

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

**PRESIDENT'S MALARIA INITIATIVE**

**Malaria Operational Plan (MOP)**

**RWANDA**

**FY 2009**

September 24, 2008

## Table of Contents

A.	EXECUTIVE SUMMARY .....	3
B.	THE PRESIDENT’S MALARIA INITIATIVE .....	9
C.	MALARIA SITUATION IN RWANDA.....	9
D.	NATIONAL MALARIA CONTROL PLAN AND STRATEGY .....	11
E.	CURRENT STATUS OF MALARIA INDICATORS .....	12
F.	GOAL AND TARGETS OF THE PRESIDENT’S MALARIA INITIATIVE.....	13
G.	EXPECTED RESULTS – YEAR THREE .....	14
H.	INTERVENTIONS - Insecticide-treated Nets.....	15
I.	INTERVENTIONS - Indoor Residual Spraying.....	17
J.	INTERVENTIONS - Malaria in Pregnancy .....	20
K.	INTERVENTIONS – Case Management .....	22
L.	INTERVENTIONS - Behavior Change Communication (BCC).....	34
M.	INTERVENTIONS –Epidemic Surveillance and Response .....	35
N.	HIV/AIDS and Malaria .....	37
O.	CAPACITY BUILDING WITHIN NATIONAL MALARIA CONTROL PROGRAM	38
P.	COMMUNICATION AND COORDINATION .....	41
Q.	PRIVATE SECTOR PARTNERSHIPS .....	42
R.	MONITORING AND EVALUATION PLAN.....	42
S.	STAFFING AND ADMINISTRATION .....	44

## A. EXECUTIVE SUMMARY

The President's Malaria Initiative (PMI) began supporting activities in Rwanda in FY 2007 in close collaboration with the National Malaria Control Program (French acronym, PNILP) as well as international and national partners. Malaria is a major, though apparently declining, public health problem in Rwanda. Recent Ministry of Health (MOH) data suggest that malaria transmission has decreased substantially since 2005-2006. Reported malaria illnesses seen at health facilities declined from 1.5 million in 2005 to 1.3 million in 2006, and then to approximately 900,000 in 2007. In 2006, malaria was still the leading cause of morbidity and mortality in Rwanda, representing 37% of outpatient consultations and 41% of hospital deaths; but by 2007, these figures had fallen to 15% and 22% respectively, and malaria had become the second rather than leading cause. The reported malaria case fatality rate in health centers between 2001 and 2007 (Health Management Information System data) for children under five and all ages, decreased from 10% and 9.3% to 0.3% and 0.6% respectively. Nevertheless, the entire population remains at risk of malaria and must be protected, especially the 1,600,000 children under five and 409,000 women becoming pregnant each year.

The 2007 Malaria Indicator Survey reported that 54% of all households owned an ITN and 60% of children under five and pregnant women slept under one the night before the survey. The parasitemia level in children under five was measured at 2.4%. According to the 2008 interim DHS, the child mortality rate is 103 deaths per 1,000 live births, a decrease from the 2005 rate of 152. These data represent dramatic decreases from previous levels. The PNILP introduced artemether-lumefantrine (AL), an artemisinin-based combination therapy (ACT), to all health centers nationwide in 2006. Home-based management (HBM) of fever with anti-malarial drugs for children under five, provided by trained community health volunteers, increased with introduction of ACTs at the community level in 2007. Ownership and use of long-lasting insecticide treated nets (LLINs) increased rapidly in both rural and urban areas following the distribution of 1.4 million nets in 2006 as well as increased distribution through routine health center delivery channels. The PNILP has begun to revise its national strategy (2008-2012) based on these data, planning to target the entire population, not only the most vulnerable, with malaria prevention and control measures.

The following table shows activities proposed at the time the FY 2008 Malaria Operational Plan (MOP) was written, together with expected results as of March 2009.

<b>Year 2 Targets</b> (PMI and partners)	<b>Expected Results After Year 2 Implementation</b> (by March 2009)
At least 600,000 LLINs (of which PMI will contribute 300,000) will have been distributed to children under five and/or pregnant women.	Approximately 1.5 million LLINs will have been distributed by September 2009 to high risk vulnerable groups by partners including Global Fund, UNICEF and PEPFAR. Of this total, PMI's FY 08 contribution is 500,000 LLINs procured and delivered by March 2009.
At least 85% of houses (approximately 267,000 households) in geographic	202,142 households (approximately one million residents) are being protected by IRS in five districts

areas targeted for IRS during Year 2 will have been sprayed.	in 2008. A shift in the IRS strategy toward spraying in targeted high risk areas within districts, based on the disease burden, accounts for the reduced number of households sprayed.
One million sulfadoxine-pyrimethamine (SP) treatments will have been procured to cover 100% of pregnant women with two or more doses of IPTp. A total of 530 healthcare providers will have been trained in IPTp.	PNILP is revising its malaria in pregnancy strategy and discontinuing IPTp by the end of 2008. Fifty district supervisors and approximately 250 providers from 12 districts have been trained in integrated focused antenatal care training.
HBM supported in up to 10 of 21 districts nationwide.	Implementation of HBM expanded in ten districts with training of 5,127 community health workers in ACT use. A total of 900,000 ACTs for HBM and private sector were repackaged with local language outer packaging for two age-specific treatments.
Roll out of malaria treatment with ACTs in the private sector through at least 100 accredited pharmacies and drug outlets.	Two hundred private sector pharmacies trained in treatment of malaria with ACTs for children under five and for recognition of adverse drug reactions.

The planning mission for the Year 3 Malaria Operational Plan (MOP) for Rwanda was conducted in July 2008. The planning team included representatives from the U.S. Agency for International Development (USAID), the Centers for Disease Control and Prevention (CDC), and the PNILP. Nearly all national and international partners involved with malaria prevention and control in Rwanda participated. Based on discussions and meetings with the PNILP and partners, the following major activities will be supported during Year 3:

Insecticide-treated nets (ITNs): In line with WHO recommendations, the PNILP now aims to achieve 90% LLIN coverage for the entire population, not just those at greatest individual risk. The new strategy promotes one LLIN for two people or three nets per household and replacement of nets every three to five years, according to the type of net. The estimated annual need totals nearly 700,000 LLINs and the net replacement need is projected to be approximately 1.7 million nets in 2009 since the last major distribution was carried out in September 2006. With Year 1 funding, PMI procured 550,000 LLINs for the poorest of the poor. PMI will also procure 500,000 nets in Year 2 to contribute to routine services and the measles/ITN campaign in September 2009. In addition, PMI is strengthening ITN distribution systems to district and community levels to prevent stock-outs and leakage, and is increasing information, education, communication/behavior change communication (IEC/BCC) activities to promote correct and consistent net use among vulnerable groups.

In Year 3, PMI will continue to support free and highly-subsidized LLINs distributed through routine channels by procuring 800,000 LLINs for children under five and pregnant women, as well as for the poorest of poor households. A portion of these nets will support the measles/ITN campaign in 2009 as replacement nets for children under five. PMI will continue to invest in improving net use with a central-level IEC/BCC task force to develop integrated malaria messages for behavior change and community mobilization. These activities and contributions from other donors are expected to bring household ownership of one or more LLINs to over 80% nationwide.

Indoor residual spraying (IRS): PMI supports the PNILP's strategy to reduce malaria transmission through selective IRS and conducting entomological monitoring in targeted high malaria risk areas. With PMI assistance, IRS began in August 2007 in all sectors of three Kigali Districts (Gasabo, Nyarugenge and Kicukiro), with a total of 160,000 houses sprayed. In Year 2, PMI is supporting a second, but more targeted, spray round beginning in August 2008 in high risk sectors of five districts (the previous three plus Kirehe and Nyanza), reaching an estimated 202,142 households. A third spray round is planned for January 2009 covering these five previously targeted areas. In addition to procuring insecticide and spray equipment, recruiting and training spray operators, and associated IEC activities, PMI provided technical assistance to the PNILP to increase their entomological capacity for resistance monitoring in the districts targeted for IRS by supporting the development of an entomology monitoring plan and an insectary.

For Year 3, PNILP has requested PMI support to expand IRS to additional targeted areas (reaching up to 275,000 households), through a single round with a long-lasting formulation of insecticide to maximize impact during the highest transmission period and through the second transmission peak as well. To supplement on-going capacity building at the national level, continued financial and technical support for district-level vector control training is planned, primarily to develop IRS oversight capability. PMI in Year 3 will also continue to support the insectary and implementation of the entomology monitoring plan.

Malaria in Pregnancy (MIP): Because of increasing parasite resistance to SP and decreasing malaria prevalence, the PNILP is now reviewing its IPTp policy and will discontinue IPTp at the end of 2008. However, PMI continues to support other aspects of the prevention and treatment of malaria in pregnancy strategy.

In Year 2, PMI supported improvements in the quality of integrated focused antenatal care (FANC) through training and capacity-building efforts at national and district levels. With FY08 funding, PMI procured a one year supply of iron and folic acid. PMI supported the MOH and MIP partners to develop and produce training materials to strengthen general antenatal care services and integrated FANC training targeting 12 districts and 250 providers. In Year 3, PMI will collaborate with partners in the training, supervision and implementation of the community health worker package and focus on links between these personnel and facilities to ensure that pregnant women own and use LLINs, seek ANC treatment early and regularly, and receive prompt treatment for malaria.

Case management: All health facilities officially transitioned to AL as the first-line treatment for uncomplicated malaria in October 2006. The Global Fund now procures all AL nationwide and provides diagnostic and other support for facilities. PMI concentrates on development of human resources and systems for HBM and the private sector. Eighteen of the 19 districts in the country that are considered malaria endemic zones have functioning HBM programs. Two additional districts have introduced the use of RDTs in the four health center catchment areas. PMI also supports the repackaging of HBM and private sector ACTs to ensure recognition and compliance among caretakers, as well as to track facility versus community treatments. PMI also supports BCC/IEC to promote timely treatment seeking and proper use of AL, as well as household surveys of care-seeking behavior. PNILP and PMI partners completed training of the pharmacists and nurses in 228 registered private sector

outlets nationwide and ACT treatment for children under five commenced at these outlets in early 2008.

In Year 3, PMI will continue supporting prompt and effective case management of malaria at health facilities as well as at the household level through HBM and in the private sector. At the health facility level, PMI will concentrate on the strengthening of the drug supply chain and on BCC. PMI will also strengthen quality assurance/quality control at national and district levels for accurate malaria diagnostics, and will support the PNILP's supervisory role to monitor and reinforce the correct use of AL at health facilities and at the community level.

Monitoring and evaluation (M&E): The PNILP has developed a costed malaria M&E plan, linked with broader M&E strategy development within the MOH; but significant elements have not yet been implemented. PMI supports M&E and malaria surveillance systems. In the first two years, PMI supported verbal autopsies linked with the 2008 interim DHS, as well as a national health facility survey, development of a community-based information system, and follow up to implement the malaria M&E strategy. PMI has also provided partial support for development of an internal USAID M&E Unit. In Year 3, PMI will continue support for PNILP M&E activities, including implementation of the national strategy, strengthening of epidemic surveillance capacity and activities, implementation of the 2009 Malaria Indicator Survey, and evaluation of HBM and private sector case management.

The proposed FY09 PMI budget for Rwanda is \$16.3 million. Of this amount, 37% will support procurement and distribution of LLINs, 15% implementation of community-based management and treatment of malaria and strengthened malaria laboratory diagnosis, 33% IRS, 5% malaria in pregnancy activities, and approximately 2% monitoring and evaluation. Forty-six percent of the total budget will be spent on commodities.

**ABBREVIATIONS and ACRONYMS**

AQ/SP	Amodiaquine/sulfadoxine-pyrimethamine
BCC	Behavior change communications
BTC	Belgian Technical Cooperation
BUFMAR	Bureau des Formations Medicales Agreees du Rwanda (Office for the Not-for-Profit Medical Facilities in Rwanda)
CAMERWA	Centrale d'achat des Medicaments Essentiels, Consumables et Equipements Médicaux du Rwanda
CBO	Community-based organization
CCM	community case management
CDC	Centers for Disease Control and Prevention
CHW	Community health worker
CNLS	National AIDS Commission
CPDS	Coordinated Procurement and Distribution System
CSHGP	Child Survival and Health Grants Program
DHS	Demographic and Health Survey
EPI	Expanded Program for Immunization
ESR	Epidemic Surveillance and Response
FBO	Faith-based organization
Global Fund	Global Fund to Fight AIDS, TB, and Malaria
GOR	Government of Rwanda
HBM	Home-based management
HMIS	Health management information system
IDSR	Integrated Disease Surveillance and Response
IEC	Information, education and communication
IMCI	Integrated Management of Childhood Illnesses
IPTp	Intermittent preventive treatment of malaria in pregnancy
IRS	Indoor residual spraying
ITN	Insecticide-treated bed net
LLIN	Long-lasting insecticide-treated bed net
MCH	Maternal and child health
MESST	M&E Systems Strengthening Tool
MIP	Malaria in pregnancy
MIS	Malaria Indicator Survey
MOP	Malaria Operational Plan
NGO	Non-governmental organization
NRL	National Reference Laboratory
OVC	Orphans and vulnerable children
PBF	Performance-based financing
PEPFAR	President's Emergency Plan for AIDS Relief
PLWHA	People living with HIV/AIDS
PMI	President's Malaria Initiative
PMTCT	Prevention of mother-to-child transmission (of HIV)
PNILP	Programme national intégré de lutte contre le paludisme
PSI	Population Services International
PTF	Pharmacy Taskforce

PVO	Private voluntary organization
RCC	Global Fund Rolling Continuation Channel
RBM	Roll Back Malaria
RDT	Rapid diagnostic test
REMA	Rwanda Environmental Management Authority
RTI	Research Triangle Institute
SISCOM	Système d'information sanitaire communautaire
SP	Sulfadoxine-pyrimethamine
SPA	Service Provision Assessment
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USG	United States Government
WHO	World Health Organization

## **B. THE PRESIDENT’S MALARIA INITIATIVE**

In June 2005, the United States Government (USG) announced a new five-year, \$1.2 billion initiative to rapidly scale up malaria prevention and treatment interventions in high-burden countries in sub-Saharan Africa. The goal of this Initiative is to reduce malaria-related mortality by 50% after three years of full implementation in each country. This will be achieved by reaching 85% coverage 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), long-lasting insecticide-treated bed nets (LLINs), intermittent preventive treatment of pregnant women (IPTp), and indoor residual spraying (IRS).

