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

BENIN

Malaria Operational Plan -- FY 2011

TABLE OF CONTENTS

ABBREVIATIONS

ACT	Artemisinin-based combination therapy
AL	Artemether-lumefantrine
ANC	Antenatal care
BASICS	Basic Support for Institutionalizing Child Survival
CAME	*Centrale d'Achat des Médicaments Essentiels* (Central Medical Stores)
CDC	Centers for Disease Control and Prevention
(F)CFA	*Franc de la Communauté financière d'Afrique* (Franc from the Financial Community of Africa)
CHW	community health worker
CREC	*Centre de Recherche Entomologique de Cotonou* (Center for Entomology Research – Cotonou)
CRS	Catholic Relief Services
CSA	*Centre de Santé d'Arrondissement* (small health center)
CSC	*Centre de Santé de Commune* (large health center)
DHS	Demographic and Health Survey
EMICoV	*Enquête Modulaire Intégrée sur les Conditions de Vie des Ménages*
EPI	Expanded Program on Immunization
FBO	Faith-based organization
FY	Fiscal Year
Global Fund	The Global Fund to Fight AIDS, Tuberculosis, and Malaria
GOB	Government of Benin
HMIS	*Système National d'Information et de Gestion Sanitaires* (Health Management Information System)
HZ	*Hôpital de Zone* (Zonal hospital)
IEC / BCC	Information, education, communication/ Behavior change communication
IMCI	Integrated Management of Childhood Illnesses
IPPF	International planned parenthood federation
IPTp	Intermittent preventive treatment of malaria in pregnancy
IRS	Indoor residual spraying
IRSP	*Institut Régional de Santé Publique* (Regional Institute of Public Health)
ITN	Insecticide-treated net
LLIN	Long-lasting insecticide-treated net
LMIS	Logistics management information system
LQAS	Lot quality assurance sampling
MCDI	Medical Care Development International
M&E	Monitoring and evaluation
MCH	Maternal and child health
MOH	Ministry of Health
NGO	Non-governmental organization
NMCP	*Programme National de Lutte contre le Paludisme* (National Malaria Control Program)

PISAF	*Projet Intégré de Santé Familiale* (Integrated Family Health Project)
PMI	President’s Malaria Initiative
PMTCT	Prevention of Mother to Child Transmission (of HIV/AIDS)
PSI	Population Services International
RBM	Roll Back Malaria
RCC	Rolling Continuation Channel
RDT	Rapid diagnostic test
SCMS	Supply chain management system
SP	sulfadoxine-pyrimethamine
SPS	Strengthening Pharmaceutical Systems Program
UNICEF	United Nations Children's Fund
URC	University Research Corporation
USAID	United States Agency for International Development
USG	United States Government
WHO	World Health Organization

Executive Summary

Malaria prevention and control are major foreign assistance objectives of the U.S. Government (USG). In May 2009, President Barack Obama announced the Global Health Initiative (GHI), a six-year, comprehensive effort to reduce the burden of disease and promote healthy communities and families around the world. Through the GHI, the United States will invest $63 billion over the next six years to help partner countries improve health outcomes, with a particular focus on improving the health of women, newborns, and children.

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

In December 2006, Benin was selected as one of eight countries to receive funding during the third year of the President's Malaria Initiative (PMI). Malaria is endemic nationwide and is a major cause of morbidity and mortality. It is reported to account for 40% of outpatient consultations, 25% of all hospital admissions, and about 32% of deaths of children under five. With 30% of the population living below the poverty line and a per capita annual income of only $530, malaria places an enormous economic strain on Benin's development. According to the World Bank, households in Benin spend approximately one quarter of their annual income on the prevention and treatment and of malaria.

The Government of Benin (GOB) views malaria control as a top development priority. The National Malaria Control Program (NMCP) is reviewing its current five-year strategic plan (2006-2010) and a new 2011-2015 strategic plan is being developed.

Benin has been awarded two, five-year malaria grants from the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund): one for $22.6 million and another for $100 million that include support for two, universal coverage, long-lasting insecticide treated net (LLIN) campaigns and community case management of malaria nationwide. With these financial resources and support from the World Health Organization (WHO), the United Nations Children's Emergency Fund (UNICEF) and other national and international partners, considerable progress has already been made in scaling-up malaria prevention and control measures.

This PMI FY 2011 Malaria Operational Plan is based on progress and results to date, as well as input received from the NMCP and partners during a planning visit carried out in June 2010. This plan was developed with the participation of the NMCP and all national and international partners involved with malaria prevention and control in the country. The activities that PMI is proposing complement the contributions of other partners and directly support the NMCP's

strategic plan. The proposed fiscal year FY 2011 PMI budget for Benin is $17.85 million. The following paragraphs describe the progress to date and FY 2011 plans:

Insecticide Treated Bed-nets (ITNs): The NMCP strategy is to support free distribution of LLINs through antenatal clinics (ANC) and vaccination clinics; distribution of highly-subsidized LLINs through community-based channels; free distribution through mass campaigns; and the sale of LLINs in the commercial sector. The PMI is procuring one million LLINs in FY 2010 for support to private sector distributions and routine services. With FY 2011 funding, PMI will procure approximately 410,000 LLINs for free distribution to pregnant women at ANC visits and to children at vaccination clinics, as well as for social marketing through the private sector. In addition, the PMI will support behavior change communication (BCC) activities including mass media and community-level approaches (e.g. local radio stations, women's groups) to increase demand for and promote correct and consistent utilization of LLINs.

Indoor Residual Spraying (IRS): PMI led the first large-scale spraying program in Benin in 2008, and has supported three rounds of IRS since then. During the last 12 months, one round of spraying was completed, protecting 636,000 people in four communes. A fourth round of IRS will be implemented in the south of Benin beginning August 2010. With FY 2011 funding, PMI-supported IRS will be shifted to the north of Benin, where a total of 118,000 households will be sprayed and an estimated 500,000 residents protected. According to the data available, the north of the country is better suited to IRS because it has lower ITN coverage, lower vector pyrethroid resistance rates, higher child mortality rates, and only one seasonal transmission peak. Meanwhile, in the formerly sprayed areas in the south, PMI will support efforts to ensure universal coverage with and adequate use of ITNs. The PMI will also continue supporting the NMCP entomological and malaria case surveillance system in Ouémé-Plateau.

Malaria in Pregnancy: During the past year, PMI provided components for ANC kits distributed in public and private health clinics. To improve the quality of intermittent preventive treatment during pregnancy (IPTp) services, a total of 1,546 midwives and nurses from both public and private clinics have been trained on focused antenatal care and IPTp. Post-training follow-up supervision visits were completed for more than half of those trained. With FY 2011 funding, PMI will conduct refresher training of health workers in IPTp, supervise health workers to improve the quality of services, strengthen logistics management for malaria in pregnancy commodities, and provide support for BCC activities to promote ANC attendance and educate pregnant women and communities on the risks of malaria in pregnancy, the need for early and regular ANC visits, and the benefits of IPTp.

Case Management – Diagnosis: During the past year, laboratory and clinical supervisors from all 12 departments of Benin were trained and are serving as national trainers and supervisors for malaria diagnostics in 60 health facilities. Three rounds of supervision have been completed, a supervision checklist has been developed, and new registers for data collection have been distributed. The PMI also purchased an additional 15 microscopes, bringing the total number of microscopes purchased by PMI to 45. With FY 2011 funding, the PMI will procure one million rapid diagnostic tests (RDTs) to cover the needs nationwide, validate and disseminate a new diagnostic algorithm, and provide support to a comprehensive diagnostics strengthening program.

Treatment: In the last 12 months, PMI has procured 1.2 million artemisinin-based combination therapy (ACT) treatments, which are in the process of being distributed to health facilities throughout the country. PMI also supported the training of 113 supervisors in formative supervision for case management. With FY 2011 funding, PMI will again procure 1.2 million ACT treatments, supervise and support health workers to follow case management and prevention guidelines, support the training and equipment needs for management of severe malaria, and support training in malaria case management and licensing of private sector drug sellers.

Integration with other GHI programs: Since the launch of GHI, PMI in Benin has reinforced its commitment to strong integration at all levels of the health system. With FY 2011 funds, PMI will support the integration of registers used at the health facility level by harmonizing those used for antenatal care, prevention of mother to child transmission of HIV/AIDS, the expanded program on immunization, and malaria. This is expected to reduce the number of registers to be completed during consultations by health workers from three or four to just one. The PMI will also fund health worker training in the integrated management of childhood illness (IMCI) at the facility level. At the community level, PMI will continue to implement an integrated community case management program, which treats pneumonia, diarrhea, and malaria at the community level in five of the country's health zones.

Health Systems Strengthening: In the context of the GHI, PMI is also focusing increased attention on health systems strengthening through strong support to Benin's supply chain for essential medicines. One of the major achievements of the last year has been the completion of legal reform of the Central Medical Stores (CAME) and implementation of activities in the CAME action plan. CAME has recently been recognized as an autonomous public utility association that operates under the technical oversight of the Ministries of Health and Economy and Finance. The PMI supported the development of new by-laws, which were approved by the Council of Ministers in January 2010, and are intended to improve governance and the transparency of operations. In addition to these major reforms, PMI supported the training of staff in all 34 health zones in the use of commodities management software. The PMI also conducted advocacy efforts and supported appropriate supportive policy change, including revision of the essential medicines list to include ACTs, and revision of guidelines for the pricing of malaria commodities at various stages of the supply chain. In FY 2011, PMI will continue to strengthen the pharmaceutical management of antimalarials, as well as provide support to the overall improvement of the supply chain for essential medicines in Benin.

Behavior Change Communication (BCC): In 2010, PMI supported malaria-related BCC activities that reached 166,000 people. In addition, PMI has established contracts with 13 non-governmental organizations (NGOs), trained 46 NGO presenters, 60 community health workers, and 825 women's group leaders on malaria prevention and control. After receiving training from PMI, NGO presenters and women's leaders conduct group discussions and interpersonal communication visits on net use, IPTp, and appropriate care-seeking for fever. With FY 2011 funding, PMI will support household visits and group education visits to promote net use and prevention of malaria. The PMI will also support BCC efforts designed to raise awareness of appropriate care-seeking and treatment for malaria, to educate women and communities on the importance of IPTp, and to mobilize communities for indoor residual spraying.

Monitoring and Evaluation: To assess the readiness of health facilities to manage malaria, the Ministry of Health (MOH), World Bank Booster Program and PMI jointly conducted an outpatient health facility survey in November–December 2009 and an inpatient pilot survey in July 2010. The PMI also continued to support sentinel site surveillance of malaria cases in Benin, and is supporting the development and strengthening of a routine malaria information system. With FY 2011 funding, PMI will provide support for the 2011 Demographic and Health Survey (DHS), including a full malaria module and biomarkers, provide technical assistance to five sites for the collection of reliable data on inpatient malaria cases and deaths, support the collection of data for the Roll Back Malaria/PMI impact evaluation, and conduct a follow-up health facility survey.

INTRODUCTION

The Global Health Initiative

Malaria prevention and control is a major foreign assistance objective of the U.S. Government (USG). In May 2009, President Barack Obama announced the Global Health Initiative (GHI), a six-year, comprehensive effort to reduce the burden of disease and promote healthy communities and families around the world. Through the GHI, the United States will invest $63 billion over six years to help partner countries improve health outcomes, with a particular focus on improving the health of women, newborns and children. The GHI is a global commitment to invest in healthy and productive lives, building upon and expanding the USG's successes in addressing specific diseases and issues.

The GHI aims to maximize the impact the United States achieves for every health dollar it invests, in a sustainable way. The GHI's business model is based on: implementing a woman- and girl-centered approach; increasing impact and efficiency through strategic coordination and programmatic integration; strengthening and leveraging key partnerships, multilateral organizations, and private contributions; encouraging country ownership and investing in country-led plans and health systems; improving metrics, monitoring and evaluation; and promoting research and innovation.

The President's Malaria Initiative

The President's Malaria Initiative (PMI) is a core component of the GHI, along with HIV/AIDS, maternal and child health, and tuberculosis. The PMI was launched in June 2005 as a 5-year, $1.2 billion initiative to rapidly scale up malaria prevention and treatment interventions and reduce malaria-related mortality by 50% in 15 high-burden countries in sub-Saharan Africa. With passage of the 2008 Lantos-Hyde Act, funding for PMI has now been extended through FY2014 and, as part of the GHI, the goal of the PMI is now to reduce malaria-related mortality by 70% in the original 15 countries by the end of 2015. 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 nets (ITNs), intermittent preventive treatment of pregnant women (IPTp), and indoor residual spraying (IRS).

Benin became a PMI focus country in 2008. Large-scale implementation of ACTs and IPTp and wide-spread distribution of ITNs began in 2009 and has progressed rapidly with support from PMI and other partners, in spite of the country's weak health infrastructure.

In the FY2010 Malaria Operational Plan, PMI/Benin decided to group most of the activities under one malaria bilateral program. Some elements in the current program, like IRS and commodities procurement, will remain centrally managed to ensure global standards are met and PMI's broad range of Washington-based expertise is accessed. The new bilateral malaria program request for applications (RFA) will include several requirements that will ensure that the program will be adequately supported by a technical capacity mix leading to quality program implementation. Key personnel have been designated in the technical areas of case management,

including diagnostics, supply chain management, BCC, and M&E, including HMIS capacity building and disease surveillance. USAID/Benin will ask applicants to clearly indicate how they will address all technical areas listed in the RFA and will encourage consortium building and sub-partnerships. The mission is currently forming a technical review committee that will incorporate PMI HQ staff and experts in each domain. In addition, the mission health bilateral (PISAF, the Integrated Family Health Project) will be complementary to PMI activities.

