evaluation purpose. The entomology support will include support for vector assessments and other M&E activities noted above. (\$200,000)
4. The PMI will work with the NMCP and technical partners, especially WHO, UNICEF, and the Malaria Alert Centre, and the M & E TWG to develop a comprehensive M & E plan for malaria. (No additional cost to PMI. It is covered under the support to the NMCP)

STAFFING AND ADMINISTRATION (\$750,000)

Two new health professionals will be 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. Candidates for these positions will be evaluated and/or interviewed jointly by USAID and CDC, and both agencies will be involved in hiring decisions, with the final decision made by the individual agency.

It is envisioned that 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. The CDC staff person will be supervised by CDC, both technically and administratively. All technical activities will be undertaken in close coordination with the MoH/PNLP and other national and international partners, including the WHO, UNICEF, the GFATM, World Bank and the private sector.

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

ANNEXES

1. Table 1 - Timeline of Activities
2. Table 2 – Planned Obligations
3. Table 3 – Assumptions and estimated Year 1 coverage levels
4. Table 4 – Budget Breakdown by Intervention
5. Table 5 – Budget Breakdown by Partner
6. 3-Year Country Strategy and Plan

Table 2
President's Malaria Initiative – Malawi
Planned Obligations for FY07 (\$15,000,000)

| Proposed Activity | Mechanism | Budget (<i>commodities</i>) | Geographic Area | Description of Activity | Relation to Interventions |
|--|------------------|---|------------------------|--|----------------------------------|
| PREVENTIVE ACTIVITIES | | | | | |
| LLINs procurement | UNICEF | \$4,788,800 (\$4,788,800) | National | Procure approximately 810,000 LLINs to distribute in ANC Clinics (pregnant women and children under five) and for free distribution through mass campaigns (EPI) | ITN |
| Procurement of LLINs for the poorest of the poor for the jumpstart | UNICEF | No cost to PMI \$1,086,000 FY06 funds | National | Procure 185,000 LLINs | ITN |
| Distribution of LLINs to the poorest of the poor for the jumpstart | PSI | \$175,000 | National | Distribute nets to poorest of the poor | ITN |
| LLIN distribution and IEC on LLINs | PSI | \$561,200 | National | Support PSI distribution at ANC clinics and mass media communication on correct and consistent use of nets | ITN |
| IEC and community mobilization on | PACT | \$100,000 | National | Implement IEC campaigns at community level | ITN |

| | | | | | |
|---|--|--|-------------------------------------|--|-----------------|
| correct and consistent use of LLINs | | | | | |
| Community IPT, training of HSA in IPTp | New Malaria Cooperative Agreement Procurement | \$300,000 | National | Provide job aids, clear policies, and gestational wheels etc to ANC worker | IPT |
| IEC for IPTp and ANC attendance | HCP/ New Malaria Cooperative Agreement Procurement | \$300,000 | National | Implement Information, Education, and Communication campaigns at community level | IPT |
| Drug efficacy monitoring for SP in IPTp in sentinel sites | CDC/ Malaria Alert Centre | \$40,000 | National | | M&E |
| IRS pilot among 20,000 households | IRS IQC | \$300,000 (\$155,000) | 1 District (Nkhotakota District) | Implement IRS to demonstrate applicability and feasibility, document costs, and resolve personnel, management, administrative, and supervisory issues. | IRS |
| SUBTOTAL: Preventive | | \$6,565,000 (\$4,943,800) | | | |
| CASE MANAGEMENT ACTIVITIES | | | | | |
| ACT procurement | UNICEF | \$5,900,000 (\$5,900,000) | National | Procure 12 months of new ACTs | Case Management |
| New drug policy support | RPM+ | \$600,000 | National | Provide technical assistance to NMCP (quantification, procurement plan, roll out) | Case Management |
| | CDC | \$20,000 | | | |