The President’s Malaria Initiative (PMI) began in three countries in 2006: Angola, Tanzania, and Uganda. In fiscal year (FY) 07, four countries were added: Malawi, Mozambique, Senegal, and Rwanda. In FY 08, eight additional countries were added to reach a total of 15 countries covered under PMI. Funding began with \$30 million in FY 06 for the initial three countries, increased to \$135 million in FY 07, to \$300 million in FY 08 and FY 09, and is expected to rise to \$500 million in FY 10.

In implementing the U.S. Government component of this Initiative, the U.S. is committed to working closely with host governments and within existing national malaria control plans. Efforts will be coordinated with other national and international partners, including the Global Fund to Fight AIDS, Tuberculosis, and Malaria (Global Fund), Roll Back Malaria (RBM), the World Bank Malaria Booster Program, the World Health Organization (WHO), the United Nations Children’s Fund (UNICEF), and the non-governmental and private sectors, to ensure that investments are complementary and that RBM and Millennium Development goals are achieved. Country Assessment and Planning visits for PMI, as well as subsequent evaluations, will be highly consultative and held in collaboration with the national malaria control program and other partners.

This document presents a detailed one-year implementation plan for the third year of the President’s Malaria Initiative in Rwanda. It reviews progress to date under PMI in Rwanda and the current status of malaria control and prevention policies and interventions, identifies challenges and unmet needs if the goals of PMI are to be achieved, and provides a description of planned Year 3 activities under PMI. The plan was developed in close consultation with the National Malaria Control Program (French acronym, PNILP) and with participation of many national and international partners involved in malaria prevention and control in the country. The total amount of PMI funding requested for Rwanda in FY 09 is \$16.3 million.

## **C. MALARIA SITUATION IN RWANDA**

Rwanda is a small, land-locked country in the Great Lakes region of eastern Africa, bordered by Uganda, Burundi, the Democratic Republic of the Congo, and Tanzania. It has a population of approximately 9.5 million, making it one of the most densely populated countries in Africa. Administratively the country is made up of 30 districts which are divided into sectors, “cellules” and then into 15,000 “umudugudus” (villages of 50-100 households).

The entire population is at risk for malaria, including an estimated 1.6 million children under five and 409,000 pregnant women/year (2002 Census, 2008 projection).

Malaria transmission patterns in Rwanda have fluctuated over time. The country has been divided into four natural “malarial eco-zones” based on altitude, climate, level of transmission, and disease vectors. Malaria is mesoendemic in the plains whilst the high plateaus and hills are epidemic prone. The PNILP has classified 19 of the 30 districts as endemic and the remaining 11 as epidemic prone; however, due to changes in migration patterns and increased coverage of malaria control interventions, this classification may no longer accurately reflect transmission patterns. The PNILP is currently remapping malaria transmission to better reflect the current epidemiology of malaria in Rwanda.

The PNILP relies on routine aggregated case reporting from health facilities and national surveys as the two major sources of data to track malaria transmission and coverage indicators. The national Health Management Information System (HMIS) collects routine information on the number of cases of malaria and deaths attributed to malaria by age group from the health centers and district hospitals. A system for reporting of community case management has been developed but not yet fully implemented.

Trends from HMIS data suggest that the transmission of malaria in Rwanda has decreased significantly in the past few years. The reported number of episodes of uncomplicated malaria treated in public sector health facilities fell from 1.5 million in 2005 to 1.3 million in 2006. In 2006, malaria was the leading cause of morbidity and mortality representing 37% of outpatient consultations and 40.9% of hospital deaths of which 42% were children under five. In 2007, the HMIS reported only 900,000 cases of uncomplicated malaria representing 15% of outpatient consultations and 22.3% of hospital deaths; malaria is now considered the second leading cause of morbidity and mortality after pneumonia. Public sector health utilization increased to 72% in 2007, mostly due to increased mandatory enrolment into the national insurance system called *mutuelles*. Treatment of fever in children under five at the community level also increased even though ACTs were not available at the community level until October 2007. The impact of community treatment on the number of cases treated at health facilities is expected to continue to increase over the next several years. As a result of this changing context, the PNILP has begun revisions to their national strategy (2009-2013) and plans to target the entire population and not just the most vulnerable groups with malaria prevention and control measures. In addition to providing ACTs at the health facility level, PNILP is engaging community health workers (CHWs) through home-based management of fever (HBM) as well as private sector pharmacies in provision of ACTs. Ownership and usage of ITNs has increased rapidly in both rural and urban areas of Rwanda due to increased availability of free and highly subsidized LLINs to target groups through mass and routine delivery channels. The new strategy will focus on achieving universal coverage. Indoor residual spraying is used on a more limited basis as the country builds capacity to carry out IRS operations, but the PNILP will use IRS specifically to target high-risk malarial areas.

PMI is working closely with the PNILP and with other donor organizations to ensure that the Government of Rwanda (GOR) is able to meet program goals and objectives set out in the PNILP’s new strategic plan (2009-2013). Rwanda has received three Global Fund grants to date: Round 3 (completed), Round 5 (underway), and Rolling Continuation Channel (RCC)

which is newly awarded. Approximately \$46 million has been disbursed thus far. The Global Fund only offered RCC to countries with well-performing grants. Thus, its approval of almost \$50 million for ACTs (public sector facilities and HBM), rapid diagnostic tests, and sulfadoxine-pyrimethamine (SP) for IPTp was an indication of Rwanda's good standing. This year, the PNILP submitted a Global Fund Round 8 proposal totaling \$138,469,243 for malaria prevention and control activities to support the expansion of community case management and universal coverage of LLINs and \$48,541,600 for cross-cutting health system strengthening activities. The announcement for funding will be made later this year.

The Belgian Technical Cooperation (BTC) is another donor for malaria control activities in Rwanda. BTC provides technical assistance to the PNILP as well as to the district and sentinel site levels, and has provided support to the development of the Malaria Early Warning System (MEWS), testing of new strategies, *in vivo* drug efficacy testing, research (for example, comparing IPTp with SP to placebo among women given ITNs), and for an entomologist with the PNILP. BTC is investing approximately \$1.8 million in 2009 in technical support to the PNILP.

#### **D. NATIONAL MALARIA CONTROL PLAN AND STRATEGY**

Rwanda's national malaria control strategy has evolved significantly during the past year, as survey data and routine health reporting systems have confirmed major reductions in the disease's epidemiology, morbidity and mortality. The country now aims to achieve the pre-elimination phase of malaria control (less than one case of locally-acquired malaria per 1,000 population) within five years. The emphasis will shift in coming years from reduced endemicity to prediction, prevention, and rapid response to epidemics. Although nuances of previous policies, the intent now is to go for universal rather than targeted coverage and aiming at full public health benefits for the general population rather than protection for only the most vulnerable. These revisions to the national strategy were decided at a three-day meeting of malaria partners in June 2008 and are reflected in the recent Round 8 application to the Global Fund.

The new strategy rests heavily on aiming for universal *use* (not just ownership) of LLINs, targeted IRS in high-risk endemic areas, and epidemic surveillance and response nationwide. For treatment, the focus is on 100% diagnostic confirmation with RDTs and microscopy for all age groups as well as expanded treatment beyond public sector health facilities through HBM. Underlying all interventions is a strong reliance on behavior change – especially for universal LLIN use and rapid response to fevers.

Rwanda's strategy for malaria in pregnancy is also changing, although with a continued emphasis on Focused Antenatal Care (FANC) and prompt diagnosis and treatment of malaria cases during pregnancy. Evidence suggests that resistance to SP is higher than 60% among children under five; thus, the PNILP plans to drop use of IPTp until a replacement drug for SP can be found. Intermittent preventive treatment of pregnant women will be suspended during 2008 in favor of non-pharmacologic prevention, primarily through enhanced distribution and behavior change in use of LLINs. Facility-level stocks of SP are not being replaced and FANC training materials have been revised to reflect the new policy.

PNILP's objectives under the new strategy generally parallel PMI's, though sometimes with more ambitious targets. They include:

- *At least 90% of all children under five years suffering from malaria will receive timely, correct and affordable treatment within 24 hours after the appearance of symptoms.*
- *At least 90% of all cases of uncomplicated malaria in the health facilities will be treated in accordance with the national treatment policy.*
- *At least 90% of patients who receive antimalarials in facilities will be parasitologically confirmed before treatment; 80% confirmation in community settings.*
- *At least 80% of pregnant women and children under five years will sleep under an ITN.*
- *At least 90% of households will possess at least one ITN; 80% at least two.*
- *At least 90% of malaria epidemics that are detected will be controlled within two weeks following detection.*
- *At least 90% of houses in targeted areas will be sprayed according to the national vector control guidelines.*

## **E. CURRENT STATUS OF MALARIA INDICATORS**

The PNILP conducted a National Malaria Indicator Survey (MIS) during June and July 2007 to collect up-to-date information on coverage of malaria interventions. Results of this survey show marked improvement in comparison to the 2005 DHS. For example, household ITN ownership in the 2005 DHS was 15%, with 13% of children under five and 17% of pregnant women sleeping under an ITN. In comparison, the 2007 MIS found that 54% of households owned at least one ITN and 60% of children under five and pregnant women had slept under one the night before the survey. The parasitemia level in children under five was 2.4%. In January 2008, an interim DHS conducted with USAID, PMI and Global Fund-support included the MIS malaria module. Preliminary results show a parasitemia rate of 2.1% for children under five. Both the MIS 2007 and the DHS 2008 were conducted at the end of the two high transmission periods (e.g. MIS 2007 during July-August, DHS 2008 during February-March). Early MIS and interim DHS results are included in the table below.

**Estimates from 2005 DHS, 2007 MIS and 2008 interim-DHS**

<b>Indicator</b>	<b>DHS 2005</b>	<b>MIS 2007</b>	<b>Interim-DHS 2008</b>
Proportion of children under five years old with fever in the last two weeks who received treatment with ACTs within 24 hours of onset of fever	2.5% (any antimalarial)	*	Pending
Proportion of households with at least one ITN	15%	54%	57%
Proportion of children under five years old who slept under an ITN the previous night	13%	60%	58%
Proportion of pregnant women who slept under an ITN the previous night	17%	60%	62%
Proportion of women who received two or more doses of IPTp during their last pregnancy in the last two years	0.3%	*	14%
Proportion of targeted houses adequately sprayed with a residual insecticide in the last 12 months (PNILP)	N/A	N/A	N/A

Sources: Rwanda 2005 DHS; 2007 MIS; preliminary results from interim-DHS 2008

\* Final results not yet available

## **F. GOAL AND TARGETS OF THE PRESIDENT'S MALARIA INITIATIVE**

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

- More than 90% of households with a pregnant woman and/or children under five will own at least one ITN;
- 85% of children under five will have slept under an ITN the previous night;
- 85% of pregnant women will have slept under an ITN the previous night;
- 85% of houses in geographic areas targeted for IRS will have been sprayed;
- 85% of pregnant women and children under five will have slept under an ITN the previous night or in a house that has been sprayed with IRS in the last 6 months;
- 85% of women who have completed a pregnancy in the last two years will have received two or more doses of IPTp during that pregnancy;
- 85% of government health facilities have ACTs available for treatment of uncomplicated malaria; and
- 85% of children under five with suspected malaria will have received treatment with an ACT within 24 hours of onset of their symptoms.

## **G. EXPECTED RESULTS – YEAR THREE**

PMI and PNILP have agreed on the following outcomes for MOP09:

### Prevention:

1. At least 800,000 LLINs will have been procured and distributed by PMI to children under five and pregnant women. This is expected to result in nationwide household ownership of one or more ITNs of 80% and at least 75% of children under five will sleep under an ITN.
2. At least 85% of houses (approximately 275,000 households) in geographic areas targeted for IRS during Year 3 will have been sprayed
3. At least 80% of CHWs trained (by PMI and partners) will provide integrated messages related to LLIN use, prompt and correct use of ACTs, how to prepare for IRS, and other malaria prevention and control messages.

### Case Management:

1. HBM will be expanded and strengthened in collaboration with donors and partners, resulting in at least 80% of suspected malaria cases identified at the community level being correctly treated within 24 hours in targeted districts.
2. The National Reference Laboratory will conduct quality control supervision visits quarterly for malaria diagnostics in at least 85% of health centers.

## H. INTERVENTIONS - Insecticide-treated Nets

### Current Status

In line with WHO recommendations, PNILP now targets 90% LLIN coverage for the entire population, not only those at greatest individual risk (children under five, pregnant women, the poorest of the poor, and People living with HIV/AIDS (PLWHAs)). The new strategy promotes universal coverage for all age groups (one LLIN for two people or three nets per household) and replacement of nets every three to five years, according to the type of net. The PNILP also plans to support LLIN distribution activities with multi-media, multi-level IEC/BCC encouraging correct and consistent use by families and caretakers; an effective supply chain and distribution channels to reach targeted groups; and a sound M&E system including monitoring of insecticide resistance and net quality control. Results from the MIS 2007 indicate high ownership and use with 54% of household owning a net and 60% of children under five and pregnant women sleeping under an ITN.

Routine LLIN distribution occurs at antenatal care (ANC) centers and vaccination sites, and through social marketing/commercial sector and PLWHA organizations. Routine health facility services provide free nets to all infants upon completion of vaccination and at highly subsidized rates (RWF 200 or \$0.40) to pregnant women at their first ANC visit. Campaign distribution linked with measles immunization occurred in 2006 (1.3 million LLINs for pregnant women, children under five, and PLWHA) and is planned for 2009 to replace these nets.

