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

President's Malaria Initiative

Malaria Operational Plan

Liberia

FY 2012

Ver. November 15, 2011

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EXECUTIVE SUMMARY

Malaria prevention and control are major foreign assistance objectives of the U.S. Government (USG). In May 2009, President Barack Obama announced the Global Health Initiative (GHI), a comprehensive effort to reduce the burden of disease and promote healthy communities and families around the world. The President's Malaria Initiative (PMI) is a core component of the GHI, along with HIV/AIDS, tuberculosis, maternal and child health, family planning and reproductive health, nutrition and neglected tropical diseases.

The PMI was launched in June 2005 as a 5-year, $1.2 billion initiative to rapidly scale up malaria prevention and treatment interventions and reduce malaria-related mortality by 50% in 15 high-burden countries in sub-Saharan Africa. With passage of the 2008 Lantos-Hyde Act, funding for PMI has now been extended through Fiscal Year (FY) 2014. Programming of PMI activities follows the core principles of GHI: encouraging country ownership and investing in country-led plans and health systems; increasing impact and efficiency through strategic coordination and programmatic integration; strengthening and leveraging key partnerships, multilateral organizations, and private contributions; implementing a woman- and girl-centered approach; improving monitoring and evaluation (M&E); and promoting research and innovation.

Liberia launched PMI-supported activities in 2008. Liberia's health infrastructure was severely damaged during the long civil war and only about 45% of the population has access to essential health services. The entire population of just over 3.5 million is at risk for malaria. The 2009 Malaria Indicator Survey (MIS) showed that net use is still low at about 33%, while parasitemia, determined using rapid diagnostic tests (RDTs), was 37%.

Liberia is in the third year of a 5-year, $37 million malaria grant from the Global Fund to Fight Aids, Tuberculosis and Malaria (Global Fund), which is paying for personnel, technical assistance, infrastructure development and commodities. Several other international and local non-governmental organizations also provide major support to malaria prevention and control efforts through importation and distribution of insecticide-treated nets (ITNs) and antimalarial drugs together with training of healthcare workers and community health volunteers. The National Malaria Control Program (NMCP) recently revised its National Malaria Control Strategy for the year 2010 – 2015.

Based on progress and experiences over the four years, this FY2012 Malaria Operational Plan for Liberia was drafted during a planning exercise carried out in March 2011 by representatives from the United States Agency for International Development (USAID) and the Centers for Disease Control and Prevention (CDC) in close consultation with the Liberian NMCP and with participation of nearly all national and international partners involved with malaria prevention and control in the country. The activities PMI is proposing conform to the Ministry of Health and Social Welfare (MOHSW)'s National Malaria Strategic Plan, and support investments made by the NMCP, Global Fund, United Nations Children's Emergency Fund (UNICEF), World Health Organization, and other donors to improve and expand malaria-related services. The proposed FY2012 PMI funding of $13.8 million will support the following activities:

Insecticide-treated nets (ITNs): The NMCP's National Strategic Plan for 2010-2015 aims to increase usage of ITNs among the whole population, especially pregnant women and children under five, to 85% by December 31, 2010 and sustain this usage up to 2015. The malaria strategic plan set also a target of one ITN for each sleeping space, or approximately three nets per household. There are an estimated 670,295 households in Liberia and approximately 3 million ITNs have been distributed in Liberia between 2005 and December 2010, via door-to-door campaigns, and through antenatal clinics. This includes an additional 883,400 ITNs that were distributed in 2010, of which 480,000 were procured by PMI. The planned activities include procurement and distribution of 150,000 ITNs planned with FY 212 funding. PMI will also continue to support strengthening the management of the national net program, improving logistics, forecasting, storage, distribution, training, and associated behavior change and communication for improve net usage.

Indoor residual spraying (IRS): In 2009 the NMCP, with PMI support, completed environmental and insecticide resistance assessments and initiated an IRS program covering approximately 22,000 houses, protecting more than160,000 people. IRS was expanded to approximately 48,000 houses sprayed in 2010 and to approximately 80,000 houses protecting 500,000 people in 2011; training is ongoing to increase capacity of NMCP staff for entomologic surveillance and insecticide resistance. Emerging yet focal resistance dictated that a carbamate be used in two counties while a pyrethroid will continue to be used in the other 3 counties. Under public-private partnerships, IRS will also be implemented in 14,000 households in the Liberian Agriculture Cooperative rubber plantation, LIBINC Palm Oil, and the iron ore company ArcelorMittal concessions areas. Two NMCP entomology technicians received training in Ghana, and mosquito rearing supplies from PMI were delivered to the Liberia Institute of Biomedical Research insectary. Entomologists from Naval Medical Research Unit -3 and CDC Atlanta will conduct a 2-3 week on-site training workshop at the LIBR for NMCP personnel.

With FY2012 funding, PMI will support spraying of over 80,000 houses, and strengthen entomology monitoring with an emphasis on insecticide resistance surveillance. Areas for IRS will be selected based on 2011 MIS and entomological surveillance data. CDC and Naval Medical Research Unit -3 entomologists will continue to collaborate with on-site training of NMCP personnel, and PMI will support Masters-level training of an NMCP staff member.

Intermittent Preventive Treatment of Pregnant Women (IPTp): With over 170,000 pregnancies at risk of malaria in Liberia each year, it is important to scale up Malaria in Pregnancy (MIP) activities. According to the 2009 MIS, 46% of pregnant women received two or more doses of IPTp during their last pregnancy PMI continues to support the training of health workers and students in pre-service institutions. As part of this effort, 45 county trainers on the Basic Package of Health Services received malaria in pregnancy training. Further training was conducted for 390 general community health volunteers (CHV) and traditionally trained midwives on MIP in 2010-2011. With FY2012 funding, PMI will maintain support for capacity building of health staff, especially midwives, in malaria in pregnancy and the community will be educated on the dangers of MIP through public advocacy and education.

Case Management & Pharmaceutical Systems: Laboratory diagnostic capacity in Liberia continues to be weak. Most health facilities use RDTs due to limited capacity for microscopic diagnosis. During the past year, PMI supported the accreditation of two laboratory technicians, as well as refresher training in microscopy and supervision for laboratory technicians and their supervisors. In addition, PMI procured more than half of the 1.75 million RDTs needed in Liberia last year. With FY2012 funding, PMI will procure laboratory supplies including reagents for microscopy and RDT for malaria diagnosis; assist the National Public Health Reference Laboratory with equipment; provide refresher training to laboratory technicians; increase diagnostic capacity in focus health facilities.

Increasing private sector availability of artemisin-based combination therapies (ACT) is a top priority of the NMCP and the MOHSW. A private sector situation analysis was conducted to determine capabilities and needs. Training of trainers was conducted and a first group of 176 dispensers was trained.

A rapid assessment of rational medicine use was conducted in the public, private and informal sectors in 2010. The MOHSW developed a comprehensive, integrated and well-thought through National Policy and Strategy on Community Health Services. An implementation plan for integrated community case management of malaria has been developed and activities begun.

During FY 2012 PMI will procure 2,350,000 ACTs based on the gap analysis conducted with the Global Fund and other donors. Quinine for severe malaria for treating at an estimated 152,000 severe malaria cases will also be procured. Training activities will include pre- and in-service training of health personnel in the public and private sectors. PMI will support the extension of malaria case management to the community level. Also, PMI will continue to support the NMCP and the Liberia Medicine and Health Product Regulatory Authority in development of the national drug regulatory procedures and systems to operationalize the Act established in 2010 with PMI support to ensure the quality of antimalarials..

Monitoring & Evaluation: The NMCP is finalizing its M&E strategy. The recently awarded Global Fund Round 10 Grant includes support for several M&E activities--health facility surveys, post-ITN campaign surveys, and quarterly visits by NMCP personnel to County Health Teams PMI began implementation of the End Use Verification tool in Liberia in April 2010. Efforts were made to ensure that EUV fits in with already planned supervisory activities that the MOHSW and NMCP are carrying out. With FY 2012 funds PMI will support the DHS 2012-2013 including parasitemia; continue the quarterly End Use Verification; at malaria program review; and supportive supervision by NMCP to health county teams.

ACRONYMS

ACT	Artemisinin-based combination therapy
ANC	Antenatal care
AQ	Amodiaquine
AS	Artesunate
BCC	Behavior change and communication
CDC	Centers for Disease Control and Prevention
CHT	County Health Team
CHV	Community health volunteers
DDT	Dichlorodiphenyltrichloroethane
DHS	Demographic and Health Survey
DfID	Department for International Development (United Kingdom)
EPI	Expanded Program on Immunizations
EUV	End-use Verification
FY	Fiscal Year
GHI	Global Health Initiative
Global Fund	Global Fund to Fight AIDS, Tuberculosis and Malaria
GOL	Government of Liberia
HCW	Health care worker
HFS	Health Facility Survey
HMIS	Health Management Information System
iCCM	integrated Community Case Management
IEC	Information, Education and Communication
IMaD	Improving Malaria Diagnostics
IMCI	Integrated Management of Childhood Illnesses
IPTp	Intermittent preventive treatment during pregnancy
IRS	Indoor residual spraying
ITN	Insecticide-treated bed net
IVM	Integrated Vector Management
LIBR	Liberian Institute of Biomedical Research
LMIS	Logistics Management Information System
LTTA	Long Term Technical Assistance
M&E	Monitoring & evaluation
MIP	Malaria in Pregnancy
MIS	Malaria Indicator Survey
MOHSW	Ministry of Health & Social Welfare
MOP	Malaria Operational Plan
MPR	Malaria Program Review
NGO	Non-governmental organization
NMCP	National Malaria Control Program
NPHRL	National Public Health Reference Laboratory
PLWHA	People living with HIV/AIDS
PMI	President’s Malaria Initiative
QA	Quality Assurance
RBHS	Rebuilding Basic Health Services
RBM	Roll Back Malaria
RDT	Rapid diagnostic test
SCMP	Supply Chain Master Plan

SIAPS	Systems for Improved Access to Pharmaceuticals & Services
SP	Sulfadoxine-pyrimethamine
SPS	Strengthening Pharmaceutical Services
TTM	Trained Traditional Midwife
TWG	Technical Working Group
UNDP	United Nations Development Program
UNICEF	United Nations Children's Emergency Fund
USAID	United States Agency for International Development
USG	United States Government
USP	United States Pharmacopeia
WHO	World Health Organization

BACKGROUND

1. GLOBAL HEALTH INITIATIVE (GHI)

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

The GHI aims to maximize the impact the USG achieves for every health dollar it invests, in a sustainable way. The GHI's business model is based on: implementing a woman- and girl-centered approach; increasing impact and efficiency through strategic coordination and programmatic integration; strengthening and leveraging key partnerships, multilateral organizations, and private contributions; encouraging country ownership and investing in country-led plans and health systems; improving metrics, monitoring and evaluation (M&E); and promoting research and innovation. The GHI will build on the USG's' accomplishments in global health, accelerating progress in health delivery and investing in a more lasting and shared approach through the strengthening of health systems. Framed within the larger context of the GHI and consistent with the GHI's overall principles and planning processes, BEST (Best practices at scale in the home, community and facilities) is a United States Agency for International Development (USAID) planning and review process that draws on our best experience in Family Planning, Maternal and Child Health and Nutrition to base our programs on the best practices to achieve the best impact.