| | | | | | |
|---|--------------------------------|---------------------------------------|----------------|--|-----------------|
| | | | | plan, health worker training, development of training curriculum, etc) | |
| IEC for new drug policy | PSI PACT | \$150,000 \$150,000 | National | Implement mass media campaign to support roll out of new ACT drug policy in the community | Case Management |
| Procure Rapid Diagnostic Test kits | UNICEF | \$200,000 (\$200,000) | National | Procure RDTs for use in year 2 | Case Management |
| SUBTOTAL: Case Mgmt. | | \$ 7,020,000 (\$6,100,000) | | | |
| MONITORING AND EVALUATION | | | | | |
| Health facility assessment | CDC / Malaria Alert Centre | \$30,000 | 8-10 districts | Technical assistance on health facility assessment and biomarker component | |
| Anemia and parasitemia SD component | CDC/ Malaria Alert Centre | \$85,000 | 6 districts | | |
| Capacity building of HMIS | CDC/Malaria Alert Centre | \$250,000 | National | Strengthen SD HMIS to monitor malaria indicators, morbidity and mortality (including training on data collection and supportive supervision) | M&E |
| Malaria entomology assessments, transmission mapping and resistance | CDC/Malaria Alert Centre /NMCP | \$200,000 | National | Conduct entomological and epidemiological assessments (including | M&E |

| | | | | | |
|---|-------|---|---|---|----------|
| monitoring | | | | resistance monitoring, supervision/monitoring) | |
| SUBTOTAL: M&E | | \$ 565,000 | | | |
| IN-COUNTRY MANAGEMENT AND ADMINISTRATION | | | | | |
| USAID PMI in-country Staff | USAID | \$300,000 | | USAID PSC salaries and benefits, travel, equipment, and local support costs and the cost of local staff | Staffing |
| CDC PMI in-country staff | CDC | \$450,000 | | CDC technical advisor salaries, benefits and support cost for FY06 and FY07 | Staffing |
| SUBTOTAL: Mgmt. and Admin. | | \$750,000 | | | |
| OTHER | | | | | |
| Support for NMCP | CDC | \$100,000 | | Provide support to NCMP for Secretariat and build capacity | |
| SUBTOTAL: Other | | \$100,000 | | | |
| GRAND TOTAL | | \$ 15,000,000 (\$11,043,800) | <i>Commodities represent 73.6% of total budget</i> | | |

Table 3

Name of Country – Year 1 Targets Assumptions and Estimated Year 1 Coverage Levels

Assumptions:

Population of country (estimated): 12,000,000

Pregnant women: 5% of total population = 600,000 pregnant women

Children <5: 17% of population = 2,040,000 children under five

Average number of households=2.72 million

Average number of malaria-like illnesses per year and cost per treatment:

Children <5: 1,465,703 illnesses/year at \$0.45 each

Older children/adults 3,419,975 illnesses/year at \$1.35 each)

Average of 2.5 nets/household needed to cover all pregnant women and children under five in a family.

| Intervention | Needs for 100% Nationwide Coverage over 5 Years* | Needs for 85% Nationwide Coverage over 3 Years* | Annual Needs to Achieve 100% Coverage | Needs to Achieve Year 1 PMI Targets | Year 1 Contributions |
|---|--|---|--|---|---|
| IPT | 600,000 pregnant women x 2 treatments/woman = 1.2 million treatments/year x 3 years = 3.6 million treatments | 3.1 million SP treatments | 1.02 million SP treatments | Target: 60% of pregnant women receive 2 doses of IPT = 612,000 treatments | MOH-2.4 million SP treatments procured Sufficient SP available through other partners |
| LLINs | 2.72 million households x 2.5 nets/household = 6.8 million nets | 5.78 million LLINs | 1.520 million LLINs (50% of households currently have 1 net) | Target: 50% of children under 5 and pregnant women sleep under LLIN | 725,000 LLINs (1.4 M procured via the GF RD 2) |
| ACTs – children < 5 ACTs – older children and adults TOTAL | 2.04 million children under 5 x 0.57 episodes/year = 1.2million treatments/year x 3 years = 3.6 million 10.06 million persons x 0.34 episodes/year = 3.41 treatments/year x 3 years = 10.26 million 13.86 million treatments | 1.2 million x 85% = 1.02 million treatments x 3 yrs = 3.1 million 3.41 million x 85% = 2.89 million tx x 3 yrs. = 8.69 million 17.45 million treatments | 1.2million treatments 3.41 million treatments | Target: 60% of children under 5 receive ACTs | PMI will procure 1.3 million treatments for children under five (under 24 kg) 2 million treatments for persons older than 5 (above 24 kg) |
| IRS | | 20,000 Households | 20,000 Households | Target: 85% of targeted houses to be sprayed 21,250 households to be sprayed | 20,000 households targeted to be sprayed, and year one target will be met. 43 |

