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**PRESIDENT'S MALARIA INITIATIVE**

**Malaria Operational Plan — FY2012**

**ANGOLA**

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**ABBREVIATIONS**

ACT	artemisinin-based combination therapy
AL	artemether-lumefantrine
ANC	antenatal clinic
CDC	Centers for Disease Control and Prevention
FBO	faith-based organization
Global Fund	Global Fund to Fight AIDS, Tuberculosis, and Malaria
GHI	Global Health Initiative
GRA	Government of Republic of Angola
IEC	information, education, communication
IPTp	intermittent preventive treatment for pregnant women
IRS	indoor residual spraying
ITN	insecticide-treated net
LLIN	long-lasting insecticide-treated net
MICS	Multiple Indicator Cluster Survey
MIS	Malaria Indicator Survey
MOH	Ministry of Health
NEDP	National Essential Drug Program
NMCP	National Malaria Control Program
NGO	non-governmental organization
PMI	President's Malaria Initiative
PSI	Population Services International
RBM	Roll Back Malaria
RDT	rapid diagnostic test
SP	sulfadoxine-pyrimethamine
UNDP	United Nations Development Program
UNICEF	United Nations Children's Fund
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 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 FY2014. 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.

Angola was selected as one of the first three countries in the PMI in June 2005. Implementation of large-scale malaria control activities in Angola faces serious challenges. The country's health infrastructure was severely damaged during the civil war and it has been estimated that only about 40% of the population has access to government health facilities. Malaria is a major health problem, accounting for an estimated 35% of the overall mortality in children under five, 25% of maternal mortality, and 60% of hospital admissions for children under five. Malaria transmission is highest in northern Angola, while the southern provinces have highly seasonal or epidemic malaria.

In February 2009, Angola signed a five-year, \$78 million Round Seven Global Fund malaria grant. The United Nation's Children's Fund (UNICEF) and the World Health Organization (WHO) have been major partners with the National Malaria Control Program (NMCP) in scaling up interventions. An effective partnership with ExxonMobil has resulted in donations of \$4 million to the United States Agency for International Development (USAID) over the last five years to further PMI and Government of the Republic of Angola (GRA) objectives in Angola. Following on a successful Round 7 grant, Angola was also successful in a Global Fund Round 10 grant, with part of the \$111 million funds expected to start flowing toward the end of calendar year 2011. The Principal Recipient of the Round 10 grant is the Ministry of Health (MOH).

The FY2012 PMI Malaria Operational Plan for Angola was developed during a planning visit carried out in June 2011 by representatives from USAID, the Centers for Disease Control and Prevention (CDC), and the Angolan NMCP with participation of other major partners working on malaria in country. The proposed FY2012 PMI activities are based on progress and experiences during the last six years and the NMCP's 2008-2012 National Malaria Control Strategy. Since Angola was successful with its Global Fund Rounds 7 and 10 grant proposals, the PMI activities are designed to complement activities supported under these grants.

With the proposed FY2012 PMI funding of \$27,200,000, the following activities will be supported:

**Insecticide-treated nets (ITNs):** When the PMI began, only about 11% of households owned one or more ITNs. During the last six years, however, more than 6 million ITNs have been procured and distributed by all partners. Over the past 12 months, PMI procured about 400,000 that were distributed through ANC and EPI routine distribution while an additional 630,000 LLINs were procured for free distribution in nine of the country's 18 provinces through non-governmental organizations (NGOs). In May 2011, PMI participated in the development of and the procurement of nets towards the universal coverage strategy adopted by the NMCP to provide one net for 2 persons. About 630,000 LLINs have been distributed to recipients from 23 municipalities in eight provinces, and a remaining 400,000 LLINs procured by PMI were reserved for distribution through antenatal and immunization clinics. As in recent years, none of the nets procured by the PMI were targeted to the capital, Luanda, where a PMI-supported study demonstrated very low malaria transmission. A PMI-supported multi-country study to assess the longevity and durability of LLINs under field conditions is underway to guide future net replacement strategies and should be completed next year.

With many residents unable to afford the cost of an LLIN, PMI will continue to support the existing MOH strategy of providing nets free of charge. With FY2012 funding, it is expected around 800,000 LLINs will be procured and distributed free to pregnant women and children under five through routine clinic services and municipal health days together with behavior change communications (BCC) activities to increase demand for and correct use of nets.