This FY2011 Malaria Operational Plan presents a detailed implementation plan for the fourth year of PMI in Benin, based on the PMI Multi-Year Strategy and Plan and the National Malaria NMCP's five-Year Strategy. It was developed in consultation with the NMCP and with the participation of all national and international partners involved with malaria prevention and control in the country. The activities that PMI is proposing to support fit in well with the 2010-2015 National Malaria Control Strategy and Plan and build on investments made by PMI and other partners to improve and expand malaria-related services, including the recently approved Global Fund to Fight AIDS, Tuberculosis, and Malaria (Global Fund) Round 3 Rolling Continuation Channel (RCC) malaria proposal. This document briefly reviews the current status of malaria control policies and interventions in Benin, describes progress to date, identifies challenges and unmet needs if the targets of the NMCP and PMI are to be achieved, and provides a description of planned FY2011 activities.

HEALTH SYSTEM IN BENIN

Background

In 2010, Benin's population is estimated to be nine million,[1] of which approximately 18% are children under-five and 6% are pregnant women[2]. In 2006, more than one third of the country's population was living in poverty[3]. In 2008, Benin ranked 161 out of 179 countries[4] on the Human Development Index and in 2009, had a gross national income per capita purchasing power parity of only $1,510 USD[5]. Life expectancy[6] is 54 years for men and 55 years for women. Educational levels are low – six out of every ten women and four out of every ten men have had no schooling, and the literacy rate is 28% for women and 55% for men[7]. For the period from 2001–2006, the infant mortality rate was 67 per 1,000 live births, the under-five mortality rate was 125 per 1,000 live births, and the maternal mortality ratio is 397 per 100,000 live births (with estimates taking into account issues of undercounting running as high as 850).

Administratively, Benin is divided into 12 departments (average 650,000 inhabitants per department), 77 communes and three autonomous areas (Cotonou, Porto Novo and Parakou), 546 *arrondissements*, and 3,747 villages.

[1] CIA World Facts Book
[2] 2006 DHS and 2008 HMIS
[3] UNDP's Assessment of Development Results (ADR) for Benin, December 2008
[4] Human Development Reports - UNDP
[5] 2010 WDI, World Bank
[6] 2008 World Health Statistics
[7] 2006 DHS

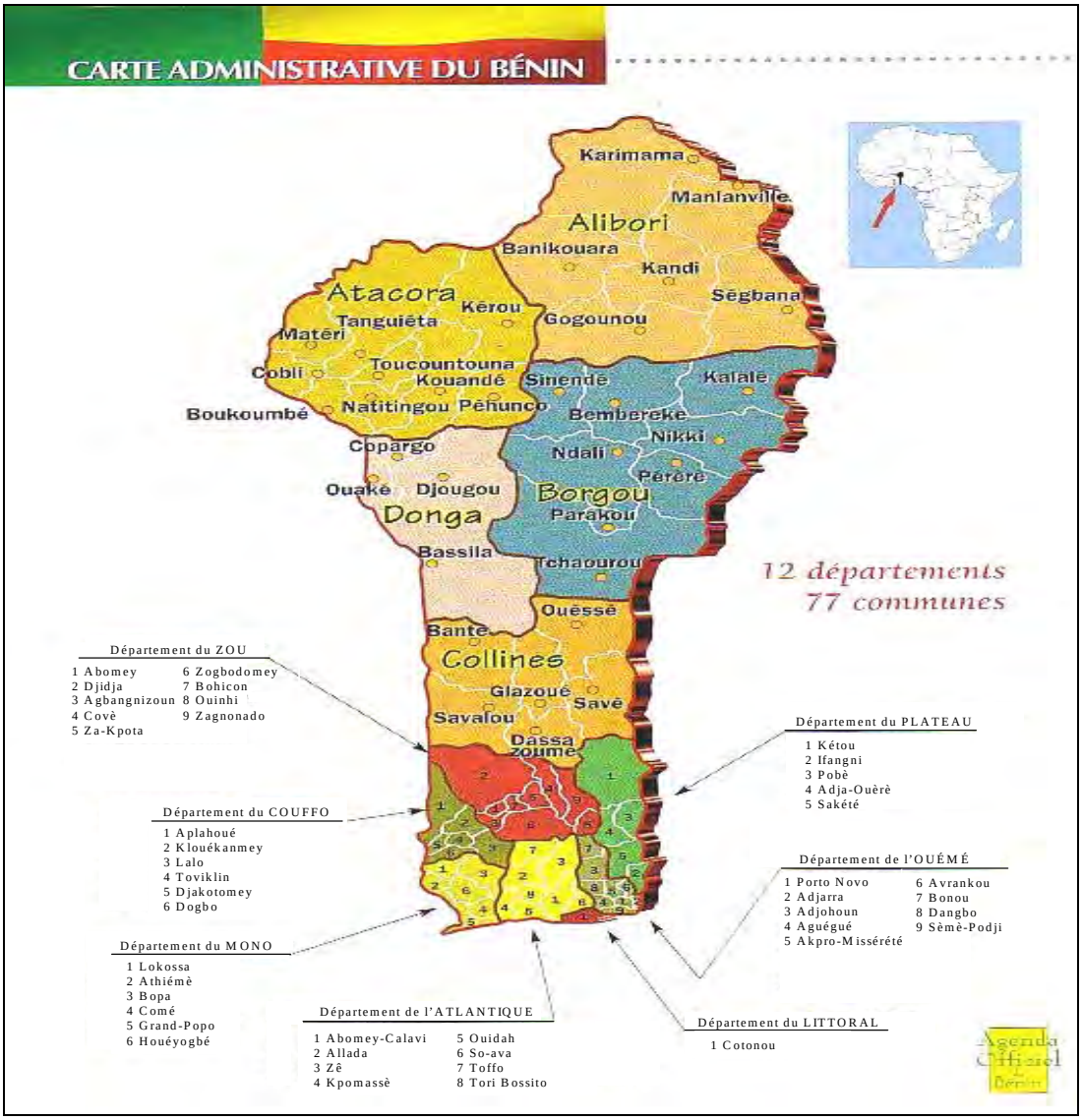
National Health System

Benin's Ministry of Health (MOH) underwent reorganization in 2010, which reduced the number of directorates from 2005 levels. Benin's public health system remains organized, however, in a pyramidal structure with three levels:

- **Central**: Ministry of Health and its central Directorates, National Referral Hospital (*Centre National Hospitalier et Universitaire*)
- **Intermediate**: Departmental Directorates for Health, Departmental referral hospitals (*Centre Hospitalier Départemental*). Functionally, there are only six referral hospitals nationwide.
- **Peripheral**: Health zones that contain the following the Zonal hospital (*Hôpital de Zone*; HZ), District Health Centers (*Centre de Santé de Commune*; CSC), Community Health Centers (*Centre de Santé d'Arrondissement*; CSA), private health facilities, and village health units. In practice, not all health zones have a functioning HZ.

The country's 34 health zones each cover an average population of 230,000 (ranging from 84,000 to 492,000). Health zones contain from one to four communes, with an average of two communes per health zone.

Benin's 12 administrative departments and 77 districts (*communes*)



In 2008, there was an estimated one physician per 7,511 inhabitants, one nurse per 2,245 inhabitants, one midwife per 1,345 women of child-bearing age, and a total of 343 laboratory technicians working in Benin's public health system. For the country as a whole, there are an estimated 442 *arrondisement*-level health centers, 75 commune-level health centers, and 305 licensed private health facilities (*Système National d'Information et de Gestion Sanitaires* -- Health Management Information System, HMIS, 2006).

Private health providers

The private health sector in Benin is unstructured and amorphous; it includes unlicensed traditional practitioners, private hospitals run by faith-based organizations, private facilities run by licensed health practitioners, unregulated providers, and unlicensed drug vendors. The NMCP is authorized by law to work with licensed facilities and practitioners, but not unlicensed ones.

This sector is one that the Benin team is seeking to further engage in FY11, as the unauthorized private sector is an important source of care for the poor.

Health system financing
Public health facilities usually charge direct fees for consultations, procedures, and medicines, except for, in recent years, certain essential health services and commodities such as long-lasting insecticide-treated nets (LLINs). The income from the fees is kept at the facility level to support the functioning of the facility as outlined by the Bamako Initiative. A *carnet de santé* (health book that acts as a patient record) must also be purchased to access care at public health facilities. Facility staff members work with community committees to allocate user fees according to policies that are set by the MOH. Community financing represents a substantial share of local operating costs for MOH facilities, contributing an average of 43% to MOH budgets. Although the MOH has an Indigent Fund that subsidizes user fees for the poorest families, it appears that many people do not know that they are eligible.

MALARIA SITUATION IN BENIN

Epidemiology
Malaria is a leading cause of morbidity and mortality among children under five in Benin. The Benin HMIS data also suggest a high burden of morbidity from anemia, much of which is likely caused by malaria. The Benin 2006 Demographic and Health Survey (DHS) found that among children 6–59 months old, 78% had anemia (25% mild, 46% moderate, and 8% severe).

The primary malaria vector in Benin is *Anopheles gambiae s.s.* The widespread distribution and continuous breeding of *An. gambiae* result in endemic transmission nationwide, with three distinct regions. In the coastal region of the southern part of Benin, which has many lakes and lagoons, transmission is heterogeneous because of the presence of both *An. melas* and *An. gambiae*. Inland, malaria is holo-endemic. Finally, in northern Benin, malaria is seasonal, with a dry season (November to June) and a rainy season (July to October), during which malaria rates are highest.[8]

Vector resistance to pyrethroid insecticides affects the malaria situation in Benin by reducing the efficacy of ITNs as well as IRS.[9] If nets are not replaced in a timely manner, they eventually deliver a sub-lethal pyrethroid insecticide dose that selects for resistance, by selectively killing 'susceptible' vectors. The potential impact of sublethal ITNs on vector resistance could be significant; however, the current test for assessing ITN insecticidal decay, the WHO bioassay, is difficult to scale up. A more efficient method, based on a chemical (colorimetric) test, has been developed, standardized, and is being tested by PMI against the WHO method and has proven to be efficient and effective.[10] To help manage pyrethroid resistance, the PMI in Benin uses a different class of insecticide, a carbamate (Bendiocarb), in its spraying program.

[8] *Annuaire des Statistiques Sanitaires* 2008, SNIGS-MSP
[9]. N'Guessan *et al.* (2007) Reduced efficacy of Insecticide-treated Nets and Indoor Residual Spraying for Malaria Control in a Pyrethroid Resistance Area, Benin. Emerging Infectious Diseases **13**(2)
[10] Green M *et al.* (2009) Rapid colorimetric field test to determine levels of deltamethrin on PermaNet surfaces: association with mosquito bioactivity. Tropical Medicine and International Health **14**:1

CURRENT STATUS OF MALARIA INDICATORS

The table below presents the most recent estimates of malaria indicators, taken from the DHS, a nationally representative household survey conducted from August-November 2006. These estimates have been accepted as the baseline indicators for PMI-Benin, as no other survey of acceptable quality has been conducted since then. It is important to note that ITN and ACT coverage figures are now believed to be considerably higher because of combined PMI, World Bank Booster, Government of Benin and other stakeholder interventions since 2006. The IRS indicator should also be noted as current for 2010, as this percentage is drawn from PMI program monitoring documents, rather than DHS data.

Malaria Indicators [2006 DHS]	
Proportion of households with at least one ITN	25%
Proportion of children under five years old who slept under an ITN the previous night	20%
Proportion of pregnant women who slept under an ITN the previous night	20%
Proportion of women who received >2 doses of IPTp during their last pregnancy in the last 2 years	<1%
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	<1%
Proportion of structures in geographic areas targeted for IRS that have been sprayed	99.3%*

*2010 RTI Report

GOAL AND TARGETS OF THE PRESIDENT'S MALARIA INITIATIVE

The goal of the PMI is to reduce malaria-associated mortality by 70% compared to pre-initiative levels in the 15 original PMI countries and to reduce malaria-associated mortality by 50% in new countries added to the PMI in FY2010 and later. By the end of 2014, PMI will assist Benin to achieve the following targets in populations at risk for malaria:

- >90% of households with a pregnant woman and/or children under five will own at least one ITN;
- 85% of children under five will have slept under an ITN the previous night;
- 85% of pregnant women will have slept under an ITN the previous night;
- 85% of houses in geographic areas targeted for IRS will have been sprayed;
- 85% of pregnant women and children under five will have slept under an ITN the previous night or in a house that has been sprayed with IRS in the last 6 months;
- 85% of women who have completed a pregnancy in the last two years will have received two or more doses of IPTp during that pregnancy;

- 85% of government health facilities have ACTs available for treatment of uncomplicated malaria; and
- 85% of children under five with suspected malaria will have received treatment with ACTs within 24 hours of onset of their symptoms.

NATIONAL MALARIA CONTROL PLAN AND STRATEGY

The NMCP has a five-year National Malaria Strategic Plan currently ending in 2010. The review process leading to the development of a new Strategic Plan for the next five years started in May 2010, and has yet to be completed. The vision behind the NMCP 2011-2015 strategy is to continue to promote universal access to malaria prevention and treatment interventions by scaling up a package of interventions that promote positive behavior change, achieve rapid and sustainable high coverage levels, and prevent and treat malaria.

The core interventions of the 2011-2015 strategy will include:

- Universal coverage with ITNs with a special emphasis on distributing LLINs through mass distribution campaigns planned for 2010 and 2013, routine distribution to pregnant women during antenatal care services, and to children under five years during routine immunization;
- Expanding IRS, currently conducted in four communes in Ouémé-Plateau in 2008-2010;
- Universal access to ACTs, as well as improved diagnosis and management of severe malaria;
- Emphasis on the treatment and prevention of malaria in pregnancy, particularly IPTp;
- Intensive IEC efforts and social mobilization at all levels;
- Integration of malaria control activities within the health system with an emphasis on human resource development; and
- Strong monitoring, evaluation, and operations research to monitor progress, evaluate impact, and continuously improve interventions.

In its 2011-2015 Strategic Plan, the NMCP will attempt to enhance coordination capacity within the decentralized structures at the department level. Under this approach, six departmental coordinating structures will be supported to improve health outcomes through implementation of policies and strategies defined by the national coordination structures.

MAJOR PARTNERS IN MALARIA CONTROL

Benin has many technical and financial partners in the health sector. The following table describes the most significant contributors to malaria control, and the opportunities for collaboration.