The estimated annual need for LLINs based on the PNILP's goal of universal coverage totals 694,000 nets (285,000 infants 0-11 months and 409,000 pregnant women). PNILP estimates that 1.7 million LLINs will be needed in 2009 to replace those distributed in the 2006 mass distribution campaign. The Global Fund Round 8 proposal requested 11.8 million LLINs over a five-year period which could potentially meet all replacement needs as well as targeting the new goal of universal coverage. If approved, the grant will fund two nationwide integrated LLIN/measles campaigns in 2009 and 2012 targeting children under five years of age; provide annual LLINs for routine services to pregnant women and children under one year in 2010, 2011 and 2013; and distribute an additional five million LLINs to households for universal coverage.

Funds are available for procurement of the following LLINs in 2008 – 2009:

Source	2008	2009
Global Fund Round 5	816,939	
UNICEF	50,000	
PEPFAR	50,000	
PMI	550,000	500,000
<b>Total</b>	<b>1,466,939</b>	<b>500,000</b>

Global Fund Round 5 LLINs are supporting routine service needs for pregnant women and children under one years of age in 2008. UNICEF is also contributing nets in 2008. PEPFAR

and Global Fund will provide LLINs for PLWHAs distributed through its partner organizations. With regards to PLWHAs, the basic package of services provided under existing PEPFAR programs calls for provision of LLINs to both adults and children. PMI is procuring nets this year for the poorest of the poor households and will procure additional LLINs in 2009 to contribute to routine services and the nationwide measles/ITN campaign planned for September 2009.

Several PMI partners help manage the current LLIN supply chain. The PNILP supervises quantification and planning of LLINs and tracks district needs and quantities. The Central Drug Purchasing Agency for Rwanda, (CAMERWA; French acronym), is the principal procurement agent for Global Fund nets and is responsible for warehousing and stocking at the central level. Population Services International (PSI) outsources vehicle transportation and distributes nets from central to district levels and directly on to health centers where needed. Problems remain with ensuring coordinated deliveries and maintaining routine inventories of stock. While partners have managed large, one-time, net deliveries efficiently, there is limited experience implementing a routine distribution system and conducting regular inventory of stocks. Preliminary findings from the 2007 Service Provision Assessment (SPA) indicate that 24% of health centers did not have nets to give out at ANC visits. There are limited LLIN stocks available at CAMERWA (approximately 40,000) for epidemics.

### **Progress to Date**

PMI is procuring 550,000 LLINs for distribution to the poorest of the poor households in November 2008. PNILP identified the target population in each district (households in the lowest wealth quintile) and developed a distribution plan with partners; it intends to use CHWs and health facilities to ensure that high risk groups among the poorest households are targeted with these nets. Criteria for selecting poorest of the poor households already exists since the health facilities through their CHWs have identified those households in the lowest wealth quintile who cannot afford to pay to participate in the mandatory enrollment of the national health insurance plans. PMI will increase the quantity of LLINs procured with FY08 funds from 300,000 to 500,000 as a contribution toward meeting the 2009 annual need for pregnant women and children under one. Support for strengthening supply chain management is on-going and includes developing a central procurement distribution system for malaria commodities and building capacity to carry out routine distribution and district-level inventories.

PMI supported a tracking and behavior survey to examine determinants and barriers to LLIN use and ownership. Data were collected in May- June, 2008, and findings will be shared shortly to inform a national BCC/IEC strategy to promote LLIN use. BCC/IEC activities are on-going with mass media, district and community-level activities.

### **Proposed PMI Year 3 Activities (\$6,112,000)**

PMI will continue to support the PNILP in efforts to achieve 90% LLIN coverage by increasing use among pregnant women and children under five years of age. PMI will procure and distribute LLINs for routine services as well as contributing to replacement needs. PMI will also continue to strengthen supply chain management and distribution

systems through various partners and explore opportunities for building longer-term capacity in this area. Support will also include focused efforts to strengthen and expand BCC/IEC activities at national and community levels. Specific activities for Year 3 include:

- *Procure and distribute 800,000 LLINs:* Support the procurement and distribution of LLINs to contribute to routine distribution channels targeting pregnant women and children under one as well as contributing to the proposed 2009 integrated measles/ITN campaign. PMI will review the quantities and intended target groups based on the outcome of the Global Fund Round 8 proposal. The distribution strategy will support development of a routine distribution plan for nets and regular district-level inventory of stocks. Strengthening CAMERWA warehousing practices through a general management fee is also included.(\$5,602,000)
- *BCC/IEC for ITNs national level:* Support key IEC/BCC partners and coordination for a central level BCC/IEC task force that will develop and implement a strategy to promote correct use of LLINs, implement integrated malaria messages and coordinate with community partners to conduct community mobilizations and BCC activities. Support will include sub-grants to local NGOs, training IEC and community mobilizers, and developing and implementing mass media messages (e.g. through radio, television, newspapers, mobile media, etc.) (\$150,000)
- *BCC/IEC for ITNs community level:* Support to CHWs and door-to-door activities to promote correct use of LLINs including BCC for net maintenance. The BCC/IEC activities will include a focus on primary schools (teachers and school children) for targeted activities and messages. The strategy will use both the BEHAVE framework to develop appropriate models and approaches as well as the recent net utilization survey to inform activities. The strategy will reflect the central task force, and results from this activity will inform the central-level decisions, as with other malaria BCC/IEC activities planned. (\$200,000)
- *Strengthen tracking and monitoring of LLIN distribution, including end-use verification of LLINs:* Strengthening reporting and monitoring systems, supervision and linking the HMIS with community-level tracking of LLINs through the CHWs. CHW will include LLIN tracking and correct use within their monthly community case management reporting and will include end-use verification of nets to pregnant women, children under five and poorest of the poor households.(\$160,000)

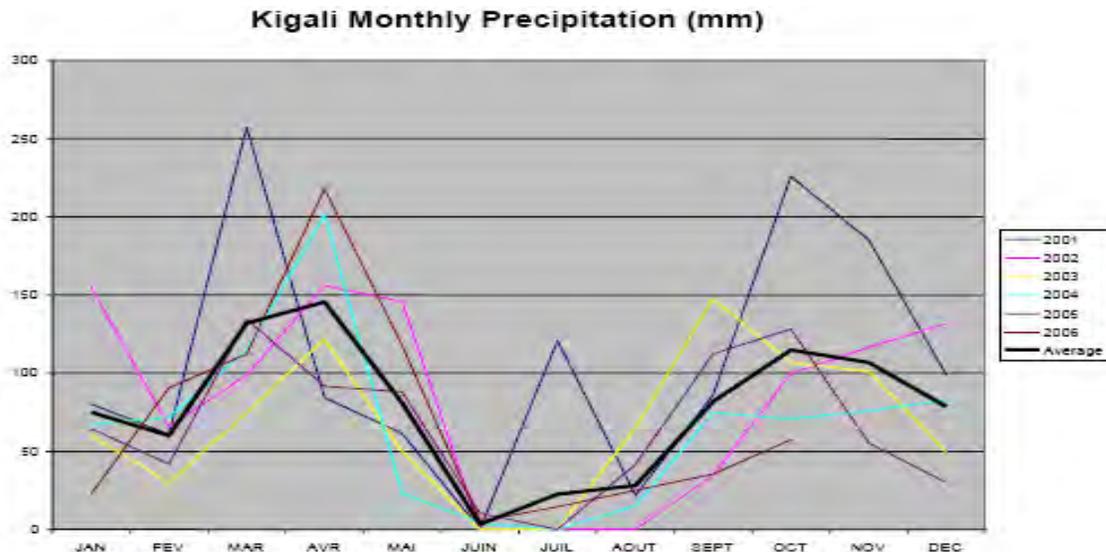
## **I. INTERVENTIONS - Indoor Residual Spraying**

### **Current Status**

Significant reductions in malaria morbidity and mortality, associated with wide spread scale-up of malaria interventions, such as mass distribution of LLINs and ACTs, home-based management of fever, and increased coverage of community health insurance plans, have prompted new thinking about the role of IRS. In 2008, the PNILP is planning to target IRS at

the sector level (rather than use ‘blanket’ spraying of whole districts). Criteria for stratifying sectors include epidemiological, ecological, and demographic considerations. This adjustment in the IRS approach responds to the emerging ‘focalized malaria’ transmission pattern and allows for expansion of spraying with consideration for increased LLIN coverage.

A bimodal rainfall pattern (Fig.1.), heavy rains between February and April and light rains September to-November, defines peak and secondary malaria vector density and transmission seasons.



The PNILP aims to implement one, well-timed round of IRS in August with a long-lasting insecticide formulation to maximize impact during the highest transmission period and sustain protection through the second transmission peak as well. This is outlined as an objective in the National Entomology Monitoring and Evaluation Plan. Currently IRS is carried out with a short-acting ‘wettable powder’ (WP) formulation twice per year (January-February and August-October). The objective is to change to one round per year through the use of a longer-lasting ‘capsule suspension’ (CS) formulation of the same insecticide. Until an insectary upgrade supported under the FY08 MOP is completed to support IRS decay rate monitoring, the effectiveness of one round of spraying per year remains unconfirmed.

### **Progress to Date**

IRS has been added to Rwanda’s malaria control strategy, as revised in 2008, although PMI remains the only donor supporting these efforts in Rwanda. Spraying began in August 2007 in the three Kigali districts (Gasabo, Nyarugenge and Kicukiro) and reached 160,000 households. FY08 funding is supporting a second spray round beginning in August 2008 in targeted sectors of these same three districts plus Kirehe and Nyanza, reaching an estimated 202,142 households. Although the MOH and PMI planned IRS in five districts in January 2008, several constraints due to communication strategies and coordination led to the cancellation of this round. Partners have since collaborated closely to address past problems,

and spray operations for the August 2008 appear to be going well. The spray round planned for January 2009 will consolidate improvements in spray operations and related IEC/BCC activities and will cover the same five districts, with potential for modest expansion into targeted sectors of other districts. The extent of this expansion will be determined following PMI and PNILP review of the successes and lessons learned from the August 2008 spray campaign as well as logistic considerations and availability of funds.

In addition to financing the IRS campaign (environmental assessments, procurement of insecticide, equipment, recruitment and training, BCC/IEC activities), PMI is providing technical support for implementation of the national IRS plan and the establishment of an insectary at the central level. To facilitate the IEC/BCC efforts, the PNILP established an IRS IEC Task Force at the national level comprised of the MOH Health Communication Unit, PNILP, PSI, Research Triangle Institute (RTI), and PMI. The task force developed tailored IRS messages for various target groups and mass media channels. The partners' relevant expertise in BCC helped to facilitate the development of a coordinated IRS IEC strategy for all five districts. CHWs and local NGOs will also be engaged in the BCC and community mobilization activities.

To date, PMI has supported the PNILP to conduct baseline IRS assessments and entomological monitoring in targeted districts. PMI also supported a consultant to assess district-level training needs and propose an implementation plan to build capacity among district program managers to carry out IRS operations.

### **Proposed PMI Year 3 Activities (\$5,379,200)**

PMI supports the PNILP's strategy to reduce malaria transmission through selective IRS and conducting entomological monitoring in targeted sectors. In addition to on-going capacity building at the national level, continued financial and technical support for district-level vector control training, primarily to develop IRS oversight capability, is requested. As in previous years, ongoing support for the National Entomology Monitoring and Evaluation Plan (to assess insecticide decay rates, vector insecticide resistance and IRS impact) is needed.

The PMI strategy will incorporate the use of long-lasting formulations beginning with the January to February 2009 round (supported by PMI FY08 funds) to maximize the duration of IRS insecticidal effect. New long-lasting formulations cost the same as shorter-lasting ones. Savings realized by moving to one IRS round per year starting in mid 2009 may eventually allow PNILP to consider expanding IRS with PMI and other donor support.

- *Annual IRS implementation in targeted sectors of existing and new districts:* Support targeted IRS in up to 275,000 households including support for baseline and post-spraying data collection (entomology and parasitology), safe pesticide storage, training of sprayers and supervisors, IRS communications, and technical support to the Rwandan Environmental Management Authority and the PNILP/MOH. (\$5,000,000)
- *IEC and community mobilization for IRS:* Implementation of IRS IEC strategy for IRS round in August 2009. The BCC/IEC task force will serve as steering committee and ensure that IRS IEC will also be part of integrated IEC/BCC activities.(\$200,000)

- *Entomological monitoring and evaluation:* Continued support for central planning for entomological monitoring and district implementation; including support for the insectary; surveillance of parasitemia as part of the monitoring at all sites where IRS is implemented and the development of a plan for monitoring of LLIN effectiveness. Two CDC technical assistance visits will be supported in this activity. Objectives: (1) to provide TA as requested to MOH/PNILP for monitoring IRS and LLIN decay rates with insectary-reared mosquitoes (2) to support MOH/PNILP in ongoing expansion of National Entomology Monitoring and Evaluation Plan. (\$149,200)
- *Ensure environmental compliance:* External monitoring of the environmental compliance of the IRS operations including the management of side effects and disposal of sachets and other contaminated materials. (\$30,000)

## **J. INTERVENTIONS - Malaria in Pregnancy**

### **Current Status**

The national strategy for prevention and treatment of malaria in pregnancy followed WHO's recommended three-pronged approach including two doses of IPTp, use of ITNs and case management of malarial illnesses. However, the PNILP has been prompted by several factors to reconsider their IPTp policy. The first is that ongoing surveillance at sentinel sites in endemic areas has found that SP therapeutic failure rates for symptomatic 6-59 month olds is higher than 60%. In addition, PNILP, with technical assistance from BTC and Prince Leopold Institute of Tropical Medicine conducted a study of SP for IPTp, comparing it with placebo among 2,250 women who also received an ITN with enrollment. This study conducted at three sentinel sites looked at outcome measures including maternal hemoglobin, newborn weight, and placental parasitemia. The PNILP reports that the preliminary results of this study show no differences in outcomes in the SP versus placebo groups. With this increasing SP resistance, the preliminary IPTp study results, and evidence of decreasing malaria transmission, the PNILP was prompted to revise their IPTp strategy and is discontinuing IPTp with SP by the end of 2008.