The Mission's bilateral flagship project, Rebuilding Basic Health Services (RBHS), along with the groundbreaking agreement with the Ministry of Health and Social Welfare (MOHSW), will serve as the primary vehicles for implementation of the overall USAID strategic approach under the GHI. A mid-term evaluation of the RBHS is being conducted to ensure that the bilateral design was appropriate to achieve desired outcomes and that it evinces the capacity for completing the extensive work it is being assigned. The mission believes that the bilateral has been successful, as comparison between the other areas and areas supported by the bilateral project shows better progress in key activities such as roll out of community-based services and Performance-Based Contracts. It is expected that the bilateral project will have a follow-on project after the current end date and this will provide PMI a critical and equally effective mechanism to implement interventions for malaria in pregnancy (MIP), Behavior Change and Communication (BCC), capacity building of the National Malaria Control Program (NMCP) and community case management.

2. PRESIDENT'S MALARIA INITIATIVE

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

through Fiscal Year (FY) 2014 and, as part of the GHI, the goal of the PMI has been adjusted to reduce malaria-related mortality by 70% in the original 15 countries by the end of 2015. This will be achieved by continuing to scale up coverage of the most vulnerable groups — children under five years of age and pregnant women — with proven preventive and therapeutic interventions, including artemisinin-based combination therapies (ACTs), insecticide-treated nets (ITNs), intermittent preventive treatment of pregnant women (IPTp), and indoor residual spraying (IRS).

Liberia was selected as a PMI country in FY2008. Large-scale implementation of ACTs and IPTp began in January in 2009 and has progressed rapidly with support from PMI and other partners. Artemisinin-based combination therapies and IPTp are now available and being used in all public health facilities nationwide and more than one million long-lasting ITNs have been distributed with PMI funding to pregnant women and children under five in just the last three years.

This FY2012 Malaria Operational Plan (MOP) presents a detailed implementation plan for Liberia, based on the PMI Multi-Year Strategy and Plan and the NMCP's 5-Year Strategy. It was developed in consultation with the NMCP, with participation of national and international partners involved with malaria prevention and control in the country. The activities that PMI is proposing to support fit in well with the National Malaria Control Strategy and Plan and build on investments made by PMI and other partners to improve and expand malaria-related services, including the Global Fund to Fight AIDS, Tuberculosis, and Malaria (Global Fund) malaria grants. This document briefly reviews the current status of malaria control policies and interventions in Liberia, describes progress to date, identifies challenges and unmet needs if the targets of the NMCP and PMI are to be achieved, and provides a description of planned FY2012 activities.

3. USAID/LIBERIA STRATEGIC APPROACH

In order to achieve the priority health objectives outlined in the MOHSW's 10-year Policy and Plan and the GHI country implementation strategy. The USG's investments in health will focus on two areas that mirror priorities in the new 2011-21 National Health and Social Welfare Plan: 1) improving service delivery thru the Essential Package of Health Services; and 2) strengthening health systems to increase institutional capacity for sustainability of service delivery.

This focus will be operationalized through a 3-tiered approach for USG support:

Tier 1: Investment nationwide

The USG will increase investment in capacity building and technical assistance for *policy formulation, strategy development and health systems strengthening* benefitting Liberia as whole. In the immediate future, USG support in health system strengthening will prioritize critical areas that have been jointly identified, such as the Health Management Information System (HMIS), health financing, pharmaceutical and commodities supply chain, BCC and human resources for health.

Tier 2: Intensive investment in three focus counties

The USG will prioritize the three target counties of Bong, Lofa and Nimba, to support the full complement of its health portfolio for maximum impact in improving delivery of quality services, behavior change, utilization of available preventive and curative services, and capacity building of the MOHSW's, County Health Teams (CHTs). Specifically, the USG, with resources from several USAID funding streams including maternal and child health, family planning, HIV/AIDS and PMI, will continue to provide both facility-based and community-based support under performance-based contracting with non-governmental organizations (NGOs) for specific health facilities and their catchment communities to implement the MOHSW's integrated package of health services for which malaria cases account for over 30% of patient encounters. In addition, the USG funding will provide complementary technical assistance for quality assurance, in-service training, monitoring and supervision, which will target all health facilities and communities within the three counties. PMI funds represent about one-quarter of the total USG support being provided to these three counties. This approach supports the MOHSW's desire for cohesive and efficient country-wide health network that enables the scale up of high-impact, cost-effective interventions for the leading causes of morbidity and mortality.

Tier 3: Strategic investment in six development corridor counties

As the lead development agency, USAID is targeting six counties along the Government of Liberia's (GOL) Development Corridors and the health portfolio is focusing efforts on three of these counties, as noted above. As funding levels allow, however, the USG will make investments in Montserrado, Margibi, and Grand Bassa to complement and leverage other partner investments in critical areas such as malaria, family planning, nutrition, and immunizations. These investments will be strategically designed to extend the USG's technical expertise in areas of comparative advantage and to fill gaps in implementation of these national programs.

The NMCP developed, in collaboration with donors and technical agencies, a work plan that all partners support and use to coordinate their activities. The cost difference for implementation of activities in different counties results from varying levels of cost-sharing and leveraging of resources from other donors according to the "lead partner" designation in each county. Each donor group funds various partners to implement an array of health activities including malaria control in collaboration with the NMCP and the Global Fund to cover all 15 Counties in the country. The European Union is providing support to five counties, the Pool Fund, which represents the United Kingdom's Department for International Development (DfID), Irish Aid, and United Nations Children's Emergency Fund (UNICEF) is supporting seven counties, and the USG is supporting six counties, with some overlap in three counties.

Under this new strategic approach coinciding with an evolution of malaria control in Liberia which has already reduced prevalence by 50% between 2005 and 2009, donor efforts are being coordinated to efficiently consolidate gains and accelerate progress. To this end, PMI will continue to support the national malaria control program with over 70% of the MOP budget financing activities implemented at the national level, and will place extra focus in Bong, Nimba, Lofa, Grand Bassa, Margibi, and Montserrado counties, where over 75% of the population resides.

4. MALARIA SITUATION IN LIBERIA

Liberia covers 43,000 square miles in West Africa and is bounded by nearly 350 miles of Atlantic Ocean coastline off the southwest and by the neighboring countries of Sierra Leone (northwest), Guinea (north) and Côte d'Ivoire (east and southeast). Liberia is administratively divided into 15 counties and 95 districts.

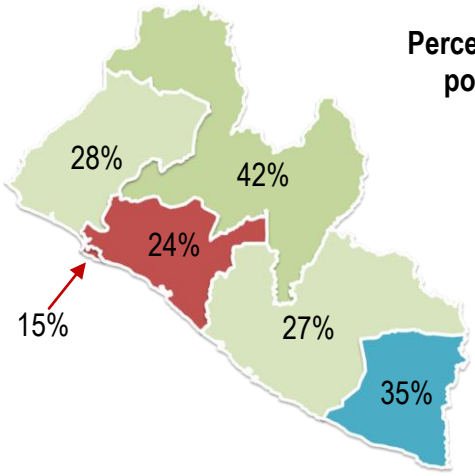
Most of the country lies at altitudes below 500 meters. The coastal areas are characterized by mangrove swamps, which give way to tropical rain forest that gradually thins out northwards to be replaced by deciduous forest. All geographic areas of Liberia are favorable to malaria transmission.

Results from prevalence studies prior to Liberia's civil wars (1989 – 1996; 1999 – 2003) classified Liberia as a country with hyper-holoendemic malaria, perennial[1] intense transmission, and considerable immunity outside of childhood. The climate is favorable for mosquito breeding of major vectors for malaria: *Anopheles gambiae s.s, An. funestus*, and *An. melas*. The major parasite species causing disease are *Plasmodium falciparum* (>90%), *P. ovale*, and *P. malariae*[2]. Information on the frequency of co-infections, while known to exist, is not available.

According to results from the 2005 Malaria Indicator Survey (MIS), in 2005 the prevalence of malaria parasitemia in children under five was 66%. Prevalence rates have since fallen to 32%[3] according to the recent 2009 MIS, and are shown by region in Figure 1 below.

Figure 1: Prevalence of Malaria in Children in Liberia by Region[4]

[1] Hyper – prevalence >75%, Holo – prevalence from 50 to 75%, perennial – transmission from 7 – 12 months/year
[2] Roll Back Malaria-National Desk Analysis-Liberia- 2001
[3] By RDT testing, the prevalence was slightly higher at 37%
[4] Liberia Malaria Indicator Survey, 2009



Percent of children 6 to 59 months testing positive for malaria by blood smear:

National average: 32%

North Western: 28%
North Central: 42%
Monrovia: 15%
South Central: 24%
South Eastern A: 27%
South Eastern B: 35%

The entire population of more than 3.47 million is at risk of the disease[5]. Children under five and pregnant women are the most affected groups. According to data from the 2009 Health Facility Survey (HFS) malaria accounts for 35% of outpatient department attendance and 33% of in-patient deaths.
Since August 2005, as part of the previous National Malaria Strategic Plan and, with funding largely from the Global Fund, progress has been made in malaria control and prevention. The major achievements[6] from August 2005 to October 2009, documented in the 2009 MIS include:

- 17% of children under five are receiving prompt and effective treatment for malaria within 24hrs from the onset of fever, up from 5% in 2005
- 45% of women are receiving two or more Intermittent Preventive Treatment during Pregnancy (IPTp) during their most recent pregnancy, up from 4% in 2005
- 47% of households have at least one ITN, up from 18% in 2005
- 27% of children under five slept under an ITN the previous night, up from 3%
- 33% of pregnant women slept under an ITN the previous night, up from 31%.

Until 2007, the Global Fund, the World Health Organization (WHO), and UNICEF constituted the major external sources of funding for the implementation of malaria control and prevention activities in Liberia. A Global Fund Round 3 grant provided $12 million over two years for improving case management including the procurement of ACTs, sulfadoxine-pyrimethamine (SP) for IPTp, vector control, BCC activities, community mobilization, and program management, including paying salaries of NMCP staff; this grant ended in February 2007. A $37 million Global Fund Round 7 grant was signed in April 2008, with the United Nations Development Program as the Principal Recipient. With Round 7 funding, Liberia plans to procure and distribute 7 million ACT treatments, 1.6 million ITNs to children under-five and pregnant women, and two doses of SP for more than 300,000 pregnant women. Also, Liberia is the recipient of a Global Fund Round 10 award of $20,560,000 for two years, starting in 2012.