Bilateral Donors		
Country	*Current Activities*	*Collaboration with PMI activities*
Belgium	The Belgian Technical Cooperation (CTB) is focused on improving the management	While CTB's focus is not directly on malaria, it actively provides support to enhance capacity and sustainability of

	capacity of selected health zones.	peripheral health units, and in supporting community-based health financing schemes known as *mutuelles de santé*.
China	The Chinese government has built hospitals and clinics, and has sent medical teams to the clinics that they support. In addition, they have imported significant amounts of ACTs (Arsuamoon) into the country.	The support of the Chinese government to Benin's health sector is significant but is not easily quantified. Coordination in this area is difficult.
France	The French Cooperation supports malaria research through the Development Research Institute (IRD) and the Centre de Recherche Entomologique de Cotonou (CREC).	IRD provides support to CREC, which is a sub-grantee of USAID through an agreement with Research Triangle Institute (RTI). The focus is on vector research and other aspects of malaria prevention.
Japan	JICA (Japan International Cooperation Agency) has a small health portfolio in Benin.	JICA is focused on the renovation and/or construction of dispensaries and clinics.
Switzerland	Cooperation Suisse has supported the development of new strategic directions for Benin's MoH.	The focus of Swiss assistance to the health sector is on community-based health financing, especially *mutuelles de santé*.

Multilateral Donors		
Donor	*Current Activities*	*Status of collaboration*
African Development Bank (ADB)	The ADB's five-year health project focused on Borgou, Donga and Zou departments, the Support Project for the Development of the Health System (PADS) is scheduled to end in 2011.	PADS targeted the reduction of the malaria burden in Benin as one of its main objectives. The strategy was a multi-faceted approach to strengthening the health system in the three target departments. The ADB has purchased equipment, commodities and supplies.
EU	The EU is looking at potential models for health care financing.	The EU has given technical and moral support for reforming the Central Medical Stores (CAME).
The Global Fund to fight AIDS, TB and Malaria (Global Fund)	Benin is a major beneficiary of grants for AIDS, tuberculosis and malaria. The two Principal Recipients (PRs) are Catholic Relief Services (CRS) and Africare, two US-based civil society organizations. USAID/Benin sits as a permanent member of the Global Fund Country Coordinating Mechanism.	A $12 million Round 7 Phase I Global Fund malaria grant provides community-based treatment of malaria for 40% of the country while a Round 3 Rolling Continuation Channel to Africare will provide up to $94 million for the expansion of community case management to the rest of the country and finance two national universal coverage net distribution campaigns. Benin's Global Fund Round 9 grants in HIV/AIDS and tuberculosis, focusing on treatment and care, HIV/TB activities, Voluntary Counseling and Testing (VCT) and Prevention of Mother to Child Transmission (PMTCT) services,

		also include a Health System Strengthening component. USAID-funded and GFATM-funded malaria projects initially overlapped in two departments. Dialogue in the last few months is expected to result in greater program complementarity.
International Institute for Tropical Agriculture (IITA)	The IITA is a unit of the Consultative Group on International Agricultural Research (CGIAR).	IITA has a small research component on pesticides and malaria control and has linkages with USAID/Benin through IRD and CREC.
UNICEF	UNICEF is the lead for Benin's health sector partners. They also support Integrated Management of Childhood Illness (IMCI) strategies in several departments in both the northern and southern parts of Benin	UNICEF and USAID have collaborated well on child health issues, including malaria and other childhood diseases, and in strengthening the health system. Community case management of malaria is a core element of the IMCI strategy.
WHO	WHO supports the development of technical norms, protocols and standards of health services. A Malaria Advisor is on staff in the Cotonou office.	USAID and WHO have collaborated on M&E issues for the NMCP. A major activity for the coming year is the five-year review of the NMCP and the development of a new five-year Strategic Plan for malaria control in Benin.
World Bank	The World Bank provides grants and loans to the GOB and the health in particular. A pilot performance-based financing project in several health zones has been recently approved.	The Malaria Booster project provided a $31 million grant to scale-up malaria control activities over the last five years. The project, now in its final year of implementation, supported purchases of commodities, supplies, and equipment.

US Agencies and Civil Society		
Gates Foundation	The Gates Foundation has channeled its malaria support in Benin to research activities.	The Gates Foundation currently funds research activities on vector resistance.
Peace Corps	Roughly a third of the 100+ PCVs are community-based health volunteers.	USAID gives small grants to PCVs to do small community-based disease prevention activities, many of which focus on malaria.

EXPECTED RESULTS – YEAR FOUR

Prevention:

- Approximately 410,000 LLINs will have been procured and distributed through routine services and the private sector;

- At least 85% of houses in villages targeted by the MoH and PMI for IRS in Atacora department will have been sprayed, with a total of 500,000 residents protected by IRS; and
- Intermittent preventive treatment with SP in pregnant women will be available and implemented in all health facilities nationwide. This is expected to increase the proportion of pregnant women receiving IPTp2 to at least 50% nationwide.

Diagnosis/Treatment:

- Approximately 1,000,000 RDTs will have been procured and distributed to ensure access to malaria diagnosis nationwide; and
- Approximately 1,213,000 ACT treatments will have been procured and distributed to children and adults. With combined procurements from the Global Fund, this will support universal access to malaria treatment nationwide.

INTERVENTIONS – PREVENTION

Insecticide-treated nets (ITNs)

Background

The NMCP's 2006-2010 Strategic Plan emphasizes the use of LLINs for the prevention of malaria among children under five and pregnant women. The 2006 DHS found that more than half of all households (56%) owned at least one mosquito net of any type; however, only 25% of households reported owning at least one ITN and only 20% of children under five and pregnant women said that they had slept under an ITN the previous night. The 2011 DHS should confirm significant progress in terms of ITN ownership and usage since the baseline.

The NMCP strategy is to support free distribution of LLINs through ANC and vaccination clinics; distribution of highly-subsidized LLINs through community-based channels; free distribution through mass campaigns; and the sale of LLINs in the commercial sector. At the end of 2010, the NMCP plans to hold a mass distribution campaign for universal coverage of ITNs with support from its partners: Global Fund will contribute 2.7 million nets; the World Bank 1.7 million nets; the African Development Bank (ADB) 187,500 nets; and the GOB national budget will contribute 125,000 nets, for a total of 4.7 million nets. Although no gap is projected for this campaign, with the end of the Booster Program in 2010, Benin expects a gap in 2011 and 2012 for ITNs for routine services. The gap to cover the 2012 estimated need is 261,630, as outlined in Table A below.

Table A: LLINs Gap Analysis for 2010-2012 period

Category	2010	2011	2012	Assumptions	Data Source
Population	8,909,874	9,199,444	9,498,426	Annual increase of 3.25% from 2006 figures	INSAE 2006
Pregnant women	465,095	480,211	495,818	5.22 % of the population	NMCP

Children under one year of age[11]	445,494	459,972	474,921	5 % of the population	

Number of households	1,781,975	1,839,889	1,899,685	5 persons per household	INSAE 2006
Bed nets needs for mass distribution campaign	5,345,924	0	0	3 nets per household based on average number of people per household. But using the calculation of 1 net for every 2 people, 4,455,000 nets are needed.	
Quantity needed for ANC services	418,586	432,190	446,236	ANC1 coverage rate: 90% 1 net per pregnant woman	PNLP, DSF; SNIGS 2008
Quantity needed for Immunization clinics	400,945	413,975	427,429	1 net per child under five, with 90% immunization coverage	PNLP, DSF; SNIGS 2008
Quantity of nets needed for routine services (adjusted)	**693,955**	**537,381**	**739,794**	70% of ANC clients will attend either public or faith-based clinics. For 2011, mass distribution will affect routine distribution -- anticipate decrease of 25%	
Total bed net needs for mass distribution campaign	**4,455,000**	**0**	**0**	**No mass distribution planned in CYs 2011 and 2012**	**NMCP**

Total bed net needs	**5,148,955**	**537,381**	**739,794**		
Partners' contribution for ITNs through routine services	**705,500**	**1,015,545**		**Comments**	
PMI	568,000	1,000,000	TBD	284,000 delivered in June 2010; 284,000 expected in Sept. 2010	FY 09 & FY 10 MOPs
WB/ Booster Program	0	0	0	Had been delivered and reserved for mass distribution	NMCP
UNICEF	0	0	0		
GoB /National budget	0	0	0		
African Development Bank	0	0	0		
Estimates stock on hand in health facilities	137,500	11,545	478,164	PMI surplus from previous year delivery for routine services.	Estimates
Partners' contribution for mass distribution campaign	**4,725,500**	**0**	**0**		
PMI	0	0	0		
WB/ Booster Program	1,675,000	0	0	475,000 initially ordered for routine was delivered and reserved for mass distribution. 1,	

[11] Children under one are to receive bednets through immunization clinics according to Malaria Control Program strategy and guidelines

				200, 000 ordered for Mass distribution campaign.	
UNICEF	0	0	0		
GoB /National budget	125,000	0	0	Budget not certain	NMCP
African Development Bank	187,500	0	0	2010 Malaria Road map	NMCP
GFATM (RCC)	2,738,000	0	0	RCC Proposal	Africare
Gap (-) / Surplus (+)[12]	**+ 282,045[13]**	**+ 478,164**	**- 261,630**	**Total needs – contributions-carry over from previous year stock**	**Computed figure**

Progress during the last 12 months:

During the past year, PMI ordered a total of 562,000 nets. The distribution of the first shipment of 248,000 was completed July 30, 2010. The second consignment of 248,000 more nets is scheduled arrived in September 2010. Both lots will be distributed via routine services to children under-five and pregnant women. PMI implementing partners continue to support the government to distribute LLINs to individual health zones and then down to the health facility level together with IEC/BCC to promote ownership and use. PMI is providing support to strengthening logistics management for all commodities, including LLINs. The government continues to implement the recommendations from a PMI-supported supply chain management assessment, which indicated a need for improved governance and transparency in the malaria supply chain, as well as for improved forecasting and distribution networks. In order to strengthen the NMCP logistic capacity, the PMI has provided support to recruit a logistician currently working at the NMCP.

In the coming months, PMI plans to procure one million LLINs using FY10 funds. Together with contributions made by the World Bank and Global Fund, all the needs for routine distribution and the mass distribution campaign in 2010 are estimated to be met. However, long lead-times for the arrival of LLIN orders have led to a gap in the availability of subsidized nets in the private sector, and may also produce gaps elsewhere in the country. The 66,000 LLINs procured with FY2009 funds for social marketing arrived in June 2010 and, based on current high demand, are expected to be sold out by November. Additional nets will be procured with FY2010 funds for social marketing purposes, as well as a large buffer stock for the covering of any potential gaps in the campaign or for routine services. The social marketing of LLINs is a complementary activity to the main distribution strategies and is intended to counteract the black market sales of low quality nets. Those who miss out on the universal campaign may need to buy an ITN in a local market, and would need to pay three to four times the price of the PMI-subsidized socially marketed ITN.

If ITN coverage is less than 100% in the southern PMI IRS areas following the 2010 mass distribution, PMI will also cover the remaining households/individuals with nets to ensure universal coverage before IRS operations move to another part of the country. Finally, PMI is

[12] The LLIN surplus is due to the safety stock pre-positioned to avert stock-outs if shipments are late, if consumption for routine services or losses are higher than anticipated. The surplus will allow corrections and adjustments in case of errors in calculation of population figures.

[13] That allows corrections and adjustments in case of errors in calculation of population's figures.

+Quantities for social marketing, 66,000 and 120,000 in FY 08 and 09 MOPs, are not included.

continuing to support an operations research study being conducted by the *Centre de Recherche Entomologique de Cotonou* (Center for Entomological Research – Cotonou, or CREC) to assess whether pyrethroid resistance in southern Benin affects the clinical impact of ITNs and IRS.

Proposed FY2011 activities: *($2,880,000)*

1. *Procure and distribute LLINs for routine services*: Procure approximately 410,000 LLINs for distribution to pregnant women at ANC visits and to children at vaccination clinics. Pregnant women will receive LLINs as part of a kit including one LLIN, one dose of mebendazole, folic acid, iron, and sulphadoxine-pyrethamine (SP) at a cost of slightly more than $1 per kit, with the net and SP being given free of charge. These nets, together with the balance remaining from previous orders, will cover the routine services needs for 2012. Some of these nets will be used to ensure universal LLIN coverage in Ouémé-Plateau, where IRS is being suspended. Costs for this activity include procurement of LLINs, their transport to health zone depots, and further transport down to the health facility level *($2,450,000);*

2. *IEC/BCC for LLINs, IPTp, and ACTs:* Support to BCC strategies including mass media and community-level approaches (e.g. local radio stations, women's groups) to promote correct and consistent utilization of LLINs. Messages will focus on explaining correct care and use of nets and emphasizing the importance of ITN use among under-fives and pregnant women, as well as by all other members of a household. This will be part of a larger, integrated, IEC/BCC activity for LLINs, IPTp, and case management. The integrated activity will also include building IEC/BCC capacity of the NMCP through technical assistance to ensure good coordination of BCC efforts at the national level and IEC/BCC of non-governmental organizations (NGOs) (*Costs covered under the IEC/BCC section);*

3. *Procure and distribute LLINs through the private sector:* Procure and distribute approximately 60,000 highly-subsidized LLINs through the private sector, using a social marketing approach, in rural areas to maintain the high LLIN coverage achieved through the 2010 universal campaign. Nets will be sold at an affordable price of $1-$2 each. The social marketing activities and distribution through routine services are part of the RBM-supported "keep-up" strategy designed to maintain and further boost net usage levels. *($400,000);* and

4. *Routine net longevity monitoring*: Continued support will be provided to CREC to conduct the assessment of the longevity of the insecticide and the durability of LLINs *($30,000).*

Indoor Residual Spraying (IRS)

Background

In September 2009, the NMCP developed its national IRS strategy. This strategy aims to scale up IRS from four to 20 communes out of 77. However, full funding for this strategy has not yet been obtained, and PMI plans to continue spraying in a limited number of communes. Between 2010 and 2015, the NMCP would like to add four new communes per year to the number of communes already being sprayed. The new communes would be chosen by a national committee based on malaria epidemiology and entomological data, with a "knock down/keep down" strategy for vector control envisioned as the overall approach. This strategy proposes the use of

IRS to drive malaria transmission down, followed by universal ITN coverage to sustain gains from IRS. Transmission following the shift to universal ITN coverage will be monitored closely to verify that the "keep down" strategy is working. This strategy is based on empirical experience in Benin and has been generally accepted by PMI. The spraying already completed in Benin has been successful in significantly bringing down entomologic indicators.

