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

PRESIDENT'S MALARIA INITIATIVE

MALARIA OPERATIONAL PLAN (MOP)

MALI

FY 2010

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EXECUTIVE SUMMARY

Malaria is one of the major causes of morbidity and mortality in Mali. In 2008, the Ministry of Health (MOH) reported more than 1.3 million clinical cases of malaria, accounting for 37% of all outpatient visits and 42% of outpatient visits in children less than five years of age. Thirty seven percent of all reported deaths are due to malaria. Among children less than five years of age, malaria is the reported cause for more than half of all deaths.

Key partners of the National Malaria Control Program (NMCP) include the Global Fund for HIV/AIDS, Tuberculosis and Malaria (Global Fund), the World Health Organization (WHO), UNICEF, the World Bank, the Dutch Cooperation, USAID and non-governmental organizations (NGOs). Mali is the recipient of a $26 million Global Fund Round 6, five-year malaria grant to support procurement of insecticide treated nets (ITNs) and artemisinin-based combination therapy (ACTs). In 2009, Mali submitted a five-year malaria application to the Global Fund Round 9 with an ambitious IRS component that expands spraying from 2 to 15 districts.

In 2007, the Government of Mali (GOM) strengthened the NMCP by raising it to the Directorate level. The GOM has also increased its investment in malaria control and the NMCP from about $1 million in FY07 to $6.7 million in FY08 and to more than $9 million in FY09. These allocations do not include NMCP administrative costs which are funded separately by the GOM.

The most recent data on other malaria indicators comes from the 2006 Demographic and Health Survey (DHS). Fifty percent of households owned at least one ITN, 27% of children under 5 years old and 29% of pregnant women had slept under an ITN the previous night. Only 15% of children less than five years of age with fever were managed promptly with antimalarials, and 4% of pregnant women had received the recommended two doses of sulfadoxine-pyrimethamine (SP) for intermittent preventive treatment (IPTp) of malaria during pregnancy. However, according to a national post-ITN campaign survey conducted in September 2008, significant progress has been made toward achieving MOH and PMI targets for ITN ownership and use with 83% of households owning at least one ITN, and 74% of pregnant women and 78% of children less than five years of age having slept under an ITN the previous night.

The PMI Year 3 Malaria Operational Plan (MOP) was based on progress achieved during the last two years and a planning exercise carried out in June 2009. The MOP was developed in close collaboration with the NMCP and national and international partners involved with malaria prevention and control in Mali. The proposed activities support the priorities outlined in the recently updated NMCP National Strategic Plan for 2010 – 2014.

To achieve PMI's goals and targets in Mali, the following major activities will be supported with FY 2010 funding:

Insecticide-treated nets (ITNs): The NMCP has made significant progress in the last two years toward achieving its initial goal of 80% use of long-lasting insecticide-treated nets (LLINs) among children less than five years of age and pregnant women. In December 2007, the Malian Ministry of Health (MOH) conducted an integrated health campaign in which 2.3 million free LLINs were distributed with support from PMI, Canadian Red Cross, UN Foundation, Malaria No More, Global Fund, and NGO partners. PMI also supported routine LLIN distribution through ANC and EPI clinics in Years 1 and 2. In Year 3, PMI proposes to fill the gap for LLINs delivered though routine channels by procuring and distributing approximately 900,000 free LLINs for children less than five years of age and pregnant women through ANC and EPI clinics, in addition to targeting people living with HIV/AIDS. An additional 640,000 LLINs will be procured to support a nationwide universal coverage campaign which is planned to start in December 2010. PMI will continue strengthening the capacity of the MOH and partners to coordinate donor inputs, track LLINs, and manage logistics and distribution systems. PMI will also support specific campaign coordination activities, as well as additional targeted communications regarding consistent and correct LLIN use for the mass distribution campaign.

Indoor residual spraying (IRS): Since 2008, PMI has supported two IRS campaigns in the districts of Bla and Koulikoro, including initial and refresher training of more than 350 spray trainers, supervisors and operators, the purchase of all commodities and personal protective equipment, and communication, supervision, monitoring and environmental compliance activities. During the 2009 IRS campaign, a total of 135,698 houses were sprayed, protecting about 457,374 residents, with an acceptance rate of over 90%. With FY 2010 funding, PMI will continue to support IRS in Bla and Koulikoro Districts and will expand to a third district with an estimated population of 160,000. PMI will also continue strengthening the MOH's capacity to plan and supervise IRS activities.

Intermittent preventive treatment in pregnant women (IPTp): Utilization of antenatal care by pregnant women and IPTp coverage are still low in Mali. The 2006 DHS showed that only 4% received the recommended two doses of SP at ANC visits during their pregnancy. In Year 2, PMI procured one million SP treatments for IPTp. In Year 3, PMI will continue to help fill gaps in SP supplies to cover all pregnant women, help update supervision and training materials, and assist in the roll out of malaria in pregnancy guidelines. PMI will also continue to target communication activities to engage religious and traditional leaders to advocate for changing the traditional cultural practice of hiding pregnancies, which delays visits to antenatal care clinics and increases the risk of adverse outcomes.

Case management: Malaria diagnosis in most public-sector health facilities is based on clinical criteria, with fewer than 10% of suspected cases of malaria having laboratory confirmation. In Year 1, PMI conducted a laboratory needs assessment to identify gaps in equipment and training at district health facilities. PMI also facilitated the review of laboratory training manuals for malaria microscopy and performance of rapid diagnostic tests (RDTs). In Year 2, PMI is procuring additional microscopy supplies as well as RDTs and other consumables. PMI is also supporting pre-service training for laboratory diagnosis and case management, and refresher training for supervisors of sentinel sites and regional

laboratories. In addition, PMI is assisting the NMCP implement a plan for quality control of microscopy and RDTs.

In March 2009, the MOH organized a national forum to build consensus around essential care services that may be offered at the community level, including home-based management of fever (HBMF). In Years 1 and 2, PMI supported malaria treatment through community health workers (*relais)* and expanded from one to three districts in the region of Sikasso. In Year 3, PMI will support the scale-up of HBMF in 5 districts by procuring ACTs for community-based ACT distribution and ensure sufficient supplies of ACTs for children less than five years of age in health facilities. PMI will also continue to procure drugs for the management of severe malaria, as well as support in-service training and supportive supervision of health workers and community *relais*. Finally, PMI will continue to build political and popular support for a new HBMF policy of case management, support the dissemination of the multi-media messages, implement a study on the impact of user fees on health service usage, and strengthen logistic and supply chain management of malaria commodities.

Monitoring and Evaluation (M&E): The NMCP, with support from PMI and other partners, has developed a comprehensive national malaria M&E plan, including capacity building, improvement of data collection, and provision of equipment to collect and analyze data. In Year 1, PMI supported sentinel sites in five health facilities to collect data on the frequency of laboratory-confirmed malaria, malaria-related hospitalizations, and deaths attributed to malaria. PMI also helped assess the quality and timeliness of routine reporting for malaria through the national health information system. In Year 2, PMI is supporting a sentinel reporting system (5 sites), as well as the inclusion of the malaria module in the 2009 Multiple Indicator Cluster Survey (MICS). In Year 3, PMI will provide financial support for the preparation of a 2011 DHS and continue to support improvements to routine reporting on malaria through the national health information system. Sentinel surveillance will be evaluated and potentially expanded to an additional 3 sites with FY09 funding. Finally, PMI will help the NMCP acquire data management capacity and strengthen the coordination of malaria M&E activities.

The proposed FY10 PMI budget for Mali is $28 million. Of this amount, 42% will support procurement and distribution of LLINs, 28% IRS, 17% improved malaria diagnosis and treatment, 4% malaria in pregnancy, 6% monitoring and evaluation, and 3% staffing and administration. A total of 56% will be spent on commodities.

ACRONYMS AND ABBREVIATIONS

ACT	Artemisinin-based combination therapy
AL	Artemether-lumefantrine
ANC	Antenatal care
ASACO	*Association de Santé Communautaire* (Community Health Association)
AS-AQ	Artesunate-amodiaquine
ATNPlus	*Assistance Technique Nationale* (National Technical Assistance)
ART	Antiretroviral therapy
BCC/IEC	Behavior change communication/information education communication
CCM	Country Coordinating Mechanism
CDC	Centers for Disease Control and Prevention
CHW/*Relais*	Community Health Worker
CNIECS	National Center for Information and Communication in Health
CSCOM	*Centre de Santé Communautaire* (Community Health Center)
CSHGP	Child Survival and Health Grants Program
CSREF	*Centre de Santé de Référence* (Reference/District Health Center)
DHS	Demographic and Health Survey
DHPS	*Division d'Hygiène Publique et Salubrité* (Division of Public Hygiene and Safety)
DNS	Direction Nationale de la Santé (National Health Directorate)
DPLM	*Division Prévention et Lutte Contre la Maladie* (Division of Prevention and Disease Control)
DPM	Directorate of Drugs and Pharmacies
DSR	*Division Santé Reproductive* (Reproductive Health Division)
EPI	Expanded Program for Immunization
FBO	Faith-based organization
FENASCOM	*Fédération Nationale des Associations de Santé Communautaire* (National Federation of Community Health Associations)
FSN	Foreign service national
GFATM	Global Fund to Fight AIDS, Tuberculosis, and Malaria
GOM	Government of Mali
HBMF	Home-based management of fever
HIPC	Highly-Indebted Poor Countries
IDA	International Development Association
IMCI	Integrated Management of Childhood Illnesses
INRSP	*Institut National de Recherche en Santé Publique* (National Institute of Public Health Research)
IPTp	Intermittent preventive treatment of pregnant women
IRS	Indoor residual spraying
ITN	Insecticide-treated bed net
LNS	*Laboratoire National de Santé* (National Health Laboratory)
LLIN	Long-lasting insecticide-treated bed net

MCH	Maternal and child health
MOH	Ministry of Health
MESST	Monitoring and Evaluation Systems Strengthening Tool
MICS	Multiple Indicator Cluster Survey
MIP	Malaria in pregnancy
MIS	Malaria Indicator Survey
MRTC	Malaria Research and Training Center
MSF	*Médecins Sans Frontières* (Doctors Without Borders)
NGO	Non-governmental organization
NIH	National Institutes of Health
OMVS	*Organisation de la mise en valeur du fleuve Sénégal* (Senegal River Basin Project)
PKC	Project Keneya Ciwara (bilateral implemented by CARE)
PLWHA	People living with HIV/AIDS
PMI	President's Malaria Initiative
NMCP	*Programme National de Lutte contre le Paludisme* (National Malaria Control Program)
PPM	*Pharmacie Populaire du Mali* (People's Pharmacy of Mali)
PRODESS	National Health and Social Development Program
PSI	Population Services International
PTF	Technical and Financial Partners' Forum
PVO	Private voluntary organization
RBM	Roll Back Malaria
RDT	Rapid diagnostic test
RTI	Research Triangle Institute
SIMR	*Surveillance Intégrée de la Maladie et la Riposte* (Integrated Disease Surveillance and Response – IDSR)
SLIS	*Système Local d'Information Sanitaire* (Health Management Information System)
SP	Sulfadoxine-pyrimethamine
SPS	Strengthening Pharmaceutical Systems
TASC-3	Technical Assistance and Support Contract, Three
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USG	United States Government
WHO	World Health Organization

PRESIDENT'S MALARIA INITIATIVE

In late 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 15 high-burden countries in sub-Saharan Africa. The goal of this Initiative is to reduce malaria-related mortality by 50% in PMI countries. 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), insecticide-treated bed nets (ITNs), 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 2007, four countries were added: Malawi, Mozambique, Senegal, and Rwanda. In 2008, eight additional countries, including Mali, were added to reach a total of 15 countries covered under the PMI. Funding began with $30 million in Fiscal Year (FY) 06 for the initial three countries, $160 million in FY07, $300 million in FY08 and FY09, and is expected to rise to $500 million in FY10.

In implementing PMI, the U.S. Government is committed to working closely with host governments and within existing national malaria control plans. Efforts are coordinated with other national and international partners. Mali is the recipient of a $26 million Global Fund Round 6 grant, coordinated with efforts of Roll Back Malaria (RBM), the World Health Organization (WHO), United Nations Children's Fund (UNICEF), the World Bank Malaria Booster Program, and the non-governmental and private sectors, to ensure that investments are complementary and that RBM and Millennium Development goals are achieved. Country planning visits for PMI, as well as subsequent evaluations, are highly consultative and held in collaboration with the National Malaria Control Program and other partners involved in malaria prevention and control in the country.

This document presents a detailed one-year implementation plan for Year 3 of the PMI in Mali. It briefly revisits the evolution of malaria control and prevention policies and interventions in Mali, reports the status of implementation of the 2009 fiscal year (FY09) Malaria Operational Plan (MOP), identifies challenges and unmet needs if National Malaria Control Program (NMCP) and PMI goals are to be achieved, and provides a description of activities planned in FY10 under the PMI. It was prepared in close collaboration with the NMCP, and key malaria stakeholders. The total amount of PMI funding requested for Mali is $28 million for FY10.

BACKGROUND

In 2010, the population of Mali will be about 13.3 million (World Population Prospects: The 2008 Revision), with over 47% less than 15 years of age. Approximately 64% of Malians live in poverty. In 2005, the estimated annual gross national income per capita was just $500

(World Bank 2007), making Mali one of the world's poorest countries. The total expenditure on health in Mali represented nearly 8% of the GDP in 2008 (MOH/ PRODESS).

Administrative and health infrastructure in Mali

Mali is divided into eight administrative regions (Kayes, Koulikoro, Sikasso, Ségou, Mopti, Gao, Tombouctou and Kidal) plus the capital Bamako. The regions are subdivided into 49 administrative "*Cercles*" comprised of 53 health districts while Bamako is divided into 6 administrative communes, corresponding with 6 health districts. Mali has a total of 59 health districts with one reference/district health center (CSREF) each. Governance is decentralized into 703 communes, each one administered by an elected local council headed by a mayor. The health system in Mali is based on decentralization of health and community participation with the main objectives of:

- Extension of health service coverage and
- Access to essential and effective medicines.

The health system is composed of three levels of case management:

- The central-level with four national reference hospitals constitutes the highest reference level;
- The intermediate level with six regional hospitals for patients requiring a higher level of care;
- The operational level with:
    - Fifty-nine referral health centers (CSREF) constituting the district reference level.
    - A total of 858 functional community health centers (CSCOM) in 2008 as well as parastatal, faith-based, military and other private health centers, constituting the community health services level. The CSCOMs are established and managed by community health associations (ASACO).