**Indoor residual spraying (IRS):** Before PMI-supported IRS campaigns began in southern Angola in 2006, no large-scale IRS had been carried out in the country for more than 10 years. IRS activities supported by the PMI during the past 12 months include spraying of 136,000 houses, protecting a total population of more than 649,842 in the provinces of Huila, Huambo and Cunene. Huambo Province is the second most malarious province in the country and Huila reports the most cases of malaria among the southern provinces. More than 96% of the houses targeted for spraying were sprayed. With FY2012 funding, the PMI will support a sixth annual round of spraying in Huambo and an eighth round of spraying in Huila. In addition, at the request of the NMCP, PMI will again spray three large towns in Cunene Province on the border with Namibia, which is one of the Southern Africa Development Community countries attempting to eliminate malaria. A total of approximately 136,000 households will be sprayed with FY2012 funding, benefiting more than 650,000 residents.

**Intermittent preventive treatment of malaria in pregnancy (IPTp):** About 80% of women in Angola attend antenatal clinics at least once during their pregnancy. Implementation of IPTp in Angola began in May 2006 together with the roll out of ACTs; at that time, it was estimated that fewer than 2% of pregnant women were receiving IPTp. The PMI has supported the Angolan NMCP scale up of IPTp through health worker training and BCC activities to promote early and regular attendance at ANCs, together with IPTp and ACT implementation in nine provinces through NGOs. As of June 2010, more than 257 health workers had already been trained in IPTp. Together with other partners, IPTp has now been implemented in all 164 municipalities

nationwide and in 2010, roughly 288,889 pregnant women received the recommended two doses of IPTp.

With FY2012 funding, efforts will be continued to promote early antenatal clinic attendance and raise levels of IPTp coverage by distribution of free ITNs to pregnant women through these clinics. The PMI will continue its support for health worker training and supervision and ensure a steady supply of commodities for the prevention and treatment of malaria in pregnancy. Support to NGOs will continue to promote IPTp and LLIN distribution through health facilities as well as effective case management of malaria in pregnant women.

**Case management:** For the past five years, PMI has been supporting improved parasitologic diagnosis of malaria with rapid diagnostic tests (RDTs) and microscopy through procurement of equipment and supplies and training and supervision of laboratory workers. Although artemether-lumefantrine (AL) was approved as the first-line treatment of uncomplicated malaria in Angola in October 2004, implementation of the new policy did not begin until May 2006 in MOH facilities. In collaboration with other partners and support from PMI, AL treatment of malaria has now been implemented in almost all health facilities nationwide and with PMI FY 2010 funding more than 1,088 health workers had trained in case management with AL across eight provinces by end of March 2011. In the past year, PMI procured five million AL treatments.

With FY2012 funding, PMI will procure about one million RDTs, together with supplies for microscopy, and will continue to support the training and supervision of laboratory workers in laboratory diagnosis of malaria. PMI will also procure approximately four million additional AL treatments to cover the remaining ACT gap after Global Fund procurements. The PMI will continue to assist with ACT implementation at the provincial level in nine provinces through local and international NGOs, and will provide technical assistance to promote good supply chain management and commodities security through the central medical stores. With completion of the successful PMI-supported pilot study of private sector sales of ACTs in Huambo Province, PMI worked with the NMCP to include funding for an expansion of private sector sales of subsidized ACTs to two new provinces in the Round 10 Global Fund proposal. Together with the NMCP, European Union, and other partners, the PMI will continue to provide technical assistance to the NMCP and National Essential Drugs Program at the central, provincial, and district levels in pharmaceutical management. The PMI will facilitate provincial level supervision by NMCP (using NGOs to provide assistance). For the capital, Luanda, where malaria transmission is virtually non-existent, PMI will promote correct use of laboratory diagnostic test results and rational administration of antimalarial drugs to patients with a positive malaria test result.