Table 4: Year 1 (FY07) Estimated Budget Breakdown by Intervention

| Area | Commodities (%) | Other (%) | Total |
|-----------------------------------|-------------------------|----------------------|-----------------------|
| Insecticide-treated Nets | \$ 4,788,800 (85.1%) | \$836,200 (14.9%) | \$5,625,000 (100%) |
| Indoor Residual Spraying | \$155,000 (51.7%) | \$145,000 (48.3%) | \$300,000 (100%) |
| Case Management | \$6,100,000 (86.9%) | \$920,000 (13.1%) | \$7,020,000 (100%) |
| Intermittent Preventive Treatment | \$0 (0%) | \$640,000 (100%) | \$640,000 (100%) |
| Monitoring and Evaluation | \$0 (0%) | \$565,000 (100%) | \$565,000 (100%) |
| Administration | \$0 (0%) | \$850,000 (100%) | \$850,000 (100%) |
| Total | \$11,043,800 | \$3,956,200 | \$15,000,000 |

Table 5**Year 1 (FY07) Budget Breakdown by Partner (\$000)**

| Partner Organization | Geographic Area | Activity | Budget |
|---|------------------------|---|---------------|
| UNICEF | Nationwide | Procure ITNs, ACTs and RDTs | \$10,888,800 |
| CDC | Nationwide | M&E, entomology, build NMCP capacity | \$1,175,000 |
| PSI | Nationwide | Distribution of LLINs, mass media on new drug policy | \$886,200 |
| RPMplus | Nationwide | Pharmaceutical management and implementation of new drug policy | \$600,000 |
| PACT | Nationwide | Community mobilization through CBOs on ITN and new ACT | \$250,000 |
| IRS IQC | NKhotakota District | IRS | \$300,000 |
| New Malaria Cooperative Agreement Procurement | Nationwide | Support for Scale-up of IPT | \$600,000 |

Appendix 2
PRESIDENT'S MALARIA INITIATIVE
Three-Year Strategy and Plan for Malawi
FY07-FY10

I. GOAL AND TARGETS OF THE PRESIDENT'S MALARIA INITIATIVE (by 2010)

Malaria is a major public health problem in Malawi, especially among pregnant women and children under the age of five years. The Malawi Ministry of Health (MOH) estimates that over the past five years there have been more than eight million episodes of malaria per year. Malaria accounts for over 40% of all outpatient visits and the 2003 HMIS report indicated that between 250,000 – 350,000 malaria outpatient cases were reported monthly by the health facilities throughout the country. Anemia, most of which is attributed to malaria, is estimated to be responsible for about 40% of all hospital deaths in children under five.

In July 2005, the United States Government announced a new five-year, \$1.2 billion initiative, the President's Malaria Initiative (PMI), to rapidly scale up malaria prevention and treatment interventions in high burden countries in Sub-Saharan Africa.

In response to this situation, the U.S. Mission in Malawi⁸, in collaboration with the Government of Malawi, is applying the strategic approaches, principles and resources of the PMI to reduce current malaria-related mortality by 50%. As a partner in the National Malaria Control Strategy, designed to respond effectively to the malaria situation in Malawi, the PMI will contribute significantly and rapidly to help transform Malawi into a nation whose citizens are actively seeking and accessing malaria services. This will be achieved through proven preventive and therapeutic interventions including insecticide-treated nets (ITNs), intermittent preventive treatment (IPT) of pregnant women, indoor residual spraying (IRS) and artemisinin-based combination therapies (ACTs).

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 have ACTs available for treatment of uncomplicated malaria; and
- 85% of children under five with suspected malaria will have received treatment with an anti-malarial drug in accordance with national malaria treatment policies within 24 hours of onset of their symptoms.