[5] National Population and Housing Census, LISGIS 2007, estimate.
[6] Liberia Malaria Indicator Survey, NMCP 2009

The WHO has hired a National Professional Officer to provide technical assistance related to malaria. UNICEF has assisted with the procurement and distribution of ITNs in the past and distributed over 350,000 ITNs in Liberia for FY2010. NGOs such as John Snow Inc., MENTOR Initiative, EQUIP, Africare, Save the Children, and the Red Cross continue to provide significant support to the GOL and, in particular, the MOHSW, to ensure health service delivery continues.

5. NMCP PLAN AND STRATEGY

The National Malaria Strategic Plan in 2010 rolled out a new 5-year strategic goals for 2010 – 2015, at a cost $170,332,893. The revised strategic plan addresses the need to scale-up malaria control and prevention activities to achieve the Roll Back Malaria (RBM) Partnership's target of reducing malaria morbidity and mortality by 75% by 2010, as well as the Millennium Development Goals of sustaining this progress and beginning to reverse the incidence of malaria by 2015. The current National Malaria Strategic Plan also addresses gaps observed in the implementation of the First and Interim Strategic Plans and also puts forth a more detailed and well-assessed strategy in dealing with the malaria situation in Liberia.

The objectives and activities set out in the plan reflect the recommendations of WHO, the RBM Partnership and best practices and successes from other African countries, to scale-up the most effective malaria control and prevention measures, from the health facility down to the community level, and to involve the private sector and all partners supporting health care delivery in Liberia.

Political commitment exists at the highest level as exemplified by the fact that Liberia is a signatory to the Abuja Declaration on RBM and currently represents Anglophone West Africa on the board of RBM Africa. This political commitment is also exemplified by the reduction of import tariffs and taxes from 25% to 2.5% for insecticide treated nets and insecticides.

The key NMCP strategies are:

- The first strategy for more effective malaria control and prevention is improved treatment through scaled up availability and use of ACT as the first line treatment for malaria through public health facilities, community level case management and the private sector.

- The second strategy is an Integrated Vector Management (IVM) approach. Long lasting insecticide mosquito nets will be provided through mass distribution to all family units and targeted distribution to pregnant women and children under five, to achieve maximum results for prevention of transmission of malaria. The strategy will also continue targeted IRS of households and will consider other vector management strategies to achieve maximum results.

- The third strategy is to increase support for advocacy, health education and BCC at all levels of society – using television, radio, schools, places of worship – on the importance of ACT therapy, ITNs and other vector management activities,

and the role of the community in malaria control and prevention activities. Cross-cutting strategies with other programs of the MOHSW will include strengthened health information and capacity building for M&E, strengthened procurement and supply chain management and targeted operational research.

To support these strategies and provide the necessary oversight, the capacity of the NMCP and its staff will be strengthened. The NMCP will coordinate the decentralization of malaria control activities throughout the country to County and Community Health Teams. It will lead coordination efforts with all health partners in Liberia, including bilateral and multilateral donors, international NGOs, local NGOs, and the private sector to accomplish shared goals and objectives.

6. CURRENT STATUS OF MALARIA INDICATORS IN LIBERIA

The most up-to-date information on the status of malaria prevention and control interventions in Liberia comes from the 2009 MIS. The MIS was conducted by the Liberia Institute of Statistics and Geo-Information Services in collaboration with the NMCP and with technical assistance from MACRO, Inc. The MIS was funded by PMI. Table B shows comparisons between the 2005 and 2009 MISs.

Significant improvements in several indicators have been recorded. Ownership of at least one ITN increased from 18% in 2005 to 47% in 2009. Children under five sleeping under an ITN rose from 2.5% to 27% between 2005 and 2009. Only 37% of children with a fever in the last two weeks were seen within 24 hours of the onset of their fever. Of those treated, only 17% received an ACT, while 17% received chloroquine. According to the 2009 MIS, 46% of pregnant women had taken two or more doses of IPTp as recommended during antenatal care (ANC) visits.

Table A: Outcome of malaria interventions in Liberia: progress towards achievement of RBM 2010 Targets

Core Indicators	RBM Target 2010	MIS 2005	MIS 2009	Gap
Proportion of households with at least one ITN	**85%**	18%	47% *	**33%**
Proportion of children under five who slept under an ITN the previous night	**80%**	2.6%	27%	**53%**
Proportion of pregnant women who slept under an ITN the previous night	**80%**	n.a.	33%	**47%**
Proportion of pregnant women who slept under any net the previous night	**n.a**	31%	34%	n.a.
Proportion of women who received two or more IPTp during the last pregnancy in the previous two years	**80%**	4.5%	45%	**35%**

Proportion of children under five receiving prompt and effective treatment for malaria within 24hrs from the onset of fever	**80%**	5.26%	17%	**63%**
Number of targeted houses adequately sprayed with a residual and insecticide in the last 12months	**n.a.**		21,816 [7] (4.7% of population)	n.a.

* An additional 480,000 nets were distributed by September 2010.

The 2009 HFS provides a benchmark on the progress of malaria facility-based activities. A total of 418 health facilities representing 79% of all health facilities in Liberia were visited and the survey included record review, assessment of commodities and observation of malaria case management. Results from the HFS are1 encouraging – 86% of health workers were prescribing antimalarial drugs according to national guidelines; 85% of the health facilities had antimalarial drugs in stock. Malaria was the diagnosis for 38% of all outpatient visits of children under 5 years (Table B). The national treatment guidelines for malaria provide that all malaria cases treated at health facilities must be confirmed through rapid diagnostic testing or microscopy. At the health facility level, approximately 85% of all malaria cases are treated based on confirmatory diagnosis.

Table B: Key Indicators of the Liberia HFSs 2005 – 2009

INDICATOR	2005	2009
% of health workers* who perform well in collection of the history of the disease	56	64
% of health workers who search for danger signs	11	20
% of health workers who perform well in physical examination of patient	57	50
% of health workers who prescribe antimalarial drug according to national guidelines	75	86
% of health workers who counsel of patients/caretakers on malaria	26	45
% of health workers** with copy of national malaria treatment guidelines	77	77
% of health workers with copy of the integrated management of childhood illnesses (IMCI) guidelines	12	45
% of health workers with basic materials and equipments (scales, thermometer, syringes)	70	85
% of health workers with vaccines for routine immunization of children under five and women (15-49 yrs)	88	75
% of health workers with essential malaria drugs: An average of 85% health workers had essential antimalarial drugs	48	85
% of out-patient department attendance due to malaria	38	35
% of out-patient department attendance due to malaria among	59***	38

[7] *Liberia End of Spray Round Report*, 2009

Table B: Key Indicators of the Liberia HFSs 2005 – 2009		
INDICATOR	2005	2009
children less than five years		
% of pregnant women with confirmed malaria	31	18
% of population five years and older (excluding pregnant women) with confirmed malaria	56	39
% of patients receiving appropriate malaria treatment within 24 hours	21	35
% of overall deaths with laboratory-confirmed malaria (Rapid Diagnostic Test (RDT) or blood smear)	44	33
% of Lab-confirmed malaria deaths in children under five years	58	41

*# of HCW observed = 750 ** # of HF visited = 418 ***Clinical malaria

7. GOAL AND TARGETS OF THE PMI

The goal of PMI is to reduce malaria-associated mortality by 70% compared to pre-Initiative levels in the 15 original PMI countries. By the end of 2014, PMI will assist Liberia 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 sprayed with IRS in the last 6 months;
- 85% of women who have completed a pregnancy in the last two years will have received two or more doses of IPTp during that pregnancy;
- 85% of government health facilities 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.

8. EXPECTED RESULTS - YEAR 5

Prevention:

- Procure and distribute 150,000 free ITNs to vulnerable groups through door-to-door campaigns, and through routine services in health facilities to help reach approximately 85% household ownership of one or more ITNs; and
- At least 85% of houses in districts targeted by the NMCP and PMI for IRS will have been sprayed (a total of 400,000 residents will be protected by IRS covering approximately 80,000 houses)

Case Management:

- Procure and assist with the distribution of 2.35 million artesunate-amodiaquine (AS-AQ) treatments. This, together with training and BCC efforts related to case management supported by PMI and other partners is expected to increase the proportion of children under-five with suspected malaria who receive an ACT within 24 hours of the onset of symptoms to 60%;
- Procure approximately 150,000 treatments to supply almost all nationwide needs for drugs and supplies for management of severe malaria;
- Enhance laboratory capacity for microscopic and RDTs diagnosis of malaria through provision of training, equipment, and laboratory supplies;
- Procure approximately 2.5 million RDTs and provide training and ongoing supervision in their use.

9. INTERVENTIONS – PREVENTION

9.1 Insecticide-Treated Nets

Background

Liberia's ITN policy is "universal coverage defined as three ITNs per household. Distribution approaches are regular mass campaigns and distribution at ANC services.

The NMCP seeks to increase use of ITN to 80% among the entire population through intense BCC campaigns at the community level. The National Malaria Strategic Plan also calls for targeting vulnerable populations such as pregnant women and children under five-years of age. Additionally, focus will be placed on reaching at least 85% of women of child-bearing age.

More than one million ITNs purchased by PMI have been distributed to 12 of the 15 counties in Liberia since 2008. Table C details ITNs distributed by PMI and partners for the period 2008 – 2010.

Table C: Total Nets Distributed by County, Donor and Numbers, 2008 – 2010

Year	County	Donor	Number of nets
2008	Southeast	German Government	300,000
2008	Grand Bassa	Episcopal Church	32,000
2008	Bong	UNICEF	212,500
2008	Bomi/Cape Mount	PMI	197,000
TOTAL			741,500
2009	Montserrado	Global Fund/UNDP	194,000
2009	Gparpolu	UNICEF	132,908
2009	Nimba, Grand	PMI	430,000

	Bassa, Lofa		
2009	Montserrado	Save The Children	5,000
TOTAL			761,908
2010	Montserrado	Global Fund/UNDP	343,400
2010	Bong	UNICEF	60,000
2010	Montserado, Nimba	PMI	480,000
TOTAL			883,400

The 2009 MIS documented a dramatic increase in household ownership of mosquito nets. Overall 49% of households have at least one net (ITN or untreated), and 47% have an ITN. This is a significant improvement over the household net ownership of 18% recorded in 2005, and an increase in the previous two years from the 30% recorded in the 2007 Demographic and Health Survey (DHS). Among children under five and pregnant women living in households owning an ITN, 51% and 60% respectively slept under an ITN the previous night.