The PMI is the only NMCP partner currently supporting IRS in the country. To date, PMI/Benin has supported three rounds of IRS with a carbamate insecticide, Bendiocarb, in Ouémé-Plateau department in southern Benin. IRS began in July 2008 in four communes. In each round, upwards of 150,000 households were sprayed, protecting a total population of about 550,000 residents each year. The insecticidal effect lasted at least four months, which was sufficient to cover the local major transmission periods of malaria.[14]

Based on the national IRS strategy and with PMI guidance, FY2010 funding will support spraying in the north of the country. In July 2010, the MOH and PMI selected Atacora department[15], in northwest Benin, aiming at a target population size of 500,000 inhabitants. The north of the country may be better suited to IRS because it has lower ITN coverage, lower vector pyrethroid resistance rates, higher child mortality rates, and only one seasonal transmission peak. This area will also be sprayed with bendiocarb; although final confirmation of the insecticide choice will be after resistance testing in October 2010. The NMCP will establish the final lists of communes and villages to be sprayed by the end of October 2010 so that insecticides can be procured by May 2011.

Progress during last 12 Months

Since 2008, PMI has completed three rounds of spraying in Benin. During the last 12 months, PMI sprayed 166,910 structures, covering 99% of the 168,010 structures found. The number of people protected was 636,448 people, including 88,912 children under five years of age and 47,947 pregnant women. Environmental monitoring conducted following spraying reported that out of 2,483 sprayed rooms inspected, 94% were compliant with pre-spray instructions. The environmental supervision report indicated that 99% of spray operators followed IRS safety and hygiene rules during operations. With FY2010 funding, two other rounds of IRS are planned; one round in August-September 2010 in the same area in the south and a round in May-June 2011 in the north.

Communities in the IRS target communes located in flood zones were not sprayed for ecological reasons. Households near watersheds present the risk of insecticides leaking into waterways. Instead, LLINs are installed in all qualifying structures that do not already have them. Approximately 48,800 LLINs were hung by local women's associations (trained during previous

[14] CREC (2008) Rapport PMI/IRS: Impact de la pulvérisation intradomiciliaire (PID) sur la transmission du paludisme dans L'Ouémé.

[15] The following assessments, surveys and information sources will be used to identify towns and villages to be sprayed: the 2006 DHS, the 2009 national HMIS report (and using HMIS data for trend analysis), the 2009 HFS, current entomological studies (assessing vector reduction and transmission reduction) in the area, and the 2008 Malaria Indicator Assessment conducted by the World Bank Booster program using LQAS. Additional sources from clinical records and reports may be identified by CDC, RTI, and the NMCP during pre-IRS assessment in October 2010.

LLIN campaigns) in 2008 and 2009. Distribution of a second LLIN to each eligible structure followed the second round of IRS.

Several key lessons were learned during the most recent round of spraying. First, the new IEC data collection form with pictures, created for this round and tested by some IEC mobilizers, was more easy to use and provided some quantitative IEC data. Second, improved M&E tools, such as the County and Commune Master Tracker, and the introduction of an M&E section in the training guide have improved the IRS data monitoring and quality. Third, the team learned that insecticide procurement and logistics must be started at least six months before the expected start date.

The decision to use a carbamate insecticide was influenced by entomological monitoring that indicates an elevated level of resistance to pyrethroids (but no resistance to carbamates) in the IRS target area in southern Benin.[16] Entomological evaluation of IRS shows that vector biting density, assessed by standardized collection techniques, decreased nearly five-fold from baseline during round one of spraying.[17] Insecticidal effect, assessed by standard WHO techniques, remained high four months after IRS. The PMI supported one operations research activity related to IRS that investigated the protective efficacy of a combination of LLINs and IRS (with a non-pyrethroid insecticide) in an area where the vector has a high (~70% kdr) level of pyrethroid resistance. The study found a significant reduction of kdr mutation from 84% to 66% after IRS. These results suggest that the combination of LLIN and IRS with a non-pyrethroid insecticide effectively reduces the number of pyrethroid resistant mosquitoes.

Proposed FY2011 activities: *($3,174,000)*

1. *IRS implementation:*
One round of spraying will be done in Atacora department prior to the peak of transmission in 2012. This round will be the second round of spraying in communes in Atacora department (to be selected in October 2010). The new IRS areas will be identified based on coverage surveys and clinical assessments. The insecticide resistance patterns, notably pyrethroid resistance, will be taken into account in selecting an insecticide. The start period of spraying will be timed such that indoor walls and roofs of targeted structures will retain insecticidal activity during the period of peak transmission, and will be accompanied by appropriate community mobilization and IEC/BCC efforts to ensure acceptance and compliance with IRS. The total number of structures to be sprayed in the north will depend on cost estimates from the IRS implementing partners.

Following the fourth round of spraying in the south in 2010, no additional rounds of IRS will be implemented by PMI in Ouémé. With FY2011 funds, PMI will continue post-IRS activities started with FY10 funds. An IEC/BCC campaign will be conducted to inform the community about the MOH's long-term strategy and, more importantly, to ensure the effective use of ITNs after spraying. A nationwide ITN universal distribution campaign is planned for December 2010. Immediately after that, PMI/Benin and the NMCP will conduct a follow-up survey to verify ITN coverage, distribute additional ITNs in IRS zones if needed to achieve universal coverage levels, and conduct an IEC/BCC campaign to promote correct and consistent ITN use in the IRS zone.

[16] CREC (2008) Rapport PMI/IRS: Impact of Indoor Residual Spraying on Malaria Transmission, CREC, Cotonou.
[17] CREC (2008) Rapport PMI d'étape: Données entomologiques et sociologiques obtenus dans le cadre des activités de recherché en prélude aux opérations de pulvérisation (IRS).

PMI will continue supporting the NMCP entomological and malaria case surveillance system to monitor malaria in the Ouémé-Plateau to detect any malaria rebound. In case of deviation from the norm, PMI will support the NMCP to provide an appropriate response through case management, supervision, ITN distribution and IEC/BCC activities. PMI will also review and support future NMCP proposal(s) for IRS sustainability in Ouémé in accordance with its guidelines. *($2,750,000)*

2. *Support the national malaria vector surveillance program*: Entomological monitoring in the new spray areas, as well as monitoring of previous spray areas in the south. This monitoring includes (1) insecticide resistance surveillance; (2) assessment of IRS insecticide decay rates for LLINs and IRS-treated surfaces; (3) impact of IRS on vector taxonomy, density, behavior; (4). *($375,000)*

3. *Environmental Compliance Monitoring:* Support in FY2011 will be provided to ensure appropriate environmental compliance at IRS sites and to build host-country capacity in Benin for environmental compliance for IRS activities. *($25,000)*

4. *Centers for Disease Control and Prevention* (*CDC*): Technical assistance for vector control activities. One trip will provide support to the net durability study and the other will inform the design and supervision of entomological surveillance being conducted in the north and south of Benin. *($24,000)*

Intermittent preventive treatment of malaria in pregnancy (IPTp)

Background

Intermittent preventive treatment for pregnant women was adopted as a national policy in November 2004 and officially introduced in all 12 departments in Benin during 2005. The protocol consists of two treatment doses with SP during pregnancy. Although the WHO policy recommends a third dose of SP only in areas with an HIV sero-prevalence of over 10%, the NMCP recommends that HIV seropositive women receive a third dose. Intermittent preventive treatment in pregnancy is not recommended for HIV positive women taking cotrimoxazole prophylaxis. Training and roll out at the facility level has been completed.

Antenatal care clinic attendance is high in Benin. The 2006 DHS showed that 88% of women make at least one ANC clinic visit and 84% of women made at least two visits and rates of attendance are higher in urban (93%) than rural (85%) areas. As expected with the high level of multiple ANC visits, pregnant women attend their first ANC clinic visit relatively early, on average at 4.2 months.

According to the 2006 DHS, only 5% of pregnant women reported receiving SP and <1% received two doses of SP during their ANC visits. The low uptake of SP is undoubtedly related to a slow roll out and implementation of the IPTp policy, as well as overuse of SP for treating malarial illnesses and logistic bottlenecks in the drug delivery system. There is however some indication that IPTp uptake is improving with data from a 2008 LQAS household survey[18]

[18] Note that due to methodological concerns, the validity of the results of the survey is in doubt.

showing 35% coverage. With appropriate training and post-training support for midwives and nurses, who together provide 80% of ANC consultations, a steady supply of SP, and modest increases in ANC attendance, the target coverage of 85% could be achieved.

Two SP treatments for IPTp are included in each ANC kit. This kit, provided at a cost of ~$1 also includes iron supplements, folic acid, mebendazole, and one LLIN. Technically, both the SP and LLIN components of this kit are provided free of charge, while the other items in the kit are provided at a minimal cost. In the case that a pregnant woman wants only and LLIN and SP at her visit, these should be provided free of charge. The first SP treatment is delivered at the time that the kit is provided to the client and is administered under direct observation. The second treatment is held at the health facility and is also given under direct observation during a follow up ANC visit, at least one month later.

Progress during last 12 months:

In Year 3 (FY09 funding), PMI provided components for the ANC kits distributed in public and private health clinics in Benin. In addition to the LLINs distributed to women attending ANC clinics, SP was distributed in the kits to pregnant women nationwide. To improve the quality of IPTp services, a total of 1,546 midwives and nurses from both public and private clinics have been trained on focused antenatal care and IPTp. Post-training follow-up supervision visits were completed for 714 of them (57%). The target for 2010 is to train 1,500 more workers. In the last year, 71% of all routine supervision visits were completed, and the hope is to complete 90% of all planned supervision visits in 2010.

Sulfadoxine-pyrimethamine needs for 2011 total one million doses (three tablets per dose for HIV positive pregnant women and two tablets per dose for other pregnant women). In FY09, PMI had planned to procure 800,000 doses of SP, but this was not done because there is currently no gap in SP supplies. PMI will use those funds to purchase the 800,000 doses of SP to cover part of the needs for 2011. 2012 needs will be entirely covered with the quantity that is currently in other partners' pipelines. Although no gaps in SP procurement are expected, delays in procurement should be anticipated because of the long procedures that have to be followed under the government's procurement guidelines.

PMI support has also IEC/BCC activities that are aimed to improve household understanding of the importance of IPTp and so that women who attend ANC are more knowledgeable and more likely to request SP.

Proposed FY2011 activities: *($300,000)*

1. Conduct refresher training of health workers in IPTp: PMI will support refresher training for public and private health facility midwives and nurses. *($300,000*)

2. *Supervise health workers in IPTp to improve quality of services*: PMI will provide support for the supervision of midwives and nurses, in both public and private health facilities, to correctly deliver SP in the context of the focused antenatal care approach. This supervision is part of an integrated approach for supervision at health facilities. (*Costs covered in Case Management Treatment section*.)

3. *Strengthen logistics management for SP*: PMI will provide technical assistance to the CAME to improve supply chain management, forecasting/quantifying, tracking, and storage of SP. Training of CAME staff at all levels (central, regional, and health zone) will be conducted. These activities will be combined with the other support that PMI will provide to improve logistics management (see the Pharmaceutical Management, LLIN and Case Management sections of this document). *(Costs covered in Health Systems Strengthening section)*

4. *IEC/BCC for IPTp*: PMI will support IEC/BCC to promote ANC attendance and educate pregnant women and communities on the benefits of IPTp. This will include support for mass media (including local radio stations) as well as community-level approaches such as training of community-based workers. Immunization outreach sessions will be used as opportunities for educating women. This will be part of a larger integrated IEC/BCC activity to satisfy needs for case management, LLINs, and IPTp. Additional IEC/BCC activities for IPTp are being planned by Africare as part of its Round 3 RCC proposal. *(Costs covered in IEC/BCC section)*

INTERVENTIONS –CASE MANAGEMENT

Diagnosis

Under the NMCP's malaria case-management policy, children under five years of age with a febrile illness should receive presumptive antimalarial treatment, regardless of whether the child is treated in a health facility or a community setting. For this age group, no diagnostic testing is required. For patients five years of age and older, the policy recommends reserving anti-malarials for those with a positive diagnostic test (microscopy or RDT). However, the NMCP plans to revise their malaria diagnostic guidelines. According to the new policy, all suspected cases of malaria need to be confirmed either with RDT or microscopy; even in children less than five years of age. This change in policy will likely lead to an increased demand for RDTs beginning in 2011.

In general, diagnostic testing is being scaled-up at the same time as ACTs. RDTs are to be used throughout the health system and are to be provided free of charge. Although microscopy is supposed to be available in hospitals and larger health facilities, such facilities often lack functional microscopes, and laboratory workers' ability to perform microscopy is likely to be sub-optimal. At the peripheral level, RDTs are often the only diagnostic test available.

With funding from the World Bank Booster Program and PMI, the NMCP is working to improve malaria diagnostics. With PMI support, an assessment was conducted to identify weaknesses and gaps in current malaria laboratory diagnostic services to strengthen training, mentoring and monitoring of laboratory and clinical staff, enhancing quality assurance systems, and guiding policy and implementation strategies.

The NMCP estimates that Benin needs a total of 129 microscopes are needed in Benin to cover departmental hospitals, health zones, and commune health centers through 2015. The need for microscopes is defined by the NMCP as a minimum of two microscopes for every departmental hospital and health zone and one microscope for every commune health center. Purchases of

microscopes planned under PMI with FY08, FY09 and FY10 funds and by the World Bank Booster Program have reduced the gap to 54.