⁸ USG agencies include the US Agency for International Development (USAID) and the Centers for Disease Control and Prevention (CDC).

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

II. PREVENTION

Insecticide-treated Nets

Based on the DHS an estimated 42% of households own nets in Malawi. To achieve 85% coverage of the target population, the country needs approximately two nets per household. With an estimated 2.7 million households, at least 5.4 million nets are needed. Currently there are close to 2.5-3 million nets in Malawi resulting in a gap of over two million. In 2007, approximately 25% of the nets currently in use will need to be replaced in addition to the nets needed for new coverage.

There are three national models responsible for the distribution of the majority of nets in Malawi. These different models target vulnerable and poor populations, in addition to those with higher incomes. The first model provides highly subsidized ITNs (MK50/\$0.36) through ANC and under five clinics with staff receiving an incentive to sell the ITNs. The second model consists of a revolving fund initiative involving village health committees and other community agents, again at a subsidised cost (MK100/\$0.71). Finally, nets are also sold through the commercial sector to the general population at full price (MK550-780/\$3.86-5.54).

This overall strategy is implemented via a partnership between the National Malaria Control Program (NMCP), UNICEF (ITN procurement agent), USAID supported PSI (primary distributor and social marketer), the Malawi Health Sector SWAp (Sector Wide Approach) and WHO and CDC (technical assistance). Through this approach, PSI sells approximately 1.2 million nets annually.

Beginning in 2006, a multi-agency partnership began distributing long-lasting insecticide treated nets (LLINs) to children less than one year old who complete their recommended vaccination series, to mothers bringing their children for vaccination who are not currently sleeping under a net and to pregnant women through ANCs in two pilot rural districts. The NMCP has adopted the use of LLINs.

Through the Round Two Global Fund grant, 4.1 million conventional ITNs and 8.25 million KO-tab re-treatment kits will be purchased over the next five years, with the first shipment of 1.2 million nets arriving in Year 1, September 2006. Of these 1.2 million nets, approximately half (660,000) will be distributed directly to the poorest of the poor who have not had access to the highly subsidized nets available through the national models described above. The net re-treatment kits come bundled with the ITNs and are also used in the annual SADC re-treatment campaign that takes place in November.

The **rapid scale-up** of effective ITN coverage is an urgent priority for the USG. The PMI strategy over the next three years takes advantage of the many excellent programs already established by the NMCP partnership and works to expand coverage rapidly.

Proposed USG Strategy:

- 1) The PMI will purchase 700,000-1,000,000 LLINs annually to rapidly increase and help maintain the coverage, especially targeting children under five years and pregnant women.
- 2) Health promotion and distribution networks, supported by FBOs and CBOs, will be expanded to improve IEC focusing on the need to sleep under an ITN every night of the year and to reach the poorest of the poor.
- 3) Support will also be given to the NMCP to advocate for and obtain additional funds through SWAp and other funding opportunities to completely phase-out the conventional nets while switching to LLINs.
- 4) The PMI will support the annual net re-treatment campaigns and help provide long lasting re-treatment kits to bring longer protection for the many conventional ITNs remaining in circulation. Beginning in year two, the PMI may support the procurement of long-lasting re-treatment kits for these re-treatment campaigns.

Intermittent preventive treatment (IPTp)

In Malawi, most women receive their prenatal care at ANC clinics. According to the 2004 DHS, 79% of pregnant women received one dose of SP during pregnancy to prevent malaria and 43% received the complete course of IPTp (at least two doses of SP) as part of their routine ANC visits. A key challenge in Malawi continues to be increasing the number of pregnant women receiving a complete course of IPT, especially among uneducated, poorer women and those living in rural areas. Research conducted by CDC has also indicated that increased health provider training and the provision of clear, concise IEC materials and job aides to both staff and patients is an effective intervention for increasing the proportion of women receiving a complete course of IPTp.