Progress during last 12 months

To attain the universal coverage target by the end of 2010 the NMCP continued ITN mass campaign distribution: 883,400 ITNs were distributed free in Montserrado, Bong, and Nimba Counties, with 480,000 of these ITNs purchased by PMI. Local and international NGOs, donors, government departments and communities contributed to the campaign. PMI trained 846 community health workers as supervisors. Mass media was reinforced by a door-to-door campaign. A total of 2,000 reminder cards and 20,000 leaflets were distributed. In September, additional mass-media messages on hanging up ITNs were broadcast through local radio along with the replacement of 350,000 ITNs to the southeastern counties of Grand Gedeh, Rivergee, Sinoe, Maryland, Grand Kru and, Rivercess. In addition, more than 60,000 ITNs were distributed free through ANC visits to enhance nets ownership among pregnant women.

With PMI support the NMCP/M&E Unit carried out an ITN ownership survey in October-November 2010, the results showed that more than 80% of households have nets in Montserrado and 82% of children slept under nets. To further increase coverage in Montserrado, 80,000 ITNs were donated by "Malaria No More" and distributed with PMI support in December 2010 – February 2011.

Table D: Gap Analysis for ITNs, 2011 – 2015

Need and Funding Source	Year				
	2011	**2012**	**2013**	**2014**	**2015**
Campaigns/Replacement	991,787	812,708	883,400	1,176,959	1,001,768
Routine (ANC/Expanded Program on Immunizations - EPI)	185,172	189,060	193,030	197,084	201,223

Table D: Gap Analysis for ITNs, 2011 – 2015					
Need and Funding Source	**Year**				
	2011	**2012**	**2013**	**2014**	**2015**
Total Need	1,176,959	1,001,768	1,076,430	1,374,043	1,202,991
Already committed/ distributed					
Malaria No More/UNICEF	80,000				
PMI FY 11	350,000				
Global Fund R7	400,000				
Global Fund R10 (ANC)		203,069		217,394	
Global Fund R10 (mass campaign)		679,843		727,800	
PMI FY 2012		150,000			
PMI FY 2013			1,076,430		
PMI FY 2014				428,849	
Total already distributed or committed	830,000	1,032,912	1,076,430	1,374,043	
Annual ITNs gap	346,959	-31,144	0	0	

Proposed activities with FY 2012 funding ($1,052,500)

- Procure 150,000 ITNs for distribution, hang-up and keep-up through mass campaign and health facilities in selected counties. Rest of ITN needs will be covered by Global Fund Round 10 ($802,500).

- Distribution, training of supervisors for campaigns, and BCC pre-distribution and during campaigns to promote the continued increasing net use ($250,000); and

- Integrated BCC for malaria case management, ITNs, MIP, and IRS (See BCC Section of Table 2 for cost).

9.2 Indoor Residual Spraying

Background

The 2010-2015 revised NMCP strategy includes increased use of IRS in rural districts of high prevalence, covering approximately 45% of the population, and at least 85% of houses in the target areas accepting IRS. Objectives are to: 1) improve procurement of insecticides, sprayers, protective gear and maintenance of spray pumps; 2) strengthen the CHTs capacity to implement IRS; and 3) map district-specific information on vector and malaria prevalence. These points will be detailed and refined in the new IRS Strategic Plan which the NMCP is developing with PMI and other partners; the final document will be available in September 2011.

Spraying in 2007-2008 was conducted in camps for internally displaced persons and refugees, with a population of approximately 150,000 protected. In 2009, with PMI support, completed environmental and insecticide resistance assessments, initiated an IRS program using a pyrethroid insecticide, purchased insecticide and equipment, trained personnel and sprayed approximately 22,000 houses, protecting over 160,000 people.

Progress during last 12 months

The NMCP has stated their desire to develop a strong program based on focal IRS, as part of their IVM strategy, however they have very limited malaria vector surveillance or control capacity. Although an overall IRS strategy exists, no detailed IRS plans have been developed. The NMCP has requested PMI assistance to establish an IRS program, to include the capacity to conduct vector surveillance, a baseline assessment to determine efficacy and cost, and identify the optimum parameters to include insecticide duration of efficacy for a targeted IRS program.

In 2010, PMI expanded IRS to cover more than 48,000 houses protecting over 160,000 people, together with surveillance of vectors and insecticide resistance monitoring. In 2011, PMI will support spraying of 80,000 houses, resistance monitoring and entomological surveillance. Insecticide resistance monitoring in the three counties that are part of the IRS program, indicated that vector populations in the surveyed areas were susceptible to all WHO-approved classes of insecticides. Four NMCP entomology technicians received training at Naguchi University, Ghana, and mosquito rearing supplies were delivered to the Liberian Institute of Biomedical Research (LIBR) insectary. These technicians will continue to provide supervisory and mentoring support to county-level entomology technicians previously trained. PMI will continue to support the NMCP to conduct periodic insecticide resistance monitoring in IRS focused areas with technical support from RTI with increasing ownership from the national program. Additional training in practical entomology such as that provided at Naguchi University will be continued in 2012.

In 2011, IRS is being expanded to approximately 80,000 houses protecting 400,000 people and training conducted for increased capacity for surveillance of vectors and insecticide resistance. Emerging yet focal resistance dictated that a carbamate be used in three counties while a pyrethroid would continue to be used in 11 counties. IRS is currently performed in four counties, two of which require the use of carbamate. Under public-private partnerships facilitated and led by NMCP, IRS is planned for over 3,000 households each on the LIBINC Palm Oil and Liberian Agriculture Cooperative rubber plantations. Dates are being selected for entomologists from Naval Medical Research Unit -3 and the Centers for Disease Control and Prevention (CDC) Atlanta to conduct a 2-3 week on-site training workshop for NMCP personnel at the LIBR.

Proposed activities with FY 2012 funding ($3,874,200)

- Support spraying of approximately 80,000 houses in three counties (protecting 400,000 people) with an insecticide to be selected by the NMCP. The maximum number of households possible will be sprayed, with the number determined by reduced costs associated with economy of scale and class of insecticide that has to be

used. Areas for IRS will be selected based on 2011 MIS and entomological surveillance results ($3,700,000);

- Training (including Master's level for one person), equipment, supplies, and mentoring for NMCP entomology technicians. These investments will contribute to addressing the lack of senior NMCP personnel with vector control experience which limits efforts to establish an IRS program ($75,000);

- Assist NMCP with insecticide resistance monitoring at two new sites, and continue monitoring at two existing sites ($45,000);

- Technical assistance on vector control activities: CDC staff will conduct two TA visits to assist with training and to monitor planning and implementation of vector control activities. The entomology technical assistance visits will be used for capacity building, with a focus on establishing a functional insectary, and assisting with training in mosquito surveillance and insecticide resistance monitoring, in support of IRS and ITN vector-based interventions ($24,200); and

- Assist NMCP in the conducting of an independent environmental monitoring and compliance inspection. ($30,000).

9.3 Intermittent Preventive Treatment during Pregnancy

Background

More than 170,000 pregnancies occur each year in Liberia and all pregnant women are at risk of malaria infection and its consequences. MIP causes maternal anemia and reduced fetal growth that results in low birth weight newborn. Low birth weight newborns have a low survival rate. According to the MOHSW 2010 annual report most pregnant women attend ANC at least once during pregnancy but only 41% attend ANC four times.

The NMCP's policy on MIP states that:
:

- All health facilities in the country (public and private) should provide IPTp according to the national MIP guidelines;

- The drug of choice for IPTp is SP;

- IPTp will be provided at community level according to the national MIP protocol and;

- ITNs will be provided to all pregnant women.

Despite the NMCP policy of community level-delivery of IPTp, the Division of Family Health has requested NMCP not to implement it and rather support trained traditional midwives (TTM) to refer pregnant women to ANCs for IPTp to sustain the increase in ANC attendance being experienced at clinics. The HFS 2009 conducted revealed an increasing decline in the proportion of pregnant women being confirmed with malaria. The role of the

TTM to refer pregnant women to the clinics for routine ANC is supported by the Family Health Division to insure pregnant women comply with routine ANC visits. All health facilities with ANC deliver IPTp with SP.

Progress during last 12 months

During the year 2010, the MIP Unit of NMCP conducted two visits to Monserrado and Grand Bassa counties. The findings showed that SP is still being dispensed from the facility pharmacy to pregnant women instead of having the SP dispensed at the ANC under directly observed therapy.

PMI supported the revision of core competencies in the new national curricula of pre-service training institutions by updating the malaria section of the Tropical and Communicable Disease Course. The malaria component of The Handbook for Health Workers in Liberia was also revised. PMI sponsored the refresher training of 47 instructors and preceptors from all the eight nursing schools in the country and the Ministry's training unit. A training of trainer's workshop was conducted for 45 county trainers on integrated Basic Package of Health Services which includes MIP. A seminar was held for 30 senior medical professionals from the Liberia Medical and Dental Association on MIP and malaria case management. In 2010, a curriculum to train general community health volunteers (CHV) was developed and training manuals produced. The training manuals were used to train 390 CHV and TTMs on danger signs of pregnancy, malaria in pregnancy and referral to health facility. From the MOHSW 2010 annual report, 48,055 and 48,847 women received IPTp2 in 2009 and 2010 respectively. The 2009 MIS showed that 45% of pregnant women received IPTp2. The MOHSW procures SP for IPTp implementation. In the USAID-focus health facilities, which cover about 25% of the population in Liberia, IPTp2 coverage increased from 53% in January 2010 to 79% by December 2010. Reports from PMI implementing partners indicate SP stock outs still occur in health facilities. Also a number of facilities still do not have ANC registers for capturing IPTp1 and IPTp2 doses. The Logistics Management Information System (LMIS) of the MOHSW, supported by DELIVER, is tracking consumption data from clinics. The ANC registers will form part of the consumption data for the LMIS to monitor SP consumption at the clinics to determine the period of replenishment and avoid stockouts. The record from the ANC registers will also provide information for the MOHSW to do forecasts that will support a procurement and distribution plan for drugs that will be supplied to health facilities.

Proposed activities with FY 2012 funding ($462,100)

- Support refresher training for tutors in pre-service institutions of nursing, midwifery, and medical school, which will support the development of the training institutions themselves in addition to the training, thus allowing for more people to be trained in the long term ($150,000);

- Continue support training for in-service staff, supervision of health workers in control of MIP ($150,000);

- Support orientation workshops of TTM and CHV in the control of MIP. ($150,000); and

- Technical assistance from CDC to provide assistance to the NMCP and Family Planning Division in MIP tools and best practices ($12,100).

10. INTERVENTIONS – CASE MANAGEMENT

10.1 Diagnosis

Background

The National Malaria Strategic Plan states that all health facilities in the country, both private and public, should carry out confirmatory laboratory testing of all suspected malaria cases with RDT or microscopy in all health facilities, from health posts to hospitals. The Global Fund Round 10 proposal expresses this objective to achieve parasitological confirmation of all cases. Liberia is scaling up a new community program by training CHVs who will treat malaria, ARI and diarrheal diseases in the community. The CHVs will confirm malaria diagnosis with RTDs before treatment with an ACT. This new approach was piloted in six districts and evaluated after six months of implementation and was found to be successful

In 2010, the MOHSW established the National Diagnostic Unit with the mandate to oversee and supervise all diagnostic activities in clinical laboratories in the country, including the Public Health Reference laboratory (NPHRL) and the National Blood Safety Program. The division has produced a draft national laboratory policy and a three-year strategic plan.