As a result, PNILP will focus on other important components of preventing of malaria in pregnancy. Although 94% of pregnant women visit an ANC at least once, the median gestational age at first visit is already six months, and only 43% of women make two or more ANC visits (Community needs assessment, SPH, 2007). While the national ANC strategy is consistent with the WHO recommendation, which calls for four ANC visits with one before quickening, few women make their first ANC visit during the first trimester. It is hoped that targeted BCC/IEC campaigns, combined with innovative community- and facility-level performance-based financing and growing enrollment in community health insurance schemes will promote earlier ANC consultation. In addition, PNILP will increase efforts to ensure that LLINs are available for distribution at every facility during ANC visits.

In the past year, marked improvements have been made in improving the integration of ANC services. The Maternal Child Health (MCH) desk in the MOH has taken the lead to coordinate with other units including the PNILP, Treatment and Research on AIDS Center (TRAC) and Expanded Program for Immunizations (EPI). The services provided by these units in addition to fetal growth monitoring and birth preparation make up the basic FANC package. These units, in addition to key malaria in pregnancy partners, have collaborated to define the FANC strategy, prepare training tools, BCC and data collection materials. The key partners met in mid-2008 to address the change in the IPTp policy and revise training materials accordingly. A key shift in the malaria in pregnancy policy is to use CHWs to identify pregnant women, distribute a first dose of iron, folic acid, and mebendazole for anemia prevention at health centers, and to promote LLIN use and first early ANC visit. It is hoped that the delivery of this integrated package of services will motivate pregnant women to attend ANC clinics.

### **Progress to Date**

In Years 1 and 2, PMI is supporting improvements in the quality of FANC services at health facilities through training and capacity-building efforts at national and district levels. With FY08 funding, PMI procured a one-year supply of iron and folic acid. Global Fund LLINs are provided at a highly subsidized price of FRW 200 (\$0.40) to pregnant women who attend antenatal care services. PMI supported the MOH to develop and review training materials for strengthened integrated ANC services including FANC, IPTp, PMTCT, nutrition education, promotion of breast-feeding and family planning. The MOH, PMI partners and WHO among others collaborated to produce integrated IEC materials, job aides and other tools for use in antenatal settings. PMI then supported integrated FANC training, including IPTp, targeting 12 districts, resulting in approximately 250 providers trained. With MOH plans to suspend IPTp, PMI supported a workshop at the request of the PNILP and MCH to revise the integrated training tools and to also define the community health package for pregnant women. The training manuals will be used in refresher trainings to be conducted in September/October of 2008.

PMI continued support for advocacy, targeting national and district-level stakeholders, including community leaders to enhance support of FANC/malaria in pregnancy activities. For example, more than 100 religious leaders now include prevention and control messages related to malaria in pregnancy in their sermons. PMI supported a qualitative assessment of ANC malaria activities in four districts coordinated with the Safe Birth Africa Initiative to provide information on barriers to early ANC attendance, barriers to bed net usage during pregnancy, etc. Results from the assessment, such as identifying cultural beliefs that led to only one ANC visit and identifying barriers to net usage by pregnant women, helped to inform a BCC strategy workshop supported by PMI that was held in May of 2008.

### **Proposed PMI Year 3 Activities: (\$850,000)**

In Year 3, PMI will continue to support the national strategy for the prevention and treatment of malaria in pregnancy with a change in the national IPTp policy and the new and increased involvement of CHWs in prevention of malaria in pregnancy. PMI will collaborate with the MCH desk and PNILP in the training, supervision and implementation of the CHW package and focus on the linkage between the CHWs and the health facilities to ensure that pregnant

women own and use LLINs, attend ANC early and regularly, and receive prompt treatment for malaria. Additionally, PMI will support the national IEC task force to continue to develop appropriate malaria in pregnancy IEC/BCC and facilitate the implementation of these messages at the community level. PMI will also procure LLINs to support routine distribution to pregnant women attending ANC nationwide at highly-subsidized rates (described in ITN section). Drugs for the prevention of anemia (iron, folic acid, and mebendazole) will be covered by Global Fund.

Specific PMI-supported activities will include:

- *Strengthening of malaria in pregnancy interventions within FANC services at district and national level:* PMI will support MCH and PNILP to implement the new malaria in pregnancy policy, provide resources and coordination for FANC training, and support MOH staff at national and district levels to conduct supervision. (\$350,000)
- *Strengthening and support of malaria in pregnancy interventions at community level:* PMI, under the coordination of the MOH, will facilitate supervision of CHWs by health center supervisors; contribute to the training of the CHWs including the printing of training materials and routine data collection tools, evaluate performance of community outreach to pregnant women, and strengthen the linkage between the CHWs and health facilities to promote ANC attendance by pregnant women. (\$350,000)
- *Community IEC/BCC to promote early ANC attendance and LLIN use:* This is a key activity to ensuring that malaria in pregnancy activities continue following the shift in national policy. IEC/BCC messages will be defined by the national task force and then PMI will support implementation by CHWs including printing of IEC materials, training and monitoring of performance. (\$150,000)

## **K. INTERVENTIONS – Case Management**

### **Malaria diagnosis**

#### **Current Status**

National policy in Rwanda states that treatment of malaria should be based on a laboratory-confirmed diagnosis for children older than five years and for all adults. Fifty-two percent of facility-based malaria cases were laboratory (microscopy) confirmed in 2007 (HMIS). Treatment at the community level, as well as treatment of all children under of five, is presumptive based on clinical diagnosis alone. However, the PNILP plans to revise the national treatment policy following WHO Rwanda-specific recommendations which were based on evidence of decreased transmission of malaria. The treatment policy will move towards laboratory confirmation of malaria diagnosis before treatment in all age groups at both the health facility and community levels. The PNILP has sought to increase the use of laboratory confirmation using microscopy by improving the laboratory equipment available in

health facilities, and by supporting the national quality assurance and quality control program through the National Reference Laboratory (NRL). At the community level, early piloting of the use of rapid diagnostic tests (RDTs) by CHWs in two epidemic-prone districts commenced in March 2008. The PNILP intends to reevaluate several brands of RDTs before planning for expansion of RDT use both at community and at the health facility level when microscopy is not readily available.

The NRL is primarily responsible for diagnostic quality control in the country by conducting supervisory visits to clinical laboratories. Supervisory visits are integrated to review quality control for HIV, TB and malaria. NRL supervisors use a standardized checklist which includes reviewing available supplies and monitoring performance of the lab technicians. There are two levels of quality control for blood smears: at the district hospital and at the NRL.

Laboratory performance is evaluated by concordance of positive and negative slides between laboratories and NRL. The rate of discordant results of malaria microscopy readings between these results and the reference readings performed by the NRL was on average 23% in the last two trimesters of 2007. Ideally, supervision should occur every three months. However, the challenge to carrying out quality control procedures is the lack of personnel, materials and logistic support. The number of qualified staff available at the NRL and at district hospitals to conduct supervisory visits to the approximately 406 health facilities is insufficient. Feedback is provided to the district through printed reports; however, in instances where the proportion of discordant results reaches a critical threshold, a supervisory visit should be conducted and refresher training carried out. As the prevalence of malaria decreases, the number of positive slides will decrease and this may require a change in the numbers of slides collected for quality control. The NRL is in the process of reviewing and revising their malaria quality control procedures.

In addition to joint supervision, there is an emphasis on integrated laboratory training for malaria, HIV, and tuberculosis. The extent and mechanism of other integrated laboratory services was discussed at a workshop in Kigali in November, 2007. The NRL incorporated recommendations from the workshop in their newly released 2008-2012 Strategic Plan.

### **Progress to Date**

In Year 1, PMI-supported laboratory activities included the emergency procurement of laboratory supplies to provide supplies following an unanticipated stock-out, an initial integrated training covering parasitological diagnosis supported primarily through PEPFAR, and a cross-sectional, qualitative laboratory capacity assessment conducted with the NRL. This assessment evaluated the NRL, reference and district hospitals and health center facilities and found that all the “necessary components for accurate and reliable laboratory diagnosis of malaria exist in Rwanda.” However, the report also highlighted the need for continued quality control, standardization of procedures and ongoing training to improve malaria diagnostic capabilities in the country. In addition, a large national health facility assessment (Services Provision Assessment) which includes information on existing laboratory staffing and capacity was completed in late 2007. Final results are expected by September 2008. The NRL with support from PMI partners and PNILP are currently revising the national quality

control protocol for malaria diagnostics and are procuring the supplies needed to for one year including slides, boxes and reagents. PMI is also working with PEPFAR and other donors to identify resources to support supervisory staff at the district and national level. PMI supported a pre-award audit of the NRL to build capacity to receive USG funds directly.

## **Malaria Treatment at the Health Facility**

### **Current Status**

As of October 2006, all health facilities officially transitioned from amodiaquine (AQ)/SP to AL as the first-line treatment for uncomplicated malaria. Oral quinine is the second-line treatment for cases of uncomplicated malaria and when AL is contraindicated. For patients who cannot tolerate oral medications, the national guidelines recommend the use of injectable artemether, or intravenous quinine until the patient can take oral formulations. Health centers should refer cases of severe malaria for treatment at district hospitals or referral hospitals. The parenteral formulations of artemether and quinine are recommended for pre-referral treatment of malaria cases during transfer from a peripheral health facility to the higher level of care.

### **Progress to Date**

In Year 1, PMI supported treatment at the health facility level including the purchase of 60,000 doses of injectable artemether (a one-year national supply) and other activities to support the transition from AQ/SP to AL. Funding from Global Fund Round 5 provided adequate quantities of AL for facility-based health care covering all age groups until September 2009. The RCC includes funding for AL, quinine, and other supplies (e.g., IV infusion kits) needed to treat all cases of malaria at the health facilities and sufficient AL for community-level treatment until 2013.

## **Malaria Treatment in the Community**

### **Current Status**

**Expansion of HBM:** The PNILP has identified 19 districts as malaria endemic districts for the expansion of HBM, of which 18 have functioning HBM programs. Two additional districts (21 in aggregate) are considered epidemic and have started HBM using RDTs in four health centers. Many partners support HBM efforts with CHW training, supervision and monitoring in these districts including PNILP, PMI, Global Fund, and BTC. PMI supports re-packaging of AL treatments for community-level distribution. The blister packaging for children under five years is branded with the name “PRIMO” and includes IEC materials in the local language, Kinyarwanda, to ensure proper dosing and administration by CHW and caregiver. The same packaging is used in the private sector. An AL treatment is sold at a highly subsidized cost of FRW 100 (~\$0.18) by trained CHWs. Currently, the PNILP is piloting the use of the RDTs by CHWs for the diagnosis of malaria prior to treatment of fever in children under five. PNILP plans to expand the use of RDTs at the community level as the national strategy shifts from presumptive to lab confirmed treatment in endemic and epidemic prone districts.

**Integration of HBM with community IMCI:** Building on the successful experience and implementation of HBM, the MOH is committed to integrating community IMCI (c-IMCI) within the HBM program. A USAID-funded partner consortium working in four districts has incorporated the treatment of diarrhea with oral rehydration therapy, treatment of acute respiratory infection with amoxicillin, and nutrition monitoring into the HBM program. The PNILP, in collaboration with the MOH Community Health desk, developed a national community health policy to support this expansion and integration of c-IMCI to all 30 districts (both endemic and non-endemic).

The HBM working group will be transformed to a community health working group, and include other members in the MOH such as the MCH and the reproductive health/family planning desk, reflecting the expanded community health policy. A delegation from the MOH attended the community case management (CCM) meeting in Madagascar in August 2008 to share lessons learned and best practices faced in Rwanda with other countries considering community case management implementation. Based on the results thus far, Rwanda was chosen to host the next CCM meeting.

**Community health policy and expansion of community package:** The community health policy indicates that the package will integrate all aspects of community health and include a holistic approach towards services at the community level. The MOH is considering incentives for the volunteer CHWs, such as the *mutuelles*, community performance-based financing, and cooperatives to generate income and create a revolving fund for CHW associations. The community health desk is working with Tulane University to develop a pre- and post-test evaluation for CHW training. The MOH is currently selecting 14 districts (to be determined) for the community health package roll-out as part of phase introduction. The first priority components of the package will include malaria, pneumonia and diarrhea and then others will follow: HIV/AIDS, tuberculosis, nutrition, hygiene and safe water, environmental health, reproductive health, family planning, care for orphans and vulnerable children, and palliative care. In addition, the MOH in collaboration with partners is developing a community-based health information system to link to the national HMIS. Discussions are ongoing regarding the roll-out of this package, development of health posts in the community, and coordinating implementation with the resources available from multiple donors.

### **Progress to Date**

Among HBM districts between 2004 and 2006, 7,719 CHWs dispensed treatments to 346,993 children. CHWs are being trained in three-day sessions by PMI implementing partners and given orientation programs by PNILP, which is the preferred training model for Rwanda as opposed to training of trainers. In 2007, PMI partners trained over 5,000 CHWs in ten districts.

PMI continues to support PNILP leadership and other partners' efforts to expand HBM through the community health strategy. PMI is supporting implementation of HBM activities in partner districts including monitoring and supervision visits, documenting lessons learned, supporting CHW associations, procurement, repackaging (to ensure correct pediatric dosing and control of subsidized medication in community and private sector) of AL, production of materials for community awareness and training in IEC/BCC to promote appropriate

recognition of malaria symptoms, knowledge of new drug, and adherence to new treatment regimen, and provision of training and refresher training in case management for CHWs. PMI also supports the integration of HBM with c-IMCI in selected districts as part of the MOH community health strategy. To monitor and reinforce the correct use of AL at the health facilities and in the community, PMI is working with PNILP and partners to carry out supportive supervision. Household surveys collecting behavioral data (including 24-hour treatment rates) to inform the campaigns and both the HBM and private sector strategies are underway and will inform activities under the c-IMCI strategy.