The Round Two Global Fund grant is addressing these challenges with a specific focus on scaling up access to IPTp services. As part of the proposal, the NMCP will procure 20% of the total SP needs for IPTp in the country, in addition to providing in-service training to over 300 health workers semiannually on the correct administration of IPT. The remaining amount of SP needed in the country will be covered through a large procurement financed through the SWAp; ensuring sufficient supplies through 2008. Through these two interventions, the NMCP expects to achieve 60% coverage of IPT.

Proposed USG Strategy:

- 1) The PMI will work with the NMCP to develop a comprehensive long-term IEC and BCC strategy and plan for IPTp in the community that will work to rapidly improve awareness of the importance of IPT during pregnancy.

- 2) The PMI will also support the scale-up of the approach implemented by CDC to simplify the IPTp policy to increase health worker compliance. This will include providing job aides such as gestational wheels to simplify correct dosage timing, providing cups and water for DOTS, and developing IEC materials for both staff and patients.
- 3) In year three the PMI is prepared to support the procurement of additional SP should there prove to be a gap in coverage.
- 4) PMI will also support the monitoring of the efficacy of SP for IPTp that began in year one.

Indoor residual spraying (IRS)

Until recently, IRS was not considered to be a viable vector control strategy in rural areas of the country where the burden of disease is the highest year round. Malawi is now in the process of giving serious consideration to this method of prevention and has proposed the introduction of IRS in well-defined rural areas to assess the feasibility, document resources needed and to train teams for an appropriate response to serious outbreaks of malaria. In addition to limited use in the private sector, specifically on tea and sugar estates, the African Development Bank (ADB) is currently supporting two small scale (~2,100 households) pilot studies with a focus on the operational costs and feasibility of IRS in rural areas. These pilot studies are being conducted in two areas with high rates of malaria transmission using teams organized around Health Surveillance Assistants (HSA).

Recognizing IRS as a key preventative strategy in combating malaria, the PMI will assist the NMCP in exploring the strategic use of IRS as an effective means of malaria prevention.

Proposed USG Strategy:

- 1) After reviewing the pilot programs established under the ADB and PMI in Year 1, the PMI will work with the MOH to determine if expansion is operationally feasible and cost-effective in rural areas. Efforts will be made to partner with local Malawi business and professional organizations for implementation to build in-country capacity. Results from these targeted efforts will form a reliable database on current and future operational costs, household acceptance, and overall feasibility and training requirements.
- 2) The PMI will work with the MoH to develop a long-term appropriate strategy for the use of IRS in Malawi. It is expected that the use of IRS will increase in years two and three.

- 3) The PMI will collaborate with sugar, tea and other companies in order to capitalize on their experience in the use of IRS and ITNs and advocate for an expansion of their strategies to other private sector companies.

III. TREATMENT

Case Management

Malawi is in the process of adopting Coartem and Quinine as the first and second-line medicines of choice for treatment which should have a dramatic impact on the malaria burden in the country. An estimated 4.5 million treatments of artemether/lumefantrine will be needed per year to cover the need from the health center level and above. Under the Round Six Global Fund proposal, the NMCP is planning to purchase enough artemether/lumefantrine to cover 80% of the projected doses beginning the second year of the grant. If this grant is approved, the funding for artemether/lumefantrine will likely begin in 2008. In the meantime, the PMI will fund the first year of procurement of this ACT.

Treatment is free in the public sector and the national policy is to provide presumptive treatment to vulnerable populations and microscopic diagnosis for malaria among children older than five, non-pregnant women and men who present signs of uncomplicated malaria at a facility with laboratory diagnostic capabilities. 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. Under the Round Two Global Fund grant, UNICEF is purchasing an additional 60 microscopes and the necessary reagents to increase diagnostic capacity at the health center level annually for the next five years.

Strong support is needed to help the NMCP successfully implement their new drug policy, to strengthen existing pharmaceutical management systems, and to improve the diagnostic capabilities of laboratory facilities. The PMI will be a primary partner to the NMCP through the provision of financial, technical and programmatic assistance.