With the present political stability and peace, the MOHSW has increased its work force from 3,996 in 2006 to 8,553 in 2009. According to the 2009 Human Resource Census there are 90 doctors, 286 physician's assistants, 46 pharmacists and 376 laboratory technicians and aides (78 laboratory technicians) in the country. At the end of 2010, there were 551 health facilities in Liberia of which 379 are public and 172 are private. The opening of new health facilities requires more health professionals including laboratory personnel to confirm diagnosis.

Presently, there are two laboratory technician training schools in the country which produce about 35 technicians in a year. The MOHSW, with USAID support, has developed curriculum for the technician training schools and it is about to re-open the laboratory technician program at Tubman National Institute of Medical Arts.

Progress during last 12 months

PMI continues to support the MOHSW to improve laboratory services. During 2010, a refresher workshop in malaria diagnosis by microscopy and RDT was organized and 74 laboratory technicians and 22 clinicians participated. Seven laboratory technologists were sponsored by PMI to the WHO External Malaria Microscopy Accreditation course in Kenya. Participants of this course were accredited and are helping the MOHSW with supportive supervision and training of laboratory personnel. PMI supported the review and adoption of a National Guidelines for Laboratory Diagnosis of Malaria in Liberia.

With PMI support, IMaD continues to assist the MOHSW in conducting the external quality assurance (QA) on a quarterly basis for diagnostics services provided by health facilities. This activity ensures that diagnostics services are provided in accordance with best practices, and that the results are validated by the NPHRL. This QA is supported by the outreach training and supportive supervision (OTSS) which provides mentoring to health workers during supervision visits to strengthen the diagnostics skills of laboratory technicians. PMI also procures laboratory equipment and supplies including microscopes to fill gaps in health facilities or the NPHRL. These investments are complementing other support from USAID/Liberia's health portfolio, which includes sponsoring 17 students at the Mother Pattern school for laboratory technicians, equipment purchase, and supportive supervision.

Table E: Rapid Diagnostic Tests Needs and Gaps, 2011 – 2015

RDTs	2011	2012	2013	2014	2015
Total Need	3,699,509	5,117,321	5,133,122	4,325,837	3,567,318
From Global Fund Rd 7	1,455,853	1,557,062	0	0	0
Expected from PMI	1,750,000	1,750,000	1,750,000	1,750,000	1,750,000
Expected from PMI for iCCM		750,000			
Gap for Global Fund Rd 10 to cover	493,656	1,060,259	3,383,122	2,575,837	1,817,318

The NMCP estimates the use of two RDT for each confirmatory treatment for malaria. The projections in Table E are based on the assumption that at least 90% of the population, inclusive of the annual growth rate, is affected by malaria annually. Therefore, confirmatory diagnostics with RDTs is expected to be performed at both the health facility and community level through integrated Community Case Management (iCCM).

Proposed activities with FY 2012 funding ($2,212,100)

- Support procurement of RDTs. The total need for RDTs is based on service delivery requirements. The estimates include iCCM needs. PMI is expected to contribute 2.5 million RDTs ($1,800,000);
- Procure laboratory supplies including reagents for microscopy and RDT for malaria diagnosis as well as the QA from NPHRL, to regional labs, to service delivery points($50,000);
- Contribute to assist the strengthening of the NPHRL by purchasing the needed equipment, supplies and training materials to improve malaria diagnostic capacity and quality control ($100,000);

- Support in-service refresher training of laboratory technicians and aides to improve diagnostic capacity in the NPHRL ($100,000);

- Support diagnostic capacity of malaria in the focus USAID counties by training laboratory staff and other health workers in RDT use ($150,000); and

- Technical assistance visit by CDC in malaria diagnostics ($12,100).

10.2 Treatment and Pharmaceutical Management

Treatment

Background

Liberia uses AS-AQ as its first line antimalarial and recently changed from a co-blistered formulation to a fixed dose co-formulation. Oral quinine is recommended for malaria in children less than 5 kg and in pregnant women in their first trimester. For severe malaria, the recommended drugs are intravenous quinine or intramuscular arthemeter.

The 2009 HFS showed that there have been significant gains in the case management of malaria. However, the assessment of danger signs, overall physical examination and counseling still show significant deficiencies. These problems are very similar to those seen in other countries. The 2009 HFS, along with other data from PMI partners, shows that when an antimalarial is prescribed, 86% of health workers do it correctly.

In spite of significant advances in improving access to care in Liberia, malaria case management is still available to only around 45% of the population. NMCP is trying to improve access to appropriate case management to 80% of the population. Unfortunately, there are not enough public health facilities nor are they sufficiently staffed to reach such high coverage. Therefore, the NMCP is expanding access to case management through two additional strategies—iCCM of malaria and through the private sector.

Although still nascent, the private sector's role in health and medical care is gradually increasing in Liberia. The 2009 MIS revealed that up to 43% of the population receives malaria treatment from private health providers. The NMCP convened a workshop with interested parties to discuss ways to increase access to subsidized ACTs through the private sector. Recommendations from the workshop addressed: 1) policy, coordination and regulatory oversight; 2) price and incentives for the private sector; 3) procurement and supply chain strategy; 4) supervision, M&E; and 5) provider and consumer education. The NMCP has now made the decision to work with the private sector on diagnostics and treatment of malaria. NMCP will provide training and commodities, the latter with a small fee for the provider and patients. Contingent upon the results of the initial phase of this private sector activity, PMI will support this effort in order to increase access to quality case management to the 43% of the population that use the private sector.

The NMCP recognizes that the availability of mono-therapies and quality of drugs are an important problem in Liberia. As part of its private sector strategy, the NMCP and Pharmacy Board of Liberia are working on a policy revision that bans the importation of all antimalarial

monotherapies not recommended by NMCP. In addition, wholesale distributors import medicines without effective control and drugs are sold on the street and from unlicensed sellers. The PMI has worked closely with the GOL to develop legislation, issued in mid October 2010, to deal with antimalarial mono-therapies and illegal trade in counterfeit and adulterated drugs.

Progress during last 12 months

A rapid assessment of rational medicine use was conducted in the public, private and informal sectors. In the public sector key findings included extensive polipharmacy, overuse of antibiotics and other drugs, inadequate therapy standards, abuse of expensive medications, lack of in-service continuing education to providers, little supervision and poor quality controls on drugs being used. In addition to the above, most private sector providers do not uniformly follow public sector standards for HIV/AIDS, Tuberculosis, Malaria, sexually-transmitted infections, and IMCI. There is a lack of supervision at most private clinics and hospitals. In private sector pharmacies and the informal sector there were poor dispensing practices and unregulated dispensing of medications.

The GOL has developed a comprehensive, integrated and well-thought out National Policy and Strategy on Community Health Services. An implementation plan for iCCM has been developed and activities have begun. In USAID-focus counties, 104 CHVs have been trained in case management of malaria, diarrhea and pneumonia. This allowed the start of iCCM in three of the USAID-focus counties (Bong, Lofa and Nimba). More than one thousand children under five years of age have been treated for malaria in just the first weeks of program implementation.

Table F: ACT Needs and Gaps, 2011 – 2015

	2011	2012	2013	2014	2015
Annual Coverage (targets)	85%	90%	90%	90%	90%
Annual Episodes (expected cases of fever)	5,790,561	5,912,040	5,432,438	4,930,117	4,404,333
Total need for ACT treatments required for all sectors based on annual percentage coverage of annual episodes	4,551,572	4,920,517	4,521,463	4,103,478	3,665,945
Percentage serviced by public sector and community (54% of ACT needed)	2,457,849	2,657,079	2,441,590	2,215,878	1,979,610
Percentage serviced by private sector (46% of ACT needed)	2,093,723	2,263,438	2,079,873	1,887,600	1,686,335
AS-AQ to be funded by PMI	1,640,952	2,350,000	2,350,000	2,350,000	2,350,000
AS-AQ covered by GF Rd7	589,087	977,370	1,277,608		
Doses already in stock from 2010	1900				
Total already committed or in stock	2,231,939	3,327,370	3,627,608	2,350,000	2,350,000
Remaining Need to be funded by donors	225,910	1,593,147	893,855	1,753,478	1,315,945

Total commitment Global Fund Round 10 to remaining need		1,395,391	545,005	957,981	784,356
Annual ACT Gap (*)	225,910	197,756	348,850	795,497	531,589

(*) in 2011 only the public sector was provided with ACTs; the private sector approach and procurement will start in 2012.

Proposed activities with FY 2012 funding ($3,887,000, includes items under Pharmaceutical Management)

- Procurement of co-formulated AS-AQ. Based upon the quantification data provided by the NMCP from the Global Fund Round 10 proposal, PMI will purchase 2.35 million ACT treatments to help fill Liberia's ACT needs. ($1,173,500);

- Procurement of quinine for severe malaria; PMI will procure 150,000 quinine treatments for severe malaria to complement the intravenous kits provided by the Global Fund. This amount has been calculated based on available funding. The WHO costing tool estimates that in a country with the malaria epidemiology of Liberia the annual number of cases of severe malaria is approximately 4% of the population. This is approximately 152,000 cases ($200,000);

- Support capacity development for appropriate and prompt treatment of malaria. This activity will support the improvement of case management of malaria in health facilities in USAID focus counties through in-service training of health workers including Faith-based health workers and CHVs. Follow-up through supportive supervision will also be coordinated for increased capacity ($850,000);

- Support iCCM of malaria. PMI will support the NMCP's "Implementation Plan: Community Malaria Case Management." As part of iCCM CHVs will be trained to provide RDT-based diagnosis of malaria, appropriate treatment of uncomplicated cases and referral of severe cases. Supervisors and clinicians will also be trained so that appropriate links between CHVs and the formal health system are established. Malaria commodities for CHVs are part of the national quantification and will be distributed to CHVs through local health facilities ($300,000);

- Drug Quality. PMI will continue to support efforts to ensure the quality of antimalarial drugs and quality control ($100,000); Activities will include:

    - Strengthening monitoring capacity. Continue supporting the Liberia Medicines and Health Products Regulatory Authority in establishing priority medicine regulations, and implementing regulatory functions according to international standard.

    - The laboratory for drug quality assurance (DQA) is already operational with support from the Global Fund. PMI, through USP, has provided training to Liberia Medicines and Health Products Regulatory Authority staff on ultra-violet and dissolution among others. PMI has begun providing more technical

assistance for drug quality monitoring. Currently, the mission is using non-PMI funding for a LTTA to the Liberia Medicines and Health Products

- Regulatory Authority and has made available funding to procure a new High-Performance Liquid Chromatography machine; PMI will train Liberia Medicines and Health Products Regulatory Authority analysts on chromatography methods according to compendia standards.