The estimated RDT needs for the public sector in 2010 and 2011 have been estimated at 628,000 and 648,000, respectively[19]. The private sector need is estimated to be about half that of the public sector. As RDTs have only recently been introduced, there are no data on consumption rates, making procurement planning difficult. The GoB, African Development Bank, and the World Bank Booster's Program will be procuring 463,000 RDTs, which will cover needs for the rest of 2010, although delays may occur. Using FY10 funds, PMI will purchase one million RDTs, which will be enough to cover the need for 2011. As stated above, the NMCP will be updating its guidance on malaria diagnostics shortly that will allow of use of RDTs to patients under-five. Under this policy, it is expected that increasing compliance to this new guidance will result in increased use and need for RDTs nationwide. As a result, the estimated need of RDTs for 2012 is just above two million tests. Because the World Bank Malaria Booster Program is ending in 2010 and the current Global Fund grant does not include RDTs, PMI will purchase one million RDTs to cover half of the tests needed for 2012. In the meantime, PMI will continue to advocate for the additional procurements of RDTs through other donors.

The Ministry of Health has committed to use part of the funds generated by the sales of ACTs to buy more ACTs in 2010. Together with contributions from other donors (World Bank and Africa Development Bank), it is expected that the 940,320 ACTs treatments needed (as indicated in the 2010 country procurement pipeline) will be covered. The PMI Benin team will continue to monitor the supply chain and track changes in the procurement situation.

The same antimalarial supply chain pipeline shows a gap of 1.2 million ACTs for 2011. The Global Fund will cover all ACT treatments needed for children under-five in the next five years under the Round 3 Rolling Continuation Channel grant to Africare.

Gap analyses of the needs for all antimalarials and RDTs for calendar years 2010-2012 are tabulated below.

Table C: Gap analyses for antimalarial commodities for Calendar Year (CY) 2010

Items	**Total Quantity needed in CY 2010**[20]	**Contributions**[21]						**Total Available**	**Current Gap for calendar year 2010**
		PMI (FY 09 funds)	**GFATM**	**UNICEF**	**World Bank Booster**	**GoB**	**African Development Bank**		
AL, 6x1	**2,889,478**	384,150	2,487,808	17,520				2,889,478	**0**

[19] The assumptions are: 1) patients 5 years of age and older with an uncomplicated febrile illness are seen at outpatient facilities without microscopy (and thus should be tested with an RDT), and 2) only 25% of patients with severe malaria (all ages) are tested with an RDT because most severe cases are seen at hospitals with microscopy.
[20] Data source: Pipeline Software updated with distribution data from 34 health zones. Distribution data adjusted to obtain consumption data at facility level, with the assumption that estimates of 80 % of quantities distributed by health zones are effectively used in health facilities to treat patients. 15 % of quantities represent the stock at hand in health facilities, and 5% losses, and misuse (pilferage, theft, damages, of commodities)
[21] From documents and information communicated during meetings. Most of partners have not yet communicated their contributions to commodities needs for calendar years 2011 and 2012.

AL, 6x2	**956,460**	291,420		17,520	200,160			509,100	**447,360**
AL, 6x3	**323,360**	123,360			150,000	50,000		323,360	**0**
AL, 6x4	**1,257,990**	414,870			150,000	200,160		765,030	**492,960**
RDTs	**457,000**							**463,000**	**0**
SP	**939,492**	800,000						800,000	**139,342**
Quinine kits	**TBD**								**0**
Artesunate suppositories	**TBD**	180,000						180,000	**0**

Table D: Gap analyses for antimalarial commodities for 2011

Items	**Total quantity needed in 2011**	**Contributions**						**Total available**	**Current Gap for 2011**
		PMI (FY10 funds)	**GFATM**	**UNI CEF**	**World Bank Booster**	**GoB**	**PADS**		
AL, 6x1	**1,343,520**		1,343,520					1,343,520	**0**
AL, 6x2	**224,160**								**224,160**
AL, 6x3	**180,960**								**180,960**
AL, 6x4	**808,320**								**808,320**
RDTs	**1,000,000**	1,000,000						1,000,000	**0**
SP, doses	**900,000**	1,900,000				800,000		2,700,000	1,800,000 surplus to cover needs in CY 2012
Quinine kits	**TBD**	17,462							
Artesunate suppositories	**TBD**							0	

Table E: Gap analyses for antimalarial commodities for 2012

Items	**Total Quantity needed in 2012**	**Contributions**						**Total available**	**Current Gap for 2011**
		PMI (FY11 funds)	**GFATM**	**UNI CEF**	**World Bank Booster**	**GoB**	**PADS**		
AL, 6x1	833,760		833,760					833,760	**0**
AL, 6x2	486,720								**486,720**
AL, 6x3	149,760								**149,760**
AL, 6x4	594,240								**594,240**

RDTs[22]	2,064,480	1,000,000						1,000,000	**1,064,480**
SP, doses	1,000,000 (less 1,700,000 carried over from previous year)							1,000,000	700,000 surplus to cover part of needs in CY 2013
Quinine kits	**TBD**								
Artesunate suppositories	**TBD**							0	

Progress during the last 12 months:

During June 2009, 12 laboratory and 12 clinical supervisors from all 12 departments of Benin were trained and are serving as national trainers and supervisors for malaria diagnostics in 60 selected health facilities. Five rounds of outreach training and supervision were planned in August 2009, and in January, April, August, and November 2010. Of these, three rounds of supervision have been completed. In addition a supervision checklist was developed, and new registers for data collection have been distributed. The NMCP and the National Laboratory Directorate plan to revise and to validate this in September so that it becomes a national tool to be disseminated to health facilities nationwide. The key findings from the first and second training and supervisory visits show progress in the following areas: (1) preparation of blood slides, (2) recording data, (3) slide examination, (4) parasite counting, (5) availability of standard operating procedure, (6) RDT use, (7) quality assurance/quality control protocol for blood slides, and microscopy storage and use. Despite this progress, assessments by PMI's diagnostics partner indicate that 30% (16/60) of health facilities are still prescribing antimalarial drugs to patients who have a negative RDT or microscopy result. PMI will continue to support the NMCP and the National Laboratory Directorate to improve confidence among health professionals in diagnostic testing and the appropriate use of those results when prescribing.

The PMI purchased an additional 15 microscopes with FY09 funds bringing the total number of microscopes purchased by PMI to 45. In collaboration with PMI implementing partners, the NMCP has developed a distribution plan for the deployment of this second batch of microscopes among health facilities.

Proposed FY2011 Activities *($1,250,000)*

[22] RDT estimates were based on:

i) Historical consumption data (Data source: Pipeline Software updated with distribution data from 34 health zones. Distribution data adjusted to obtain consumption data at facility level, with the assumption that estimates of 80% of quantities distributed by health zones are effectively used in health facilities to treat patients. 15 % of quantities represent the stock at hand in health facilities, and 5% losses, and misuse (pilferage, theft, damages, of commodities)

ii) Current stock on hand;

iii) Anticipated consumption increase after extension of RDT use to children under-five, for whom the new guidelines recommend RDT usage.

1. *Procure 1,000,000 RDTs:* The estimated need for RDTs for calendar year 2012 is just over two million RDTs. Given a large procurement of RDTs with FY10 funding, the PMI Benin team plans to cover roughly half these needs, assuming that the National Program and the Global Fund will step forward to fill the remaining gap. *($750,000)*

2. Validation and dissemination of new diagnostic algorithm: Support consensus building, development of materials (job aids, etc.), and the dissemination of a new diagnostic algorithm. *($100,000)*

3. *Comprehensive diagnostic strengthening*: This activity will include the development of standard operating procedures, maintenance of microscopes, training, procurement of reagents, and quality control of slides/RDTs. To conduct diagnostic quality control, PMI's implementing partner will participate in supply chain management design and implementation in order to ensure good condition, storage and transportation of laboratory commodities, including RDTs. In the event of positive or negative false testing results, PMI will attempt to determine their cause. Under this activity, implementing partners will also conduct regular comparisons between microscopy and RDTs, and advise the NMCP in case of discrepancies. *($400,000)*

Treatment

Background

Uncomplicated malaria

The first-line treatment for uncomplicated malaria in Benin is artemether-lumefantrine (AL, or Coartem®). Artesunate-amodiaquine (AS-AQ, Arsucam®) is recommended for patients under six months of age, for those who cannot tolerate AL, and when AL is not available. Children under-five with a febrile illness should receive presumptive antimalarial treatment, with no testing required under the national policy. Additionally, IMCI guidelines state that under-fives with anemia should be treated with an antimalarial.

The ACT policy was rolled out at the national level in August 2008. Artemisinin-based combination therapies are available in the regional and health zone warehouses throughout the country and health staff has been trained primarily with World Bank Booster Program funding. Although AS/AQ is the second-line treatment for uncomplicated malaria, it is not prescribed nor frequently ordered by health workers. The latest sentinel site surveillance quarterly report found an average stock out rate of 80% of ACTs; however, as of April 30, 2010; 200,000 doses of AS/AQ were sitting in storage depots unclaimed.

Under a cost recovery scheme, AL is sold to patients in public health facilities. Blister packs of 6, 12, 18, and 24 tablets are sold for 150CFA [~ $0.33], 300CFA [~ $0.66], 450CFA [~ $1.00], and 600CFA [~ $1.33], respectively. The PMI Benin Team has led efforts to advocate for a policy change on the use of proceeds from ACT sales. As a result, while the final cost to patients has remained the same, Health Zone depots and health facilities are now allowed to keep part of the proceeds from ACT sales. For the sale of a 24 blister pack of AL, the patient pays 600CFA (~ $1.2), of which two-thirds is deposited in a bank account and one third is shared among the Health Zone depot and health facilities. The one third retained by the health facility and health zone is authorized to cover the management costs associated with the transport, storage and

distribution of ACTs. Since the policy became effective in October 2009, an increase in the use of ACTs has occurred. Futhermore, USAID and PMI are pushing the MoH to align the management of ACTs to that of other essential medicines. At the request of the MoH, the NMCP and CAME are now working with support from PMI team to design a revised system of how commodities and user fees flow between health facilities, Health Zone depots and the CAME. The revised money flow will allow a unique bank account at the central level, where proceeds from the sales of ACTs will be deposited and used to renew stocks of antimalarial commodities. Although ACTs are available in some private pharmacies, they are expensive and not affordable to most residents. As a result, a scale-up strategy in the private sector is being formulated by the NMCP.

Severe malaria

The NMCP's policy recommends treating severe malaria with quinine. Injectable artesunate or artesunate suppositories are recommended for the pre-referral treatment of severe malaria. For pregnant women, all malaria cases are considered severe, and the recommended treatment is quinine. Severely ill cases identified in peripheral outpatient health facilities should be referred to a larger health facility with inpatient facilities. In practice, the management of severe malaria in Benin has been difficult. Compliance to treatment guidelines by health care workers is poor, and it is difficult to predict annual consumption rates. Therefore, the PMI team plans to monitor stocks of severe malaria drugs and make necessary adjustments in the budget[23]. PMI will also provide training and supervision of healthcare workers for severe malaria.

Progress during the last 12 months:

For the management of uncomplicated malaria, the NMCP used World Bank funds to train health workers on the ACT policy in all public health facilities. In the last 12 months, PMI has procured two shipments of AL: 215,000 treatments with FY09 funds and a second order of one million treatments with a combination of FY09 and FY10 funds. These ACTs are in the process of being distributed to health facilities throughout the country. To complement these activities, PMI funds were used to train 113 supervisors in formative supervision for case management. A total of 3,064 supervision visits were planned (including visits to 34 private clinics) in all 34 health districts, 71% of which were completed. However, despite these efforts, there is still a need for supportive supervision and training of health workers to ensure the appropriate use of malaria drugs, including severe and uncomplicated malaria and an understanding of the use of pre-referral drugs at lower-level heath facilities. The existing policies and guidelines also need to be updated and disseminated.

Proposed FY2011 Activities *($ 3,650,000)*

1. *Procure ACTs*: Procure 1.2 million ACT treatments for older children (5+ years) and adults (blister packs 12, 18, and 24). *($2,000,000)*

Estimated Cost of ACTs

Item	Unit Cost[24]	Quantity	Total
AL, 6x2, tablets	$ 0.94	224,160	$210,710

[24] From PMI Guidance Part A, January, 2010 updates, costing assumptions, page 28

AL, 6x3, tablets	$ 1.41	180,960	$255,154
AL, 6x4, tablets	$ 1.78	808,320	$1,430,810
Estimates for in-country distribution cost (~ 5%)			$95,233
Total		**1,213,000**	**$1,999,904**

2. *Supervise and support health workers to follow case management and prevention guidelines:* Support supervisory visits, as part of a comprehensive quality assurance approach, to ensure high quality malaria case management with ACTs, focused ANC (which includes IPTp and ITN distribution), and the distribution of ITNs during routine immunization clinics. The quality assurance and quality improvement component of this activity will include improvement at the health facility level, as well as community involvement in health and oversight in health center management. The system, which will be coordinated with the MOH, will incorporate training of supervisors (including those responsible for supervising the CHWs that distribute ACTs), developing practical tools, supporting travel, conducting on-the-job observation and training, monitoring, and promoting correct use of diagnostic results. The training will also reinforce appropriate treatment, providing feedback, collecting, analyzing and using data to improve planning and training, motivating supervisors and supervisees, and will instruct supervisors to implement changes identified during supervision. The focus of supervision will be at the health facility, as the rollout of CHW programs is being covered by the Global Fund and through community-based PMI implementing partners. Technical experts from the MOH and PMI will provide oversight for this activity. The key goals are to: (1) provide supervision to at least 90% of health workers nationwide with malaria-related responsibilities at least once every three months, (2) ensure that at least 90% of patients needing malaria testing are tested, (3) ensure that at least 90% of patients (all ages) needing an antimalarial receive an effective antimalarial, and (4) ensure that at least 90% of patients (all ages) not needing an antimalarial do not receive an antimalarial. Progress in reaching each of these four goals will be quantitatively monitored and reported every three to six months. These activities will be evaluated with monitoring data (based on supervisors' reports), health facility surveys, and the End-Use Verification Tool, which will be used quarterly. *($700,000)*

3. *Severe malaria training and equipment*: Training of health workers on the management of severe malaria, procurement of resuscitation equipment, and other related supplies. *($400,000)*

4. *IMCI training*: Support in-service training of health workers in IMCI, including the printing and dissemination of specialized IMCI patient registers. *($250,000)*

5. *Training and registration of private sector providers*: Roughly 60% of malaria patients use private sector services, most of which are not acknowledged by the NMCP. PMI/Benin's current targets will not be reached without involving the private sector as close collaborators, or at least ensuring they use NMCP protocols. During the 24-month period between 2008 and 2010, health services were unavailable to the public due to MOH strikes and demonstrations for an estimated total of three months. When such events occur, the private sector is the only recourse for basic health services to be delivered to Beninese mothers and children.