Proposed USG Strategy:

1. In year one, the PMI will support the implementation of the new policy by procuring a 12-month supply of artemether/lumefantrine. The NMCP will explore potential funding through the SWAp and other donors to purchase artemether/lumefantrine beyond the first 12 months of implementation.
2. In the first year, the PMI will provide comprehensive technical assistance to facilitate the change to artemether/lumefantrine. This includes the re-training of health workers on the new drug policy, supporting the quantification and procurement of the drugs, developing a distribution plan, and implementing a supportive IEC plan. The national malaria policy, treatment guidelines and training manuals will be revised and job aids developed, printed and distributed. In subsequent years, the PMI will continue to provide support for the supervision of health workers, and retraining as needed.

3. The PMI will also work with the private sector to ensure that ACTs are being used consistently and appropriately. Given that the majority of individuals self-treat through the private sector, the BCC strategy will also include sensitization and training for the workers in private sector pharmacies and possibly even rural and urban shopkeepers on proper prescribing practices and oversight of treatment, particularly at community levels.
4. During the first year of the PMI, using existing funding, the NMCP and Malaria Alert Centre in conjunction with CDC plans to evaluate the effectiveness of rapid diagnostic tests (RDTs). In year one, \$200,000 will be used to purchase a limited supply of RDTs for use in year 2. In subsequent years, the PMI may support the scale-up of RDT use at the lower level health facilities and community level.
5. Once the implementation of ACTs at the health facility level is complete, the NMCP has expressed interest in including ACTs a part of their community-based integrated management of childhood illness (IMCI) program, which uses community health workers called Health Surveillance Assistants (HSAs). The PMI may support the implementation of ACTs at the community-level by conducting a public health evaluation of community-based IMCI with ACTs, followed by support for the scale-up of this approach. This may include support for the re-training of HSAs, IEC, and supportive supervision.
6. In years two and three, the PMI will support monitoring of drug resistance of Coartem and evaluate promising, newer anti-malarials through sentinel surveillance drug efficacy testing.

IV. SURVEILLANCE, MONITORING AND EVALUATION PLAN

The comprehensive and integrated Malawi Health Management Information System (HMIS) collects and reports on 13 indicators that deal directly or indirectly with malaria, including an indicator for children under the age of five treated for malaria, and two indicators for ITNs. The NMCP conducted a Roll Back Malaria baseline survey in eight districts in 2001 using 17 core and 31 supplementary indicators. A second survey was completed in 2004 in addition to the DHS which is conducted every five years.

Proposed USG Strategy:

1. A sentinel district bio-marker malaria household and health facility indicator survey will be conducted in April/May 2007 with additional survey components addressing health facility programmatic and quality of care. In addition to these surveys, the DHS 2004, the UNICEF 2006 MICS, and routinely collected health information, will serve as the baseline for PMI.
2. Support will also be provided to improve the HMIS to ensure that crucial information on malaria control and prevention; drug efficacy monitoring; and

vector and insecticide monitoring will be collected. The strengthening of the HMIS at health facility and community levels in these sentinel sites will also be a priority with the goal of expanding to all districts. At the community level, village registers including mortality data will be used to improve both morbidity and mortality data available for monitoring and evaluation.

3. Entomological activities including vector assessments, insecticide resistance monitoring and mapping will be conducted routinely in order to improve targeting and prioritizing of appropriate mixes of interventions for scale-up in different epidemiological areas. The PMI will also seek to strengthen institutional monitoring and evaluation capacity within the NMCP linked to other local institutional partners like the Malaria Alert Centre/College of Medicine.

V. SUSTAINABILITY

The Malawi/PMI's framework for sustainability addresses three major components: human resources development, targeted systems strengthening, and financial resources planning, mobilization and management. Each of these components is a critical pillar of sustainability and will be strengthened throughout the course of the Initiative.

1. Human Resources Development - Strengthening Management and Technical Capacity: The implementation of the PMI will result in the transfer of technical knowledge, management and implementation skills to local partners including the NMCP, NGOs, community- and faith- based organizations, health workers and private sector partners.