Health financing through cost recovery

Mali has a strong cost recovery system in place that is based on the "Bamako Initiative." At the district-level, communities can establish CSCOMs based on the following criteria: a minimum of 10% contribution to the construction or renovation of the health facility; the hiring and support of health personnel; and the establishment of an ASACO. All CSCOMs are required to deliver the national minimum package of services: antenatal care, immunizations, and curative services. Once authorized by the District Medical Officer, the MOH provides an initial stock of medicines, consumables and equipment. In principle, communes are expected to allocate 15% of their budget for social services including water, education and health (CSCOMs).

Three forms of revenue generation exist at CSCOMs and are managed by the ASACO: membership fees, the sale of essential drugs, and fees for services. Service fees vary by health area and are set by the ASACO after consultation with the population. Membership fees allow for reduced service charges at some CSCOMs. Funds derived from the sale of medications are kept in a separate account to prevent providers from overprescribing to generate revenue. This should also prevent de-capitalization of pharmacy stock. The ASACO management committee purchases replacement drugs for the CSCOM through the national pharmacy

system or from the private sector based on availability. Selected drugs (e.g. antimalarials for children under five and pregnant women, vitamin A, oral rehydration solution) are provided free by the government or donors. The CSCOMs must finance the transportation of their drugs from CSREFs (Reference Health Centers). However, due to small profit margins and the loss of or use of revenues for non-pharmaceutical purposes, CSCOM drug stores often become de-capitalized.

National financial planning for malaria and health/social development

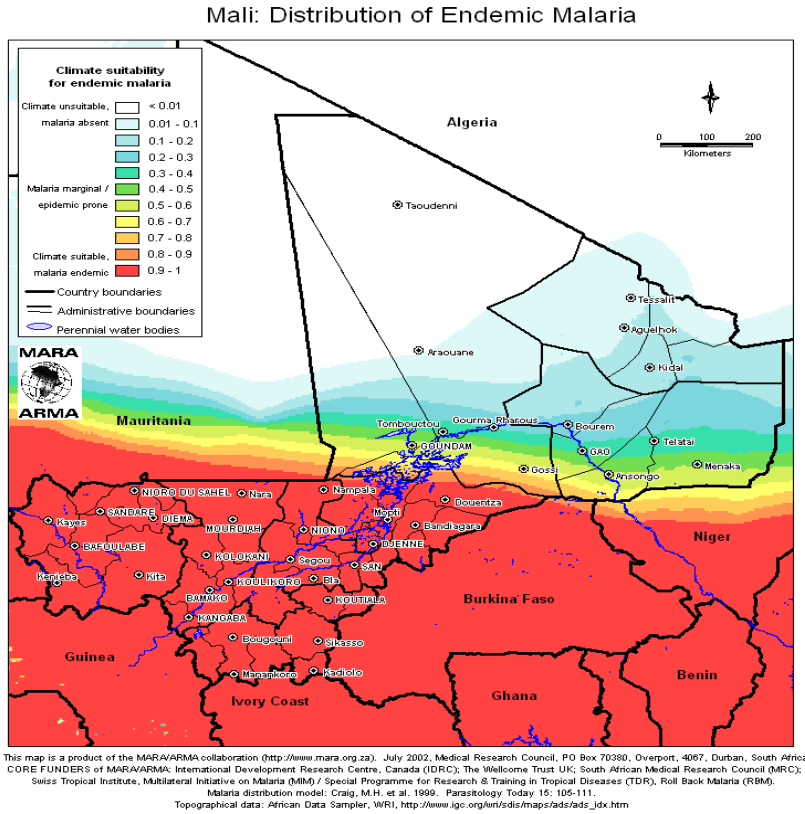
The NMCP receives annual budget support from National Health Sector Wide Approach or PRODESS. The PRODESS Evaluation Committee (*Comité de Suivi)* oversees and approves the annual operation plan, which includes funding gaps expected to be covered by donors. Several partners (including the governments of the Netherlands, Sweden and Canada) provide direct budget support on an annual basis. Other donors target their funding to sub-sectors and programs. The Government of Mali (GOM) contributes mostly to salaries, office space and other operating costs in the PRODESS annual budget. The GOM also uses Highly Indebted Poor Countries (HIPC) program funds to pay some MOH salaries, especially in CSCOMs. Overall, the GOM has steadily increased the contribution of the national budget devoted to health from about 6% in 2000, to 8% in 2005, and to about 11% in 2007 with commitments for additional increases in the future.

The GOM-approved FY07 Operating Plan for the PRODESS includes budget line items totaling about $1 million for activities to be conducted by the NMCP. Government funding for NMCP activities was increased substantially in FY08 to $6.7 million and in FY09 to over $9 million, following the GOM's procurement of malaria commodities and equipment. This budget includes resources from countries providing direct budget support, with the remainder of needs covered by funds from other donors including GF, PMI, UNICEF and others. This does not include funds for NMCP administrative costs, which are funded separately by the GOM.

MALARIA SITUATION IN MALI

Malaria is the primary cause of morbidity and mortality in Mali particularly for children less than five years old. In the 2008 annual statistical summary of the national health information system (*Système Local d'Information Sanitaire* or SLIS), health facilities reported more than 1.3 million clinical cases of malaria, accounting for 37% of all outpatient visits (all ages). Malaria also accounts for 42% of all outpatient visits for children less than five years of age. Fifty-five percent of all reported deaths and 68% of deaths in children under five are due to malaria.

Distribution of Endemic Malaria and Climate suitability for endemic malaria (Source: MARA/ARMA)



According to the SLIS, the reported incidence of presumed cases of malaria in 2007 was 85.6 per 1,000 population nationally, with regional incidence ranging from 53/1,000 in Mopti to 108/1,000 in Bamako. Infants had the highest reported incidence of 221/1,000, followed by children aged one to four years at 132/1,000. Actual malaria incidence may be much higher, since many patients with malaria do not seek care from health facilities. In fact, it is estimated that only 15-20% of febrile children present to health facilities. Overall, about 58% of the population lives within five kilometers of a health facility, and 80% within 15-kilometers (*Annuaire SLIS 2007*).

Plasmodium falciparum accounts for 85-90% of malaria infections while *P. malariae* (10-14%) and *P. ovale* (1%) make up the remaining infections. There is also recent evidence of *P. vivax* in epidemic-prone regions of the north.

Malaria generally is endemic to the central and southern regions (where about 90% of Mali's population lives), and epidemic in the north. Malaria transmission varies in the five geo-climatic zones. It occurs year-round in the Sudano-Guinean zone in the south, with a seasonal peak between June and November. The transmission season is shorter in the northern

Sahelian Zone, lasting approximately three to four months from July/August to October. Malaria transmission is endemic in the Niger River delta and areas around dams with rice cultivation, and is endemic with low transmission in urban areas including Bamako and Mopti. Epidemics occur in the north (Tombouctou, Gao, and Kidal regions) and in northern districts of Kayes, Koulikoro, Segou and Mopti regions.

Key partners of the NMCP include the Global Fund to fight HIV/AIDS, Tuberculosis and Malaria (Global Fund), the WHO, UNICEF, the World Bank, the Dutch Cooperation and USAID. Non-governmental organization (NGO) and private voluntary organization (PVO) partners include *Groupe Pivot Santé*, *Fédération Nationale des Associations de Santé Communautaire* (FENASCOM), *Médecins Sans Frontières* (MSF), Plan International and Mali Voices /JHUCCP. The National Institutes of Health (NIH) supports the Malaria Research and Training Center (MRTC) of the Applied Epidemiology Department within the School of Medicine, Odontostomatology and Pharmacy. Sanofi-Aventis has launched a subsidized treatment program in collaboration with local pharmacies to encourage use of its artesunate-amodiaquine (AS-AQ) products, Arsucam® and Coarsucam®. The Canadian International Development Agency (CIDA) is implementing large-scale home-based management of fever (HBMF) with ACTs in two regions of Mali covering more than two million people.

NATIONAL MALARIA CONTROL PLAN AND STRATEGY

The MOH guides and coordinates all malaria control activities. The NMCP was established in 1993 and, until July 2007, remained under the oversight of the Disease Control Division of the National Health Directorate (DNS). In July 2007, the NMCP was elevated to a Directorate level in the MOH organizational chart. The new NMCP director supervises four technical divisions and reports directly to the Secretary General of Health. Due to this higher profile in the MOH, the NMCP can now participate in and influence decision making about malaria control more effectively, including development of MOH work plans and budgets.

The NMCP establishes strategies for all malaria interventions, coordinates research, proposes policies, norms and guidelines, and develops and oversees implementation of partner work plans. The NMCP also supports decentralized regional and district health teams through training and supervision.

The NMCP Strategic Plan was recently revised and realigned with the funding period for the Global Fund Round 9 proposal (2010-2014). The revised national strategy aims to achieve the following:

- Reduce malaria mortality by at least 50% in 2010 and by 75% in 2015 as compared to year 2000 levels;
- Reduce malaria case-fatality rates reported in health facilities by at least 50% in 2010 and by 80% in 2014, as compared to year 2005 levels; and
- Reduce malaria morbidity by at least 50% in 2010 and by 75% in 2015 as compared to year 2000 levels.

The Global Fund Round 9 proposal includes requests for two national LLIN campaigns, to provide one LLIN per two persons every three years, proposes scale-up of IRS to 15 districts, and requests ACTs and RDTs for all health facilities in Mali. The outcome of the Global Fund Round 9 proposal will be announced in November 2009.

To achieve these objectives, the NMCP has defined four major malaria control and prevention strategies: 1) improved case management, 2) IPTp, 3) vector control through the distribution and use of ITNs, elimination of mosquito breeding sites using larvicides, and targeted indoor residual spraying, and 4) malaria epidemic preparedness. Three cross-cutting approaches support these major strategies: community mobilization and behavior change communication (BCC), operational research, and monitoring and evaluation.

With the resumption of IRS, the NMCP has established an IRS Steering Committee comprising representatives from the Ministries of Agriculture, Environment, and Territorial Administration, as well as from civil society, UNICEF, WHO, PMI, and other relevant MOH technical divisions. The committee is chaired by the Secretary General of Health.

CURRENT STATUS OF MALARIA INDICATORS

The Demographic and Health Surveys (DHS) conducted in 1996, 2001 and 2006 are the only nationally-representative health surveys conducted in Mali in recent years. The 2006 DHS was conducted from May to December, which includes the peak period for malaria transmission (August-November). The results show relatively high household coverage with any net, but low ITN coverage and even lower use of nets or ITNs by high-risk groups (pregnant women and children). Prompt case management in children less than five years of age with fever is also very low, as is use of sulfadoxine-pyrimethamine (SP) for IPTp.

A UNICEF multiple indicator cluster survey (MICS) is planned for September – December 2009 and will include a module on malaria with measurement of parasitemia and anemia prevalence in children 6-59 months of age.

Mali DHS 2006

Indicator	Estimate
Proportion of children under five years old with fever in the last two weeks who received treatment with an antimalarial according to national policy within 24 hours of onset of fever	15%
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	N/A*
Proportion of households with at least 1 ITN	50%
Proportion of children under 5 years old who slept under an ITN the previous night	27%
Proportion of pregnant women who slept under an ITN the	29%

previous night	
Proportion of women who received 2 or more doses of IPTp during their last pregnancy in the last 2 years	4%
Proportion of targeted houses adequately sprayed with a residual insecticide in the last 12 months	N/A**

*Data will be available in 2009 MICS.
** According to RTI, 90.3% of targeted houses were sprayed. For the districts of Bla and Koulikoro, 107,638 houses were sprayed out of 119,194 planned during the 2008 round of spray.

GOAL AND TARGETS OF THE PRESIDENT'S MALARIA INITIATIVE

The goal of PMI is to reduce malaria-associated mortality by 50% in PMI countries. By the end of 2010, PMI will assist Mali to achieve the following targets in populations at risk for malaria:

- Over 90% of households with a pregnant woman and/or child 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 in accordance with national malaria treatment policies within 24 hours of onset of their symptoms.

EXPECTED RESULTS – YEAR THREE

Prevention:

- LLINs: PMI will procure approximately 1.540 million long-lasting insecticide-treated nets for an 18-month period (1,240,000 LLIN in FY 10, 300,000 LLINs for FY 11). Of these, 900,000 nets are for routine services to children less than five years of age and pregnant women, and 640,000 for contribution to mass campaign, under the GOM universal coverage approach. This is expected to result in over 80% of households owning one or more LLINs;

- IRS: Approximately 170,000 houses with approximately 580,000 residents will be reached in two IRS rounds over an 18-month period. A total of 108,212 houses in the two districts will be sprayed in May and June 2010 with a third round of IRS. An additional 52,000 houses in one new district will be included in May and June 2011.
- MIP: Approximately 1.2 million tablets of SP for IPT in pregnant women will be procured in conjunction with the Global Fund and UNICEF to cover 100% of SP needs for two years (FY 10 and FY 11).

Treatment:

- Case Management of uncomplicated malaria: approximately 400,000 treatment courses of ACTs will be purchased for the NMCP to prevent stockouts in health facilities and to support the implementation of HBMF for children less than five years of age using community *relais*.
- Case management of severe malaria: Approximately 95,000 treatments of artesunate suppositories and injectable (intramuscular) artemether for pre-referral treatment and approximately 50,000 treatment courses for severe malaria will be purchased for use in government health facilities.
- Diagnosis: 30,000 RDTs will be purchased for the NMCP for use in all malaria sentinel surveillance sites. A one-year supply of lab consumables will be purchased to reinforce the diagnostics capacity at all 59 district referral centers.

INTERVENTIONS – LONG LASTING INSECTICIDE-TREATED NETS (LLINs)

Background:

According to the revised Malaria Strategic Plan for 2010-2014, the NMCP is promoting universal LLIN coverage for all age groups (defined as one LLIN for every two people) with a target of 100% coverage by 2014. To achieve universal coverage, the NMCP is discussing multiple approaches including mass distribution campaigns in 2010 and 2013 contingent upon a successful Global Fund Round 9 application. Replacement of old nets is planned for every three years through mass campaigns.