Implementing partners, supported by PMI and Global Fund, are conducting a second HBM evaluation following the introduction of ACTs in new districts and the transition from AQ/SP to AL in established ones. The evaluation includes eight districts: two from the original area sampled in 2006, three new districts with ACTs, two districts with a pilot RDT introduction and one district with the full package for CCM. Preliminary findings indicated some early stock outs of ACTs and expired stock at some health centers. Final results will be disseminated in September 2008 and used to inform the expansion and integration of HBM into the new community health package.

PMI supports a pilot community performance-based financing model to promote appropriate and timely referral of severe malaria cases to health facilities. This model approach uses incentives to achieve national indicators to strengthen HBM and ensure referrals by CHWs from the household to health facility level. The incentives are monetary contributions supported by MOH and other donors that are given to CHW cooperatives established for CHW use. The pilot in three districts was encouraging and the MOH wants to scale up this model as a part of the integrated community health program and is using Global Fund support for this. A list of indicators has been developed and tested and includes a variety of maternal and child health indicators, including prompt and correct treatment for malaria for children under five and the number of children and pregnant women sleeping under LLINs. CHWs receive their incentives based on the number of completed forms that are delivered on time to the health facility. Discussions are also underway regarding how to use this system as an opportunity to provide outreach messages, e.g. after collecting information on net use, the CHW would instruct how to properly hang the net. The Community Health desk intends to integrate the community performance-based financing forms into the HMIS system for routine reporting.

## **Malaria Treatment in the Private Sector**

### **Current Status**

About 30% of fevers among children under five are treated in the private sector. The PNILP strategy to introduce AL into private sector pharmacies and over-the-counter outlets (*comptoirs*) includes officially registering these establishments, developing a system of accreditation to encourage recommended business practices, and developing a marketing and subsidized pricing scheme that would promote appropriate treatment of malaria for children under age five. In addition to increasing accessibility to AL, this strategy serves to discourage the sale and use of non-recommended antimalarials that are either no longer efficacious (e.g., SP) or that could undermine the efficacy of the newly introduced treatment by promoting drug

resistance (e.g., artemisinin monotherapy). The current private sector strategy will provide highly subsidized AL to a population most at risk for severe malaria and subsequent death; however, recently the PNILP has revised its policy to provide subsidized malaria treatment for adults as well. Although adults are not at as great a risk of serious complications due to malaria, and AL could be available at non-subsidized prices, the rationale for this is to prevent the misuse of the highly-subsidized pediatric treatments by adult family members. When the national policy shifts to treatment of confirmed cases only, ensuring that the guidelines are followed in the private sector as well will be a challenge.

### **Progress to Date**

In 2007 and 2008, PMI supported procurement of 500,000 AL treatments and repackaging of 480,000 treatments for an estimated 228 private sector outlets; training and supervision for private sector personnel in appropriate case management and referral; support for BCC/IEC to promote timely treatment seeking and proper use of AL; and support for household surveys of care-seeking behavior. During July 2007, a mapping exercise and national assessment identified and located 228 registered private sector outlets. The distribution of these outlets is national with a higher concentration in Kigali and Butare (Huye), Rwanda's two largest cities. Interviews with managers and staff at private facilities collected information on the types of drugs currently sold, etc. Of note, none of the private outlets was marketing chloroquine; 12 were marketing artemisinin monotherapies; 94 had SP monotherapy for the treatment of acute malaria; and non-subsidized, privately-stocked AL was found at 44 outlets at an average cost of FRW 4,350 (~\$8.00) in contrast to the health facility subsidized cost of FRW 200 (~\$0.40).

Following the mapping exercise, PMI supported a training of private sector outlet personnel (September-December 2007) which started with a training of trainers involving one representative from each registered outlet. Private sector outlet providers received comprehensive one-week training and a checklist for presumptive diagnosis, treatment and referral based on IMCI guidelines. Private sector treatment of children under five with specially packaged AL (branded with the name "PRIMO") commenced in early 2008 and is sold at a highly subsidized price of FRW 250 (~\$0.50). Follow-up visits by trained personnel assessed the quality of services including the expiration dates of medications and the occurrence of stock-outs. Mystery clients were employed to evaluate services. To further evaluate the consumer experience, the use of registers recording names of patients will allow for periodic follow up to assess the quality of services they received, their knowledge of why the medication was dispensed, the actual price paid, and adherence to treatment regimen.

A follow-up mapping exercise and assessment is currently being conducted and the results will be available in the coming months. The results will be compared to the baseline which was done in July 2007 and will provide insight whether the training of private sector outlet personnel was successful and sufficient.

BCC/IEC activities to promote recognition of malaria symptoms, prompt treatment, the importance of adhering to treatment regimes, and awareness and demand for AL have begun. Household surveys collecting behavioral data (including 24 hour treatment rates) to inform the campaigns and both the HBM and private sector strategies have been completed.

## **Drug Supply and Pharmaceutical Management**

### **Current Status**

The MOH currently procures antimalarials and supplies for health facilities through two main providers. The Centrale d'Achat des Medicaments Essentiels au Rwanda (CAMERWA), an autonomous non-profit organization considered to be the national medical store for Rwanda, currently procures about 60% of all health facility drugs and supplies. CAMERWA is the only institution in Rwanda that can legally procure ACTs for the public sector. CAMERWA, with support from PEPFAR and Global Fund, is currently improving their internal financial process and procedures and have augmented their warehouse fee to 9%. CAMERWA is also working to improve procurement, accounting, human resources, customer service, and storage practices to qualify as a USG direct funding recipient. The second, much less active supply provider is BUFMAR, another autonomous non-governmental and non-profit organization set up by FBOs in Rwanda.

Medicines for Rwanda's primary care system are managed through a "pull" system with transportation provided to district level warehouses. The pull system extends down to the peripheral levels where health facilities pick up their stocks from the warehouse and community health workers replenish their stock of medications from the health facility. Each district pharmacy determines the quantities of medicines to be ordered based on the recommended standard treatments for the key priority conditions and the number of patients expected to be treated within a given time frame. However, the supply chain of CAMERWA from the central to community-levels is limited in capacity and does not have the capability to prevent routine stock-outs of essential drugs. The district level pharmacy system is also weak. While CAMERWA works to improve their internal operations, the Pharmacy Taskforce is in the process of creating an active distribution plan to help CAMERWA move from a "pull" to a "push" system. The PNILP works with the district pharmacists and health centers to forecast and quantify antimalarial needs. In the past, large quantities of ACTs were procured at one time yet consumption levels decreased, leading to many expired doses of ACTs. In the future, the PNILP plans to stagger smaller procurements throughout the year to avoid both stock outs and expiring drugs.

The distribution of LLINs is managed differently. CAMERWA does not have the capabilities of storing large quantities of LLINs at their central warehouse; hence LLINs are distributed to the district level almost immediately. A small reserve stock remains at CAMERWA for emergencies. Because there is no routine distribution of LLINs, and nets are distributed immediately after entering the country, stock-outs at health facilities can occur until the subsequent procurement arrives in country.

In 2005, several Ministerial decrees specific to pharmaceutical industry, included the formation of a national committee, the Pharmacy Taskforce, to oversee pharmacy retailers with responsibilities for quality control, inspection, licensure, and ensuring a basic package of pharmaceutical products. A list of these products has been developed, and is reviewed annually. Drug importation laws have been revised recently to ensure quality control upon receipt. Visas and import licenses are issued by the Pharmacy Taskforce only after certification and other requirements are met by the exporter. Requirements include

documentation of manufacture, wholesale, and export of pharmaceuticals' licenses, certification of good manufacturing and distribution practices, and accurate packing lists with batch numbers, manufacture dates, appropriate expiry dates (minimum of 2/3 the shelf life of the product), quantities of pharmaceuticals, and the country of origin. While the Pharmacy Taskforce has the regulatory authority, capacity is nascent and will require support to carry out duties including quality control of incoming and circulating drugs. In 2007, the PNILP with Global Fund money purchased a high performance liquid chromatography machine for drug quality testing which is located at the National University of Rwanda in Butare. In addition to the drug quality testing at the national level (port of entry), there is a need for drug quality testing at the district and /or the health center level. A pharmacist/chemist who is also a staff member of the university has received training on operational procedures of the equipment; however, due to a lack of reagents, no antimalarials have undergone quality control testing.

*In vivo* drug efficacy monitoring has been ongoing in three Rwandan sites under the East African Network for Monitoring Anti-Malarial Treatment, in collaboration with Prince Leopold Institute of Tropical Medicine and London School of Hygiene and Tropical Medicine. Drugs tested include AL, dihydroartemisinin-piperaquine (Artekin®) and chlorproguanil-dapsone (Lapdap) plus artesunate. Regular monitoring of AL efficacy is planned. All support for drug efficacy monitoring has been provided by Global Fund and BTC.

### **Progress to Date**

In Years 1 and 2, PMI supported several specific technical areas within the drug supply chain and pharmaceutical management. Specific contributions are listed below:

**Strengthening of antimalarial distribution:** PMI partners supported the PNILP to improve quantification and distribution of antimalarials to the health facility and community level by assisting the PNILP: to develop a quarterly distribution plan; revise antimalarials medicine requisition and reporting tools; and train at district pharmacies, hospitals and health facilities in the use of these revised tools.

**Rational drug use:** PMI supported activities involving rational drug use including the development of a single monitoring tool for the rational use of antimalarials. Training for two health care personnel per district on the proper use of the tool has been completed. There have been discussions of developing an integrated tool to monitor rational drug use in general, which would require additional trainings, but no decisions have been made. Through PEPFAR, a data manager has been hired to sit at the Pharmacy Taskforce to manage and analyze data on drug origin, expiration and quality. PMI will work with PEPFAR, the Global Fund under the Rolling Continuation Channel grant through the PNILP to continue roll out of this activity.

**Regulation and Drug Quality Control:** Although PMI has not previously funded any activities to support regulation and drug quality control in Rwanda, this will change because of the increasing number of counterfeit drugs (including ACTs) on the market. In addition,

PMI will continue to provide support to the Pharmacy Taskforce to build its capacity in drug regulation activities

**Pharmacovigilance:** Safety data on ACTs is limited, especially in Africa where these drugs are now being widely used as the first-line treatment for malaria. National pharmacovigilance systems are needed to monitor adverse drug reactions to ACTs and other drugs. Collection of safety data on ACTs is an important component of malaria case management. The delivery of prompt and effective malaria treatment is not only influenced by the availability of drugs or the accessibility of health facilities but also by the safety of the drug. Adverse events whether minor or severe can significantly influence the treatment outcome. Reporting of adverse events to the proper authority (such as a pharmacovigilance unit) is important so that follow-up investigations can be conducted to determine causality and severity as well as provide recommendations for continued care and treatment. In May 2008, an orientation workshop, supported by PMI and led by the Pharmacy Taskforce and a consultant from the National Drug Authority of Madagascar, took place which included participants from various areas of the health sector (physicians, pharmacists, nurses, as well as representatives from various MOH departments and the National University of Rwanda. The workshop gave an overview of basic concepts of pharmacovigilance and presented several examples of pharmacovigilance system in other countries such as Morocco, Algeria, and Madagascar. During this workshop Rwanda's national pharmacovigilance system was defined and an adverse events reporting form was developed. In addition, four Rwandese nationals participated at a pharmacovigilance training course in Morocco in June 2008.

Following the workshop, the adverse events reporting form and the reporting system will be field tested, before nationwide implementation will commence. A training manual and terms of reference for the various organs of the system are currently being developed and are anticipated to be finalized by September. A consensus meeting will follow to present the "piloted" system to the various health programs and stakeholders with the intention to officially adopt the system as "Rwanda's national pharmacovigilance system" and to designate the pharmacovigilance unit of the Pharmacy Taskforce as "Rwanda's National Pharmacovigilance Center." Currently, the PNILP in collaboration with a physician from the University Hospital of Kigali collect pharmacovigilance data of accidental ACT exposure in the first trimester of pregnancy.

The MOH and the various health programs, especially TracPlus (which includes malaria and HIV programs) have recognized the need for a national pharmacovigilance system and are supporting the development of one system rather than creating a separate system for each disease program. Both PMI and PEPFAR have contributed to this effort. Because the needs of each program are different, the pharmacovigilance unit of the Pharmacy Taskforce will continue to work closely with all health programs, especially the PNILP, to ensure that their needs are met and to assure a smooth integration of ongoing pharmacovigilance activities into the national system.

The need to conduct pharmacovigilance in the private sector has been identified but no specific activities have been undertaken. The PNILP with partners and the Pharmacy Taskforce are currently developing a strategy on how to best integrate pharmacovigilance activities in the private sector.

## **Proposed PMI Year 3 Activities (\$2,389,200)**

### **Diagnostics (\$287,100)**

PMI considers accurate diagnostic capacity a critical component of malaria case management and will continue to support the PNILP through the NRL in efforts to shift from presumptive treatment to the use of laboratory confirmation using microscopy or RDTs by improving training, laboratory infrastructure and supporting the national quality assurance and quality control program. PMI will continue to work with other partners including coordinating laboratory diagnostics activities with PEPFAR, Global Fund, BTC, and other donor-funded activities, to ensure improved quality and availability of malaria diagnostics in Rwanda in Year 3.