As a result, PMI will promote accreditation and registration of private sector providers to bring them into the realm of legally recognized providers, training, and establishment of a network or association. Training of private drug sellers will be administered through professional

associations and organized groups. Experience in other PMI countries such as Ghana and Tanzania will be used to develop the best approaches for this activity. *($250,000)*

6. *Therapeutic efficacy testing*: Support *in vivo* efficacy testing of ACTs. *($50,000)*

INTEGRATION WITH OTHER GHI PROGRAMS

Health facility-based Integration

Background

Benin's health sector is organized according to the tenets of primary health care with three levels: central, intermediate, and operational levels. At the operational level, an integrated package of services is offered by a limited number of health workers. A recent assessment of Benin's national health information system identified the lack of coordination among stakeholders, resulting in the development of parallel and competing systems, as being an important cause of poor performance. To reduce these issues, PMI Benin, within the USAID's family health team, is strategically integrated with other USG health programs—particularly maternal and child health. Multiple funding sources managed by USAID's family health program contribute to clinical IMCI training and the procurement and distribution of antenatal care (ANC) kits. This kit, provided at a cost of ~$1 to pregnant women at their first ANC visit, also includes iron supplements, folic acid, mebendazole, two treatments of SP, and one LLIN. USAID funded trainings are also designed to integrate standard packages of services to be provided to patients (i.e. clinical IMCI, integrated ANC).

Proposed FY2011 Activity: ($250,000)

1. *Integration of EPI, ANC, PMTCT and malaria registers at the facility level:* The collection and reporting of health data is the most important burden to health workers due to vertical programs. With FY11 funds, PMI will lead the development, printing, and dissemination of harmonized and integrated ANC, PMTCT, EPI and malaria M&E tools in health facilities. This will reduce the number of registers that health workers are required to complete from three or four to only one. ($250,000).

Other integrated facility–based activities are included in the relevant sections (IPTp, LLIN, IEC/BCC, pharmaceutical management, etc).

Integration at the community level:

Background

The MOH is committed to community-based integrated health programming. When the initial community-based case management activity was being designed, the PMI team worked with maternal and child health colleagues from USAID to co-fund an integrated package of interventions, including case management of malaria, diarrhea and pneumonia, along with health promotion activities for immunization at the community level.

In 2009, the NMCP finalized National Directives for Community and Home-Based Management of Malaria[25], which approved the distribution of and treatment of malaria with ACTs at the community level. As a result of advocacy efforts by USAID/PMI implementing partners, the MoH has also agreed to allow the use of antibiotics for the treatment of childhood pneumonia at the community level. At present, the NMCP strategy does not approve use of RDTs at this level; however, the national diagnostic policy will likely change soon.

Community case management activities in Benin currently involve a wide range of partners including USAID/PMI, Africare, UNICEF, Catholic Relief Services, other international and local NGOs, and a number of community- and faith-based organizations (CBOs and FBOs). Most community-based treatment programs in the country select CHWs with village input, after which these elected individuals may be formally linked to either a *arrondisement*-level health center or a commune-level health center. Certain programs elect CHWs through existing local women's groups and manage community-case management activities through these networks.

The Global Fund Round 7 grant, for which Catholic Relief Services is the Principal Recipient, began conducting community-based case management activities in 14 health zones in July 2008 and is being implemented in collaboration with Plan Benin, Medical Care Development International, Africare and Caritas Benin. Along with funds from Round 7, the recently signed RCC for Africare plans to extend community and home-based management of uncomplicated malaria nationwide.

There has been and will continue to be significant cost-sharing between PMI and MCH portfolios due to the common target groups of mothers and children under-five. PMI FY11 funding allocated to interventions focused on mothers and children under-five totals $5,150,000. USAID/Benin's budget for MCH in FY10 is $4,900,000, which is expected to be maintained in FY11. Forty five percent of MCH funding ($2,205,000) will fund integrated activities with PMI, which is in line with the proportion of morbidity and mortality associated with malaria in Benin and consistent with GHI principles.

Progress during the last 12 months:

PMI/USAID's community-based program will implement activities through July 2012 in five health zones in two departments, which were selected in collaboration with the NMCP and Directorate of Family Health. In a coordinated fashion, PMI, Africare, CRS, and UNICEF have worked to standardize approaches. As a result, in the five Health Zones where PMI/USAID is working, PMI/USAID will cover three health zones with a complete package of integrated community-based health services for children under-five. In the two remaining health zones, joint implementation between Africare and USAID will take place, with Africare covering the malaria portion of the package and USAID/MCH funding covering the treatment of pneumonia and diarrhea. At the end of PMI/USAID's community-based project in 2012, Africare will continue the work of USAID's implementing partners in the three health zones where the integrated package was originally rolled out.

[25] *Directives nationales pour la prise en charge du paludisme au niveau communautaire et à domicile au Bénin selon la nouvelle politique*, NMCP 2009

Proposed FY2011 activity: *(fully funded with resources from FY08-FY10)*

1. *Support implementation of community-based child health interventions by NGOs/FBOs*: With FY2011 funding, PMI will continue to support AL distribution for children under five by CHWs in three health zones identified by the NMCP as having low access to health services and high child mortality rates. This activity also includes co-financed activities with USAID/MCH for delivery of oral rehydration salts, zinc, and antibiotics. The PMI will develop guidelines, train and supervise CHWs, develop innovative methods to motivate CHWs, and support the commodity distribution system. Activities will be implemented by NGOs/FBOs under sub-agreements with a lead agency. Results of the activities in these health zones will be closely monitored and documented.

CAPACITY BUILDING AND HEALTH SYSTEMS STRENGTHENING

Together with the NMCP, PMI Benin has identified three major problems in the health system impeding PMI implementation: 1) NMCP lacks adequate capacity to plan, manage and coordinate a comprehensive malaria program; 2) the health information system is inefficient; and 3) the management of the health commodities supply chain is also weak, resulting in pilfering, stock-outs, and expiration of drugs. With these priorities in mind, the PMI will work in close collaboration with the government of Benin and other stakeholders (WHO, the Global Fund, UNICEF, bilateral partners, and NGOs) to reduce barriers that constrain the delivery of malaria control interventions. Under the GHI principle of strengthening health systems and integrating health programs, the interventions of PMI are intended to have positive spill-over effects for other maternal and child health programs.

Capacity Building

Background/Progress during the last 12 Months:

The PMI supported an organizational audit of the NMCP, for which the final report highlights a number of organizational and operational issues. In collaboration with other donors, PMI will use FY10 funding to support implementation of the necessary reforms.

In the coming months, PMI will work with the NMCP to prioritize key gaps in staff profiles, the schedule for necessary training, the timing and location of training programs, and the necessary budget to carry out key audit recommendations. Organizational gaps outlined by the NMCP Coordinator include: team building; English language acquisition; program management, focusing on planning, supervision, and problem-solving; communications; M&E; proposal-writing; financial transparency; supply chain management; and research design and implementation. The PMI team has also observed the need for different donors to harmonize their budgets for NMCP capacity building. As a result, PMI/Benin needs to engage with the two Global Fund PRs, Catholic Relief Services and Africare, in an ongoing dialogue on capacity building to ensure complementary approaches and budgeting. Capacity building under the soon-to-end Booster Project of the World Bank was extensive, but was neither deep enough nor focused on the NMCP.

The PMI has seconded technical staff to the NMCP to improve pharmaceutical management programming. This advisor will build capacity at the national level to improve planning and supply chain monitoring capabilities and will also support planning for the universal coverage campaign planned in December 2010.

In response to human resource challenges, PMI is investing in the training and supervision of health workers and in the strengthening of a supply chain management system for essential drugs and equipment, in addition to procurement and distribution of antimalarial drugs and diagnostics. The Ministry of Health has also recently developed a strategy document, the National Medical Development Plan 2009 – 2018, the objective of which is to reinforce the overall health system, with a focus on addressing key weaknesses identified during a health system situational analysis and finding external partners and resources to alleviate them.

Proposed FY2011 Activities: *($554,000)*

1. Capacity Building of the National Health System: The current curricula in Benin's health worker training schools are not up-to-date on malaria. There is little state-of-the-art information on malaria diagnostics, case management and public health approaches. Internet access in the two medical schools is insufficient, their libraries have few books on malaria and endemic infectious diseases, and those they do have are out of date. Professors, used by the MOH for policy and strategy development, also need access to better information by which to develop up-to-date policy documents. With FY2011 funding, PMI will provide support to national teaching schools to revise training curriculums, purchase lab equipment, and improve written source materials. Resources will be primarily devoted to malaria-related subjects, but may also include computers that can be available for other training. *($250,000)*

2. *Capacity Building of the NMCP:* Using FY2011 resources, the PMI will also continue support for the implementation of recommendations from the organizational audit conducted at NMCP. PMI implementing partners will develop an action plan to address the key weaknesses identified and follow up implementation of the plan in collaboration with other partners. PMI will provide support for the staff training plan that will be developed. *($254,000)*

3. *Quality Assurance Officer:* PMI will provide support to the NMCP to build capacity in quality assurance/control and coordination of supervision. A seconded quality assurance officer will coordinate and assure the quality of supervision and implementation of other quality improvement activities (such as coaching, mentoring, peer review and sharing). This position will be supported by PMI on a time-limited basis. *($50,000)*

Health Systems Strengthening

Background

Many donors are working through various streams to strengthen the Benin health system. The Ministry of Health is a principal recipient under a Round 9 Global Fund proposal that includes a health systems strengthening (HSS) component[26]. The African Development Bank has been

[26] Grant not yet signed. Board approved grant amount is US$ 53,766,934, of which $ 43,7 million is for health system strengthening specific activities

implementing a project to strengthen the health system in three departments (Zou, Donga and Borgou), and the Global Alliance for Vaccines and Immunization (GAVI) is conducting a three-year project focusing on neonatal care and immunization. The World Bank is also supporting a $22.8 million project to increase the coverage of quality maternal and neonatal health services in eight districts[27] in Benin.

The efforts of the PMI will complement these activities. While working with other stakeholders, PMI will focus its attention on specific areas with major blockages to scaling up of malaria control. These include:

- building capacities of the NMCP;
- improving the quality of diagnostic testing and case management of malaria;
- integrating malaria activities within MCH services, including IMCI;
- supporting pharmaceutical and supply chain management;
- strengthening monitoring and evaluation system; and
- supporting policy changes.

Progress during the last 12 months:

In addition to supporting annual training on integrated management of childhood illness at the health facility level, PMI has focused attention on strengthening Benin's supply chain management. One of the major achievements in the last 12 months has been the legal reform of the Central Medical Stores (CAME) and implementation of activities in the action plan developed from a December 2008 assessment. PMI supported the development of new by-laws, approved by the ministerial council in January 2010, and the upgrade of its information system. The reforms are intended to improve governance and the transparency of operations at CAME.

While leading coordination with other donors to help complete these reforms, USAID negotiated an interim distribution mechanism for PMI-funded commodities with the GoB. Use of this temporary mechanism is to i) protect PMI commodities, especially drugs, from expiration at the Central Medical Stores; ii) improve the availability of commodities at health facilities; iii) improve management transparency and reporting, and iv) ensure evidence-based decision making on stock management. This interim mechanism will be phased out at the end of 2010, at which point PMI will resume using CAME to dispatch commodities to health facilities.

Alongside the CAME reforms process, the PMI also worked with partners on an emergency roll-out of ACTs to health facilities, both public and private, and averted expiration of ~ 400,000 doses of Coartem. PMI also assisted with the creation of a technical working group, hosted by the NMCP and including all the major donors supporting malaria activities in Benin, including Africare, CRS, UNICEF, the World Bank, ADB and PMI implementing partners. This working group meets every two months to review and monitor drug consumption, and update a joint procurement plan. To further avoid stock-outs and/or expiries, the PMI has also worked with the

[27] *The eight districts are: (i)Adjohoun-Bonou-Dangbo; (ii) Covè-Ouinhi-Zangnanado; (iii) Kouandé-Ouassa-Pehunco-Kerou ; (iv) Lokossa-Attiémé ; (v) Bohicon-Zakpota-Zogbodomey ; (vi) Banikoara ; (vii) Ouidah-Kpomasse-Tori Bossito ; and (viii) Porto Novo-Aguegue-Seme Podji.*

NMCP to support health zones to improve storage of commodities. Staff members in all 34 health zones were trained in the use of commodities management software, Medistock.

Additionally, the PMI has supported policy change, including revision of the essential medicines list to include ACTs and the revision of guidelines for the pricing of malaria commodities. With PMI support, the MoH has authorized facility-level and health zone depots to use some of the profits from user fees to cover management expenses. The PMI continues to lead discussions with the MoH, NMCP and CAME to create a system whereby the proceeds from ACT drug sales will finance drug procurement and contribute to antimalarial commodity security in Benin.

Finally, PMI helped also the NMCP to develop a framework to distribute donor-funded malaria commodities to private health clinics beginning with a group of faith-based International Planned Parenthood Federation (IPPF) affiliate clinics.