In 2007, Mali focused significant effort on scaling-up nationwide LLIN distribution through mass distribution campaigns. A pilot distribution was carried out in two regions as part of a "Nutrition Weeks" campaign combined with Vitamin A and followed by a nationwide integrated five-commodity campaign conducted in the remaining seven regions. By December 2007, nearly 2.3 million free LLINs had been distributed in all nine regions to children less than five years of age. PMI worked with the Canadian Red Cross to mobilize additional resources and bring in new partners, including the UN Foundation, Malaria No More, Global Fund, and NGO partners. A follow-up campaign survey conducted eight months after the campaign during the high transmission season showed that 78% of children under five, and 74% of pregnant women, slept under an ITN the previous night (HealthBridge, August 2008).

This represents a significant increase in ownership when compared with the 2006 DHS findings of 50% of households with at least one ITN.

Since 2006, the MOH has supported free distribution of LLINs through health facilities to pregnant women at their first antenatal care visit and to children less than five years of age with completed vaccination cards through Expanded Program for Immunization (EPI) services. The projected annual need for LLIN routine distribution through ANC and EPI is about 1.2 millions nets. With a goal of 100% universal coverage and a total population of 13.3 million people (estimate for 2010), the need for mass distribution is approximately 6.7 million nets in 2010 for approximately 2.5 million households. These nets would replace old nets distributed in 2007. In addition, the NMCP's April 2009 Directive on LLIN distribution included two other opportunities for free routine distribution: through healthy child clinics when a child reaches 5 years of age; and through sick child clinics for children ages 4-5 years old if they had not previously received a net.

The following LLINs are planned for 2009-2010 distribution:

Demographics	**Quantity**		**Observations/Assumptions**
	2009-2010	**2010-2011**	
Total Population (approximate)	12,300,000		Projected 2010
Number of targeted households	2,500,000		Assuming 5 persons/household
Total number of LLINs needed for universal coverage		**6,700,000**	Mass campaign 2010 and 2013 pending Global Fund request NMCP target: 1 LLIN per 2 persons.
Total number of LLINs needed for routine services	**1,200,000**	**1,200,000**	Estimates: Pregnant women: 665,000 Child <1: 530,000
Total number of LLIN needed	1,200,000	7,900,000	
Sources of LLINs			
GOM	Possible	Possible	Funded through HIPC funds or through donor direct funding to PRODESS (National Health and Social Development Program)
PMI	570,000	600,000 640,000	Available for routine services; Support mass campaign 2010 Plus 300,000 for FY2011
Global Fund Round	500,000 (Round 6)	500,000	Currently under negotiations. Nets would be available for routine services in 2009-10
UNICEF	200,000	Possible	Available for routine services in 2009

Total LLINs available	**1,270,000**	**1,740,000**	
GAP (LLIN need minus LLINs available)	**+70,000**	**-6,160,000**	**Goal of universal ITN coverage and pending GF Round 9 proposal**

The NMCP anticipates that these nets will cover routine distribution needs through June 2010, before the beginning of the 2010 high transmission season. The NMCP projects that in 2010-2011, the country will need 1.2 million LLINs for routine services and hopes to receive an estimated 500,000 nets from the Global Fund Round 6 grant. Though the second phase of the grant is currently being negotiated, the NMCP is requesting approximately 500,000 nets per year (2010 and 2011) to cover half of the annual need. In FY10, PMI plans to contribute to reducing this gap.

NMCP and partners have submitted a Global Fund Round 9 application that includes plans for procuring 13.8 million LLINs over five years to achieve universal coverage. Two mass campaigns are planned for 2010 (6.7 million nets) and 2013 (7.1 million nets) with one net for every two people and replacement of nets every three years. Pending a successful outcome and timely negotiations of a Round 9 grant, Mali plans to conduct staggered mass net distribution campaigns beginning in 2010. The country will be divided into six operational zones with two zones per month distributing LLINs to households over a three-month period. During the pre-campaign phase, community representatives and volunteers will conduct house-to-house census visits, distributing vouchers (one for every two people) based on the number of people in each household. During the campaign, residents will redeem the vouchers for LLINs at fixed distribution points and through mobile outreach. To ensure correct use, intensive BCC/IEC activities will be carried out using various communication channels particularly after the nets are distributed. The Round 9 application provides for the full operational costs of the campaigns, quality control of nets, follow-up coverage surveys and on-going BCC/IEC activities. The Round 9 application does not include LLINs needed for routine services.

Progress during the last 12 months:

With FY 08 funds, PMI procured 600,000 LLINs targeting pregnant women and children less than one year of age through routine services at health facilities. A small portion of these nets were also distributed to persons living with HIV/AIDS (PLWHAs) and their households. UNICEF, Global Fund Round 6 and World Bank HIPC funds contributed an additional 500,000 LLINs to support annual routine services over the last year. The NMCP and partners conducted BCC/IEC activities to reinforce correct behaviors and practices around net use. PMI supported radio and TV broadcasts focused on malaria transmission and increasing year-round net use. Mali has generally high demand for LLINs, but consistent year-round use among target groups remains low, especially during the dry season when people are less likely to sleep under a net. The upcoming 2009 MICS will provide current coverage information on LLINs and help to inform development of targeted BCC/IEC strategies for existing delivery channels and future campaigns.

PMI is supporting the NMCP and MOH/EPI for supervision, forecasting, planning and coordination of net distribution. The NMCP M&E Planning Division is responsible for forecasting net needs in collaboration with other MOH offices including the Directorate of Drugs and Pharmacies (DPM), the Division of Reproductive Health (DSR), and the EPI Section with input from the regions and districts. Despite the influx of LLINs over the last two years, lack of coordination among MOH/NMCP and donor partners resulted in some confusion about the quantities, timing, and delivery of nets for routine distribution with some stock outs reported at health facilities. Population Services International (PSI) is developing a tracking table of all nets procured and distributed since 2008 to assist with better coordination and planning among partners. As a sub-partner on the Global Fund Round 6 grant, PSI procures, warehouses, and distributes nets to the district CSREF-level and further to the CSCOM-level based on need. With NMCP participation, PSI is conducting nationwide LLIN inventories twice per year to assess the availability of stock at district level health facilities, and to redistribute LLINs among facilities before the peak of the malaria transmission season. Although adequate stock generally exists at the district depot, many CSCOMs do not have the minimum stock required for six months and have limited means of transporting nets to their facilities and recovering these costs. PSI issued private sector bids to trucking companies to deliver to the district-level and then issued a second tier of contracts with the districts to deliver to the CSCOM facilities.

Proposed FY2010 activities: ($11,765,000)

PMI will continue to contribute to improving coverage and use of free LLINs among the principal target groups (children less than five years of age and pregnant women) by supporting free distribution through public sector routine delivery channels and campaigns. The level of PMI's support to the NMCP's universal coverage goals will largely depend on the country's success in Round 9 and other partner support. PMI will also continue to strengthen the capacity of the MOH and partners to coordinate donor inputs, track LLINs, and manage logistics and distribution systems. The following PMI Year 3 activities are planned for Mali:

LLIN procurement: ($9,690,000) PMI will procure approximately 1,540,000 LLINs for free distribution to children under five, pregnant women and other vulnerable groups such as PLWHAs. Of these, 600,000 LLINs will contribute to closing the estimated annual LLIN gap for 2010-2011 and 300,000 nets will contribute to ensuring an additional six-month supply is available at the beginning of 2012 before the start of the peak transmission season. Approximately 640,000 LLINs will be provided to a mass distribution campaign in 2010 including distribution costs and any post-campaign, "hang-up, keep up" activities. PMI will also continue to strengthen capacity of the NMCP and MOH/EPI in supervision, forecasting, planning and coordination of net distribution. PMI will work closely with other partners including NMCP to leverage additional support and funding for LLINs to meet any new gaps.

Distribution of LLINs: ($1,115,000) PMI will support distribution of free LLINs to pregnant women and children under five in the public sector by ensuring nets are delivered to the district CSCOM level for routine distribution at health facilities during ANC and EPI services. PMI will continue to help CSCOMs improve their distribution and reporting systems and ensure proper labeling of public sector LLINs. PMI will also support the NMCP to provide

planning and coordination for a LLIN mass distribution campaign (2010), monitor routine distribution of LLINs, and be prepared to increase support in order to achieve universal LLIN coverage. In addition, PMI will work with the NMCP and partners to explore other promising strategies for distributing LLINs, such as coordination with campaigns for neglected tropical diseases and outreach services to persons living with HIV/AIDS and/or tuberculosis.

LLIN logistics strengthening: ($240,000) PMI will continue to strengthen the capacity of the NMCP and other key implementing partners involved with LLIN logistics from central- to district-levels. PMI funds will provide technical assistance to strengthen commodity management to adequately forecast, plan and track distribution of LLINs, and carry out quarterly inventory controls of LLIN stocks. This includes advising on transportation and other inputs needed to ensure routine stocks are available. Funding will support improved monthly stock distribution and reporting as well as inventory and supervisory checklists. A portion of the funds will also be used to support an annual end-use verification exercise for LLINs.

Post-Campaign Follow-up and Reinforcement: ($200,000) PMI will support the NMCP and key implementation partners to carry out specific post-campaign activities that include promoting correct and consistent use of LLINs, implementing "hang-up, keep-up" activities with trained community volunteers, and contributing to post-campaign evaluation efforts (both quantitative and qualitative).

BCC/IEC: ($470,000) Support for BCC/IEC activities and coordination among key partners at the national and community levels is even more critical in Year 3 to reinforce mass net distribution efforts and to ensure correct and consistent use of nets among key target groups through out the year. Identifying the remaining barriers to correct hanging, use and maintenance of nets and promoting year-round use is extremely important to help meet NMCP and PMI goals. PMI will support innovative ways to combine tracking of LLINs with targeted BCC messages, and will identify multi-channel strategies to design, develop and communicate this information, including engagement of community-based workers.

NGO Capacity Building: ($50,000) PMI will contribute to efforts led by the NMCP and implementing partners to coordinate and build capacity of local non-governmental, faith-based and community-based organizations in LLIN distribution and follow-up activities. During the campaigns, the GOM will rely heavily on a wide range of community-based organizations and associations to assist with the census and distribution of LLIN vouchers and the nets themselves. Following the campaigns, NGO partners will participate in post-campaign IEC/BCC to promote correct and consistent use of nets.

INTERVENTIONS: INDOOR RESIDUAL SPRAYING (IRS)

Background:

The NMCP's Strategic Plan envisions an integrated vector control program that includes ITNs, indoor residual spraying, destruction of larval habitats, larviciding, and environmental management in urban zones**.** The success of IRS is greatest if coverage rates are high and insecticidal activity on walls is long-lasting. If the duration of IRS effectiveness on walls is less than that needed to last throughout the rainy season, houses would require a second round of spraying during the year.

Regional climatic zones in Mali range from desert in the North with less than one month of rainfall, to the Sudano-Guinean Zone in the far south with six to seven months of rainfall. The three northernmost regions and the northernmost districts within the Kayes, Koulikoro, Segou and Mopti Regions are considered zones of sporadic or epidemic risk for malaria transmission and therefore are not good candidates for routine IRS. IRS is not conducted in rice-growing areas and zones of irrigation around the Niger River Delta where transmission is holoendemic, or in the urban areas of Bamako and Mopti, where malaria is endemic but with limited transmission. IRS is likely to be most effective in the remainder of the country where malaria transmission is perennial and occurs in seasonal peaks that vary in duration from three to six months.

IRS is conducted by private companies regularly in the gold mining areas of Sadioloa, Yatela, Loulou, Morila and Kalana, but it is limited to the mines and surrounding villages rather than to the entire district. No Global Fund-supported or other private sector IRS activities are currently underway. A Global Fund Round 9 proposal plans to expand IRS to 15 additional districts to complement those being covered by PMI. In support of its strategic plan to scale up IRS, the NMCP has also asked PMI to consider supporting a third district.

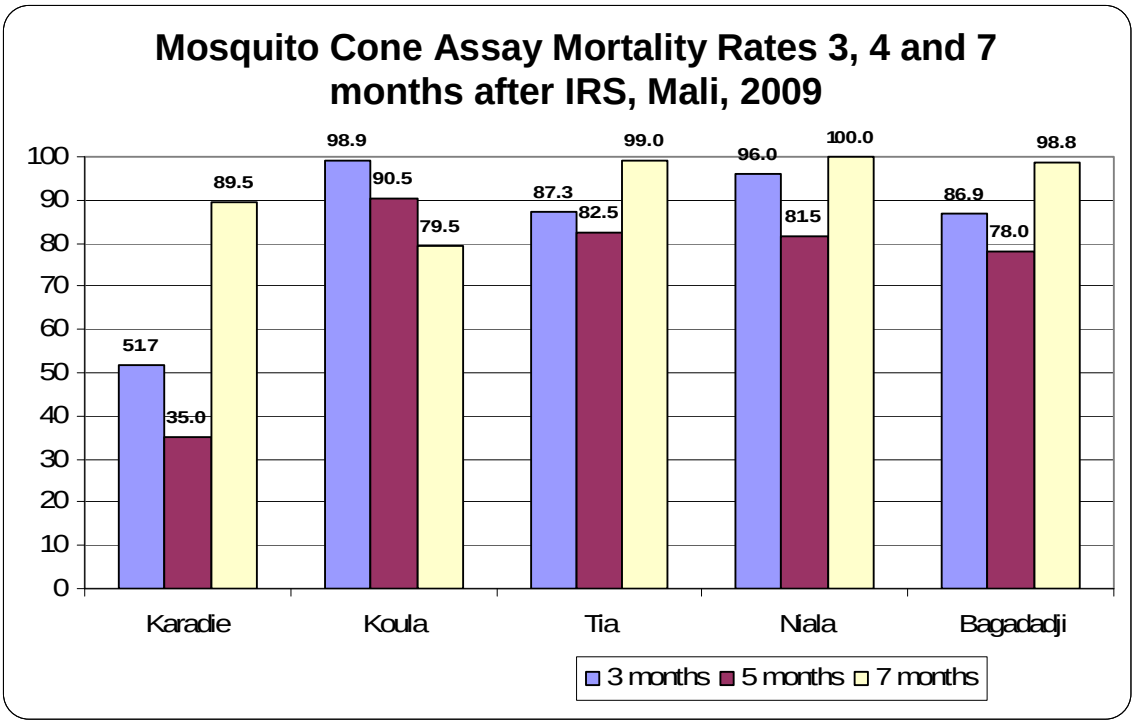
A list of WHO-approved insecticides for IRS includes several insecticides in four classes that offer good options for pesticide rotation strategies designed to limit the development of resistance in mosquito populations. Based upon MRTC's insecticide resistance tests conducted using *An. gambiae* collected in Bla and Koulikoro during 2007, the NMCP and its in-country partners chose lambda-cyhalothrin (30 mg/m2) as the insecticide of choice for 2008 and 2009. MRTC continues to conduct resistance assays in these to inform selection of insecticide for use in 2010.