Specific activities include:

- *Laboratory diagnostic commodities:* Procure equipment and supplies for malaria laboratory diagnosis and the quality control system, including slides, Giemsa stain, replacement microscopes, or RDTs as needed for malaria diagnostics at the National Reference Laboratory or district health facilities. The annual need for all laboratory supplies is currently supported by NRL, CAMERWA, UNICEF, and PEPFAR; funding from PMI will support this coordinated effort for the specific malaria components (\$100,000);
- *Strengthen malaria laboratory diagnostics:* Continue direct funding to the NRL to strengthen malaria diagnostics by supporting integrated national quality control system for microscopy at health facilities and RDTs at the community level. Specific contributions to the quality control system include reinforcing training at health center and community level (specifically for RDT use), incorporating the RDT strategy into quality control system, increasing the availability of supervisory staff at the national, regional or district levels, supporting supervisory visits to the district hospitals or the health centers and coordinating laboratory technician training and supervision with HIV and tuberculosis laboratory activities. One CDC technical assistance visit will be supported in this activity. (\$187,100).

### **Case Management in the community and private sector: (\$1,600,000)**

In Year 3, PMI will continue support for prompt and effective case management of malaria at the community level and in the private sector to reach 85% of suspected malaria cases in children under five within 24 hours with an ACT. PMI, in collaboration with other partners, will work within the community health platform for prompt treatment of malaria, as well as for outreach to ensure that communities understand the importance of malaria prevention and control measures.

Specific activities to be funded by PMI are:

- *Community case management implementation:* As the HBM districts move towards implementing the entire community health package, PMI will continue to support the malaria/fever component of the package including initial and refresher trainings, training in RDT use, supervision, monitoring activities and provision of materials and supplies for the CHWs.

CHWs do not currently have integrated tools for prevention messages that are cross-cutting in malaria and MCH; therefore, PMI will continue to revise and develop messages as part of the integrated BCC task force (see BCC section) to ensure that there are no missed opportunities to provide messages about proper compliance with AL and early care seeking for fever, sleeping under LLINs correctly and consistently for both children under five and pregnant women (especially since the IPTp policy has changed), and other messages related to an integrated counseling package targeting care takers.

PMI will support the integration of these messages into the training package for CHW implementation. The PNILP has recognized that supervision is one the key elements to ensure quality roll-out of the community health program. PMI will continue to provide supportive supervision in its HBM districts, with a focus on referrals and follow up among CHWs and health facilities. PMI will also assist in revision of CHW tools as discussions move forward regarding linkages with the community health information system, commodity management, and community PBF (see commodity management and M&E sections for further description).(\$1,200,000)

- *Community case management evaluation (cost and activity details are provided in the M&E section):* PMI will support the PNILP to conduct an assessment of RDT use by CHWs for the treatment of malaria in children under five at the community level.
- *Central support for the community health strategy:* PMI will support the community health desk to coordinate all the community health implementing partners to ensure that community health materials (e.g. training modules, job aids, motivation/incentive packages, per diem rates, supervision protocols, and key messages) are reviewed systematically and revised/reproduced similarly across implementing partners. PMI will support the community health desk to conduct regular supervision at district and health centers and to standardize and revise supervision tools and manuals based on an assessment of best practices among current supervision models. PMI will support the fever management component in 14 MOH to-be-identified districts only where PMI is already supporting HBM efforts. PMI will also support the MCH task force with the PNILP and other partners to develop a long-term, costed plan for community health roll out involving the HBM/fever management component, and review the results of the pilot RDT within the task force to determine the best strategy to move forward. PMI's support for malaria/fever management as part of the community health package will be limited to no more than 50% of the entire cost of the Mission's new community health programs. (\$100,000)
- *Community performance-based financing (c-PBF):* PMI will continue to support the roll out of c-PBF. This includes finalizing the indicators on the reporting forms and training

additional CHWs to accurately collect and submit this information to the facilities for review of their performance. (\$100,000)

- *Strengthen private sector distribution of ACTs:* Continued support for the private sector approach to market ACTs for young children and adults, including use of mystery clients and monitoring of pharmacy registers to ensure appropriate malaria treatment. Work with the national association of private sector outlets to strengthen their capacity to support private pharmacies and outlets, and ensure timely distribution of ACTs to private sector outlets nationwide, including ongoing support to minimize stock outs (\$150,000);
- *Repackaging of ACTs:* Support to the community health program and private sector by printing and re-packaging of approximately 500,000 AL treatments for community-level distribution in a blister packaging for children under five years and packaging for adult ACT treatments for use in the private sector to address the high level of care seeking in urban areas (\$50,000).

### **Drug Supply and Pharmaceutical Management (\$502,100)**

In Year 3, PMI will continue support for prompt and effective case management of malaria by strengthening drug supply chain and promoting rational use of antimalarials. In addition, PMI in collaboration with other health programs and PEPFAR will support the MOH/Pharmacy Taskforce to establish a pharmacovigilance and drug quality control system.

- *Strengthening commodity supply chain management for drugs and other commodities at district and community level:* Continue support to strengthen supply chain systems using previously developed tools and software through collaboration with CAMERWA to improve forecasting and quantification of malaria commodities at national, district (e.g. pharmacies and hospitals) and sector (health centers) levels. Support training on data collection and record keeping for accurate consumption data and proper ordering of PMI commodities at all levels; support the integration of PMI commodities into existing reporting formats and systems (e.g. LMIS). Support participation in the GOR technical working groups (including CPDS) focusing on nationwide quantification, forecasting and procurement of all lab supplies, drugs and commodities; seconding one logistics staff member at PNILP to coordinate all malaria commodities for the program. (\$290,000);
- *Develop national pharmacovigilance systems:* Support the development of a training manual and job aides, as well as training of health facility staff, on pharmacovigilance of antimalarials and how to complete the adverse event reporting form. In addition, PMI will support the pharmacovigilance unit of the Pharmacy Taskforce to work closely with the PNILP to ensure that their active pharmacovigilance surveillance activities continue and are integrated into the national system. With increasing importance of community case management (CCM), PMI will support the national pharmacovigilance unit to work in close collaboration with all partners and programs involved in the implementation of CCM to define the role of pharmacovigilance at the community level. In addition, PMI will support the PTF to explore integrating

pharmacovigilance activities in the private sector approach. One CDC technical assistance visit will be supported in this activity. (\$112,100)

- *Drug quality:* Support the MOH/PNILP and the Pharmacy Taskforce to establish a quality control system to identify sub-standard antimalarial drugs both at the national and district level. PMI will assist in the development of a national quality control strategy as well as conduct trainings on quality control at the central and district level. In addition, PMI will procure necessary reagents for the testing of antimalarials. (\$100,000).

## **L. INTERVENTIONS - Behavior Change Communication (BCC)**

Rwanda is in a unique situation for malaria prevention and control. As mentioned in the strategy section, Rwanda is gearing up for its “pre-elimination” phase for malaria prevention and control. This situation warrants a strong emphasis on behavioral change and solidifying social norms to ensure that the community, caretakers, health providers, and leaders within the GOR and community understand the importance of maintaining key malaria prevention and control behaviors and practices and does not become complacent as malaria transmission decreases. As mentioned earlier in the LLIN and case management sections, even though the MIS 2007 shows that utilization of LLIN rates and early and prompt treatment with ACTs is around 60% among target populations, in order to reach the “last mile” in achieving at least 85% coverage of key interventions and consistent use of these interventions, a strong emphasis needs to be placed on BCC and a shift in social norms for acceptability of these key interventions over the long-term. The MOH has emphasized the importance of behavioral data, and additional surveys will soon be completed by partners to further target needs.

The recent shift in malaria in pregnancy policy also emphasizes the importance of ensuring pregnant women are sleeping under their bed net each night. In addition, given the shift in focus to community provision of prevention and curative services, it is essential that the community understands the differences between the services they receive from the CHW and the services provided at the health facility. The community services should be perceived as a link to the health facility, not a replacement for key services available.

The recently approved community health policy also emphasizes the importance of BCC among all technical areas. As mentioned earlier, per request of the MOH, PMI will support an integrated task force at national level, which will include the PNILP, Health Communication Center (HCC), CHD, MCH, and other desks as appropriate, to support the “five pillars” of malaria prevention and control (ITNs, HBM, case management, epidemic detection and response, and MIP). PMI will support BCC/IEC at all levels to ensure consistency in technical messages, while ensuring the channels and target audiences are adapted as appropriate.

In addition, a recent community health assessment revealed that there are several opportunities not yet tapped into that are influencing communities’ perceptions and behaviors regarding HBM as well as community health. PMI will work with other partners to explore these possibilities to ensure that the most effective methods are being utilized that will

maximize desired behavioral outcomes. Beyond the community, PMI will include primary schools (teachers and school children) in targeted BCC/IEC activities and messages, as well as local and religious leaders.

**Proposed PMI Year 3 Activities:** (cost referenced in other sections)

PMI will continue to support IEC/BCC activities for IRS, ITNs, MIP, HBM, case management, and epidemic detection and response in Year 3 of PMI. A detailed description of IEC/BCC activities can be found in each of the above mentioned sections.

## **M. INTERVENTIONS –Epidemic Surveillance and Response**

### **Current status**

Rapid identification and response to malaria outbreaks will become a cornerstone of Rwanda's updated strategy, as prevalence continues to decrease and attention increasingly focuses on consolidation and sustainability of achievements. The public health system must be even more vigilant than in the past as the population's immunity to malaria falls while the country remains at great risk of both local and trans-frontier epidemics. Thus, strengthened epidemic surveillance and response, including enhanced predictive capability, rapid detection, and decentralized response capability are key elements of the program reorientation now underway to reach the target of pre-elimination by 2012.

Sentinel sites were first established in Rwanda in 1999, with 10 now in place in endemic districts. According to PNILP (January 2008 M&E Plan), "Each sentinel site is equipped with a cellular phone and motorcycle with specifically trained staff and a malaria focal person. . . Data are collected on special forms and sent to the PNILP according to agreed timelines by post office, telephone or physical delivery. The data are checked for completeness and correctness at the PNILP and then entered in an Access data base." Indicators to be reported monthly include:

- Malaria incidence rate for uncomplicated malaria, per age group
- Malaria incidence rate for severe malaria, per age group
- Proportion of severe cases with anemia
- Malaria cases with confirmed diagnosis
- Proportional morbidity
- Number of malaria cases treated
- Proportion of uncomplicated and severe malaria cases
- Proportion of admissions due to malaria
- Fatality rate for malaria
- Number of malaria microscopy blood slides taken

Malaria reporting is in the process of being incorporated within a broader Integrated Disease Surveillance and Response (IDSR) system, being established through TRAC Plus. This system, to be established by the end of 2008, will be extended to approximately 120 sites country-wide.

## **Progress to Date**

PMI will support nine sentinel sites primarily located in epidemic-prone districts following the finalization of the IDSR. PMI will support a comprehensive assessment of all the sentinel sites in order to provide recommendations for systematically strengthening the sentinel surveillance system and to inform implementation of the IDSR system.

A WHO assessment in mid-2007 noted two major weaknesses in the epidemic surveillance and response system, namely that completed data coming from sentinel sites were available for the last three years but had not been analyzed regularly; and the epidemic committee tasked with coordinating national-level epidemic surveillance and response activities had not been decentralized to build district-level capacity and ability to detect and respond to epidemic situations in a timely fashion. The absence of an epidemic preparedness plan both at the national and district levels also caused serious concern.

The report recommended specific actions, the first four of which are well underway, including identifying epidemic-prone areas based on analysis of risk factors; retrospectively analyzing malaria epidemics; extending environmental surveillance throughout the country; maintaining sufficient stocks of drugs and other materials needed to manage epidemics; elaborating an IRS plan for prevention of epidemics; implementing epidemic surveillance by epidemic threshold follow-up; and training on a malaria early warning system.

A PNILP staff member has developed a research model for analyzing past epidemics and predicting future ones- a model that will eventually be piloted in Rwanda. As noted, surveillance is being extended countrywide, through IDSR. Plans are in place to phase both ACT and LLIN procurement to ensure adequate stocks at all times. PMI is supporting a comprehensive assessment of the operational capacity of the sentinel sites in late 2008.

### **Proposed PMI Year 3 Activities: (\$220,000)**

PMI continues to support epidemic surveillance and response through prompt analysis of existing data and preparation for rapid response. PMI will also continue to support capacity building within the PNILP (see Section N, Capacity Building of the National Malaria Control Program).

The following specific activity is planned in Year 3:

- *Support of sentinel sites and epidemic preparedness committees:* PMI will continue to provide technical support for nine sentinel sites in the non-endemic districts while exploring ways to develop a community-based Malaria Early Warning System. As requested, PMI will assist PNILP to analyze existing sentinel surveillance data and to increase their use in weekly reviews. PMI will also support extension of epidemic preparedness committees to all districts, including technical support for LLIN stockpiling for use in epidemics. (\$170,000)

- *Human resource capacity building*: PMI will continue to provide training in vector control, case management and the monitoring and evaluation of malaria programs to district and central level personnel. (\$50,000)

## **N. HIV/AIDS and MALARIA**

### **Current status**

HIV infected persons have a greater risk of severe disease due to malaria and clinical malaria in HIV infected persons is associated with a transient increase in their viral load and further suppression of the immune system. Accordingly, HIV/AIDS and malaria programs have taken steps to integrate activities where possible in order to address the compounding effects of both infections and to promote synergy across programs. Opportunities for integration for HIV and malaria are primarily within preventive services such as delivery of LLINs to persons living with HIV/AIDS through existing HIV service delivery mechanisms such as care packages or through existing mechanisms for orphans and vulnerable children, and support of ANC services to ensure prompt and effective case management of malaria in pregnancy including the treatment and prevention of anemia, the distribution of LLINs and the prevention of mother-to-child transmission (PMTCT). Beyond these specific intervention areas for potential integration, the cross-cutting areas such as integrated training/supervision, laboratory services, drug quality control services, pharmacovigilance activities and monitoring and evaluation systems offer the most promising opportunities for HIV and malaria program integration and synergy.