**Monitoring and evaluation (M&E):** With FY2010 funding, PMI is supporting a nationwide Malaria Indicator Survey (MIS) with an increased sample size to assess progress in scaling up malaria prevention and treatment interventions since the baseline MIS in 2006/2007. The MIS, with an expanded sample size, was conducted between 2010 and 2011 and assessed coverage with ITNs, IPTp, and ACTs, together with measurements of all-cause under five mortality and anemia and parasitemia biomarkers. Preliminary results, released as this operational plan was finalized, seem to suggest significant progress in some areas – specifically, a 50% reduction in

parasitemia from 19.5% in 2006/2007 to 9.6% and all-cause under five mortality decreased from 118 deaths per 1000 live births in 2001-2006 MIS to 91 deaths per 100 live births in 2010/2011 MIS. This represents a reduction of 23% in under-five deaths between 2006 and 2011.

With FY2012 funds, PMI will support *in vivo* therapeutic efficacy studies of the AL at three sites and will support strengthening of the national health management information system (HMIS) based on a new HMIS strategy under development. PMI will also support quarterly surveys of health facilities and provincial medical stores to monitor the availability of key malaria commodities (including PMI commodities).

**Health systems strengthening and integration:** In line with GHI principles, PMI has reinforced its efforts to build capacity and integrate across programs. Because of the limited access of the population to government health facilities in the rural areas of most provinces, PMI has focused its efforts on the rollout of IPTp, correct diagnosis and prompt treatment of malaria, and distribution of LLINs through NGOs and FBOs that have a presence at the provincial level and work closely with provincial health authorities. These NGOs assist with training and supervision of health workers on malaria as part of Integrated Management of Childhood Illnesses, supply chain management at the provincial level and below, and BCC activities to ensure correct usage of LLINs, IPTp, and ACTs. National or international NGOs are currently being supported in nine of the country's 18 provinces with a combination of PMI funding and an annual donation to USAID/Angola from the ExxonMobil Foundation. This scale up has been accompanied by joint PMI and PEPFAR-supported technical assistance to the National Essential Drugs Program to strengthen the pharmaceutical management system at national, provincial, and health facility levels. During the past year, more than 400 health workers were trained in malaria case management and malaria in pregnancy, while nearly 600 were trained in IRS.

## **INTRODUCTION**

### **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 GHI, a comprehensive effort to reduce the burden of disease and promote healthy communities and families around the world. Through the GHI, the USG will invest to help partner countries improve health outcomes, with a particular focus on improving the health of women, newborns and children. The GHI is a global commitment to invest in healthy and productive lives, building upon and expanding the USG's successes in addressing specific diseases and issues.

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

### **President's Malaria Initiative**

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

Angola was one of the first three countries selected for PMI. Large-scale implementation of ACTs and IPTp began in Angola in mid-2006 and has progressed rapidly with support from PMI and other partners, in spite of the country's weak health infrastructure. Artemisinin-based combination therapies and IPTp are now available and being used in all public health facilities nationwide and more than six million long-lasting ITNs have been distributed to pregnant women and children under five in the last six years.

This FY2012 Malaria Operational Plan presents a detailed implementation plan for the seventh year of PMI in Angola, based on the PMI Multi-Year Strategy and Plan and the National Malaria Control Program's (NMCP's) 5-Year Strategy. It was developed in consultation with the Angolan NMCP, with participation of national and international partners involved with malaria prevention and control in the country. The activities that PMI is proposing to support fit in well with the 2008-2012 Angolan 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 10 malaria proposal. This document briefly reviews the current status of malaria control policies and interventions in Angola, describes progress to date, identifies challenges and unmet needs if the targets of the NMCP and PMI are to be achieved, and provides a description of planned FY2012 activities.