Progress during last 12 months:

In 2008, PMI funds supported Mali's first large-scale IRS campaign in the *Cercles* of Bla and Koulikoro, with continuing support of both districts in 2009. PMI supported the training of spray trainers, supervisors and operators, the purchase of commodities and protective equipment, and communication, supervision, monitoring, and environmental compliance activities. Activities to promote and mobilize the population around IRS were carried out each year. About 1,848 community *relais* (1,221 in Bla and 627 in Koulikoro) received training and materials to conduct informational group meetings and carry out door-to-door mobilization for IRS. In 2008, spray activities were conducted in July and August, while in 2009 they were conducted in May and June. In Bla and Koulikoro, 107,638 houses were sprayed in 2008, protecting about 420,580 residents, and in 2009 about 126,921 houses were sprayed in 2009 to protect over 457,374 residents. The numbers of supervisors and spray

operators trained for IRS in 2008 and 2009 were 400 and 444, respectively; 1,848 relais were trained in IRS BCC/IEC each year.

With PMI support, MRTC carried out the entomologic monitoring of the IRS program to determine the quality and duration of insecticidal activity remaining on walls during the malaria transmission season. Monthly entomological monitoring in Bla and Koulikoro districts began immediately after the spray round was completed in July 2009. Entomological indices were monitored in five villages (Niala, Tia and Bagadadji in Bla and Koula and Karadie in Koulikoro). WHO cone bioassays were used to measure the duration of insecticidal activity on sprayed walls. Results showed that treated surfaces (mud walls) were very effective (≥80% mortality), at killing susceptible mosquitoes for at least 7 months after the spray. One village, Karadie, had lower mortality rates than the others; most likely due to insecticide application errors.



The GOM strongly advocates an integrated vector control program. MRTC is currently conducting two PMI-supported operational research projects involving vector control interventions. A larviciding project in a small subset of houses in Koulikoro IRS district will determine if there is an added benefit to larviciding water sources surrounding sprayed houses. Field activities began in June 2009 and will continue until December 2009. Preliminary results should be available in early 2010.

A second PMI-supported operations research project targets *An. gambiae s.l.* breeding in water-filled depressions along the Niger riverbed during the dry season. Although *An. gambiae* is found year-round in the hamlets along the Niger River, it disappears during the dry

season in larger villages a few kilometers inland. The "river" anophelines may be the primary source for the mosquito population that increases and migrates inland after the rains begin. By controlling mosquitoes during the dry season with IRS in hamlets along the river's edge, malaria transmission may be reduced in villages farther upland and away from the river. This project is studying eight hamlets and four villages along the Niger River and monitoring the effect of the dry season IRS throughout the rainy season from June to December 2010. Entomologic monitoring was carried out during the rainy seasons of 2008 and 2009, and an IRS spray round was completed June 2009 and followed by entomological monitoring the rest of the year. Results of this study will allow the NMCP to better assess the effects of IRS in similar environments throughout the country. Ultimately, the results of both operational research projects will help the NMCP and PMI choose the best combination of strategies for the control of malaria vectors.

Proposed FY2010 activities: ($7,784,000)

IRS: ($7,300,000) With FY2010 funding, PMI will continue to support IRS in Bla and Koulikoro *Cercles* for the next two spray rounds by procuring insecticide and equipment and covering expenses for trainers, spray teams and storage facilities. As PMI expands to a third district in 2011, additional equipment and supplies will be procured as necessary to cover the projected 108,121 houses in Bla and Koulikoro and an estimated 52,000 houses in a third district. Other support to be provided will include training at the regional, district, and community levels, and joint supervision by NMCP and the Division of Public Hygiene and Health (*Division d'Hygiène Publique et Salubrité, or* DHPS). Communications materials will be provided to inform beneficiaries, raise public awareness, promote behavior change (including environmental management and sanitation) and promote cooperation with the DHPS spray teams.

The NMCP expressed a strong desire for additional monitoring data to provide measures of impact on malaria vectors, transmission indices and associated clinical indicators. The NMCP will utilize PMI funding to coordinate the collection of sound baseline data in 2010, including entomological monitoring in sprayed districts, and conducting surveillance before and after IRS in the proposed third district.

Technical assistance for entomology: ($24,000) A CDC entomologist will provide technical assistance on entomological monitoring activities to ensure quality control and the completion of operational research projects.

IRS Capacity Building for NMCP: ($40,000) With FY2010 funding, PMI will strengthen national and local capacity for IRS by helping the NMCP develop a coordination mechanism for all partners supporting the malaria control program. Within this mechanism an IRS oversight committee, composed of members of MOH including the DHPS, NMCP, PMI team members, and implementing partners will develop a sustainability plan for the MOH. IRS committee meetings will be sponsored and held periodically to ensure partner coordination and effective monitoring and evaluation. In terms of outputs, PMI will support IRS quarterly coordination meetings, support the design and production of IRS planning, implementation and monitoring tools.

Entomological Monitoring: ($380,000) To measure the impact of IRS on mosquito populations, PMI will continue to support ongoing insecticide efficacy and longevity studies for an 18-month period in selected villages within the two current IRS districts immediately after spraying in 2010. Entomological monitoring in a proposed third IRS district will occur in 2010 to provide quality baseline data prior to the IRS spray round in 2011, and again after IRS from May until November 2011.

Environmental Compliance Monitoring: ($40,000) PMI will continue to support environmental compliance monitoring for all IRS operation centers and locations where IRS insecticides and equipment are used and stored.

INTERVENTIONS: MALARIA IN PREGNANCY

Background:

Utilization of antenatal care (ANC) by pregnant women is relatively high; according to 2006 DHS, 72% of pregnant women utilized ANC services. However, only 30% of pregnant women came before the end of their first quarter of the pregnancy and 35% attended three or more visits. Low ANC rates are partly due to cultural practices in which women hide their pregnancies until they are physically visible. Although IPTp has been a national policy since 2005, IPTp use is still low. The MOH policy for IPTp in Mali requires two doses of sulfadoxine-pyrimethamine (SP) under direct observation at least one month apart between the 4th and 8th month of pregnancy. However, the 2006 DHS showed that only 16% of pregnant women reported receiving any SP during their last pregnancy, and only 4% received the recommended two doses at ANC visits. According to the CNIECS (*Centre National d'Information Education et Communication pour la Santé*) which is responsible for developing the MOH's IEC/BCC materials, key challenges to increasing uptake of IPTp are improving providers' interpersonal communication skills and encouraging early ANC visits by pregnant women.

Data from MRTC and *Laboratoire de Biologie Moléculaire Appliquée* indicate that SP is still effective for the treatment of malaria in Mali. While resistance of *P. falciparum* to SP is documented at only 10-15%, MRTC notes that it is apparently increasing and will require continued monitoring of its efficacy.

In 2006, the MOH announced that IPTp would be provided for free; however, pregnant women continue to pay for SP. The policy has not been widely disseminated and misunderstood in the cost replacement system of the Bamako Initiative. Therefore, even though the policy for IPTp was adopted in 2006, the uptake and roll-out has been particularly slow.

The projected annual need for SP in 2010 to maintain the NMCP objective of 80% coverage is about 1.3 million treatments, based on 5% of the population (650,000) being pregnant women and each woman receiving two doses. However, a surplus of free SP available at CSCOMs

may encourage greater use of SP as a first-line treatment of malaria when there are stock outs of ACTs, potentially resulting in SP shortages for IPTp. Global Fund Round 6 includes 2.4 million SP treatments for IPTp over the next four years (approximately 609,000 treatments per year), or slightly more than half of the need with an annual gap of about 407,000 doses. USAID and UNICEF have procured SP for IPTp to help fill this gap.

In May 2006, USAID supported and other partners worked with the MOH's Reproductive Health Unit and the NMCP to develop a revised in-service training module for focused antenatal care (FANC) that includes MIP and IPTp. Global Fund Round 6 includes support over the next four years for in-service training of health providers in the public and private sectors, and central and regional supervisors/trainers. Training will include the diagnosis and treatment of malaria, IPTp and malaria in pregnancy and use of LLINs.

PMI-supported partners have helped produce technical guides for providers, IEC outreach materials for *relais*, and radio and TV campaigns on IPTp. In addition, other PMI-supported partners have supported the provision of LLINs to pregnant women. The partners have used *relais* to promote key malaria in pregnancy messages including IPTp and the availability of free SP and LLINs at ANC consultations.

Information is collected and reported quarterly through the national SLIS on the number of ANC visits (including early ANC visits), postnatal consultations, SP doses administered, and assisted deliveries by a skilled birth attendant. In 2007, revised ANC visit cards were released that included IPTp and LLIN information.

Progress during last 12 months:

PMI procured three million SP tablets which complemented the 2.5 million tablets UNICEF procured to ensure sufficient SP stock to cover all pregnant women in Mali. In spite of this, some stockouts continue to be reported. PMI is supporting national-level policy dialogue and consensus building on the guidance for free provision of SP. This effort includes targeting religious and traditional leaders as well as elected officials to help advocate for the importance of malaria prevention during pregnancy. PMI implementing partners, along with the MOH, held a workshop in March 2008 to discuss the impact of free commodities such as SP, LLINs, and ACTs at health facilities. PMI will support additional technical discussions and workshops to re-train health care workers to facilitate the implementation of the policy and analyze its effect on utilization and access to services.

PMI supported training of 142 health providers in the new in-service training module for FANC and will expand this training along with supportive supervision during the promotion of IPTp nationally among facility staff at the CSREF and CSCOM levels. In addition, PMI worked with the MOH to develop a training plan on supportive supervision which is currently being implemented. As part of its overall M&E plan, PMI will support the training and supervision of health workers to complete the IPTp portion of the new MOH health facility reporting form and to use the information locally to improve IPTp quality and coverage.

PMI worked with influential religious leaders to include messages in their public addresses which emphasize the importance of antenatal care and encourage husbands to accompany their wives on these visits, a common practice in other Muslim countries. PMI supported the revision of the malaria module of the national communications plan, which was complemented by non-PMI (MCH) funding to ensure a comprehensive revision of the communications plan. PMI developed job aides for *relais* and TV and radio spots that provide accurate information on IPTp dosing and timing, as well as a re-emphasis on SP as a free commodity for pregnant women. PMI links BCC/IEC activities with HIV/AIDS messaging where appropriate.

Proposed FY2010 activities: ($1,086,000)

PMI will support early and frequent attendance at ANCs, and work with the MOH and other donors to ensure SP is used correctly and is provided free to pregnant women. Through training of health providers and strengthening of the commodity system, PMI is working towards increased use of FANC among pregnant women to reach the goals for malaria in pregnancy for both the NMCP and PMI.

SP Procurement: ($56,000) The current quantity of SP available is enough to cover all pregnant women for the next two years. Assuming that an official directive will be passed to ensure all SP procured by MOH and partners is free for pregnant women, PMI will procure enough SP for six months, including handling and distribution costs from the PPM.

Facility-level service provider training and supervision: ($430,000) PMI will continue to update supervision and training materials as necessary and assist in implementing the malaria in pregnancy guidelines. Efforts will focus on advocating for revised treatment guidelines for malaria in pregnancy to include treatment with oral quinine in the first trimester and ACTs in the second and third trimesters, and improved treatment compliance. PMI will work to ensure nationally that every cadre of health provider is providing appropriate services at ANC visits.

PMI will work with partners including the MOH Reproductive Health Division and Midwives Association to expand use of the new in-service training module for FANC and increase supportive supervision during IPTp implementation nationally through facility and community outreach activities. The NMCP master training plan includes 1930 service providers to be trained. As part of its overall M&E plan, PMI will continue to support training and supervision of health workers to complete the IPTp portion of the new MOH health facility reporting form, and to use this information locally to improve IPTp quality and coverage.

Policy support for ANC and IPTp: ($100,000) Religious leaders and traditional opinion leaders will continue to be engaged to accelerate the uptake of the IPTp policy and help encourage pregnant women to seek ANC services early in their pregnancies. PMI must help ensure that the national leadership understands the importance of IPTp and encourages adherence to policies such as the provision of free SP to pregnant women. PMI will support the development of advocacy materials, and a national consensus building workshop to help change provider behaviors to provide free SP to pregnant women.

BCC/IEC for ANC and IPTp: ($300,000) PMI will support a multi-channel strategy targeting pregnant women, women of child bearing age, and men, focusing on knowledge and perceptions related to malaria in pregnancy, women's awareness of risks of malaria during pregnancy, early and frequent ANC attendance at the CSCOMs, early use of IPTp in the 2nd trimester, completion of the recommended two treatments courses of IPTp, and demand for proper treatment of malaria in pregnancy. PMI will support training on interpersonal communication among health providers, which is an area cited by the MOH's CNIECS as a challenge. PMI will continue to support refresher training for *relais* and other community-based volunteers, with a focus on targeting men and key decision-makers in households. PMI will link BCC/IEC activities with HIV/AIDS messaging where appropriate.

IPTp Program Assessment: ($50,000) PMI will undertake a health facility assessment of barriers to uptake of IPTp. This information will inform current programming, determine ways to improve IPTp outcomes, and help identify innovative approaches to encourage uptake of SP.

Evaluation of SP effectiveness for IPTp: ($100,000) Despite low *in vivo* resistance to SP, Mali lacks sufficient data on the effectiveness of SP among pregnant women when provided according to national guidelines. PMI will work with NMCP and partners to undertake an operations research study to determine the efficacy of SP among pregnant women based on birth outcomes (low birth weight, placental parasitemia, peripheral parasitemia, and maternal anemia). The results could have significant implications for national guidelines on preventing malaria in pregnancy.

Logistics strengthening: ($50,000) PMI will continue to support the PPM to strengthen the logistics and distribution system for SP and other malaria in pregnancy commodities, along with those for ACTs and LLINs. This includes routine monitoring of supplies to avoid stock outs.