An estimated 180,000 people infected with HIV live in Rwanda and there are an additional 190,000 orphans and vulnerable children (AIDS Report 2007). This coupled with the presence of major programs such as the President's Emergency Plan for AIDS Relief (PEPFAR) and the World Bank's Multi-Country HIV/AIDS program (MAP), integration of malaria control activities with those for HIV has become a priority. Rwanda is one of fifteen focus countries for PEPFAR and received a total of \$103 million for FY 2007 and \$123 million in FY2008 in central and country funds.

### **Progress to Date**

PEPFAR will procure 50,000 LLINs for PLWHAs and PMI and the PNILP will support the distribution of these LLINs in coordination with PEPFAR NGO clinical partners. Integrated malaria and HIV laboratory training and supervision have begun with the NRL, PNILP, BTC, PEPFAR and PMI. In addition pharmacovigilance activities led by the Pharmacy Taskforce and involving various health programs including malaria and HIV (TracPlus), tuberculosis, EPI and others have commenced. An orientation workshop outlining the concepts of pharmacovigilance was held in May. During this workshop the programs defined the national pharmacovigilance system for Rwanda and developed an adverse events reporting form.

**Proposed PMI Year 3 Activities** (funding partially provided through PEPFAR and other sources)

Links with PEPFAR are particularly important for the following activities, as described in other sections.

- *LLINs for PLWHAs and orphans and vulnerable children:* To ensure LLINs are distributed to these groups, PMI and PNILP will continue to coordinate with PEPFAR to include funding for LLINs and supporting tracking and monitoring of LLIN use in these groups in the Country Operational Plan FY09.
- *Financial and technical support of FANC services through MCH unit:* PMI and PEPFAR will continue to work closely with the MCH desk and the respective MOH programs to support integrated FANC services
- *Laboratory services integration:* Continuation of joint planning with Tuberculosis and HIV programs to integrate training and supervision of laboratory workers to improve the quality of malaria diagnostics and strengthen district level ability to conduct quality control. To facilitate this, CDC laboratory technical assistance for parasitology and malaria diagnostics will be coordinated and jointly supported by PMI and PEPFAR. See “Malaria Diagnostics” section for additional activity details.
- *System strengthening and cross-cutting areas:* Other opportunities to coordinate efforts in support of systems include those for monitoring and evaluation purposes and commodity management and distribution. Continued technical support to CAMERWA and the PTF for pharmaceutical distribution will be coordinated with PEPFAR to be included in both MOP and COP for FY 2009.
- *Pharmacovigilance:* Pharmacovigilance activities for AL and antiretroviral therapies will be coordinated between PMI and PEPFAR with CDC technical assistance coordinated and supported jointly. (See the case management section for additional detail.)

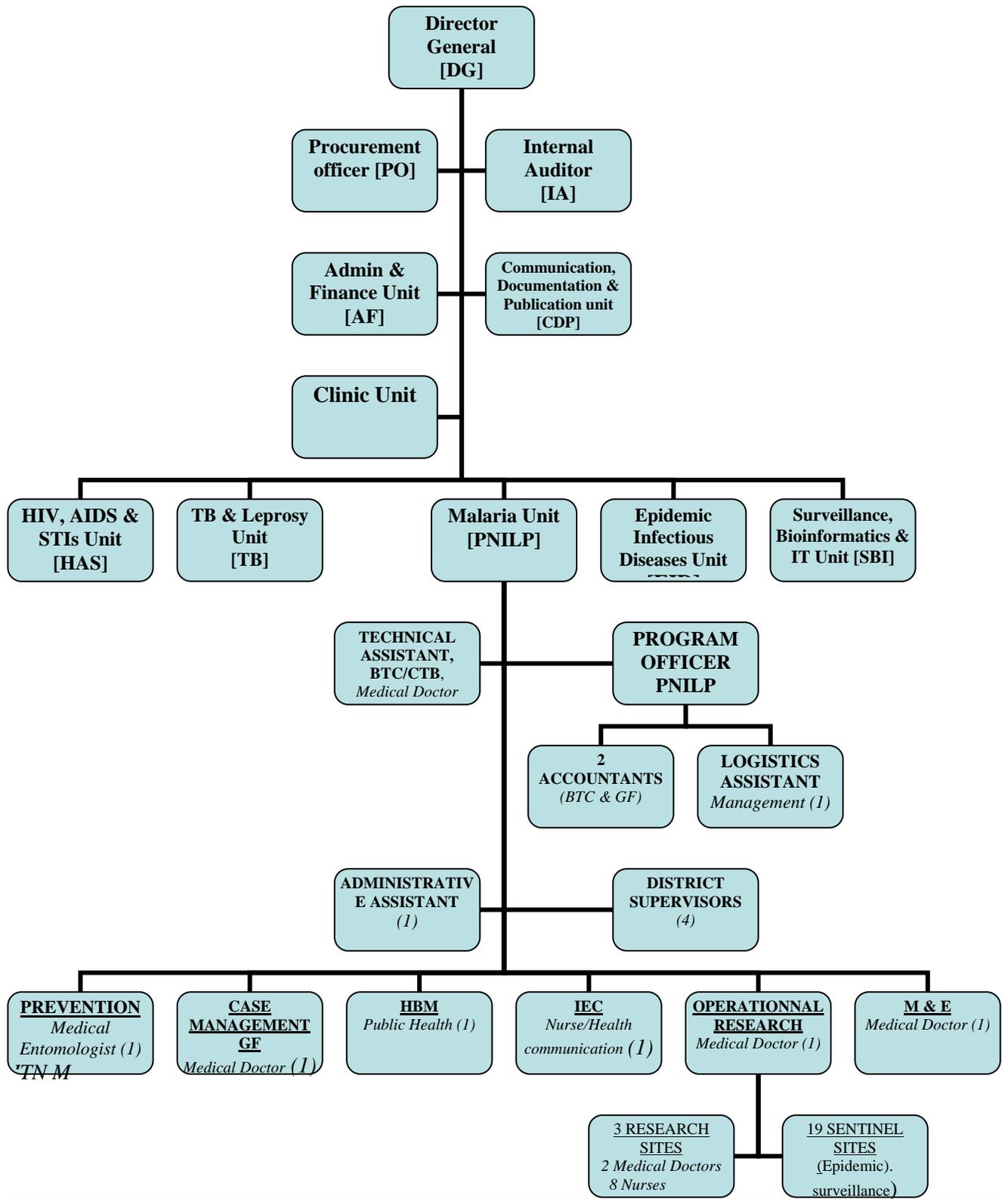
## **O. CAPACITY BUILDING WITHIN NATIONAL MALARIA CONTROL PROGRAM**

### **Current status**

The MOH has restructured its infectious disease programs including the PNILP, the Treatment and Research AIDS Centre (TRAC), and the Tuberculosis Program into one umbrella program called TRAC Plus/CIDC (Center for Infectious Disease Control). (See organigram below). CIDC is now responsible for elaboration of the national strategy and policy for all infectious diseases in Rwanda and in the upcoming year will also consolidate the administrative units of the programs. Currently the PNILP functions with a staff of 19 at the central level, including five physicians, an entomologist, a public health specialist, nurses, two

social marketing experts, and support staff including three accountants and secretaries. The German aid agency GTZ (Gesellschaft für Technische Zusammenarbeit or German Technical Cooperation) has recently assigned a Dutch epidemiologist to assist in analysis of sentinel site data. Financial support for these positions is shared by the GOR, Global Fund, and BTC, in addition to GTZ. PMI funding will soon be used to hire an Environmental Health officer position to support IRS activities and a logistics officer to coordinate activities related to malaria commodities.

CIDC (Trac Plus) Organigram



## **Progress to date**

In Years 1 and 2, PMI funded several activities to build central and district capacity. USAID conducted a pre-award assessment of PNILP (a prerequisite for direct USG funding) and recommended that they hire an accountant; PNILP postponed implementation, however, pending TRAC/CIDC restructuring. PMI supported the training of 15 personnel from PNILP, TRAC Plus and the National University School of Public Health in the use of personal digital assistants (PDAs) for surveys and in Geographic Information Systems (GIS); they also purchased 55 PDAs with Geographic Positioning Systems and distributed them to the PNILP. Following training, the PNILP has used the PDAs to conduct further staff training and recently completed a Knowledge, Attitudes and Practices (KAP) survey.

A PMI implementing partner has developed a certificate course in Integrated Malaria Control and Prevention, and ten people including nurses from the sentinel sites, district supervisors and PNILP staff, participated in the first five of the course's modules. PMI has supported technical assistance and logistics for an insectary to enable the PNILP to perform entomological monitoring. Lastly, PMI in-country staff provide ongoing technical assistance to the PNILP through participation in all the thematic working groups, technical meetings and other activities as requested by the PNILP.

**Proposed Year 3 activities** (cost referenced in Epidemic Surveillance and Response section)

PMI will continue to provide training in vector control, case management and the monitoring and evaluation of malaria programs to district and central level personnel, as described above.

## **P. COMMUNICATION AND COORDINATION**

*PMI-Rwanda Steering Committee:* The PMI Steering Committee, a multi-sectoral group for coordinating and reviewing PMI activities and established at the request of the Government of Rwanda. Although the committee has not been able to convene on a regular basis since its inception and first meeting in 2006, efforts are under way to revitalize this oversight group. The lapse in regular meetings can be partly attributed to the diverse commitments of its high level participants, including the MOH Permanent Secretary as chair and the USAID Mission Director as co-chair.

*PMI partners meeting:* PMI partners have continued to hold regular meetings facilitated by the PNILP. In Year 3, PMI and the PNILP plan to hold these meetings on a quarterly basis as part of the review process for PMI funded activities to inform progress, identify challenges and provide solutions and approaches for effective activity implementation.

*IRS steering and technical committee:* PNILP has continued to support and facilitate the IRS steering committee and has formed a subcommittee known as the IEC technical committee, which includes HCC, PNILP, RTI and PMI. This committee is charged with providing input to the development of the IEC strategic plan, the design of the communication materials and coordinating the IEC campaign.

*Country Coordinating Mechanism (CCM) for the Global Fund:* The Country Coordinating Mechanism for the Global Fund, continues to meet on a monthly basis. PMI has participated in proposal development and review, most recently for the Round 8 malaria proposal.

*Roll Back Malaria activities:* PNILP continues to hold regular meetings with the RBM group, and partners involved in malaria control activities. Members are particularly active during preparations for Africa Malaria Day.

*MCH and the partners in MIP:* The Maternal Child Health unit continues to provide support to PNILP, and all the partners involved in malaria in pregnancy. These partners have proposed quarterly thematic group meetings and stressed the importance of increased involvement of PNILP and MCH in these meetings.

*The Community Health Desk:* The Community Health Desk has elaborated an integrated community health policy and has continuously taken the lead in bringing together all the stakeholders in community health including HBM, community IMCI, community PBF, other child survival, family planning, and HIV palliative care partners.

## **Q. PRIVATE SECTOR PARTNERSHIPS**

Novartis has been involved with PNILP and other partners in discussions of the provision of subsidized medications. PMI anticipates collaboration with Novartis, especially in the area of ACT provision through the private sector. Discussions between PSI, in partnership with PNILP, and Novartis are already well underway; and Novartis has agreed to allow private sector outlets throughout Rwanda to provide Coartem at subsidized prices to increase access for low-income populations to effective antimalarial treatment.

## **R. MONITORING AND EVALUATION PLAN**

### **Current status**

Accurate and timely information has become even more essential than previously in Rwanda as the country moves from high malaria prevalence to the pre-elimination phase targeted for 2013. Four needs predominate:

- To monitor routine service provision at both the community and facility levels, as well as the links between the two
- To closely monitor and evaluate evolving service delivery strategies, including those for malaria in pregnancy and community health
- To measure Rwanda's rapidly changing malaria epidemiology
- To rapidly identify malaria outbreaks, especially in previously endemic zones.

(The last two of these are further elaborated in the Section M, Epidemic Surveillance and Response, above.)

Rwanda needs nimble measurement systems, able to respond to rapid changes; but also consistent and well-coordinated systems that provide timely and reliable information at sector, district and national levels. The country overall has much more health systems data, covering a longer period, than most countries in Africa; however, a recent assessment of the Health Sector Strategic Plan concluded that weak HMIS was perhaps the most serious weakness in the program.

In addition to the nineteen surveillance sites described above, malaria-related data is collected through the facility-based HMIS, primarily focused on clinic caseloads and mortality; community information systems, recording CHW activities (but not yet linked to facility systems) and at least two systems supported by the Expanded Program for Immunizations (EPI) – one registering routine activities such as immunizations and LLIN distribution, and the other providing telephonic reports of disease cases (not yet including malaria).

These data sources create potential for rapid improvement in management systems, but they need to be linked, analyzed and above all applied in routine decision making. Creative thinking, moreover, is needed to serve the four purposes listed above, especially rapid identification and reporting of epidemics as well as monitoring and fine tuning of policy innovations (MIP and community management).

A May 2007 WHO mid-term assessment of the Rwandan Malaria Strategic Plan noted a number of weaknesses in the area of M&E, including the absence of a national M&E system, and the use of data from just a few districts to generalize to the country as a whole. The report further commented on the need to “institute a credible, verifiable and robust data system to provide timely data for policy and program decision making.” The report from application of the Global Fund’s M&E Systems Strengthening Tool (MESST) in late 2007, while noting many significant strengths, commented on the lack of written guidelines for documentation and processing, the absence of data quality control, and weaknesses in data transfer systems from districts to the national level. These situations continue but are improving: the national M&E system is gradually coming into place, and missing facility data are being recovered

### **Progress to Date**

PMI continues to support PNILP capacity development for M&E and to facilitate prompt presentation of results, particularly those of the 2007 Malaria Indicator Survey (delayed by staff turnover and limited capacity in the government unit responsible for analysis). Specific activities include training of district program managers, support for sentinel sites (see ESR section above), entomological monitoring (see IRS section), and verbal autopsies for deaths identified during the interim DHS. PMI FY08 funds will support efforts to implement findings from the MESST plan described above as well as full implementation of PNILP’s January 2008 M&E plan. Efforts will also support rapid completion of the 2007 MIS. The PMI/Rwanda team is also developing a data-based quarterly review process with PNILP.