Proposed FY2011 Activities: *($1,700,000)*

1. Strengthening pharmaceutical and supply chain management of anti-malarial commodities: The PMI will continue to support collaboration among stakeholders, including the NMCP, program managers, donors and recipients, to quantify the commodities needed to meet short- and long-term program goals. Training, mentoring and sharing of best practices will help improve forecasting and procurement planning by the NMCP, managers and recipients. Main interventions will include strengthening the national logistics management information system, training, development of standard operating procedures for the management of health commodities at all levels, and technical assistance in supply chain management from the central level down to health facilities. The PMI will also continue to work with other donors to improve the drug management capacity of staff within the 34 health zone depots.

Part of FY11 funding will also be dedicated to support the GoB's pharmacovigilance strategy and provide support to the Ministry of Health to develop and implement its strategy against illicit sales of drugs and anti-malarial drugs in particular. Although ACTs are globally safe, Benin has documented examples of drug trafficking. If the population is not sufficiently warned about substandard products and their presence in informal markets, confusion between the good and bad drugs could have negative effects on malaria control. *($1,200,000)*

2. *Strengthening the health management information system:* With FY11 funds, PMI will extend support to strengthen procedures and indicators for malaria in the national health management information system alongside strengthening of the HMIS as a whole. The proposed goal of this activity is to enable 80% of public and private health facilities and community-level actors to accurately report health indicators. The number of malaria indicators will be eventually reduced from the current 20 to allow the inclusion of other indicators related to other diseases, while retaining priority for PMI/RBM indicators. In addition to revising the national HMIS indicators and tools for data collection, analysis and reporting, PMI will also develop standard operating procedures and manuals; address gaps in computer and internet equipment and software for health zones and targeted health facilities; print paper-based data collection tools for health facilities; and create incentives for data quality, use, and transmission. *($500,000)*

BEHAVIOR CHANGE COMMUNICATION

Background:

In 2006, the NMCP drafted a National Malaria IEC/BCC Strategy with technical assistance from the WHO. This document was designed to be an integrated communication plan that would standardize messages and tools for all partners working on malaria in Benin. Until recently, the NMCP had no IEC/BCC point person.

PMI has supported the establishment a National Malaria Communications Working Group *(Groupe Technique de Travail en Communication)*, which receives routine technical assistance from a number of PMI implementing partners. The group is responsible for reviewing the technical content of all IEC/BCC messages pertaining to malaria. It held its first meeting in December 2008 and is scheduled to meet on a quarterly basis. Members of the group include the NMCP, USAID/PMI, Research Triangle Institute , URC/PISAF, Africare, CRS, PSI, the World Bank, WHO, UNICEF, and the Peace Corps. The NMCP included key IEC priorities in its 2010 integrated plan, which has been used to prepare monthly and quarterly plans for all activities.

Over the past five years, the Global Fund Round 3 grant to Africare has also supported malaria messaging at the community level through organized social mobilization campaigns, support to women's animation groups, and training of CHWs in BCC. The RCC for Round Three ($100 million) includes a significant IEC/BCC component, which will encourage prompt treatment for febrile children at the community level, timely referral of severe malaria cases, and use of ANC to increase IPTp uptake among pregnant women. PMI will support a survey in late 2010 to assess the effectiveness of communication efforts.

Progress during the last 12 months:

In 2010, PMI supported IEC/BCC activities reaching 166,000 people via a broad range of approaches. Through its IEC/BCC implementing partner, PMI has established contracts with 13 NGOs, as well as trained 46 NGO presenters, 60 CHWs, and 825 women's group leaders on malaria prevention and control. PMI has communicated the importance of LLIN use, care-seeking and treatment with ACTs, and early arrival at ANC through the production and dissemination of 3000 posters, and the broadcast of 19,745 radio spots and 824 TV segments in major urban areas. In rural areas, PMI also supported three social mobilization events, including sketches and other performances, which were carried out in front of ~12,000 people.

For IEC/BCC related to IRS, PMI supports the recruitment of IEC mobilizers, selected by village leaders, who are trained on IRS and responsible for social mobilization in their village. In 2009-2010, PMI supported the recruitment and training of 253 community mobilizers (123 female and 130 male), who performed door-to-door visits to all IRS targeted houses, distributed leaflets, and informed community members about the benefits of IRS, as well as the precautions to be taken before, during, and after spraying. The PMI also supported sub-contracts to five community radios that broadcast information on IRS, which included radio spots, shows, and skits.

Proposed FY2011 activities: *($1,500,000)*

1. Support household visits and group education visits to promote net use and malaria prevention through NGO contracts and CHWs: To promote the hang-up, use, and maintenance of over five million bed-nets being distributed through the universal coverage campaign in late 2010, the PMI will continue to employ a multi-pronged approach to behavior change. In peri-urban areas, PMI will contract with local NGOs with experience in BCC to conduct net promotion activities. In areas where CHWs are being trained to treat malaria, PMI will utilize these community agents to conduct household visits and follow-up activities. With four million nets planned to be distributed through the universal coverage campaign, this activity represents only $0.25 per net, which is a necessary investment to make sure that all nets distributed are hung and used appropriately. *($1,000,000)*

2. Support BCC efforts related to appropriate careseeking and treatment: ($500,000)
Results from the 2009 health facility survey, as well the baseline 2006 DHS indicate that children with fever are brought late to health facilities and do not receive an ACT. PMI will work with partners to target caregivers and providers, intensifying messages surrounding prompt and effective treatment, with the goal of improving the uptake of ACTs at both the facility and community level. Continued IEC/BCC around care-seeking is also needed due to the availability of questionable drugs in public markets, ongoing high levels of self-medication, and use of unaccredited private facilities in Benin. Informal and unregulated private sectors allow for prescribing unauthorized antimalarials, as well as incorrect use of ACTs through practices such as cutting blister packs, selling smaller dosages than required. Strong communication programming is needed to fight these practices and ensure that people not only seek care, but receive proper treatment for malaria. *($500,000)*

3. IEC/BCC for IRS (costs covered in IRS section): PMI is shifting IRS sites from the south of Benin to the north in FY10. Alongside house-to-house bed-net distribution in Ouémé plateau, PMI will fund household visits to promote year-round net use in the south, with the goal of preventing an increase in malaria and minimizing adverse community reactions regarding the movement of spray sites. In new spray areas, the PMI will continue to support IEC/BCC for IRS to inform beneficiaries about the positive benefits of IRS in controlling and preventing malaria; the environmental and safety issues related to the use of insecticide for IRS; and the importance of continuing to use bed nets year-round. In these areas, PMI will support training of IEC mobilizers identified in collaboration with local physicians, heads of health posts, mayors, and village leaders.

COMMUNICATION AND COORDINATION WITH OTHER PARTNERS

Background

Malaria stakeholders in Benin represent government, civil society, the private sector, academia and external donors. The NMCP, a unit of the National Directorate for Health Protection (*Direction Nationale pour la Protection Sanitaire*), coordinates and oversees the country's malaria program and policy. Various civil society organizations act as implementing partners, especially at the community level and in remote areas where the MOH has no presence. The role of academic institutions is to provide technical assistance and training in different areas of expertise. The private sector is represented by private clinics, individual service providers,

commercial establishments and vendors of goods and services that are used in malaria programs. External donors include the USG, World Bank, Global Fund, and others.

Progress during the last 12 months

The large number of stakeholders requires major efforts at communications and coordination. Different donors have financial cycles that do not coincide with the NMCP's annual calendar and delays in the release of funds from some donors have been a problem. In light of delays, PMI/Benin attempts to be both flexible and responsive. In March 2010, when ACTs planned by the other partners were still being ordered and their arrival was delayed, the NMCP requested PMI/Benin to arrange for an emergency purchase of ACTs to avoid a projected stock-out during the rainy season. The shipments arrived during the third week of June 2010 and avoided a national stock-out of ACTs during the peak of the transmission season.

A variety of mechanisms for communication and coordination on malaria issues exist in Benin:

- *The NMCP***.** The NMCP is the designated hub for coordination of malaria activities in Benin. There are three functional Technical Working Groups that have met regularly over the past year to achieve a consensus on technical issues: M&E, communication, and supply chain management. Different stakeholders volunteer their time in the different working groups, based on their expertise.

  The NMCP holds an annual workshop to harmonize the plans of the different stakeholders. This leads to the publication of the integrated annual work plan, which guides all stakeholders in their coordination of malaria activities. In spite of this, additional efforts will be needed to maximize the use of this document. Another activity that promises to result in better coordination in the future is the ongoing NMCP five-year review. Entirely participatory, but with external facilitation, the review is expected to lead to a new five-year Strategic Plan owned by all malaria stakeholders.

- *Roll Back Malaria Network.* The NMCP acts as the convener of the RBM Network in Benin. The NMCP Coordinator is the Chair, and the WHO Malaria Advisor is the Co-chair. Meetings are held monthly and are well-attended. All stakeholders present are given the opportunity to report on their malaria activities during the previous month. This local RBM network is closely linked to the West Africa RBM Network and the global RBM Network based in Geneva.

- *The Country Coordinating Mechanism (CCM) of the Global Fund.* The CCM is designated to shepherd proposals to the Global Fund Secretariat in Geneva and provide oversight to the successful achievement of objectives of approved proposals. USAID/PMI sits as a permanent member of Benin's CCM, and is actively involved in the Malaria Working Group of the CCM.

- *The Partenaires Techniques et Financiers (PTF).* The members of this group comprise the external donor community to Benin's health sector (with the exception of China). While their interests may not necessarily focus on malaria, the group has been very supportive of health program-related reforms, such as what PMI/Benin has supported at

CAME. The Minister of Health recognizes this group as a channel for the dissemination of policy changes in the government as they relate to health programs and initiatives.

- *The Malaria Operational Planning (MOP) exercise.* The week-long annual visit of colleagues from CDC/Atlanta and PMI/Washington is an excellent reason for sharing information, lessons learned and experiences with all malaria partners participating.

MONITORING AND EVALUATION

Background

The NMCP created a national M&E plan[28] in December 2006. The plan's strategy includes a multi-institutional M&E Technical Working Group, monitoring of programmatic process indicators, periodic evaluations, and epidemiologic surveillance. After five years of implementing the National M&E plan, Benin has three main sources of malaria information: 1) household and health facility surveys, 2) malaria surveillance data, and 3) the HMIS. Each of these data sources is being supported and strengthened by PMI, but further work is needed to ensure timely and reliable data for malaria program monitoring.

National surveys provide the most reliable data to date. The 2006 DHS included all-cause child mortality, anemia, and the standard malaria module. The next DHS is planned for 2011. To maximize its value for evaluating malaria control activities, the survey will measure *Plasmodium falciparum* prevalence and child mortality with an increased sample size. An LQAS survey, conducted by the NMCP and funded by the World Bank, was designed to evaluate the October 2007 national LLIN distribution campaign. The survey is a potential source for tracking household indicators between the 2006 and 2011 DHS.

The MOH, World Bank Booster Malaria Program, and PMI jointly conducted an outpatient health facility survey in November–December 2009 to assess the readiness of health facilities to manage malaria, the availability of anti-malarials and diagnostic equipment, and the quality of malaria case management, the laboratory, and at ANC clinics. The same group of stakeholders also supported a pilot inpatient survey in July 2010. In addition to addressing the issues above, the health facility survey collected data necessary for PMI's end-use verification process.

Malaria sentinel surveillance was initiated by WHO in six health zones in 2001; however, by 2007, surveillance activities at these sites had almost ceased to exist. In 2008, PMI and the World Bank Booster Program revived malaria surveillance after Benin became a PMI focus country. Since January 2009, PMI has funded the Regional Institute of Public Health in Benin to strengthen hospitals in three sentinel sites, enabling them to collect data on malaria morbidity and mortality. The World Bank Booster Program has strengthened these sites by purchasing microscopes and supporting malaria diagnostics training.

The national HMIS reports on the number of malaria cases, deaths, and case fatality rates at the health facility level. Although data are stratified by age group and inpatient/outpatient settings,

[28] *Plan de Suivi et d'Evaluation de la Lutte Contre le Paludisme au Benin 2007-2010*

before PMI, no effort had been made to distinguish clinically diagnosed cases from those confirmed by laboratory testing. The system has limited capacity; and concerns exist about the accuracy, timeliness, and coverage of the data, as well as how the data are used for decision-making. The latest evaluation of the national HMIS identified an absence of data transmission equipment, inadequate feedback, poor use of existing data, and a lack of coordination among stakeholders, resulting in the development of parallel and competing systems.

With the support of PMI and other partners, however, the NMCP is strengthening the malaria module of the national HMIS with the goal of enabling 80% of public and private health facilities and community-level actors to accurately report malaria data. Additional M&E activities have also been initiated to track progress in malaria control at the sub-national level. The USAID-funded Integrated Family Health Project and Africare have conducted household surveys in their project areas. UNICEF has also conducted surveys to evaluate its Accelerated Child Survival and Development program.

Progress during the past 12 months:

During the last 12 months, PMI funded the outpatient portion of the HFS in collaboration with the NMCP, WHO, and the World Bank Malaria Booster Program. The inpatient portion is in the pre-test phase. The first round of Benin's End Use Verification was conducted and the second round is underway. Planning for the 2011 DHS is also underway.

The Benin sentinel site program has been producing timely and reliable data since October 2009. After evaluation, PMI has decided to continue funding the program because of good performance on criteria indicators despite being operational for less than one year. The program has shown strong potential in its capacity to collect quality data to monitor trends over time.

The NMCP, with support from WHO, the World Bank Malaria Booster program, and PMI, has designed a routine malaria information system. Standard operating procedures have been written and validated and deployment is underway. The system is built around twenty key malaria indicators that will be collected on a monthly basis. Training for this system is ongoing and data collection began in September 2010. PMI is contributing 40% of the funding needed for this routine malaria information system, and the statistician hired by PMI in 2008 will be the data manager of the routine malaria information system (RMIS). The other 60% of RMIS funding is coming from the World Bank Booster Program, the Government of Benin, and WHO.