INTERVENTIONS –CASE MANAGEMENT

Background:

Diagnostics: Malaria diagnosis in most MOH facilities is based on clinical criteria and fewer than 10% of suspected cases of malaria are laboratory confirmed. This is due in part to the lack of supplies and laboratory materials as well as the prohibitive user fees patients are charged. Microscopic diagnosis is performed in four national, six regional and 59 district hospitals at a cost of 300-600 FCFA ($0.75-1.50) per blood smear. According to national policy, every malaria case needs to be laboratory confirmed before administering ACTs. Where microscopy is not available, rapid diagnostic tests (RDTs) should be used to confirm the diagnosis. PMI will procure RDTs for the sentinel sites and all RDT needs for health facilities are provisioned under the Global Fund Round 9. The *Institut National de Recherche en Sante Publique* (INRSP) is responsible for quality control of all diagnostic services,

including malaria diagnostics. However, the INRSP has no comprehensive strategy for quality control of malaria microscopy or rapid diagnostic tests in place.

Case management in facilities: The MOH recently revised the national policy for the treatment of uncomplicated malaria: artesunate-amodiaquine (AS-AQ) and artemether-lumefantrine (AL) are equally recommended for the treatment of uncomplicated malaria. Likewise, two regimens are recommended for severe malaria: quinine and artemether. This policy may cause confusion in terms of procurement, training of health professionals, and education of patients for improved treatment adherence. For pregnant women, the policy has not changed; every pregnant woman with malaria is to be treated as a severe case with administration of quinine IV followed by oral quinine. Some advisors to the NMCP are resisting ACT use in pregnant women despite a clear WHO recommendation.

Poor geographic and economic access to care are overwhelming challenges for malaria treatment in Mali. According to the 2006 Annual Report from the SLIS, there are approximately 800 CSCOMs in Mali. This translates into about 75% of the population with geographic access to public health services according to WHO standards (living within 15 km of a first-line health facility). According to the 2006 DHS, only 31% of children less than five years of age with fever received any antimalarial, and only 15% were treated within 24 hours.

Quantification of ACT needs: Quantification of ACT needs for 2007-2009 was based upon 2005 health facility usage data that suggested that approximately 29% of patients with fever seek treatment at public-sector health facilities. The Global Fund proposals Rounds 6 and 9 cover most national needs in ACTs. The Round 6 procurement order is underway, and the Round 9 proposal includes procurement of 14 million treatment courses of ACTs for public and private health facilities over a five-year period. PMI is supporting a limited quantity of ACTs for HBMF and for treating severe malaria, and will contribute to a national buffer stock of ACTs.

Assumptions were made that with increasing availability of ACTs, health facility usage would increase annually by 5-10%. In 2007, 1,053,529 cases of suspected malaria were reported from health facilities. This represents 0.09 cases per person per year, which reflects poor utilization of health services due to access or other problems. Global Fund Round 6 has committed $4.3 million for financing ACTs in Mali from 2007-2009. Although this award includes $1.45 million for the purchase of ACTs in 2008 and $1.6 million for the purchase of ACTs in 2009, it does not include activities to strengthen the capacity of the PPM to store or transport ACTs, BCC/IEC, pre- and post-market drug quality monitoring, or pharmacovigilance. The table below presents estimates of ACT needs for 2009.

Age Group	ACT estimates for 2009	Global Fund for 2009	Gap in treatment courses for 2009	ACT estimates for 2010	ACT estimates for 2011
<1-6 years	720,640	824,828	0	845,529	864,131
7-13 years	130,058	140,251	0	138,808	141,862
>13 years	481,655	613,148	0	509,217	520,420

Assumptions of ACT estimates for 2009 include: 45% health facility usage, extrapolated from 2005 incidence data from HMIS, constant population growth rate, no change in the incidence of malaria, and 5% adult population being pregnant and therefore not receiving ACTs.

Assumptions of ACT estimates for 2010 and 2011 include: 50% health facility usage, extrapolated from 2005 incidence data from HMIS, constant population growth rate, no change in the incidence of malaria, and 5% adult population being pregnant and therefore not receiving ACTs.

Global Fund financing may provide enough ACTs to cover current needs at MOH facilities, but these projections are based upon the number of cases presenting to health facilities, which is less than 20% of all malaria cases. The effect of the ministerial decree that malaria treatment will be free for all children less than five years is unknown and current projections have not accounted for possible increased ACT needs following implementation of this new policy. In order to attain 85% coverage of febrile children with ACTs, community-based treatment will be an essential complement to health facility-based efforts. Additional purchases of ACTs will be necessary to cover community-based treatment if it is adopted as national policy. The ACT distribution system will also need to be supported to meet the increased demands of community-based distribution.

Mali's application for Global Fund Round 9 included sufficient support for ACTs and RDTs to be deployed in all government health facilities; however, results of the Round 9 application will not be available until November 2009. Therefore, PMI will continue to provide support for ACT procurement to be used in health facilities if this application is unsuccessful, or in HBMF activities if the Global Fund awards a Round 9 grant to Mali.

Community treatment of malaria: A few NGOs and UNICEF are operating small-scale projects at the district level to overcome barriers of access by training *relais* to treat children under five with free ACTs. NGO partners have developed their own models for utilizing the *relais*. Save the Children has expanded a community-based treatment program to over 470 villages in three health districts reaching approximately 17,000 children over a two-year period. The NMCP has reviewed the Save the Children pilot project and has agreed to expand that project in Sikasso Region. Through Canadian CIDA-funding, PSI will begin implementation of home-based management of fever (HBMF) in two regions in 2009. UNICEF, on the otherhand, has supported the use of *relais* to deliver health messages and to encourage parents to bring ill children to health facilities, but not to deliver antimalarial treatment. A national forum on the role of community health workers was held in March 2009 to consider the potential package of services that trained community health workers might offer. Adoption of a national HBMF policy is anticipated in the near future.

Supply chain management: The *Pharmacie Populaire du Mali* (PPM) manages medicines for Mali's primary health care system. The PPM procures drugs through international tender from qualified suppliers and distributes them to the nine administrative regions. The PPM has no capacity to ensure reliable transportation of commodities to the district, health center or community. The district pharmacies purchase drugs from regional depots based upon monthly

orders from health facilities (CSREFs and CSCOMs) and the average number of drugs expected to be distributed within the district's catchment area. If a drug is unavailable in the regional PPM stores, private pharmaceutical warehouses can fill orders. There are significant problems with drug storage at district pharmaceutical depots regarding storage capacity, humidity, security and drug classification in the warehouse. While CSCOMs must collect all required drugs from the district pharmaceutical depots, there is no central funding to support the transportation and logistics.

Regulation and drug quality: Several Ministerial decrees target the management of pharmaceuticals in Mali. These include the formation of a national committee to oversee pharmacy retailers responsible for quality control, inspection, licensure and ensuring a basic package of pharmaceutical products. The National Essential Drug List is reviewed bi-annually. Laws are in place to ensure quality control for imported drugs. The *Direction de la Pharmacie et du Médicament* (DPM) issues visas and import licenses only after the exporter meets certification and other requirements. The *Laboratoire National de la Santé* (LNS) samples drugs and verifies quality, and has regulatory authority to monitor pre- and post-market quality of drugs, water, food, and other products (including insecticides and bednets).

Pharmacovigilance: Pharmacovigilance is a high priority of the NMCP and the MOH. Following training in Morocco, the Pharmacovigilance Department at the DPM has developed an action plan, adverse events notification form, and timetable. Implementation of the plan has not begun.

Progress during last 12 months:

The major issues and challenges to improving case management of malaria are:

- Adoption of a HBMF policy
- ACTs for pregnant women in the second and third trimesters
- Oral quinine for pregnant women in the first trimester without signs of severe disease
- Rectal artesunate or IM artemether for pre-referral treatment of severe malaria
- Clarification of guidelines on when to refer severe malaria cases
- Inclusion of dosing and administration information for IV artesunate in national treatment guidelines (currently listed as acceptable alternative)

To date, some progress has been made on these issues and PMI has supported the introduction of small-scale regional efforts (e.g. HBMF and use of drugs for treatment of severe malaria). Training manuals for malaria case management and laboratory diagnosis have been developed and officially adopted. A master training plan on malaria case management and laboratory diagnosis (microscopy and RDTs) has been developed and training conducted up to the district level. Cascade training in case management will continue to the CSCOMs and eventually to the community level once an HBMF policy is adopted.

An on-going challenge in case management will be to continue the support of high quality clinical and diagnostic services at all levels. PMI will support strengthening of formative supervision at all levels of the health systems: national to regions, regions to districts and

districts to CSCOMS at the community level, and once adopted, CSCOMs to community health workers. If HBMF is not adopted nationally, the primary challenge in case management will remain access to care.

Pre-referral treatment for severe malaria (rectal artesunate or IM artemether) has been introduced in two districts and will be evaluated prior to expanding nationwide. PMI trained 64 MOH staff in drug and laboratory quality control at the National Health Laboratory (LNS – *Laboratoire National de Santé*) and in appropriate use of WHO's SIAMED software for drug registration and drug import verification. During that training session, a drug quality control plan and a pharmacovigilance plan were developed for nationwide implementation.

Periodic stock outs of ACTs and SP continue, resulting from inadequate procurement and distribution planning. A PMI-supported logistic assessment was conducted in May 2009 focusing on supply chain, storage capacity, and data quality. Findings will serve as a basis for strengthening the national drug supply system, improving pharmaceutical management including long-term financing for essential commodities, strengthening logistics including best practices in stocks management, and improving data management and usage.

Despite national policies that SP for malaria in pregnancy prevention should be free, drugs continue to be sold to pregnant women in some health facilities. The policy of free ACTs for pregnant women and children less than five has not been widely disseminated. Mothers report that they are still required to pay for all other medicines prescribed by clinicians and consultation fees remain prohibitively high. Advocacy for removal of consultation fees for children less than five years of age must continue in order to improve access to antimalarial therapy at health facilities.

In 2007, USAID supported a comprehensive supply chain management assessment that reviewed the following: policy, law, regulation; quantification and procurement; storage, inventory management, and transportation; prescribing and dispensing practices; and financing and costs for the system. This information will serve as the platform for supply chain strengthening, and will include the entire system of commodities; USAID MCH funds have been invested to ensure that the entire system will be strengthened, while PMI will support the malaria commodity strengthening portion.

Proposed FY2010 activities: ($4,663,000)

PMI will continue to support the improvement of malaria diagnosis by microscopy through training and supervision. PMI will also support the development of a national system of quality control for microscopy and RDTs.

Procurement of laboratory consumables and RDTs: ($431,500)
PMI will procure laboratory consumables for microscopy testing for all 59 CSREFs, including the sentinel sites. PMI will also procure 30,000 RDTs for up to 10 sentinel sites. This amount translates to $375/CSREF/month for 18 months.

Quality assurance/quality control for diagnostics: ($150,000)
In addition to in-service training, PMI will continue to assist the NMCP and INRSP to implement a plan for quality control of microscopy and RDT diagnosis, including regular supervisory visits, systematic review of a predetermined percentage of positive and negative blood smears, and simultaneous use of both tests in a percentage of cases to monitor the quality of RDT diagnosis.

Supervision for malaria case management and lab diagnostics: ($315,000)
After training health personnel at all levels in case management and laboratory diagnostics, PMI will continue to support formative supervision in order to maintain and strengthen the quality of services. Refresher courses will also be conducted as needed at selected health centers where problems are identified.

Technical assistance on case management: ($12,000) A CDC medical epidemiologist will provide technical assistance to develop supervisory tools for case management and laboratory diagnostics.

Home-based management of fever (HBMF) scale up: ($750,000) Once an HBMF policy is adopted, PMI will support training and supervision of community *relais* to monitor ACT treatment compliance at the community-level throughout the country based on training materials used during the Sikasso pilot.

Procurement of ACTs and severe malaria drugs: ($1,774,500) PMI will procure ACTs to support community-based ACT distribution, and to ensure adequate coverage of children less than five years of age in accordance with the free treatment policy. PMI will also continue to procure drugs for managing severe malaria, including injectable artemether, rectal artesunate, and oral quinine to support the NMCP.

BCC/IEC for case management: ($400,000) PMI will continue to assist in the dissemination of the multi-channel communication strategy (e.g. mass media, interpersonal communication) and to harmonize malaria prevention and treatment messages. The strategy will promote care-seeking for febrile children and compliance with treatment regimens. PMI will also support training on treatment of malaria with ACTs at the facility level, and training in ACT compliance monitoring by community *relais*. The *relais* will also educate care givers on complications that require referral.

Logistics strengthening: ($250,000) PMI will continue to facilitate distribution of PMI-funded ACTs and provide technical assistance for pharmaceutical management, including distribution to the district-level and improved coordination between the NMCP and PPM. Pharmaceutical and supply chain strengthening activities will also include end-use verification/monitoring of the availability of key antimalarial commodities at the facility-level. Specifically, this will entail regular supervisory/monitoring visits to a random sampling of health facilities and regional warehouses to detect and trigger further action on the following critical areas: ACT (or other drug) stockouts; expiration dates of ACTs at health facilities; leakage; anomalies in ACT use; and verifying assumptions on quantification and consumption.

Health financing for case management: ($50,000) PMI will continue to support the implementation of recommendations from a 2009 study on the impact of user fees on utilization of health services, especially among children under five years of age. PMI will also support monitoring of progress in implementing recommendations from the 2008 national workshop on the impact of free commodities on the cost recovery system and user fees.

Drug quality control: ($390,000) PMI will continue to support pre- and post-market drug quality monitoring by the LNS with equipment and technical assistance. Technical assistance to the LNS will also examine quality of insecticides and RDTs.

Pharmacovigilance: ($140,000) PMI will continue to support the implementation of a pharmacovigilance plan through the DPM. The pharmacovigilance plan will specifically address adverse events reporting during the widespread implementation of ACTs.

INTERVENTIONS – EPIDEMIC SURVEILLANCE AND RESPONSE

Background:

An estimated three million people in the northern areas of Mali are considered at risk for malaria epidemics. This includes the 13 districts of the Tombouctou, Gao and Kidal regions and the northernmost *Cercle*s of Mopti, Segou and Koulikoro, and Kayes Region. The periodicity of epidemics generally ranges from two to seven years with the most recent epidemic having occurred in 2003. The northern Sahelian region is subject to irregular rainfall amounts, and climatic conditions such as increased rainfall and temperatures appear to play a significant role in the occurrence of epidemics.