## MALARIA SITUATION IN ANGOLA

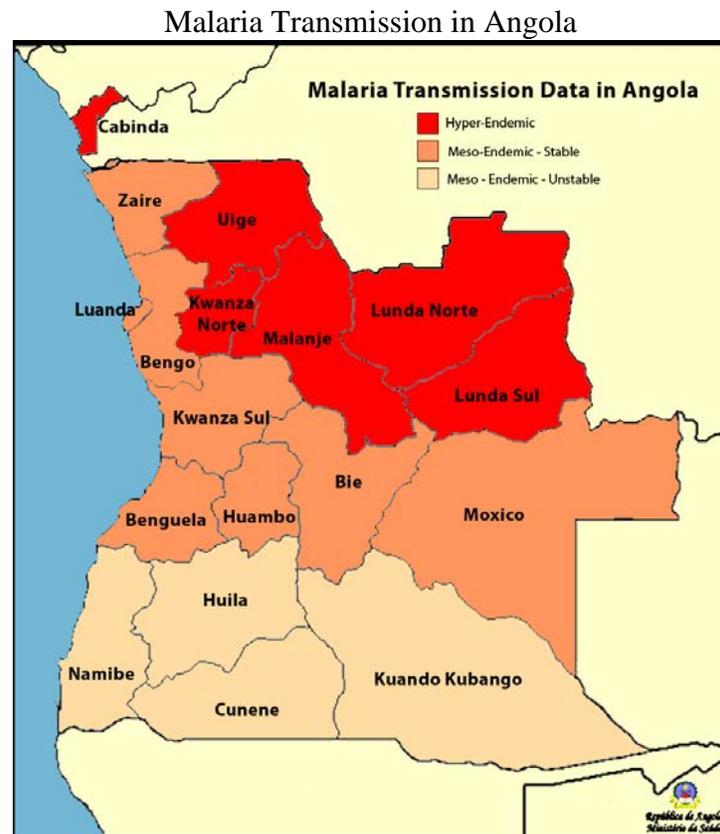
Angola emerged in 2002 from almost three decades of civil war that left the country's health infrastructure severely damaged. Angola has a population of approximately 19 million people in 18 provinces and 164 municipalities (districts). It is estimated that 80% of the health facilities were damaged or destroyed during the war and that the existing health system covers only 30%-40% of the Angolan population. Although a major health facility building program is underway, the remaining health infrastructure is limited by a lack of qualified and motivated health staff outside the capital, weak drug and medical supply and management systems, poor data quality and analysis, and a weak primary health care network.

According to the preliminary results of the 2011 Malaria Indicator Survey (MIS), the mortality rate for children under-five has fallen by 23% over the last five years, and it is currently estimated at 91 deaths per 1,000 live births. Regarding maternal mortality, the available estimates published within the WHO's Trends in Maternal Mortality (2000-2008) indicate a maternal mortality ratio for Angola at 616 per 100,000 live births. However, based on this year's MIS data the range of maternal mortality estimates is as low as 270 and as high as 1,400 per 100,000 live births.

According to the latest MIS 2011 results the prevalence of malaria in Angola has dropped by 50% over the last five years as a result of control efforts, nonetheless, malaria still accounts for about one-third of the overall mortality in children under five and one-quarter of overall maternal mortality. It is also the cause of 60% of hospital admissions among children under five and 10% among pregnant women.

Malaria is hyperendemic in northeastern Angola, including Cabinda Province, a non-contiguous province in the north of the country. The central and coastal areas are largely mesoendemic with stable transmission. The four southern provinces bordering Namibia have highly seasonal transmission and are prone to epidemics. In the north, the peak malaria transmission season extends from March to May, with a secondary peak in October- November. *Plasmodium falciparum* is responsible for more than 90% of all infections. The primary vectors in the high transmission areas are *Anopheles gambiae* ss and *An. funestus*, which prefer to bite humans and

feed and rest indoors. *Anopheles melas*, which favors a brackish water habitat, can be an important vector in coastal areas. *Anopheles pharoensis* can be a secondary vector where present. The behavior of *An. arabiensis*, which prefers to feed on animals and outdoors, limits its role in malaria transmission. Until recently, the extent of malaria transmission in Luanda City has been unclear, but a PMI-supported study carried out in 2008 has shown that malaria transmission in Luanda City is very low, except in the outlying areas of Cachuaco, Viana, and Samba.



### **National Malaria Control Program Strategy and Activities**

Malaria diagnosis and treatment: The treatment of malaria in most MOH facilities in Angola is based on clinical diagnosis. Malaria microscopy is only available in hospitals and larger health centers and the quality of diagnosis varies considerably between sites. Rapid diagnostic tests (RDTs) are used in all health facilities whenever available (currently the only suppliers of RDTs are through the PMI and Global Fund). With the recent change in WHO guidance related to malaria laboratory diagnosis, Angola has updated its strategic plan (2011 - 2015) to be in line with international standards, which recommends that all suspected cases of malaria be diagnosed parasitologically, using either microscopy or RDTs. The new policy has been widely disseminated in the form of NMCP circulars but problems still exist in terms of scaling up high quality laboratory and RDT diagnosis of malaria. These include shortages of RDTs, limited laboratory network, inadequate quality control procedures, and perhaps the greatest challenge – failure of health workers to appropriately follow the results of laboratory and RDT testing when

prescribing treatment. In addition, the RDTs have not yet been incorporated into the integrated management of childhood illness (IMCI) algorithm, which is currently under implementation in some provinces.