- Continue to provide technical assistance and equip the quality control laboratory of Liberia Medicines and Health Products Regulatory Authority by establishing a sound quality system and the good laboratory practices with continuous M&E. Train and strengthen the inspections services of Liberia Medicines and Health Products Regulatory Authority and National Drug Service to enable them to carry inspections of manufacturers, importers, retailers and enforce good pharmacy practices in Liberia.

- Increase availability of ACTs in private sector. NMCP will roll out a pilot project in one county (Montserrado) to increase private sector availability of ACTs. The project will provide: (1) a subsidized, branded ACT; (2) private sector provider trainings; (3) compelling, low literacy mass media for demand creation; and (4) interpersonal communications campaigns for both caregivers and providers this is contingent on the results of the feasibility evaluation proposed in FY 2011 ($313,500).

Pharmaceutical Management

Background

Supply chain management continues to be one of the biggest challenges facing health care programs in Liberia. Existing gaps in the supply chain limit accessibility of ACTs for distribution by county health teams. Unreliable roads, unsuitable storage, inventory and warehouse management practices, and limited information sharing continue to contribute to stock outs of commodities, uncertain drug quality, and a general lack of confidence in the system. In the 2010 Basic Package of Health Services Accreditation, 34% of health facilities reported drug stock outs in the three months prior to accreditation.

Progress during last 12 months

Under the leadership of the MOHSW and in full collaboration with partners including PMI, a 10-year Supply Chain Master Plan was developed during 2010. The Master Plan integrates all pharmaceutical logistics into a single system to ensure transparency and responsiveness. The Supply Chain Management Unit was re-established and will now be responsible for all supply chain operations.

USAID assisted the MOHSW in proposing the optimization of the storage and distribution within the supply chain. In collaboration with other partners, PMI supported a review of the Inventory Control Management System parameters and the definition of logistics system performance review indicators.

Through the Procurement Plan & Monitoring Report for Malaria Products PMI helped the NMCP track central level stock status and shipments of anti-malaria commodities. At the peripheral level, the End Use Tool (See M&E section) was used twice in the last year to check in health facilities.

PMI, along with other partners, supported the drafting of Forecasting standard operating procedures for forecasting drug needs.

In collaboration with the diagnostics contractor, procurement planning and delivery for diagnostic materials to the National Drug Service was completed for FY 2009 and 2010. In collaboration with National Drug Service and the Supply Chain Management Unit the anti-malaria drug re-supply requests of counties were analyzed.

The LMIS is being implemented as pilot with technical assistance from DELIVER in Montserrado County where most of the health facilities are located. In collaboration with the Strengthening Pharmaceutical Systems (SPS) Project, the LMIS is also being incorporated in three additional counties. DELIVER focuses on the central level and SPS is focused on implementing this activity at the county level. The MOHSW has begun to benefit from the LMIS by receiving data on consumption from health facilities, which provide information on forecast for the procurement of drugs and supplies.

Proposed activities with FY 2012 funding ($950,000)

- Strengthen supply chain management system for antimalarial drugs at national level. This activity is seen as a key priority by the NMCP and the public health community, and will be a continuation of efforts started under previous years. Activities include the development of a pharmaceutical logistics plan, training CHTs to do regular monitoring and supervision. The Logistics Management and Information System roll out will in a phased manner and continue to be supported. DELIVER is currently conducting the LMIS in Montserrado County. The technical capacity in Supply Chain Management Unit and National Drug Service will be enhanced ($700,000); and

- Supply chain management at the county level. Provide support to counties to enhance their supply chain management to increase availability of ACTs in health facilities ($250,000).

11. INTEGRATION WITH OTHER GLOBAL HEALTH INITIATIVE PROGRAMS

11.1 Maternal and Child Health Services/Reproductive Health

Due to the high maternal and infant mortality rates 994/100,000 and 71/1,000, respectively GOL has developed a series of policies and strategic plans to reduce this burden; These include the National Health Policy and Plan, National Sexual and Reproductive Health Policy, Child Survival Strategy, National Nutrition Policy, Maternal Mortality Reduction Roadmap and the IMCI approach; Currently the MOHSW is developing a ten-year health

strategy (2011-2021) with focus on expanding the Basic Package of Health Services that will be expanded to all Liberians.

The GHI is in line with the health strategies developed in Liberia. This strategy pursues a comprehensive approach to achieve maximum impact with special focus on the health of women, newborns and children by delivering clean water, improving nutrition and maternal, newborn and women health, and combating infectious diseases such as HIV/AIDS, tuberculosis and malaria. PMI is contributing to this focus by supporting the delivery of integrated services at the facility level, which include services supporting maternal health and safe motherhood, child health, and prevention and treatment of HIV/AIDS, among others mentioned above. Although PMI funds target improved malaria diagnostics and treatment at the facility level, its support for training and supervision also helps to reinforce the other services being offered, since the combined funding of the different sectors enables counties to provide quality services to a larger segment of the population; without PMI's contribution this would be less likely.

Progress during last 12 months

The PMI platform has increased private sector engagement and community health messaging through ITNs distribution campaigns. To provide greater access to care, iCCM and family planning have shifted from facility-based staff to CHVs within focus communities in Bong, Lofa, and Nimba counties. In other counties, PMI will use the ANC platform with other disease control programs to improve reproductive health services.
Proposed activities with FY 2012 funding (costs covered under other sections)

- Improve the capacity and technical expertise within the MOHSW on Basic Package of Health Services nationwide and, with other partners, expand the implementation of iCCM approach in other communities;
- Create demand for IPTp at community level by reinforcing CHV support; and,
- Integrate key malaria interventions such as ITNs in the Expanded Program on Immunization and Vitamin A campaigns and utilize ITN distribution to channel Family Planning services nationwide.

11.2 HIV/AIDS AND MALARIA

The prevalence of HIV/AIDS (1.7%) in Liberia is expected to be largely unchanged from the results of the 2007 DHS, which was the first national survey to use population-based testing to determine HIV prevalence. Monrovia and counties in the eastern part of the country have higher HIV prevalence as these areas along international borders with commercial, mining and cross-border trading activities. The National AIDS Control Program has 176 sites for HIV counseling and testing and 156 centers for prevention of mother to child transmission.

PMI will be collaborating with the National AIDS Control Program and the National Tuberculosis and Leprosy Control Program to ensure more HIV positive pregnant women receive IPTp and to provide an integrated diagnostic service. PMI will strengthen its collaboration among the NMCP, National AIDS Control Program and the National Tuberculosis and Leprosy Control Program to provide ITNs to people living with HIV/AIDS (PLWHA) and treat co-infections.

Proposed activities with FY 2012 funding (costs covered under other sections)

- PMI will work through its implementing partners to link with organized groups and NGOs to reach PLWHA with ITNs, BCC and ensure that pregnant women receive antiretroviral or daily cotrimoxazole through the health facilities or SP for IPTp, if that is the only available option;
- Support training and diagnosis for co-infection of HIV, tuberculosis and malaria at regional and central levels; and,
- Support integrated supportive supervision of laboratory technicians.

12. CAPACITY BUILDING AND HEALTH SYSTEM STRENGTHENING

Background

The scale up of malaria activities in Liberia will depend on a well-trained and active malaria staff particularly at the county level. PMI continues to support in-service and pre-service training for HCWs and CHVs through short-term trainings and technical assistance by partners. In addition to the development of the current NMCP Strategic document which was fully sponsored by PMI, a funding gap analysis for Global Fund proposal writing and the development of a document on Integrated Standard Operating Procedures for Procurement and Supply Chain Management was supported by PMI. PMI will continue working to improve the human resource capacity of the MOHSW and its key partners, improving quality of care and support and management systems. These PMI interventions will complement other health activities (funded by USG and other donors) to improve financial and program management, procurement of malaria drugs, ITNs and diagnostics, and the BCC and M&E capabilities of the MOHSW and the NMCP.

Progress during last 12 months

Currently, PMI through the DELIVER project is providing technical assistance to the MOHSW for the implementation of the SCMP. A pilot phase is underway in Montserrado County where approximately 60% of health facilities are located. Working closely with the National Drug Service , a delivery service is being initiated to avoid stock outs of essential malaria drugs. The implementation of a MIS is also underway with support from PMI to collect data on the stock flow of malaria drugs to inform timely resupply and avoid stock outs. Training in forecasting and quantification continues to be provided to increase the capacity of the MOHSW to effectively manage its supply chain system. PMI is also providing technical support for the establishment of a central warehouse which will be linked to several satellite warehouses at regional level across Liberia. The Supply Chain Unit of the MOHSW has been assessed and will receive needed office equipment from PMI to bolster

what has been provided by the Global Fund. Four NMCP staff also received training in applied entomology in Ghana and are currently collaborating with the IRS contractor to provide increased entomological services at the NMCP and training county level entomology technicians for entomologic monitoring.
PMI will continue to provide funding to the NMCP to carry out supportive supervision at the county and central levels to ensure HCWs conform to policy guidelines for diagnosing and treating malaria.

Proposed Activities with FY 2012 funding ($50,000)

- Strengthening supportive supervision and management of the NMCP PMI will complement funding from the consolidated Global Fund Round 7 and Round 8 grants for operational support and capacity building of the NMCP. ($50,000)

13. COMMUNICATION AND COORDINATION WITH OTHER PARTNERS

Background

Several mechanisms for communication and coordination between the NMCP and partners exist in Liberia:

Liberia Country Coordinating Mechanism

The Country Coordinating Mechanism is made up of representatives from the donor and NGO communities as well as technical and managerial leads from UN agencies and MOHSW senior leadership. USAID is a voting member of the Country Coordinating Mechanism. They meet to review options and plans for submission of proposals to the Global Fund and keep abreast of progress toward start-up of activities and grant implementation. The Country Coordinating Mechanism does not have any direct role in implementation of malaria activities. Liberia is consolidating the Global Fund Round 7 phase 2 and the Round 10 grants.
Malaria Steering Committee

Recommended by RBM and in response to the current malaria situation in Liberia, a Malaria Steering Committee was formed to strengthen partnerships and coordination. The Malaria Steering Committee includes the NMCP as well as representatives of all implementing partners, including relevant government ministries and agencies, international and local NGOs, donor agencies, and multilateral organizations. It meets on a monthly basis. The Malaria Steering Committee advises and guides the NMCP and other participating partners on the content and organization of their work plan and projects.

Donors' technical coordination forum

The PMI team initiated a donors' technical coordination forum where United Nations Development Program (UNDP), UNICEF, WHO, and PMI meet monthly to exchange information on issues of mutual interests and coordinate activities;

Donor coordination meeting

Every month the MOHSW chairs a meeting of donors and heads of departments in the MOHSW and reviews major developments in the health sector. The PMI and other USAID health programs participate in these meetings.