The NMCP strategic plans 2001-2005 and 2007-2011 included the goal of implementing a system for surveillance, prevention, detection and response to malaria epidemics. The objectives were to detect 80% of the episodes in the two weeks following their appearance and to control 80% of episodes within two weeks of their detection. In the proposed budget for 2007-2011, $1.75 million was suggested for epidemic control, but no budget for such activities was included in the National Plan for Accelerated Malaria Control, or in the Global Fund Round 6 budget. An epidemic response training is provisioned for sentinel site personnel with the Global Fund Round 9 proposal.

Two surveillance systems for malaria exist in the north. The SLIS, managed by the DPLM, compiles malaria data every three months for the whole country and reports it annually; thus data are not collected frequently enough for epidemic detection and response. The WHO-supported Integrated Disease Surveillance and Response system (SIMR), implemented in 2003, collects weekly data on diseases with potential for epidemics. Malaria data collection in this system is limited to the three northern regions and is collected as follows: the CSCOMs report the previous week's data to the CSREFs where they are combined and reported to the Regional and then the National level to the DNS, DPLM and WHO. In the SIMR system, an

epidemic is declared when the number of cases doubles from one week to the next and remains at that level during the third week.

Progress during the last 12 months:

PMI has procured ACTs and IRS supplies to be stored at the regional and district hospitals in Tombouctou and Gao. Six IRS trainers from the regions of Gao, Kidal and Tombouctou were trained during the IRS preparations for Bla and Koulikoro in 2008 and 2009 to build capacity for IRS operations.

Proposed activities:

In 2010, PMI will support the NMCP strategy of effective and efficient stock rotation of commodities, while providing other contingency support in the case of stock-outs. Therefore, PMI will replace and rotate current supplies of ACTs and IRS commodities positioned in 2009 for epidemic surveillance and response in the North before they expire. Current supplies will be utilized for IRS activities in Bla and Koulikoro and ACTs will be used in malaria endemic areas to avoid expiration. Training needs for IRS will be assessed in collaboration with the NMCP.

BEHAVIOR CHANGE COMMUNICATION

Background:

PMI supported mechanisms and other BCC partners are coordinated and led by the *Centre National d'Information, Education et Communication pour la Santé* (CNIECS). PMI supports the CNIECS with review and revisions of the national communication strategy (e.g. mass media, client provider interaction, utilization of community health workers). The strategy includes LLIN utilization for year round use, community mobilization for IRS, early uptake of ANC services including appropriate management of malaria in pregnancy, and case management. As policies change (e.g. HBMF) it will be critical to ensure that target populations understand and demand appropriate services for malaria prevention and control. PMI is supporting the BCC/IEC strategy development at all levels, ensuring consistency of technical messages and appropriate use of all communication channels and target audiences.

Progress during last 12 months:

The PMI has targeted religious leaders and community leaders, in addition to elder women (grandmothers). PMI created a policy dialogue tool on malaria, pregnancy and Islam. The tool has been used with groups including RISE, the Islamic network for child survival, RIPOD, the Islamic network for population development, and UNAFEM, the National Union of Muslim Women. The tool is based on passages (Hadiths) from the Koran that encourage dialogue among couples about malaria and pregnancy. Over 950 religious leaders have been engaged in

policy dialogue sessions. PMI has developed a data collection sheet used by religious leaders to gather information on current practices and beliefs.

PMI has also supported health workers as outreach service providers and developed a variety of pre-tested counseling materials, radio spots in local languages monitored by women's and men's groups, as well as facilitated interpersonal communication through key community groups. Through implementing partners, PMI supports work with nine local and faith-based NGOs that reach target populations through 143 community and national radio stations. PMI partners developed subcontracts with different radio stations and teachers' training centers which have trained over 3,500 youth ambassadors and distributed 10,000 brochures in schools. Over 15,000 youths in 77 schools were reached with messages that they shared with peers and parents. PMI is helping to develop strategies to monitor household practices, including use of ACTs and ITNs, and provide education sessions on malaria.

Proposed FY2010 activities: (costs referenced in other sections)

PMI will work at the national level to support the CNIECS in the implementation of the malaria communication strategy and support the development and implementation of BCC/IEC at all levels to ensure consistency in technical messages, while ensuring the channels and target audiences are adapted as appropriate. PMI will work with other partners to explore ways to promote desired behavioral outcomes. PMI and partners will continue to include schools, NGOs, and religious leaders in targeted BCC/IEC activities and messages. Where appropriate, PMI will link BCC/IEC activities with HIV/AIDS messaging where appropriate.

Among the interventions, some key components include (each technical area is referenced in the appropriate section with related costs):

- **IRS:** *Relais* will go door-to-door to explain the importance of IRS, reduce refusal rates, and improve compliance with instructions on how to prepare the house for IRS both pre- and post-campaign.

- **LLINs:** PMI will support national-level communications design; *Relais* will reinforce correct and consistent LLIN use, including net repair and proper care, and possibly collect data on net use.

- **MIP:** *Relais* will provide outreach to encourage early and frequent ANC visits, pregnant women to sleep under a LLIN. PMI will promote a multi-channel approach for MIP, including innovative strategies including packaging of SP with pictorial messages that indicate SP is free for pregnant women and that the packaged SP should be used for IPTp only.

- **Case Management:** *Relais* will sensitize communities and caretakers on changes that affect their care seeking and prevention of malaria, such as prompt follow-up with a referral for a child with severe malaria or a non-malaria related fever. This area will emphasize interpersonal communication among health providers and their clients, as cited as a weakness by the CNIECS.

Collaboration with Maternal and Child Health Programs (MCH): PMI will work with the NMCP, USAID, and other MCH partners such as UNICEF, to support revision and integration of appropriate messages as part of the integrated communications plan and to continue to engage local organizations including faith-based organizations to ensure that no opportunities are missed to provide integrated messages where appropriate.

HIV /AIDS AND MALARIA

Background:

It is estimated that between 80,000 and 140,000 people with HIV/AIDS (PLWHA) live in Mali, and approximately 23,754 were receiving antiretroviral therapy as of December 31, 2008. The overall HIV incidence is relatively low in Mali, but several risk groups have been identified including truck drivers and commercial sex workers. There are currently 75 sites providing prevention of mother-to-child transmission (PMTCT) services, 39 sites providing voluntary testing and counseling, and 24 sites providing antiretroviral therapy to PLWHA. Cotrimoxazole is provided to all PLWHA on antiretroviral therapy. In collaboration with partners, including CDC and USAID, the MOH has developed a network of 20 sentinel surveillance sites for HIV/AIDS, though these sites differ from the NMCP malaria sentinel sites. The HIV/AIDS sentinel sites have a centralized system for quality control of HIV rapid diagnostic tests through comparison with ELISA and Western Blot results. There are plans to develop a regional system of quality control for rapid tests in either Segou or Sikasso.

Progress during the last 12 months

PMI procured approximately 30,000 LLINs with FY 08 funds for distribution to PLWHA in antiretroviral therapy sites and their immediate family members, as well as providing SP to pregnant women with HIV who are not receiving daily prophylaxis with cotrimoxazole.

Proposed FY2010 activities (costs covered on other sections)

PMI will continue to support the distribution of LLINs to PLWHA in ART sites and the provision of SP to pregnant women with HIV who are not receiving daily prophylaxis with cotrimoxazole. In addition, PMI will support continued laboratory training for malaria and increase the technical capacity of sentinel surveillance sites that are also HIV surveillance sites.

NEGLECTED TROPICAL DISEASES AND MALARIA

Mali is endemic for all five Neglected Tropical Diseases (NTDs); lymphatic filariasis or LF, onchocerciasis, schistosomiasis, trachoma, and three soil-transmitted helminthes, and was

selected in 2007 as one of the first five country programs for implementation of USAID's integrated NTD Control Program. All five disease-specific programs are represented under the MOH's *Division de la Prévention et Lutte Contre les Maladies* (or Division of Disease Prevention and Control). Building on established programs, the Mali NTD program has been particularly successful in overcoming the challenges of incorporating the existing stand-alone disease control programs into an integrated NTD program. There is reportedly good coordination between the central, regional, district and community levels on planning and implementing NTD activities.

The Mali NTD program's strategy is to control and treat the five diseases through targeted mass drug administration providing safe and effective drugs to all at-risk populations. Approximately 9.18 million people were treated for NTDs in all nine regions of Mali from April-September 2008 through rolling mass drug administration campaigns. The NTD control program is working with other partners to recruit and train *relais* throughout Mali to collect annual household census information and assist with performing door-to-door treatment activities.

For FY 2009, the NTD program plans to conduct mass drug administrations in all nine regions of Mali targeting a total population of 10 million (excluding children <5 years of age and pregnant women for those diseases for which the medication is not approved). The evaluation strategies include post-campaign coverage surveys and sentinel surveillance in two sites per region.

Country ownership of the program is a core principle and is critical to successful implementation and long-term sustainability. USAID support for the NTD control program in Mali is provided through a cooperative agreement with Research Triangle Institute, with a sub-grant to Helen Keller International, working alongside the Mali government and the Ministry of Health. The program also engages with a wide range of local stakeholders, including the International Trachoma Initiative, the World Health Organization – Mali, *l'Organisation pour la prévention de la Cécité* (OPC), Sight Savers International, and the University of Bamako.

Given its nationwide activities, as well as its experience in targeting a wide population age range, the NTD program could offer opportunities for further scaling up LLIN distribution and other malaria prevention and control activities. Areas for possible collaboration with malaria programs that PMI may explore with the MOH and partners include the following:

- Joint coordination of LLIN distribution with NTD mass drug administration activities. This could be an important vehicle for helping the NMCP attain its universal coverage goals.

- Integrated health education activities on prevention and vector control to help reduce malaria and NTDs provided by the *relais*, including promotion of net hang-up.

- Explore potential overlap of sentinel sites supported by both malaria and NTD programs and collaborate on joint capacity building, training, and formative

supervision.

- PMI will also consider potential collaboration between NTD mass drug administration activities and PMI-supported efforts to scale up home-based management of fever.

CAPACITY BUILDING WITHIN THE NATIONAL MALARIA CONTROL PROGRAM

Background:

The MOH reports a critical shortage of staff at all levels of the public health system, especially for service provision below the national-level. In addition, health workers are not evenly nor proportionately distributed throughout the country. In 2008, the ratio of doctors to the population varied from 1/4,102 in sparsely populated Kidal to 1/23,782 in Mopti Region, compared with the WHO standard of 1/10,000. Regional directors oversee health teams that implement integrated health interventions; currently all regional teams have malaria focal persons. The district health center (CSREF) is the first referral structure for CSCOMs; the district health team is headed by a medical chief responsible for technical supervision of CSCOMs. Community health associations manage CSCOM staff and operations; collect proceeds from drug sales, consultation and user fees, and pay salaries and other expenses. As is the case at the central-level, distribution of staff is uneven. In 2008, the percentage of CSCOMs headed by a certified head nurse was close to WHO norms ranged from 100% in five regions to 90% in Kayes. The number of staff employed may depend on the level of community resources to pay them.

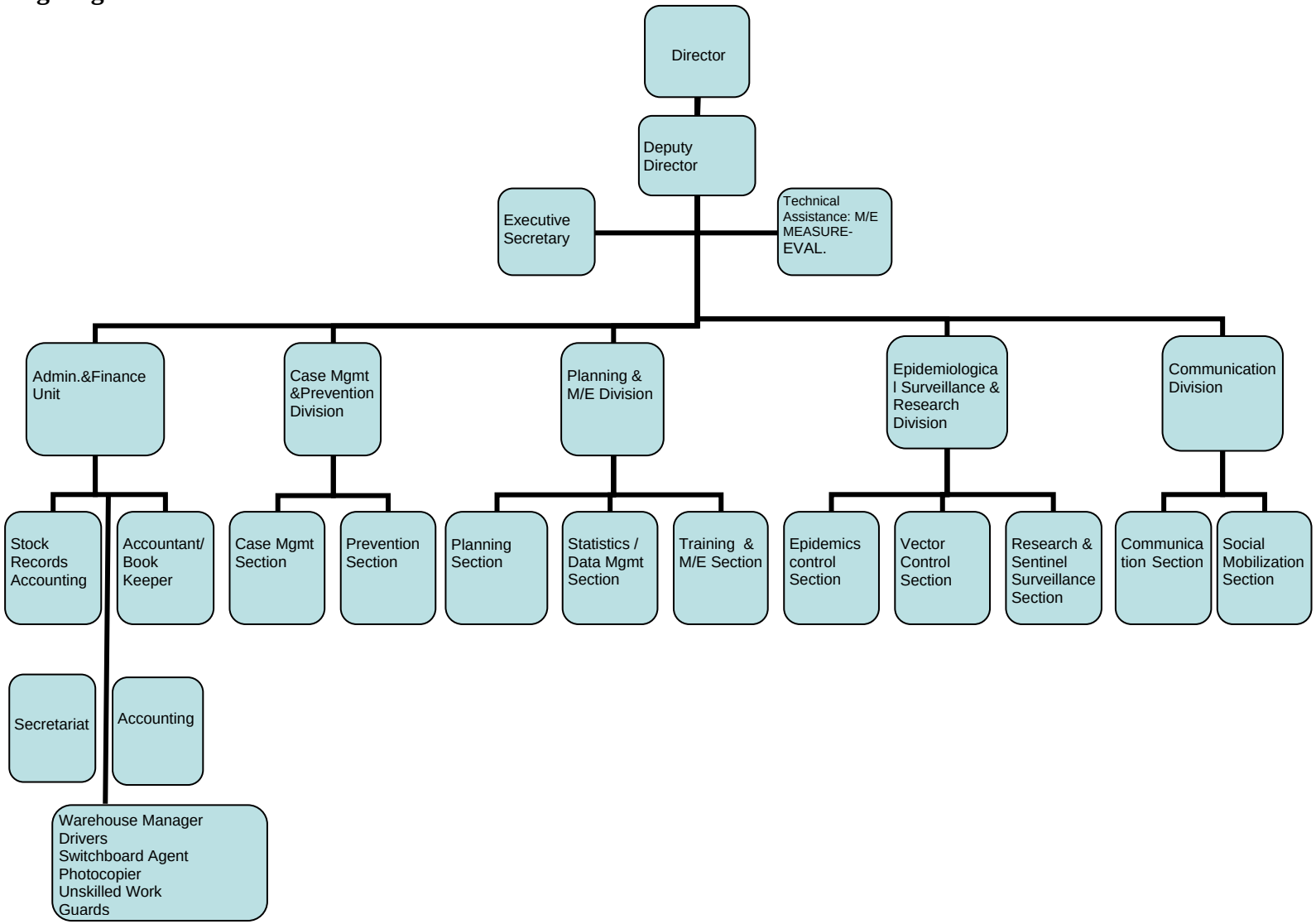
Entomological capacity is fairly strong both within the MOH and at research institutes such as the University of Bamako's Medical School and MRTC. The NIH-supported MRTC has over 50 malaria experts including laboratory scientists, epidemiologists and entomologists. It has ongoing collaborations with the NIH, University of California (at Los Angeles and Davis), Johns Hopkins University, Tulane University, Gates Foundation, and the WHO Africa Regional Office.