2. Financial Resource Planning and Management: Financial sustainability will be one of the most challenging issues to address. The PMI will assist Malawi with financial resources planning, and management that will provide a solid foundation for long- term financial sustainability. Elements include: 1) determining cost-effective approaches to service and commodity delivery; 2) improving service efficiencies and reducing costs over time (e.g. community initiatives to support cost-sharing); 3) facilitating and increasing the engagement of the private sector and development of public-private partnerships (e.g. contracting out) to efficiently deliver and expand services and commodities; and 4) assisting the GOM and the MOH to mobilize resources and expand their funding sources (including collaboration with ongoing funding sources, e.g. the Global Fund, etc.). In addition, the PMI will support capacity building and the introduction of systems that will improve financial tracking and analysis for all malaria partners including the NMCP. It is important that the NMCP be able to do cost interventions and develop realistic budgets and proposals, and that partners are able to monitor and report on financial expenditures.

3. Facilitating Public Private Partnerships: A majority of the population with uncomplicated malaria self-medicates first before consulting a qualified health professional. Their preferred sources of anti-malarial medicines are drug shops, drug

vendors and leftovers from previous treatments. The private for-profit sector (pharmacies and drug vendors) play a significant role in malaria control providing much of the malaria treatments. The PMI will encourage and support the government to partner with NGOs and the private sector contractors to increase efficiencies of doing business. In addition, the PMI will explore partnerships with the corporate sector in a variety of areas, including ITN distribution.

5. Behavior change/awareness among care-seekers and providers: Given the gap in year round usage of ITNs , the limited knowledge on IRS, and the recent shift to Coartem, adequate IEC/BCC and advocacy activities will be necessary to support key interventions and their long-term effectiveness. The PMI will incorporate a variety of IEC/BCC and advocacy activities, including mass media, interpersonal communication, sharing of best practices and lessons learned, and other non-formal methods of communication to ensure that the activities undertaken are well received among health providers as well as the community. This will be a cross-cutting area among the various interventions.

6. Integration with other existing programs: The PMI has already consulted extensively with other institutions/organizations implementing malaria programs, including the Global Fund, WHO, USAID-funded programs, and others. Every effort will be made to identify areas of synergy, avoid duplication, and promote an integrated and complementary effort at the national, regional, district, and community level.

VI. STAFFING AND ADMINISTRATION

Two new health professionals will be 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. Candidates for these positions will be evaluated and/or interviewed jointly by USAID and CDC, and both agencies will be involved in hiring decisions, with the final decision made by the individual agency.

It is envisioned that 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. The CDC staff person will be supervised by CDC, both technically and administratively. All technical activities will be undertaken in close coordination with the MoH/PNLP and other national and international partners, including the WHO, UNICEF, the GFATM, World Bank and the private sector.

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

It is estimated that the PMI will need to devote approximately \$600,000 per year to cover the salary, benefits, and travel and support costs for these two expatriate advisors.

ANNEXES

Table 1

Proposed 5-Year Timeline of Coverage of Interventions – Malawi

| Coverage Target | Baseline 2006- 2007* | End Year 1** | End Year 2 | End Year 3** | Final Evaluation |
|---|----------------------------|--------------------|---------------|-----------------|---------------------|
| Proportion of households with a pregnant women and/or child under 5 with at least 1 ITNs | NA | 50% | 65% | 90% | 90% |
| Proportion of pregnant women sleeping under an ITN the previous night | 31.4% | 50% | 75% | 85% | 85% |
| Proportion of children under five sleeping under an ITN the previous night | 35.5% | 50% | 75% | 85% | 85% |
| Proportion of children under five with fever in previous 2 weeks treated with appropriate anti-malarial drug within 24 hours of onset of symptoms | 17.5% | 35% | 55% | 75% | 85% |
| Proportion of pregnant women receiving at least 2 doses of IPT | 46.87% | 60% | 75% | 85% | 85% |
| Proportion of households targeted for IRS that have been sprayed | >1% | 85% | 85% | 85% | 85% |

* This baseline will be revised based on the 2006 MICS and 2007 Malawi Malaria Anemia and Parasitemia Household Indicator Survey

** Nationwide coverage will be measured on three occasions: 1) 2006/2007 (baseline) 2) end of year 2; and 3) at the end of 2010. Year 1 and year 3 coverage will be estimated based on delivery of ACTs and IPTp treatments; distribution of ITNs, and households protected by IRS.