Progress during last 12 months

Over the last quarter the NMCP with PMI coordination and support has developed a consolidated 2011 work plan including budget; this template facilitates follow-up of malaria control program activities on a quarterly basis.

The MOHSW has also established a National Diagnostics Unit to coordinate diagnostics activities for service delivery across Liberia. A TWG has been established by the Unit to plan and coordinate activities on diagnostics. The TWG is currently reviewing a National Diagnostics Strategic Plan that will harmonize diagnostics activities for malaria, HIV/AIDS and Tuberculosis with support from partners.

The Supply Chain Management Unit of the MOHSW will be responsible for rolling out the SCMP developed for Liberia with technical support from PMI. A technical working group for supply chain issues meets monthly to review progress made in the implementation of the supply chain and propose remedies for unresolved challenges.

Proposed activities with FY 2012 funding (no additional cost to PMI)

- PMI is developing a National Guideline and National Policy for malaria diagnostics in collaboration with the NMCP. These documents are expected to feed into the National Diagnostics Strategic Plan of the MOHSW currently being reviewed.
- The SCMP is being implemented in a phased fashion with a pilot being carried out in Montserrado County, which will subsequently be rolled out to the rest of the country.
- The management information system being piloted will enable data from health facilities to be collected, collated and analyzed through the supply chain system for adequate quantification and forecasting of antimalarial drugs.

14. PRIVATE SECTOR PARTNERSHIPS

Background

It is essential that the private sector collaborates with the NMCP for Liberia to achieve its malaria control objectives. The large populations living within the concession areas managed by private companies remain in malaria transmission foci and may not easily access effective preventative malaria services. As PMI-supported IRS activities demonstrate success, companies have expressed interest in conducting IRS as part of malaria prevention in the context of corporate social responsibility. To further the sustainability of IRS, an integral part of malaria control strategy in Liberia, private sector participation must be expanded.

PMI is currently the only international donor funding IRS activities. The NMCP would like other donor groups and private sector collaboration in the funding of IRS. The country team

guided by the NMCP and PMI will facilitate dialogue to encourage private sector participation in IRS activities. Establishing a network of private sector partners to coordinate experiences and information will help. The team will also develop a concept note on private sector collaboration to assist with private sector participation.

The NMCP has demonstrated leadership by engaging several companies in discussions that have resulted in increased private sector involvement in IRS. A Memorandum of Understanding has been agreed with the Liberia Agricultural Company and the LIBINC Oil Palm Inc in Grand Bassa County. Additionally, an agreement is being finalized with another mining company, BHP Billiton. These are in addition to the agreement already in progress with Arcelor Mittal Mining Company in Nimba County. The partnership with these private companies provided additional resources that were leveraged for the 2011 IRS campaign and resulted in more than 90,000 households getting sprayed. The NMCP has committed itself to efforts that will strengthen the private partnership for IRS in Liberia and will consider a strategic approach to meet the goal of its national strategic plan.

Progress during last 12 months

The second phase of the PMI IRS implementation project was rolled out during the third quarter of 2010; this was a public-private partnership initiative. During the course of the year, three large corporate entities— Arcelor Mittal Mining Company, an iron ore mining company, and two rubber plantation companies, Firestone Liberia and Liberia Agricultural Company—expressed interest in undertaking an IRS program to protect their employees. These companies compose close to 155,000 employees with 100,000 dependents residing within company premises. Initial spraying of the Arcelor Mittal Mining Company concession has taken place. NMCP is still talking to Firestone Liberia to also start IRS at its concession, but has successfully sprayed at the LIBINC Palm Oil concession area. Nine employees and nine volunteers were trained. Spraying was conducted over a 17-day period, with 1,168 structures sprayed, and 6,762 people and 1174 households protected by IRS.

PMI plans to use this partnership as an example of successful collaboration between the public and private sectors, and hope that it will lead the way for future collaboration with other private companies in Liberia.

Proposed activities with FY 2012 funding (costs covered under IRS)

The NMCP and PMI will include IRS activities in private sector concessions if the Liberia Agricultural Company, LIBINC Palm Oil, and Arcelor Mittal Mining Company concession areas overlap with the targeted counties identified in the upcoming MIS. Funding for these concession areas will be determined as their inclusion in IRS activities are finalized.

- Support from PMI for private companies will include assisting with the mobilization of communities, and providing technical training and guidance to sprayers and supervisors in line with international standards. PMI will also supply insecticides and spraying equipment and encourage daily reports, feedback, and summaries from spray teams as well as an evaluation meeting with lessons learned at the completion of the activity. Spray teams will be requested to present regular data on malaria morbidity and mortality

15. BEHAVIOR CHANGE AND COMMUNICATION

Background

In order for donor and NMCP malaria control efforts to be successful, communities, households and individuals must adopt certain key behaviors. The presence of commodities such as ITNs and ACTs alone will not reduce malaria transmission. According to the 2009 MIS, only 26% of children under-five and 33% of pregnant women, slept under an ITN the night before the survey. Also, the MIS showed that only 17% of children under-five received an ACT within 24 hours of onset of fever. Although it is likely that ongoing efforts have improved these statistics, there clearly is much work to be done.

The NMCP has released their latest National Strategic Plan for 2010 through 2015 which includes a multichannel approach for health education with emphasis on radio messages; using community health volunteers for dissemination of malaria messages in their communities; using peer educators, trained care-givers, traditional authorities, and child-to-child communicators as agents for behavior change; and using social mobilization and health system support for capacity building at all levels. To reinforce these approaches, PMI is working with NMCP and other stakeholders to develop a National BCC Strategic Plan which is expected to be will be finalized by the end of September 2011.

Progress during last 12 months

The PMI, through its implementing partners, is assisting the NMCP in several ways. CHVs are being trained and equipped with communication materials, to directly reach households, conveying important messages about ITN use and care seeking behavior for people with fever, in particular, children under-five. CHVs are also prepared to assist families to hang and care for ITNs; additional messages about ANC attendance are communicated at the time of these encounters. Some of the challenges reported by partners working at the community level include inconsistent availability of job aids, transport, string, and nails.

PMI partners have also contributed to the development of communication materials including posters, flipcharts, and other training materials. These materials were developed using guidelines provided by the NMCP, and are being deployed by PMI implementing partners and other donors including the Global Fund. Moreover, many implementing partners are assisting with the production and transmission of radio spots including dramas and advertisements. The content of the messages was provided by the NMCP and implementing partners are assisting with translation into local dialect, production of shows and ads, as well as transmission of the final product. Radio programs include dialogues about signs and symptoms of malaria, as well as proper care-seeking behaviors, in addition to use of ITNs. Although radios are widely used in Liberia, and are often seen as a tool for communicating important information, implementing partners agree that use of mass media alone is not sufficient to affect behavior change.

Finally, PMI is training HCWs, on how to communicate important messages about malaria prevention and treatment-seeking behavior. The training also includes community outreach activities that can be undertaken in the health facility catchment area, such as interaction with CHVs and mobilization for ITN campaigns.

Proposed activities with FY 2012 funding ($700,000)

The PMI will continue to support the NMCP to roll out its latest BCC strategy by providing resources to train CHVs, HCWs, peer educators, and community and local leaders in improved malaria prevention and treatment-seeking behavior together with production and dissemination of communication materials and mass media messaging (including radio spots), and surveys to determine the effectiveness of communication efforts in changing behavior. The PMI activities are in coordinated with the Global Fund's Principal Recipient and the NMCP to ensure that efforts are complementary.

The following activities are being proposed with FY 2012 funding:

- BCC for ITNs, IPTp and case management. In carrying out this activity PMI will implement an integrated communication campaign to promote all aspects of malaria interventions. It will support BCC at community level to assist the NMCP to promote correct and consistent use of ITNs, particularly by pregnant women and children under-five. Post-distribution follow up to verify hanging of ITNs is also to be included. Support a broad communication strategy on the dangers of malaria, the need for prompt referral to health facilities, ACTs, prevention of malaria in pregnancy. IRS BCC is included in IRS costs ($700,000).

16. MONITORING AND EVALUATION PLAN

Background

The NMCP is finalizing its M&E strategy that follows internationally-accepted standards and facility- and population-based indicators. The M&E Strategy was developed in collaboration with the M&E Unit of the Department of Planning of the MOHSW and other technical partners, including PMI. The plan is closely integrated with the HMIS of the MOHSW. A more detailed operational plan for M&E is prepared annually. Table G summarizes the approaches and systems for collecting data.

In spite of a sound M&E vision, the MOHSW and NMCP have had problems with implementation of its more routine systems such as the HMIS because of limited technical capacity and limited funding. In contrast, survey activities are generally well funded and implemented with outside technical support. The MIS and end-use verification activities are generally funded by PMI. The DHS receives funding from several sources but the main source is USG. Health facility surveys and post-ITN campaign surveys are expected to be funded by the Global Fund Round 10. Sentinel sites are supported directly by the MOHSW.

Table G: Data Sources for M&E in Liberia, 2003 – 2015										
Data Source	**Calendar/PMI Year**									
	2005	**2006**	**2007**	**2008 1**	**2009 2**	**2010 3**	**2011 4**	**2012 5**	**2013 6**	**2014 7**
HMIS	X	X	X	X	X	X	X			
Sentinel sites	X	X	X	X	X	X	X			
DHS				X						
MIS			X		X		(X)		(X)	
MICS										
"Dipstick" surveys										
Health Facility Survey	X				X		(X)		(X)	
Supervision and Evaluation Reports	X	X	X	X	X	X	X			
End Use Tool						X	X	(X)	(X)	(X)

(X)-already scheduled and approved

In 2009, the NMCP conducted its first follow up to the 2005 MIS and now has comparative data on malaria for the period 2005 - 2009. Also in 2009, a national health facility survey was conducted providing observation-based case management indicators. Quarterly verification of commodity availability in health facilities using the end use verification tool began in April 2010. Finally, the NMCP and partners conduct ad hoc surveys at district and county levels that provide additional contextual information on malaria indicators. One example of these are rapid surveys conducted by a local contractor to assess how well BCC messages are reaching target populations. This survey is a form of rapid assessment method implemented in selected areas of implementation that provides a range of progress being made by partners providing malaria services to communities. These rapid surveys implemented during the BCC campaign provide good monitoring data on the impact of the campaign. These include the EPI coverage survey conducted by UNICEF, which has malaria indicators such as bed net ownership and use, that is endorsed by the MOHSW and used by all partners to monitor the progress of interventions for malaria prevention and control.

Progress during last 12 months

The recently awarded Global Fund Round 10 grant includes support for several M&E activities, including support to health facility surveys, post-ITN campaign surveys and quarterly visits by NMCP personnel to CHTs to support M&E activities.

Sentinel Sites. The NMCP has two fully functional sentinel sites in hospitals for collection of routine malaria indicators. Both sites produce standardized monthly reports of key malaria indicators. Monthly review meetings of sentinel site data are conducted with health personnel in health facilities and involve NMCP staff. The MOHSW supports the sentinel sites directly.