The quality, completeness and frequency of malaria-specific supervision are unclear, and there is limited funding for visits below the district level. Support for monitoring comes through the PRODESS using HIPC or partner funding. District-level teams carry out integrated supervision for all health interventions at CSCOMs, using a supervision guide. National and regional teams perform malaria specific supervision irregularly. In FY08 and FY09, PMI funded efforts to strengthen malaria-focused supportive supervision, including direct funding to the NMCP plus technical assistance through PMI's implementing partners, in addition to Global Fund support to strengthen supervision capacity of the NMCP staff each year.

In March 2008, the Ministry of Health improved malaria control capacity in Mali by creating a new management structure for the NMCP directorate (see organogram). Challenges for the

NMCP include the capacity to provide effective coordination among implementing partners at both central and district levels and training new staff in malaria control.

Organogram of the NCMP



Progress during the last 12 months:

In FY08 and FY09, PMI contributed substantially to building capacity of the NMCP and other Malian Government entities (including MRTC and the Ministry of Social Development) through direct funding of specific activities. PMI provided this direct funding based on demonstrated capacity to manage US Government funds appropriately. Combined funding of over $1.2 million of FY08 and FY09 was given to specific departments in the MOH for supervising and monitoring of PMI-supported activities.

Malian Government Entity	Activity Supported
Malaria Control Program (NMCP)	Supervise LLIN distribution, train and supervise health workers on case management, and disseminate the malaria monitoring and evaluation plan
Division of Reproductive Health	Train and supervise health workers on IPTp, and evaluate LLIN distribution and IPTp practices in antenatal clinics, support collaborative MIP approaches with the midwives association
National Immunization Program (EPI)	Work with the NMCP to estimate LLIN needs for infants and supervise LLIN distribution during routine vaccination services
Directorate of Pharmacy and Medicines	Train and supervise health agents who prescribe ACTs at all levels to recognize and notify about adverse events
National Pharmacy (PPM)	Assess practices, inform key partners about proper ACT procurement, and conduct supervision.
Malaria Research and Training Center (MRTC)	Conduct operational research on larviciding during the rainy season and IRS near the Niger River, and support entomological monitoring and surveillance activities in five sentinel sites
National Health Laboratory (LNS)	Train pharmacists and laboratory technicians on quality control for LLINs and malaria medicines, refurbish equipment and purchase consumables
National Institute of Public Health Research (INRSP)	Train CSREF laboratory technicians and regional pharmacists on malaria diagnostics
Ministry of Social Development	Train social development agents at the national and regional levels on malaria communications strategies, train school teachers and pupils on malaria prevention.

PMI has also contributed to capacity building at the community level. Given that approximately twenty percent of the population lives more than 15 kilometers from a CSCOM, volunteer community health workers, such as the *relais,* can play an important part in improving malaria control, especially in rural populations. Ideally, each village should have two *relais* trained by CSCOM staff to educate communities about bednet use, prompt care-seeking for malaria, referral to CSCOMs for treatment, and proper sanitation. At present, the *relais* serve only one-quarter of the targeted vulnerable population. In March 2009, the MOH, in coordination with PMI and other malaria partners, held a national forum to define roles and responsibilities of *relais*. The forum adopted two types of *relais*, one with BCC/IEC functions and another with more technical skills who will be assigned community case management of childhood diseases. In FY08 and FY09, PMI supported training and supervision of the *relais* for BCC/IEC at the community-level, including the promotion of LLIN use. In FY09 specifically, PMI is supporting the introduction of HBMF in all the eight health districts of Sikasso region.

Proposed FY2010 activities: (costs covered in other sections)

Strengthening NMCP functions: (costs included in other sections) To help the NMCP reach its coverage targets for the key malaria interventions, PMI will continue collaboration with other partners to support the new NMCP structure and staff, to increase capacity at all levels to plan, implement, supervise, coordinate with partners, and monitor and evaluate malaria prevention and control activities. Strengthening NMCP managerial capacity will be critical as PMI supports scale-up. Therefore, PMI will continue implementing the recommendations of the NMCP needs assessment in relation to information technology equipment, M&E, supervision, management capacity and coordination, as well as specific trainings.

Direct support to the NMCP and other Government partners (costs included in other sections): Support will continue in FY10 for assisting the NMCP and other Government partners to design or refine supervision and M&E tools, and conduct supportive supervision in all malaria program interventions supported by PMI. Activities are described in the various subsections of the MOP. In FY10, PMI will continue training and mentoring NMCP staff to increase their skills in data analysis, interpretation and reporting of findings both from routine supervision and other data sources such as large household and health facility surveys. Scopes of work for implementing partners will include provision, whenever feasible, for collaborating with NMCP in building staff managerial and technical capacity.

Study tour of malaria control and PMI activities in another country (costs included in case management section): The two-year old NMCP structure in place still needs to learn how to function effectively and efficiently in coordinating partners' interventions. PMI will support a visit by two NMCP staff members, accompanied by a PMI representative, to one or two other countries supported by PMI. The goal is to learn about another malaria control program's coordination approaches around implementation of policies and guidelines, staff roles and responsibilities, and approaches to address different technical and operational challenges. Host counterparts will address such issues

as the universal coverage with LLINs, home-based case management, implementation challenges for IRS, policy changes and implementation, and partner coordination.

Advocacy for adequate staffing levels: At the community-level, PMI will continue to assist the MOH to explore options to increase the number of effectively staffed and functioning CSCOMs. PMI will support a study on the feasibility of free case management of malaria in Mali and Senegal. This study includes costs for case management consultations, diagnosis, and drugs. The recommendations from this study will provide an important framework for PMI and partners to help solve the critical issue of income shortage and its implications for the lowest service delivery level. PMI will continue to advocate for HIPC and other funding sources to complement salary support generated by communities. Joining efforts with other partners, PMI will help improve the skills of and expand the number of community-based workers (including *relais*) to mobilize populations for proper use of LLINs and prompt referral to health facilities for appropriate care. In particular, PMI will continue to advocate for effective scaling up of community-based case management of febrile childhood illnesses.

COMMUNICATION AND COORDINATION

The NMCP's mandate and coordination responsibilities are described in detail in Section D. Communications among malaria control partners in Mali are coordinated through the NMCP partners meetings, through the Technical and Financial Partners' Forum, and through the Global Fund Country Coordinating Mechanism (CCM).

The Financial Partner's Forum began with the adoption of the ten-year strategic plan for the health sector wide approach known as the Ten Year Plan for Social and Health Development, operationalized through the five-year health development program (PRODESS). The Financial Partner's Forum meets monthly to share information on ongoing programs, new initiatives, strategies, and policies, to coordinate interventions, and to help leverage resources. Following the excellent coordination of the 2007 integrated measles/ITN campaign, this is being replicated to plan for the 2009 campaign.

Currently, the CCM has 24 members including eight from the public sector, ten from civil society and private sector, and six representatives from the donor community. The CCM holds quarterly meetings and can call special meetings as needed. The CCM chairperson and deputy chair are elected for a one-year term that can be extended only once.

The NMCP cites its capacity to coordinate partner and donor efforts as its biggest challenge given the increased number of partners interested in malaria control. The NMCP seeks better mechanisms for ensuring that partners share information on the timing and nature of key activities. In order to avoid duplication PMI will continue to support the NMCP's efforts to improve its coordination functions.

PRIVATE SECTOR PARTNERSHIPS

The NMCP is making modest efforts to establish private sector partnerships, mainly with the Associations of Employers (*Patronnat du Mali*), the Chamber of Commerce, the Mining Companies, and ITN vendors. Partnership with the Patronnat (an association of high-level business owners) and the Chamber of Commerce is nascent and has benefited from active participation of Mali Voices Project. During awareness events, representatives of the new partnership pledge to provide free LLINs to their employees and their dependants.

There are potential opportunities for PMI to support collaboration with mining companies in malaria control. Currently, five mining areas (Karana, Morila, Loulo, Sadiola, Yatela) are implementing IRS in employee residences and neighboring villages. Given the ambitious plan of the NMCP to expand IRS to more than 80% of the endemic south in the next five years, PMI will facilitate the dialogue between mining companies and NMCP.

MONITORING AND EVALUATION

Background:

The Ministry of Health's Planning and Statistical Unit oversees all monitoring and evaluation (M&E) activities, in close collaboration with health training and research institutions. As part of the reorganization of the NMCP, the Government created the Division of Planning and Monitoring and Evaluation, which is tasked with developing operational plans and monitoring and evaluating program implementation. While the Ministry has officially confirmed the new division director's post, it has yet to confirm those of the three unit chiefs for documentation, statistics, and training and M&E. The new Division of Epidemiological Surveillance and Research includes a specific unit on Sentinel Surveillance and Research, which will provide data from sentinel sites supported by PMI to the M&E Division for analysis. The Division is also in charge of promoting research on malaria, establishing a system to detect malaria epidemics, and supporting operational units in epidemic response.

A national malaria M&E plan was developed, adopted and costed in 2008. It is being disseminated to all levels of care throughout the country. The national M&E plan includes collection of routine data through the health information system known as *Systeme local d'information sanitaire* (SLIS), implementation of sentinel sites for malaria surveillance, and periodic national surveys to evaluate malaria prevention and treatment activities. Routine data collection, analysis and reporting through the SLIS are of questionable quality and are not delivered in a timely manner to assist program planning and management. Because so few cases of malaria are laboratory confirmed, SLIS data are not a reliable indicator of malaria prevalence in the country. The NMCP has proposed sentinel sites for malaria surveillance to monitor trends in suspected and

laboratory-confirmed cases of malaria over time in different malaria transmission zones. PMI has agreed to support five of these sites initially with expansion to eight in 2009.

Several national surveys are planned in next two years. PMI is supporting UNICEF to coordinate a multiple indicator cluster survey (MICS) with a malaria module starting in November 2009. The NMCP is a considering the feasibility of an anemia and parasitemia survey in 2010. A DHS survey is planned for 2011.

Progress during last 12 months:

PMI has worked with the NMCP and MRTC to develop a training manual and a protocol on sentinel surveillance. Eighty-six clinicians, laboratory technicians and data entry clerks at five sentinel sites are using these materials, and the sites have been provided with microscopes, slides, reagents, and RDTs to test all suspected malaria cases. The five sentinel sites report case-based data on suspected and laboratory-confirmed malaria cases directly to the NMCP. Data from sentinel sites will also inform the NMCP and its partners on the availability of ACTs, LLINs, and SP at sentinel sites, adherence to national malaria treatment guidelines, and use of laboratory test results in clinical case management. These data are essential for program monitoring and evaluation, and are more timely indicators of malaria program activities than the SLIS. Sentinel sites are supervised monthly to ensure quality data collection, timely reporting and appropriate analysis and interpretation of data.

A malaria data quality audit has been conducted and was used to develop a strategy for improving the timeliness and completeness of data reported through the SLIS, to assist the NMCP with data analysis and feedback and to promote data use to improve program performance. FY09 funds have been reprogrammed to improve the information technology system at the NMCP for improved data management and analysis.

Proposed FY2010 activities: ($1,362,000)

MOH NMCP annual review of M&E Plan: ($30,000) PMI will support the implementation of a comprehensive M&E Plan with a single list of process and coverage indicators and data collection methodologies for decision making. PMI will also support an annual programming and planning meeting through the MOH and NMCP.

Technical assistance on sentinel surveillance and M&E planning: ($12,000) A CDC medical epidemiologist will provide technical assistance on the sentinel sites and on-going M&E support activities by PMI implementing partners. If feasible, the assistance will coincide with the annual MOH review of the M&E work plan.

Support to DHS: ($490,000) Results of the 2006 DHS serve as the baseline coverage measures for PMI. PMI will provide financial and technical support for inclusion of the malaria module in the third Mali DHS (2011)**.**

Strengthening the SLIS: ($250,000) PMI will continue to support activities to improve routine reporting on malaria through the SLIS and to develop NMCP capacity to capture data at the community level. Areas of emphasis will continue to be training, quality control/quality assessment, completeness and timeliness of reporting, analysis, feedback, and use of findings to improve program performance. PMI will support continued training for the NMCP to increase data management capacity and to optimize the use of data for program management and strategic planning. PMI will support appropriate technology to improve data flow and reporting through the SLIS. Also, PMI will support activities to improve M&E capacity at regional and district levels.

On-going M&E technical assistance to NMCP: ($200,000) Support for assistance to the NMCP and partners will continue for general M&E capacity building and for sentinel surveillance. Noting the importance given in the M&E plan to supervisory reports, PMI will emphasize efforts to collect, summarize and use report findings and recommendation to refine program plans and strategies.

Strengthening of sentinel sites: ($350,000) PMI will support the expansion of the sentinel site reporting system to a maximum of 10 sites once the initial sites have met the criteria of timely reporting and quality data. Specific support will include refining the reporting system and tools, continued training or retraining, human resource support for data collection, monthly formative supervision, laboratory quality control, and analysis of sentinel site data.

Entomological Monitoring: ($120,000) PMI will support expansion of entomological monitoring at five sentinel sites in 2009 to up to ten sites in 2010. Monitoring activities will include periodic pyrethroid spray catches and yearly insecticide susceptibility assays. Entomological inoculation rates (EIRs) will be determined and used as important indicators of malaria transmission. These activities will also provide useful information to PMI and the NMCP for areas where bednets are the primary vector control strategy. Insecticide susceptibility testing at sentinel sites and within IRS districts is a critical component needed to determine local resistance profiles and will be used to help guide selection of insecticides for use in LLIN distribution programs and future IRS activities in these areas. Carefully measured vector parameters at these sites will be compared to those of other interventions such as IRS, larval control and IRS in river areas, and used to determine the best combination of vector control interventions for use by PMI and NMCP programs.