### **Proposed PMI Year 3 activities (\$349,600)**

PMI will continue to support malaria monitoring and evaluation by strengthening use of data for all four of the purposes listed above. PMI will partner with PNILP, the MCH and Community Health Desks, and the M&E Task Force to strengthen reporting of community-based interventions, including case management, end-use of LLINs, and malaria in pregnancy; with partners, PMI will also expedite identification of malaria outbreaks, through strengthened sentinel surveillance and linkage with telephone-based notification systems. PMI will support monitoring, evaluating and refining service delivery innovations for malaria in pregnancy and community case management and further strengthen routine measurement of malaria-related morbidity and mortality. The following activities are proposed for Year 3.

- *Support of the national M&E Task Force to strengthen routine information systems:* Under the leadership of the MOH HMIS Unit, the M&E Task Force works to link multiple data sets, ensures complete and timely flow of reports and analyses, and assists managers to analyze and use processed information in routine decision making. Of prime interest to PMI and PNILP is the link between community and facility-based reporting systems, especially as routine services (case management, malaria-in pregnancy) move from facilities to community health. PMI funds will augment other funds (including PEPFAR) to support technical assistance; they will also ensure that malaria needs are fully considered in selection of indicators and provision of analytical reports to district managers. One technical CDC visit will be included in this activity. (\$162,100)
- *Continued support of the Malaria Indicator Survey (MIS) for the collection of household data:* Rwanda's rapidly evolving epidemiology and strategy require frequent evaluation; thus, MOP09 funds will supplement those provided in 2008, to contribute to financing of the 2009 MIS. (\$50,000)
- *Community case management evaluation:* PMI will support the PNILP to conduct an assessment among the districts that have transitioned to the use of RDTs by CHWs for diagnosis of malaria prior to treatment in children under five. Evaluating CHW overall performance with the RDTs and adherence to test results in the treatment of malaria within the integrated community case management approach will inform policy changes and national scale-up. (\$50,000)
- *Support USAID internal M&E and reporting unit:* This unit will assist implementing partners to strengthen data collection and quality, and will systematize USAID reporting to Washington. It will work particularly on Geographic Information Systems and the Health Management Information System. PMI funds will augment a much larger contribution from PEPFAR to broaden technical support for PMI implementing partners. (\$87,500)

## **S. STAFFING AND ADMINISTRATION**

Two health professionals have been hired to oversee PMI in Rwanda, one representing CDC and the other representing USAID. In addition, one Rwandan has been hired as a Foreign Service National to support the PMI team. All PMI staff members are part of a single inter-agency team led by the USAID Mission Director or his designee in country. The PMI team shares responsibility for development and implementation of PMI strategies and work plans, coordination with national authorities, management of collaborating agencies, and supervision of day-to-day activities.

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

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





Table 2

**President's Malaria Initiative - Rwanda  
Planned Obligations for FY09 (\$000)**

<b>Proposed Activity</b>	<b>Mechanism</b>	<b>Budget (<i>commodities</i>)</b>	<b>Geographic Area</b>	<b>Description of Activity</b>
<b>PREVENTIVE ACTIVITIES</b>				
<b>LLINs</b>				
Procure and distribute 800,000 LLINs	DELIVER (4,896) PSI Behavior Change Social Marketing (706)	5,602 (5,602)	National	Procure 800,000 LLINs and distribute free or at highly-subsidized prices through routine channels to pregnant women and children under five
National IEC/BCC for net usage	PSI BCSM (subgrant to local NGOs/FBOs)	150	National	Support a central level BCC/IEC task force to develop a strategy for implementing integrated malaria messages and coordinating with community partners to conduct community mobilizations and BCC activities.
Community IEC/BCC for net use <sup>1</sup>	TBD	200	National	Support community interventions to increase net usage such as CHWs door to door hang up/keep up activities
Strengthen tracking of LLIN distribution and use	DELIVER	160	National	Strengthening reporting and monitoring systems, supervision and linking the HMIS with community-level tracking of LLINs through the CHWs. Includes end-use verification of PMI nets to pregnant women, and children under five
<b>IRS</b>				
<i>Annual IRS implementation in targeted sectors of</i>	RTI IRS IQC	5,000 (1,700)	Targeted sectors	Procurement of insecticides and other IRS supplies/equipment; training and other operational

<sup>1</sup>Community IEC/BCC activities are integrated across prevention activities. These activities will include household-level efforts to promote demand for, and correct use of, ITNs and ANC services as well as ACTs. The activities are broken down in this table and throughout this document for the purposes of presenting financial investments by intervention area.

<b>Proposed Activity</b>	<b>Mechanism</b>	<b>Budget (commodities)</b>	<b>Geographic Area</b>	<b>Description of Activity</b>
<i>existing and new districts</i>				costs for IRS activities for up to 275,000 households.
IEC and community mobilization for IRS	PSI BCSM	200	Targeted sectors	Implementation of IRS IEC strategy for IRS round in Aug 2009. BCC/IEC task force will serve as steering committee and ensure that IRS IEC will also be part of integrated IEC/BCC activities
Entomological M&E	RTI IRS IQC (125) CDC (24.2)	149.2	IRS districts	Continued support for central planning for entomological monitoring and district implementation; including support for the insectary and development of a plan for monitoring of LLIN effectiveness. Two CDC technical assistance visits will be supported.
Environmental compliance	Central Environmental Monitoring award	30	IRS districts	External monitoring of the environmental compliance of the IRS operations, including management of side effects and disposal of sachets and other contaminated materials.
<b>Malaria in Pregnancy</b>				
Strengthening of MIP interventions within FANC at district and national level	ACCESS	350	National	Support to MCH and PNILP to implement the new MIP policy, provide resources and coordination for FANC training and support the national and district levels to conduct supervision.
Strengthen community level MIP interventions	TBD	350	National	Support implementation of MIP strategy at community level by supporting CHW training, printing training materials and routine data collection tools, evaluate performance of community outreach to pregnant women and strengthen the linkage between the CHWs and health facilities
Community IEC/BCC for MIP	TBD	150	National	Support for implementation by CHWs of MIP IEC/BCC as defined by the national task force
<b>SUBTOTAL: Preventive</b>				

<b>Proposed Activity</b>	<b>Mechanism</b>	<b>Budget (<i>commodities</i>)</b>	<b>Geographic Area</b>	<b>Description of Activity</b>
<b>CASE MANAGEMENT</b>				
<b>Diagnosis</b>				
Laboratory diagnostic commodities	DELIVER	100 (100)	National	Procure lab equipment and supplies for malaria diagnostics, including slides, Giemsa stain, replacement microscopes, or RDTs as needed for malaria diagnostics at the NRL or district health facilities.
Strengthen malaria laboratory diagnostics	Implementing letter to NRL (175) CDC (12.1)	187.1	National	Training, supervision, transportation and supporting malaria diagnostic capacity. One CDC TDY will be included to support malaria diagnostics
<b>Community and Private Sector Treatment</b>				
Community case management implementation	TBD (800) EIP NGO partners (400)	1,200	9 districts	Support continued implementation of community case management of fever within community health package in nine districts.
Central support for the community health strategy	BASICS	100	National	Support community health desk to coordinate and oversee implementation and supervision of community health package
Performance-based financing for community case management	TBD	100	National	Support PBF approaches to strengthen community case management and referrals
Private sector provision of ACTs	PSI BCSM	150	Over 200 private sector pharmacies and outlets nationwide	Strengthen private sector capacity to appropriately market ACT for young children and adults; support the timely distribution of ACTs to private sector outlets nationwide.
Repackaging of ACTs	PSI BCSM	50 (50)	10 districts	Printing and re-packaging ACTs for HBM and private sector
<b>Drug Supply and Pharmaceutical Management</b>				
Strengthen commodity supply chain	DELIVER	290	National and district levels	Continue support to strengthen supply chain using previously developed tools and software, including collaboration with CAMERWA and districts to track drugs at district pharmacies and health centers.

<b>Proposed Activity</b>	<b>Mechanism</b>	<b>Budget (<i>commodities</i>)</b>	<b>Geographic Area</b>	<b>Description of Activity</b>
				Support one commodities manager staff at PNILP
Pharmacovigilance	SPS (100) CDC (12.1)	112.1	National	Support for national pharmacovigilance system One CDC TDY will be included.
Drug quality	USP DQI	100	National	Assist in the development of a national quality control strategy, conduct trainings on quality control at the central and district level, procure necessary reagents for the testing of antimalarials
<b>SUBTOTAL: Case Management</b>				
<b>EPIDEMIC SURVEILLANCE &amp; RESPONSE ACTIVITIES</b>				
Support sentinel sites for ESR preparedness	TBD	170	Sentinel sites	Technical support for nine sentinel sites in ESR, development of a community-based Malaria Early Warning System (C-MEWS). Support extension of epidemic preparedness committees to all districts, including technical support for LLIN stockpiling for use in epidemics.
Build PNILP capacity in vector control and malaria epidemiology	TBD	50	n/a	Support training in vector control, case management and the monitoring and evaluation of malaria programs to district and central level personnel.
<b>SUBTOTAL: ESR</b>		<b>220</b>		
<b>MONITORING &amp; EVALUATION ACTIVITIES</b>				
Support of the national M&E Task Force	TBD (150) CDC (12.1)	162.1	National	MOH systems strengthening in M&E, with focus the link between community and facility-based reporting systems. One CDC TDY will be included
Technical support to PNILP for evaluation of community case management	BASICS	50	National	Evaluate treatment of fever at community level within the integrated community health approach
Support of 2009 MIS	TBD	50	National	Supplement 2008 contribution for 2009 MERG

<b>Proposed Activity</b>	<b>Mechanism</b>	<b>Budget (<i>commodities</i>)</b>	<b>Geographic Area</b>	<b>Description of Activity</b>
				Malaria Indicator Survey
M&E and reporting unit in Mission	USAID	87.5	n/a	Contribution to USAID Mission M&E requirements and responsibilities as they relate to PMI
<b>SUBTOTAL: M&amp;E</b>		<b>349.6</b>		
<b>STAFFING &amp; ADMINISTRATION</b>				
USAID and CDC staff and associated administrative expenses	USAID/CDC	700	n/a	Support for USAID & CDC Malaria Advisors, plus associated administrative costs.
FSN staff and other in-country administrative expenses	USAID	300	n/a	Malaria Program Specialist for PMI, partial support for other administrative/support staff within USAID Mission
<b>SUBTOTAL: Mgmt. and Admin.</b>		<b>1,000</b>		
<b>GRAND TOTAL</b>			<b><i>Commodities represent 46% of total budget</i></b>	



Table 3

**President's Malaria Initiative – Rwanda  
Year 3 (FY09) Budget Breakdown by Intervention (\$000)**

Area	Commodities \$ (%)	Other \$ (%)	Total \$
Insecticide-treated nets	5,602 (92%)	510 (8%)	6,112
Indoor residual spraying	1,700 (32%)	3,679.2 (68%)	5,379.2
Case management	150 (6%)	2,239.2 (94%)	2,389.2
Malaria in pregnancy	0 (0%)	850 (100%)	850
Epidemic preparedness & response	0 (0%)	220 (100%)	220
Monitoring and evaluation	0 (0%)	349.6 (100%)	349.6
Administration	0 (0%)	1,000 (100%)	1,000
<b>Total</b>	<b>7,452 (46%)</b>	<b>8,848 (54%)</b>	<b>16,300</b>

**Table 4****Year 3 (FY09) Budget Breakdown by Partner (\$000)**

*(Once the FY09 Implementation Plan is approved and contracts/grants cooperative agreements awarded, all other partners will be listed here)*

<b>Partner Organization</b>	<b>Geographic Area</b>	<b>Activity</b>	<b>Budget</b>
DELIVER	National	Procurement of LLINs	\$4,896
	National	Strengthen tracking of LLIN distribution and use	\$160
	National National	Procurement of laboratory diagnostic commodities	\$100
	National	Strengthening commodity/supply chain management	\$290
RTI IRS IQC	Up to 9 districts	IRS commodities and operational costs	\$5,000
	IRS districts	Entomological M&E	\$125
PSI BCSM	IRS districts	IEC and community mobilization for IRS	\$200
	National	LLIN distribution	\$706
	National	National IEC/BCC for net usage	\$150
	National	Private sector provision of ACTs	\$150
	National	Repackaging of ACTs	\$50
JHPIEOG/ACCESS	National	Strengthen District Level MIP and FANC services	\$350
USP	National	Drug Quality	\$100
PIL with NRL	National	Strengthen Malaria Diagnostics	\$175
SPS	National	Pharmacovigilance	\$100
BASICS	National	Technical Support to PNILP and Evaluation	\$50
	National	Central Support for the Community Health Strategy	\$100
CSHGP EIP	4 districts	Community Case Management Implementation	\$400
USAID		M&E and Reporting Unit in Mission	\$87.5
Central Environmental Monitoring Award	IRS districts	Environmental Compliance	\$30
CDC	National	TA support for various activities: IRS/	\$60.5

		entomology, Diagnosis, pharmacovigilance, M&E	
TBD	National	Performance-based Financing for Community Case Management	\$100
TBD	Districts TBD	Community IEC/BCC for net use	\$200
TBD	5 districts	Community Case Management Implementation	\$800
TBD	Sentinel sites	Support sentinel sites for ESR	\$170
TBD	National	Support of national M&E Task Force	\$150
TBD	National	Support of 2009 MIS	\$50
TBD	Districts TBD	Strengthen Community-level MIP Interventions	\$350
TBD	Districts TBD	Community IEC/BCC for MIP	\$150
TBD	National	Build central and district MOH capacity in vector control and malaria epidemiology	\$50

\* Staffing, administration and USAID/CDC headquarters' supported technical assistance not included