PMI began implementation of end use verification (EUV) in Liberia in April 2010. Efforts were made to ensure that end use verification fits in with already planned supervisory

activities that the MOHSW and NMCP are carrying out. Because the number of health facilities in Liberia is relatively small, the total annualized number of facilities assessed with the EUV provides statistically significant results.
Proposed activities with FY 2012 funding ($542,100)

- Support to the DHS 2012 - 2013. PMI – Liberia will support the DHS in 2012 – 2013 in coordination with other donors and sources of funding. Together with the MIS, the DHS, with a malaria module, provides critical information for M&E of malaria control activities. Additionally, the DHS will provide a second all-cause mortality data point for children under five for the RBM impact evaluation. The impact evaluation will be conducted in late 2012 or early 2013 ($300,000);

- End Use Verification Tool. The quarterly end use verification continues to provide useful information on availability of malaria commodities in health facilities. PMI will provide resources to implement the end use verification twice a year. Because a health facility survey, that collects similar data will be conducted in 2012, the end use verification will not be implemented during those quarters.($100,000);

- Malaria Program Review. PMI will provide resources for the annual malaria program review (MPR). The MPR examines programmatic, operational and data aspects of the NMCP and offers a realistic snapshot of the functioning of the program, its problems and successes. This exercise, conducted annually with technical support from WHO, provides many inputs for PMI, both for operational activities as well as for the development of the annual MOP. ($30,000);

- Supportive supervision. As districts and regional health teams become more self reliant and are able to implement activities on their own, the role of the NMCP is shifting to a more normative and supportive role. Resources will be made available to NMCP to do supportive supervision of district health teams and health facilities ($100,000); and,

- Technical assistance. CDC will conduct one technical assistance visit to support NMCP for M&E activities. PMI resident advisors, in collaboration with NMCP, will determine technical priorities in M&E and will request an appropriate headquarters-based technical advisor ($12,100)

17. STAFFING AND ADMINISTRATION

Three health professionals, two serving as Resident Advisors (one representing CDC and one representing USAID) and one foreign service national, oversee PMI in Liberia. All PMI staff members are part of a single inter-agency team led by the USAID Mission Director or his/her designee in country. The PMI team shares responsibility for development and implementation of PMI strategies and work plans, coordination with national authorities, managing collaborating agencies and supervising day-to-day activities. Candidates for these positions (whether initial hires or replacements) will be evaluated and/or interviewed jointly by USAID and CDC, and both agencies will be involved in hiring decisions, with the final decision made by the individual agency.

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

18. TABLES/ANNEXES

18.1 Table 1 – Budget Breakdown by Partner
18.2 Table 2 – Planned Obligations
18.3 TDY – Schedule of Temporary Duty (TDY)

Table 1
President's Malaria Initiative - Liberia
(FY 2012) Budget Breakdown by Partner

Partner	Activity	Budget ($)	%
CDC	Technical assistance to various parts of the malaria program	$60,500	0.4%
Deliver TO3	Procurement of ITN, ACTs, severe malaria drugs, RDTs and laboratory supplies; support supply chain management	$4,726,000	34.2%
IRS 2 IQC	Indoor residual spraying in 80,000 households	$3,745,000	27.1%
Macro	Support Demographic Health Survey	$300,000	2.2%
NMCP/MOHSW	Support NMCP to carry out supervision. Support for training for NMCP personnel	$700,000	5.1%
New Mechanism	Integrated BCC for malaria control; support IPTp, training activities	$2,150,000	15.6%
SIAPS	Support supply chain management at district level	$663,500	4.8%
USP	Monitoring of drug quality	$100,000	0.7%
TBD	Malaria program review, support national laboratory, refresher training in diagnostics, environmental monitoring, and integrated vector control	$335,000	2.4%
CDC/USAID	Technical advisors	$1,020,000	7.4%
Total		**$13,800,000**	**100%**

Table 2
President's Malaria Initiative - Liberia
Planned Obligations for FY 2012

Proposed Activity	Mechanism	Budget		Geographical area	Description
		Total $	Commodity $		
PREVENTION					
Insecticide Treated Nets					
Procure LLINs	Deliver TO3	802,500	642,000	Nationwide	Procure 150,000 LLINs for distribution during campaigns, in health facilities and/or community-based systems
Distribution of LLINs	NMCP	250,000	250,000	Nationwide	Distribution of LLINs, training and supervision0
SUBTOTAL ITNs		**1,052,500**	**892,000**		
Indoor Residual Spraying & other Vector Control Measures					
Indoor residual spraying	IRS2 IQC	3,700,000	3,700,000	Selected areas based on need, projected effectiveness and insecticide resistance levels	Spray 80,000 households with pyrethroids and carbamates. Costs include BCC in support of IRS.
Increase entomology capacity	TBD	75,000		NMCP	Provide training, equipment and supplies for NMCP entomology technicians
Insecticide resistance monitoring	IRS2 IQC	45,000		IRS Target areas	Continue insecticide resistance monitoring at four sites
Technical assistance	CDC	24,200		NMCP	Two visits to monitor planning and implementation of vector control activities
Environmental monitoring	TBD	30,000		IRS target areas	Assist NMCP in the conduct of an independent environmental monitoring and compliance inspection
SUBTOTAL IRS		**3,874,200**	**3,800,000**		
Intermittent Preventive Treatment in Pregnancy					
Pre-service for MIP	New Mechanism	150,000		Nationwide	Continue training in MIP in selected pre-service nursing, medical and midwifery schools.
In-service training of HCWs	New Mechanism	150,000		USAID Counties	Continue training in MIP in-service training and supervision of health workers.
Support orientation workshops in the prevention and control of MIP	New Mechanism	150,000		USAID Counties	Support orientation workshops for traditional midwives and CHVs in prevention and treatment of MIP
Technical assistance	CDC	12,100		Nationwide	Technical assistance to monitor and support MIP activities in country from CDC
SUBTOTAL IPTp		**462,100**	**0**		

TOTAL PREVENTION		**5,388,800**	**4,592,000**		
CASE MANAGEMENT					
Diagnosis					
RDT Procurement	Deliver TO3	1,800,000	1,800,000	Nationwide	Procure 2.5 million RDTs to fill gap
Laboratory supplies	Deliver TO3	50,000	50,000	Nationwide	Procure laboratory supplies for microscopy, including reagents and others for health facilities
Support national lab	TBD	100,000		Monrovia	Support NMCP/MOHSW to strengthen the national reference laboratory, in collaboration with other donors by providing equipment such as microscopes, reagents, and computers.
Refresher training and supportive supervision	TBD	100,000		Nationwide	Refresher training laboratory technicians in malaria diagnostics
Support capacity development in health facilities	New Mechanism	150,000		Nationwide	Continue support health facilities for early and accurate diagnosis of malaria cases
Technical assistance	CDC	12,100		NMCP	Technical assistance provided to assess and support malaria diagnostic activities
SUBTOTAL -- Diagnosis		**2,212,100**	**1,850,000**		
Treatment & Pharmaceutical Management					
ACT Procurement	Deliver TO3	1,173,500	1,173,500	Nationwide	Procure 2,350,000 ACT doses for private sector, public and community
Severe malaria meds	Deliver TO3	200,000	200,000	Nationwide	Procure 150,000 treatments for severe malaria
Support capacity development for appropriate and prompt treatment of malaria	New Mechanism	850,000		Nationwide	Continue support for appropriate and prompt treatment and early referral of malaria cases including pre-service and in-service training for health workers, CHVs and health supervisors
Support iCCM	MOHSW	300,000		USAID Counties	Support the roll out of community case management of malaria in focus districts
Drug quality	USP	100,000		Nationwide	To monitor the quality of antimalarials.
Private sector case management	SIAPS	313,500		Nationwide	Support the implementation of private sector cases management through training activities, supervision and implementation of costs and logistics mechanisms
Supply chain management	Deliver TO3	700,000		Nationwide	Support NMCP/MOHSW to strengthen the drug management system capacity, including development of drug financing, registration, logistics, information systems, supervision, forecasting and warehousing plans at central level
Supply chain management (District level)	SIAPS	250,000		Nationwide	Support NMCP/MOHSW to strengthen the drug management system capacity, including development of drug financing, registration, logistics, information systems, supervision, forecasting and warehousing plans at district level.
SUBTOTAL - Treatment & Pharmaceutical		**3,887,000**	**1,373,500**		

Management					
TOTAL CASE MANAGEMENT		**6,099,100**	**3,223,500**		
CAPACITY BUILDING					
Capacity Building	NMCP	50,000			Strengthening supportive supervision and management of the NMCP for operational support and capacity building of NMCP
TOTAL CAPACITY BUILDING		**50,000**	**0**		
BEHAVIOR CHANGE AND COMMUNICATION					
BCC for ITNs, IPTp and Case Management	New Mechanism	700,000		Nationwide	Implement an integrated communication campaign to promote all aspects of malaria interventions. It will support year-long IEC/BCC at community level to assist NMCP to promote correct and consistent use of LLINs, particularly by pregnant women and children under-five, using mixed media including school children. Post-distribution follow up to verify hanging of LLINs is also to be included. Support broad communication strategy of NMCP on dangers of malaria, the need for prompt referral to health facilities, and current drug policy, and MIP, targeting HCWs and general public. IRS BCC is included in IRS costs.
TOTAL BCC		**700,000**	**0**		
MONITORING AND EVALUATION					
DHS	Macro	300,000		Nationwide	Support DHS with Malaria Component
End Use Tool & Rational Use	SIAPS	100,000		Nationwide	To support NMCP in the implementation of End-Use Verification Tool
Malaria Program Review	TBD	30,000		Monrovia	Support NMCP to conduct its annual malaria program review.
Supportive supervision of activities	NMCP	100,000		Nationwide	Support NMCP to conduct supervisory activities
Technical assistance	CDC	12,100		NMCP	Provide technical assistance in monitoring and evaluation
TOTAL - M & E		**542,100**	**0**		
STAFFING AND ADMINISTRATION					
TOTAL - STAFFING AND ADMINISTRATION		**1,020,000**	**0**		
GRAND TOTAL		**13,800,000**	**7,815,500**		

Temporary Duty

President's Malaria Initiative - Liberia

TDYs FY2012 MOP

Type of TDY	Number of TDYs	Name/Agency	Description	Dates	Cost/Source
TA Diagnostics	1	CDC	Monitor the progress on malaria diagnostics capacity development in Liberia.		12,100
TA Entomology and insecticide resistance monitoring	2	CDC	To help the implementing partner on insecticide resistance monitoring and the mentoring of local staff working on vector control.		24,200
M&E	1	CDC	NMCP and implementing partners on the proper data collection and preparation for the Impact Evaluation		12,100
General TA	1	CDC	To support the in-country team. The timing of this travel will be determined by the country need and coordinated with the RAs.		12,100