With FY2010 funds, PMI also initiated a partnership with the US Peace Corps to support the NMCP and PMI M&E team. The PMI is supporting a former volunteer who has M&E training and experience under the Peace Corps Response Volunteer program to assist with M&E activities in Benin. This volunteer will be embedded in the NMCP to help coordinate all activities related to achieving sustainability and assuring the quality of the RMIS's outputs. PMI will fund the volunteer's housing and all work-related travel costs.

Proposed FY2011 activities: *($1,292,000)*

1. *Support the 2011 DHS:* Provide technical and financial support for the planning and implementation of the 2011 nationwide DHS, including an increase in sample size for the malaria and child mortality module. The expanded sample size is linked to changes in precision

over time. Since PMI has been involved in Benin for only three years (rather than the typical five-year look back period), an increased sample size is necessary to closely monitor PMI impact. Based on past DHS experience, the estimated cost of the 2011 survey will be about $2 million, of which $500,000 is the estimated incremental cost of malaria biomarkers and the increased sample size. USAID's total contribution from PMI and MCH (approximately $300,000 from MCH) will be about $1.1 million, which is in line with historical USAID contributions to the DHS. *($530,000)*

2. Health facility-based sentinel site surveillance program: Five health zones in the NMCP's existing cadre of sentinel sites have been selected and strengthened for the implementation of health facility-based surveillance in support of the PMI M&E framework. This activity will include technical assistance to improve the capacity of these existing sites to collect reliable data on inpatient malaria cases and deaths. There is no plan to expand the number of sentinel sites beyond the five in existence at present. *($250,000)*

3. Impact Evaluation: PMI will provide support to gather data for the malaria impact evaluation, which will measure the results of the malaria control activities in Benin. *($100,000)*

4. End use verification: Quarterly monitoring of the availability and utilization of key anti-malarial commodities at the health facility level. *($150,000)*

5. Health Facility Survey: Conduct a health facility survey focused on malaria case management and quality of ANC care. The results of the 2009 health facility survey showed significant weaknesses in the quality of malaria case management. This follow-up survey will assess the effectiveness of interventions in addressing the weaknesses identified in the first survey. *($250,000)*

6. *CDC technical assistance for M&E:* CDC staff will conduct one technical assistance visit to assist the NMCP with M&E planning and implementation. *($12,000)*

STAFFING AND ADMINISTRATION

Two health professionals have been recruited as Resident Advisors to oversee the PMI in Benin, one representing CDC and one representing USAID. In addition, one Foreign Service National has 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. Candidates for these positions were interviewed and evaluated jointly by USAID and CDC.

These two 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. Both staff members report to the USAID Mission Director, and the CDC Advisor is supervised by CDC both technically and administratively. All technical activities are undertaken in close coordination with the MOH/NMCP and other national and international partners, including the WHO, UNICEF, the GFATM, World Bank, and the private sector.

The USAID Mission Director approves the hiring of local staff to support PMI activities either in Ministries or in USAID. Because of the need to adhere to specific country policies and USAID

accounting regulations, any transfer of PMI funds directly to ministries or host governments needs to be approved by the USAID Mission Director and Controller.

Proposed FY2011 Activities: *($1,300,000)*
These funds will be used for coordination and management of all in-country PMI activities including staff salaries and benefits, office equipment and supplies, and routine expenses.

President's Malaria Initiative – *Benin*
Planned Obligations for FY 2011 ($17,850,000)

Proposed Activity	Mechanism	Budget *(commodities)*	Geographic Area	Description of Activity
PREVENTION				
Insecticide Treated Bednets				
1. Procurement and delivery of LLINs to the health facility level	DELIVER	2,450,000	Nationwide	Procurement of 410,000 long-lasting insecticide treated bednets for delivery through routine services and to ensure universal coverage in previously sprayed areas in 2012. This includes delivery up to the Health Zone level.
2. BCC for net use	New Mission Malaria Bilateral	Costs covered in BCC section	Nationwide	Follow-up household visits promoting net use in areas not already covered by CHWs
3. Procure and distribute LLINs through the private sector	New Mission Malaria Bilateral	400,000	Nationwide	Procure and distribute 60,000 highly-subsidized LLINs through the private sector, as keep-up strategy for non-target populations
4. Routine net longevity monitoring	CREC	30,000	Three sites	Routine monitoring of nets to assess the longevity of insecticide and durability of LLINs
Subtotal : Insecticide Treated Bednets		**$2,880,000**		
Indoor Residual Spraying (IRS)				
1. IRS implementation	IRS2 IQC	2,750,000	Four communes in the north of Benin	One round of IRS in Northern Benin; includes training for personnel, equipment/insecticide procurement, community mobilization, and IRS implementation
2. Entomological monitoring for spray areas and continuation of monitoring in previously sprayed areas	CREC	375,000	Four communes in the south and new sites in the north	Entomological monitoring in the new spray areas, as well as monitoring of previous spray areas in the south

3. Environmental Compliance Monitoring	EMCAB	25,000	Nationwide	Funding for one TA visit to build in-country capacity for environmental compliance for IRS
4. TA for vector control	CDC IAA	24,000	Spray areas	Funding for two TA visits to monitor movement of IRS to the north
Subtotal : IRS		**$3,174,000**		
Malaria in Pregnancy (IPTp)				
1. Quality improvement, refresher training, and supervision of healthcare workers on focused antenatal care	New Malaria Mission Bilateral	300,000	Nationwide	On-site supervision of healthcare workers including benchmark assessments, on-the-spot training on the new algorithm, and coaching
2. Supervise health workers in IPTp to improve quality of services	New Malaria Mission Bilateral	(*Costs covered in Case Management Treatment section*.)	Nationwide	See IEC/BCC section
3. Strengthen logistics management for SP	New Malaria Mission Bilateral	(*Costs covered in Health Systems Strengthening section*.)	Nationwide	
4. IEC/BCC for IPTp:	New Malaria Mission Bilateral	*(Costs covered in IEC/BCC section*	Nationwide	
Subtotal: Malaria in Pregnancy		**$300,000**		
CASE MANAGEMENT				
Diagnostics				
1. Procure RDTs	DELIVER	750,000	Nationwide	Procure one million RDTs to cover needs for 2012

2. Validation and dissemination of new diagnostic algorithm	New Malaria Mission Bilateral	100,000	Nationwide	Consensus building, development of job aids and other materials, and dissemination of new diagnostic algorithm
3. Comprehensive diagnostic strengthening	New Malaria Mission Bilateral	400,000	Nationwide	Development of policies, standard operating procedures, maintenance of microscopes, training, procurement of reagents, and quality control of slides/RDTs
Subtotal: Diagnostics		**$1,250,000**		
Treatment				
1. Procure ACTs	DELIVER	2,000,000	Nationwide	Procurement of ACT treatments for older children and adults (blisters of 12, 18, and 24)
2. Quality improvement and supervision of healthcare workers at the facility level	New Malaria Mission Bilateral	$700,000	Nationwide	On-site supervision of healthcare workers including benchmark assessments, on-the-spot training on the new algorithm, and coaching
3. Severe malaria training and supplies	New Malaria Mission Bilateral	400,000	Nationwide	Training on the management of severe malaria, resuscitation equipment and other related supplies
4. IMCI training	New Malaria Mission Bilateral	250,000	Nationwide	Support in-service training of health workers on the integrated management of childhood illness
5. Training and registration of private sector providers	New Malaria Mission Bilateral	250,000	Nationwide	Promotion of accreditation of private sector providers, training, and establishment of network/collaborative
6. Therapeutic efficacy testing	USP/DQI	50,000	Nationwide	Support in vivo efficacy testing of antimalarials
Subtotal: Treatment		**$3,650,000**		
INTEGRATION WITH OTHER GHI PROGRAMMS				
Facility-level integration				

Integration of EPI, ANC, PMTCT and malaria registers at the facility level	New Malaria Mission Bilateral/New Mission Health Bilateral	250,000	Nationwide	Development, printing, and dissemination of integrated ANC, PMTCT, EPI and malaria registers in health facilities
Subtotal: Facility-level integration		**$250,000**		
Community-based interventions				
Community-case management of malaria, pneumonia, and diarrhea in five health zones	BASICS Task Order	*Covered with FY08, FY09, and FY10 funding*		USAID/PMI will support an integrated CCM program in five health zones, which complements the Global Fund CCM program for malaria.
CAPACITY BUILDING AND HEALTH SYSTEMS STRENGHTHENING				
Capacity Building				
1. Pre-service training support and curriculum harmonization	New Malaria Mission Bilateral	250,000	Nationwide	Develop capacity of two health worker pre-service training institutions
2. Capacity Building to NMCP	New Malaria Mission Bilateral	254,000	Nationwide	Online training in logistics/management, and human resource capacity building
3. Quality Assurance Officer	New Malaria Mission Bilateral	50,000	Nationwide	Build NMCP capacity in quality assurance and quality control, as well as the coordination of supervision
Subtotal: Capacity Building		**$554,000**		
Health Systems Strengthening				
1. Continuing to strengthen logistics management information system and supply chain management	New Malaria Mission Bilateral	1,200,000	Nationwide	Strengthening of the national Logistics Management information system, training, and supply chain management from the central level down to health facilities
2. Strengthening health management information system	New Malaria Mission Bilateral	500,000	Nationwide	Strengthening procedures and indicators for malaria in the health management information system and comprehensive strengthening of system overall

Subtotal: Health Systems Strengthening		**$1,700,000**		
Behavior Change Communication				
1. Support household visits and group education visits to promote net use and malaria prevention through NGO contracts and community health workers	New Malaria Mission Bilateral	1,000,000	Nationwide	Develop contracts with NGOs in former World Bank Booster-supported zones to conduct group education sessions and individual household visits to encourage net use. PMI will continue the contract strategy established under the World Bank.
2. Support BCC efforts related to appropriate care seeking and treatment	New Malaria Mission Bilateral	500,000	Nationwide	Messaging around appropriate care seeking for fever
3. Community mobilization for IRS	IRS2 IQC	Costs covered in IRS section	Five communes in North and four communes in Ouémé Platuea	House-to-house visits and community sensitization in Northern Benin to raise awareness of new spray rounds; sensitization in the south regarding the shift of PMI-supported IRS to new areas
Subtotal: Behavior Change Communication		**$1,500,000**		
MONITORING AND EVALUATION				
1. Support the planning and implementation of Demographic and Health Survey	MACRO	530,000	Nationwide	Malaria contribution to Demographic and Health Survey, including a full malaria module and biomarkers
2. Health facility-based sentinel site surveillance program	IRSP	250,000	Five sites	Technical assistance to five sites for collection of reliable data on inpatient malaria cases and deaths
3. Impact Evaluation	TBD	100,000	Nationwide	Funding to gather data and provide TA for the PMI impact evaluation
4. End-use verification	New Malaria Mission Bilateral	150,000	Selected sites	Monitoring of availability and utilization of key anti-malarial commodities at the health facility level

5. Health facility Survey	TBD	250,000	Selected sites	Health facility survey to assess the effectiveness of quality malaria control interventions
6. TA for M&E	CDC IAA	12,000	Nationwide	Funding for one CDC advisor to provide technical assistance for monitoring and evaluation
Subtotal: Monitoring and Evaluation		**$1,292,000**		
IN-COUNTRY MANAGEMENT AND ADMINISTRATION				
1. USAID Technical Staff	USAID	$1,300,000	N/A	Support to two resident advisors and malaria-related staff
2. CDC Technical Staff	CDC		N/A	
3. FSN Staff and other in-country administrative expenses	USAID		N/A	
Subtotal: In-country Management and Administration		**1,300,000**		
GRAND TOTAL		**$ 17,850,000**		

President's Malaria Initiative – *Benin*
Year four (FY 2011) Budget Breakdown by Partner (\$17,850,000)*

Partner Organization	Geographic Area	Activity	Budget
DELIVER Malaria Task Order 3	Nationwide	Procure and deliver microscopes/kits, LLINs, SP, ACTs, RDTs, and severe malaria drug kits.	\$5,200,000
IRS2 IQC	IRS sites	IRS in several communes of Northen Benin, including procurement of insecticides and spray equipment, training of spray operators, and community sensitization. Includes post-IRS LLIN distribution in the South, as well as IRS capacity building activities in former spray sites.	\$2,750,000
CREC (*Centre de Recherche Entomologique de Cotonou*)	Surveillance: Nationwide Surveys: IRS target area	Support for CREC to conduct entomological monitoring in IRS area; expand and strengthen the national vector resistance surveillance system	\$405,000
New Mission Malaria Bilateral	Nationwide	Train and supervise laboratory technicians. Support quality assurance/quality control system for malaria diagnostics. Improve lab registers.	\$5,754,000
	Nationwide	Support training and supervision of health workers in IPTp and case management including severe malaria. Train health workers in IMCI. Capacity building for NMCP/CREC and equipment for NMCP. Support for improved transfusion services. Support for HMIS, NMCP M&E capacity, and process indicator collection.	
	Nationwide	Training and technical assistance to the Central Medical Stores on supply management, forecasting, tracking, and improving storage of malaria commodities.	
	Nationwide	IEC/BCC for LLINs, IPTp, and treatment. Private sector LLIN distribution.	
NMCP (National Malaria Control Program)	Nationwide	Support training and supervision of health workers in case management	Funded through mission bilateral
United States Pharmacopeia (USP) DQI	Nationwide	Support drug quality control	\$50,000
IRSP (*Institut de Recherche pour la Sante Publique*)	Nationwide	Conduct health facility-based surveillance in support of the PMI M&E framework at up to 7 sites	\$250,000
EMCAB	Nationwide	Environmental monitoring capacity building for IRS	\$25,000
CDC IAA	Nationwide	Technical Assistance for entomology and M&E	\$36,000
Measure Evaluation	Nationwide	2011 DHS planning and implementation	\$530,000

TBD	Nationwide	PMI impact Evaluation and health facility survey	$350,000

* Table does not include technical assistance visits nor administrative/management costs for USAID/CDC.