Table 2

Illustrative 3-Year Budget and Expected Coverage Levels (for Malawi)

Targets:

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 have ACTs available for treatment of uncomplicated malaria; and
- 85% of children under five with suspected malaria will have received treatment with an antimalarial drug in accordance with national malaria treatment policies within 24 hours of onset of their symptoms.

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

Assumptions:

Population of country (estimated): 12,000,000

Pregnant women: 5% of total population = 600,000 pregnant women

Children <5: 17% of population = 2,040,000 children under five

Average number of persons per household = 4.4

Average number of households = 2.72 million

Average number of malaria-like illnesses per year and cost per treatment with Coartem:

Children <5: 3.0 febrile episodes/year (\$0.45 per treatment)

Older children/adults: 0.5 malaria illnesses/year at (assume average of \$1.35 per treatment)

Cost of IPT with SP: \$0.20 (\$0.10 for each of the two treatments a woman will receive during her pregnancy)

Average household will require 2.5 ITNs to cover all children under five and pregnant women in the family

Cost of a long-lasting ITN = \$6.00

Costs per person for epidemic preparedness, implementation support and USG implementation costs were taken from a detailed cost analysis prepared for Uganda.

| Item/Activity | Annual Cost per Person | Annual Cost | 3-Year Total | Assumptions/Comments |
|---------------------------------------|------------------------|--------------|----------------------|--|
| Prevention – insecticide-treated nets | | \$9,753,000 | \$29,259,000 | 12.00 million population at risk of malaria = 2.72 million households x 2.5 nets/household x 85% coverage-1.6 million already distributed x \$7.00/net. |
| Prevention – indoor residual spraying | | \$510,000 | \$1,530,000 | IRS will target 85% of population of 40,000 households at cost of \$15/household once a year; assumes it will be more cost-effective to use ITNs for remainder of population |
| Treatment – malarial illnesses | | \$13,770,000 | \$41,310,000 | 12 million population at risk of malaria; 17.9% children under 5; 85% coverage; assume 3 episodes per child. cost of treatments approximately \$.45 for children under 5 and \$1.35 for the rest of the population |
| Treatment – IPT for pregnant women | | \$102,000 | \$306,000 | 600,000 pregnant women x \$0.20 per year x 85% coverage |
| Epidemic Preparedness | \$0.08 | \$960,000 | \$2,880,000 | Based on detailed calculations from Uganda model |
| Implementation Support | \$0.92 | \$11,040,000 | \$33,120,000 | Commodity management, human resources, supervision, training, social mobilization, etc. based on calculations from Uganda model |
| Monitoring and Evaluation | | \$2,000,000 | \$6,000,000 | PMI + other donors |
| Cost of Program | | | \$114,405,000 | |

| | | | | |
|---|--|--------------|----------------------|---|
| USG Implementation Support Costs | | \$800,000 | \$2,400,000 | Long-term expatriate advisors' salaries, benefits, travel; local staff; office supplies and equipment for PMI in-country office; TDY from CDC and USAID |
| Total funding needed (including USG program costs) | | | \$116,805,000 | |
| SWAP | | \$22,000,000 | \$66,000,000 | Based on GFATM Round 2 information (assumed phase 2 is approved); GoM is expected to provide staff and some funding for commodities |
| GFATM – Round Two, 2-year approved funding | | | \$8,971,566 | Round 2 two-year approved funding; since this initial request was a small one, will assume that GFATM funding becomes available in Years 3-5 at \$20 million/year |
| Available funding from other sources | | | \$74,971,566 | |
| PMI funds available (estimated): | | | | Assumes PMI funding is divided between countries based roughly on their populations |
| Year 1 | | \$15,000,000 | | Assumes 3 PMI countries |
| Year 2 | | \$15,000,000 | | Assumes 7 PMI countries |
| Years 3 and 4 | | \$15,000,000 | | Assumes 12 PMI countries for both years |
| | | | | |
| Years 1 through 5 | | | \$45,000,000 | |
| | | | | |
| Total Available funding | | | \$119,971,566 | |
| | | | | |
| Remaining Gap | | | 0 | 3-year shortfall to meet total need |