Coordination and capacity building in M&E at NMCP: ($100,000) PMI will support the NMCP in acquiring data management capacity, and in strengthening the coordination of malaria activities. This will include strengthening the NMCPs coordinating role for malaria commodities (LLINs, ACTs, SP, and severe malaria drugs) and building capacity for effective use of SLIS, sentinel site, and national survey data to enhance program performance.

STAFFING AND ADMINISTRATION ($1,150,000)

USAID and CDC have each hired a Resident Advisor to oversee PMI activities in Mali. In addition, one FSN technical advisor and an administrative assistant have been hired to support the PMI team. All PMI staff members are part of a single inter-agency team led by the USAID Mission Director. The PMI team shares responsibility for development and implementation of PMI strategies and work plans, coordination with national authorities, managing collaborating agencies and supervising day-to-day activities.

The PMI professional staff work together to oversee all technical and administrative aspects of the PMI, including finalizing details of the project design, implementing malaria prevention and treatment activities, monitoring and evaluation of outcomes and impact, and reporting of results. The CDC Resident Advisor is supervised by CDC both technically and administratively. All technical activities will be undertaken in close coordination with the MOH/NMCP and other national and international partners, including the WHO, UNICEF, the GFATM, World Bank, and the private sector.

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 1
President's Malaria Initiative – *Mali*
Year 1 (FY10) Timeline of Activities

ACTIVITY	2009	2010												2011								
	OCT-DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP
Procurement of malaria commodities (ACTs; LLINs; SP, RDTs, IRS equipment, diagnostic/lab equipment, severe malaria drugs, etc.)																						
Distribution of LLINs																						
Policy support for health financing, uptake and roll out of policies, etc.																						
BCC/IEC for LLINs, CM, MIP, etc.																						
IRS campaign																						
Environmental compliance monitoring																						
Entomological monitoring																						
Parasitological Baseline data collection in the third IRS district																						
Training and supervision for health providers for MIP, CM, QA/QC in lab diagnostics																						
Strengthen MOH logistics management system																						
ACT implementation at national, district, community level																						
Support to pharmacovigilance																						
Implementation of M&E plan																						
Strengthening of SLIS and expansion of sentinel sites																						
Support DHS preparation and implementation																						

Table 2

President's Malaria Initiative – *Mali*
Planned Obligations for FY2010 ($28,000,000)

Proposed Activity	Mechanism	Budget (*commodities)*	Geographic Area	Description of Activity	Page Number Reference
PREVENTIVE ACTIVITIES					
LLIN Procurement	DELIVER	9,690,000 (9,690,000)	Nationwide	Procurement of 1,540,000 LLINS to support routine distribution and contribution to mass CU5 campaign in 2010 or pilot with MDA, etc.	18
Distribution of LLINs	PSI	1,115,000 (1,115,000)	Nationwide; specific regions	Distribution of LLINs for pregnant women and children under one year of age to support routine coverage; support mass campaign as necessary	18
LLIN logistics strengthening	SPS NMCP	200,000 40,000	Nationwide	Strengthening NMCP in LLIN logistics management	19
Reinforcement post-campaign	PSI	200,000	Nationwide; specific regions	Post campaign hang up and evaluation activities (quantitative and qualitative)	19
BCC/IEC for LLINs	ATNPlus PKC 2 CNIECS	150,000 300,000 20,000	Nationwide	National support for harmonization and message design (ATNPlus); design and implementation through Group Pivot and Local NGOs (PKC 2); oversight and coordination (CNIECS)	19

NGO capacity building	Groupe Pivot	50,000		Strengthen local NGO technical and operational capacity	19
Indoor Residual Spraying	IRS/IQC Global Task Order CDC IAA	7,300,000 (2,409,000) 24,000	2 districts in 2010, 3 in 2011	Procurement of IRS equipment (insecticide, sprayers, etc.). Support PERSUAP, policy guidelines (WHOPES insecticide, etc.) training, implementation, data collection, protocols, guidelines, IEC/BCC, logistics for July/August 2010 and 2011 spraying in Bla and Koulikoro (New Award); possible expansion to one more district in 2011; technical assistance for spraying/entomological assessment (CDC IAA)	22
Entomological Monitoring	NMCP MRTC	40,000 380,000	1-2 districts (400k population); plus additional district	Entomologic monitoring for IRS including a baseline for a new district, thus covering two rounds of spraying.	23
Environmental compliance monitoring	IRG	40,000		Support environmental compliance monitoring associated with IRS	23
SUBTOTAL: Preventive		**$19,549,000**			

MALARIA IN PREGNANCY					
SP procurement	DELIVER	56,000 (56,000)	Nationwide	Procurement of SP for last six months in 2011	25

Facility level service provider training and supervision	ATNPlus DSR/Midwives	350,000 80,000		Update supervision and training materials; support the expansion of training in the new in-service training module for comprehensive ANC, as well as the expansion of supportive supervision during IPTp implementation nationally through facility and community outreach activities.	25
IPTp Policy/Advocacy	HPI	100,000		Work with traditional leaders (Imams) in reinforcing advocacy tool to encourage adherence to policies such as the provision of free SP to pregnant women to improve care and utilization of services at regional- and district-levels.	25
IPTp BCC/IEC	ATNPlus PKC	100,000 200,000		National support for harmonization, design focused messages on free SP-multichannel, including packaging	26
IPTp program assessment	ATNPlus (JHPEIGO)	50,000		Assessment to follow up on qualitative information on barriers to uptake of IPTp	26
Evaluation of SP effectiveness for IPTp (operations research)	MRTC through NMCP	100,000		Determine efficacy of SP among pregnant women based on low birth weight data	26
MIP logistics	SPS	50,000		To facilitate strengthening of MOH capacity in MIP commodity logistics management	26
SUBTOTAL: Malaria in Pregnancy		**$1,086,000**			
CASE MANAGEMENT (INCLUDING DIAGNOSTICS)					

Procurement of lab consumables	DELIVER	400,000 (400,000)	Nationwide	Consumables for microscopy testing for 59 CSREFs, including sentinel sites.	30
Procurement of RDTs for SS	DELIVER	31,500 (31,500)	Nationwide	Procure 30,000 RDTs for up to 10 sentinel sites for the needs of 18 months; 5% handling/distribution fee.	30
Quality assurance/quality control for diagnostics	INRSP through NMCP	150,000	Nationwide	In-service training on quality control of microscopy and RDT at CSREFs and RDTs at some CSCOMS, including formative supervisory visits. Also include strengthening capacity of INRSP to do quality assurance and quality control.	31
Supervision in lab diagnostics	INRSP through NMCP	140,000		Includes supporting formative supervision visits of trained lab personnel (microscopy and RDTs) and clinicians (RDTs) at all levels. This will also include refresher training as needed.	31
Supervision for malaria case management	ATNPlus NMCP CDC IAA	100,000 75,000 12,000	Nationwide	Includes supporting formative supervision visits of trained clinicians at all levels, and refresher training as needed; technical assistance for case management from CDC	31
HBMF scale up	PKC	750,000	Nationwide	This includes training and supportive supervision to community health workers to monitor ACT treatment compliance. This will also include refresher training as needed	31
Procurement of malaria drugs - ACTs and severe malaria	DELIVER	1,774,500 (1,774,500)	Nationwide; 3 districts	Includes supplies of ACTs to support HBMF activities and ACTs for free treatment for children under 5. Also include procurement of malaria drugs for severe malaria cases.	31
BCC/IEC for case management	ATNPlus PKC 2	100,000 300,000	Nationwide	This includes national support for harmonization of	31

				messages; BCC implementation through *Relais* at community level and support for training and refresher training on use of ACTs at facility and community levels as well as training of communities on referral systems to health facilities.	
Logistics strengthening	SPS	250,000	Nationwide	To facilitate distribution of ACTs and technical assistance for pharmaceutical management and supply chain strengthening.	31
Health financing for case management	ATNPlus	50,000		Support follow up implementation of recommendations from the national workshop on the role of the *relais*.	32
Drug quality control	USP NMCP	350,000 (100,000) 40,000		To support testing of quality of ACTs, RDTs, SP upon arrival in country and support post-market quality control. Also include testing the quality of insecticides on the LLINs distributed in the country.	32
Pharmacovigilance	USP NMCP	100,000 40,000		To continue support to the implementation of the pharmacovigilence plan developed with PMI funding.	32
SUBTOTAL: Case Mgmt.		**$4,663,000**			
MONITORING AND EVALUATION AND MALARIA SURVEILLANCE					
MOH NMCP annual review of M&E plan	MEASURE Evaluation CDC IAA	30,000 12,000	Nationwide	Support to the implementation of the comprehensive M&E plan with a single list of process and coverage indicators and data collection methodologies for PMI implementation and data for decision making (New Procurement); support annual programming and planning through the MOH and NMCP(MOH NMCP); technical assistance for M&E (CDC	44

				IAA).	
DHS	MEASURE DHS	490,000	Nationwide	Support for inclusion of a malaria module in the DHS.	44
Strengthening SLIS	MEASURE Evaluation	250,000	10 sentinel sites	Support training and quality control/timeliness for completion of routine SLIS reporting forms, assist in analysis and feedback on malaria indicators and promote use of findings at all levels to improve program performance.	45
On going TA for M&E support to NMCP	MEASURE Evaluation	200,000	Nationwide	Direct technical assistance to the NMCP and partners on sentinel surveillance, assess the feasibility of sentinel site expansion, support a seconded staff member to NMCP to track commodities from PMI and other partners.	45
Strengthening/ expansion sentinel sites	MRTC through NMCP	315,000	Sentinel sites	Support expansion of sentinel surveillance activities to up to 8-10 sentinel sites. Support will include refining reporting system and tools, training and refresher training, support for data collection, analysis and report writing and dissemination, and formative supervisory visits.	45
Strengthening/ expansion sentinel sites	NMCP	35,000	Sentinel sites	Support expansion of sentinel surveillance activities to up to 10 sentinel sites	45
Insecticide resistance and entomological monitoring	MRTC through NMCP	120,000	Nationwide	Support insecticide resistance monitoring at sentinel sites. Support will include entomologic inoculation rates, spray catches, and yearly insecticide susceptibility assays.	45
Coordination and capacity building	NMCP	100,000		Support NMCP data management capacity, and strengthen	45

NMCP				its coordination of and leadership capacities in malaria activities. Support will be provided to increase NMCP capacity to lead thematic groups in their strategic development and implementation.	
SUBTOTAL: M&E		**$1,552,000**			
IN-COUNTRY MANAGEMENT AND ADMINISTRATION					
In-country staff; Program Administration Expenses	USAID	800,000	Nationwide	Salaries, benefits of in-country USAID PMI staff (1 PSC/2 FSN), contribution to salaries and benefits of Mission support staff, IT support costs, office space, vehicle, attendance at PMI retreat, other Mission program support costs, local costs for CDC PMI advisor.	46
In-country staff; Admin. expenses	CDC	350,000	Nationwide	Salaries, benefits of in-country CDC PMI advisor (1), attendance at PMI retreat.	46
SUBTOTAL: Mgmt. and Admin.		**$1,150,000**			
GRAND TOTAL		**$28,000,000**	***Commodities represent 56 % of total budget***		

Table 3

President's Malaria Initiative – Mali
Year 1 (FY10) Budget Breakdown by Intervention ($28,000,000)

Area	Commodities $ (56%)	Other $ (44%)	Total $
Long lasting Insecticide-treated Nets	10,805,000 (92%)	960,000(11%)	11,765,000
Indoor Residual Spraying	2,409,000(31%)	5,375,000 (69%)	7,784,000
Case Management	2,306,000 (49%)	2,357,000 (51%)	4,663,000
Malaria in Pregnancy	56,000 (5%)	1,030,000 (95%)	1,086,000
Monitoring and Evaluation	0 (0%)	1,552,000 (100%)	1,552,000
Administration	0 (0%)	1,150,000 (100%)	1,150,000
Total	15,576,000 (56%)	12,424,000 (44%)	28,000,000

Table 4

Year 1 (FY10) Budget Breakdown by Partner* ($28 Million)

Partner Organization	Geographic Area	Activity	Budget
ATNPlus	Nationwide	National support for harmonization and message design for LLINs, IPTp, ACTs; Facility level service provide training, training and supervision for case management, health financing and policy implementation; Barriers to IPTp	900,000
CDC IAA	Nationwide	TA for IRS, case management, and M&E, benefits of in-country CDC PMI advisor (1), attendance at PMI retreat.	398,000
CNIECS	Nationwide	Oversight and coordination of BCC/IEC for LLINs	20,000
DELIVER	Nationwide	Procurement of LLINs, SP, lab consumables, RDTs and ACTs	11,952,000
Groupe Pivot	Nationwide	Strengthening local NGOs	50,000
HPI	Nationwide	Advocacy for IPTp and case management	100,000
IRG	Nationwide	Environmental compliance monitoring	40,000
MEASURE DHS	Nationwide	DHS 2011	490,000
MEASURE Evaluation	Nationwide	Strengthening SLIS, TA for M&E support	480,000
MOH (NMCP, EPI, DPM, INRSP, LNS, DSR, PPM, MRTC)	Nationwide	Capacity building, training and supervision, M&E (NMCP), EPI strengthening of tracking nets, net forecasting, capacity building (NMCP+ EPI Section), pharmacovigilance (DPM), quality assurance/control for laboratory diagnostics (INRSP), drug quality	740,000

		control (LNS), BCC/IEC (DSR, Midwives Association), logistics strengthening (PPM)	
MRTC	Nationwide	Entomological monitoring; Training, quality assurance and quality control in lab diagnostics, sentinel site strengthening	915,000
PKC II	Nationwide	BCC/IEC for LLINs, IPTp, case management, community ACT rll out, HBMF scale up	1,550,000
PSI	Nationwide	Public/private sector net capacity, LLIN distribution	1,315,000
RTI	Nationwide	IRS commodities and operational costs, NMCP capacity building	7,300,000
SPS	Nationwide	LLIN, MIP, CM logistics management	500,000
USAID Mali Mission	Nationwide	Salaries, benefits of in-country USAID PMI staff (1 PSC/2 FSN), contribution to salaries and benefits of Mission support staff, IT support costs, office space, vehicle, attendance at PMI retreat, other Mission program support costs, local costs for CDC PMI advisor.	800,000
USP	Nationwide	Drug quality control ; pharmacovigilance	450,000