Artemether-lumefantrine (AL) and artesunate-amodiaquine (AS/AQ) were approved by the NMCP as alternative first-line drugs for the treatment of uncomplicated malaria in October 2004 and roll out of that new policy began in public facilities in May 2006. During the fourth quarter of 2008, the NMCP made the decision to move to AL as the only first-line drug for the treatment of uncomplicated malaria. In spite of this, the NMCP in April 2010 launched Co-Arsucam<sup>®</sup>, a co-formulated AS-AQ. Additionally, the NMCP is currently engaged in a large multi-center drug efficacy study of another ACT, a fix-dosed formulation of dihydroartemisinin and piperazine (DHP). This ACT is one five recommended ACTs in the 2010 second edition WHO treatment guidelines. While a recommended treatment in Angola, at the time of the drafting of this document, no finished pharmaceutical preparation is approved by either the WHO Prequalification Program or a stringent regulatory authority. NMCP may change policy to include DHP as new first-line treatment with AL and AS/AQ as alternative treatments if the ongoing drug efficacy survey confirms the DHP product to be effective and safe in the Angolan population and the drug is approved by an international stringent review board or the WHO PQP.

Intermittent preventive treatment of pregnant women (IPTp): IPTp with two doses of sulfadoxine-pyrimethamine (SP) was approved as a national policy in September 2004. This policy currently applies to the entire country, including the epidemic-prone areas in the south. While Trip Reports from site visits suggest the policy is being implemented in all functioning antenatal clinics; the 2011 MIS found that only 17.5% of women reported taking at least two IPTp doses during their last pregnancy.

Insecticide-treated nets (ITN): The NMCP ITN strategy supports a market segmentation approach, consisting of free distribution of nets to pregnant women and children under five and commercial sector distribution in urban areas. The New NMCP Strategy (2011-2015) adopted a universal ITN coverage strategy defined as one ITN for every two residents. Because of very low re-treatment rates for conventional nets, the Government of the Republic of Angola (GRA) encourages the distribution of long-lasting insecticide-treated nets (LLINs). Nets are classified as luxury goods and are subject to a tariff of up to 50%; however, the United Nations Children's Fund (UNICEF), DELIVER Task Order 3 Project and Population Services International (PSI) have waivers and are therefore not required to pay tariffs.

Indoor residual spraying (IRS): Only limited IRS was being carried out by some NGOs in Huambo and Zaire Provinces before PMI and Global Fund began spraying in December 2005 and January 2006. The National Malaria Control Strategy for 2011-2015 supports the use of IRS for malaria prevention in epidemic-prone areas and elsewhere in the country. Synthetic pyrethroids are the insecticides of choice. The GRA has banned the use of dichloro-diphenyl-trichloroethane (DDT) and there seems to be no intention in lifting the ban in the near future.

Epidemic detection and containment: The National Epidemiological Surveillance System collects weekly reports on clinically-diagnosed cases of malaria from the four epidemic-prone provinces in the south – Namibe, Huila, Cunene and Kuando Kubango. Since not all districts

report on a regular basis and there are delays in releasing reports to the NMCP, these weekly data is currently of limited value for the detecting and containing malaria epidemics. With PMI support, through the World Health Organizations (WHO) and RTI, malaria epidemic thresholds system has been established in some municipal hospitals of three southern provinces (Huila, Namibe and Cunene). Efforts are now focused on leveraging the existing polio surveillance system to improve the weekly reporting system for malaria

### **Funding of malaria control activities**

In 2007, Angola was awarded a \$78 million Round 7 malaria grant. The MOH is the Principal Recipient, with WHO, UNICEF, and PSI as sub-recipients. A Program Management Unit for the Global Fund grant has been established within the MOH. This grant includes approximately \$36 million for ITNs, \$17 million for ACTs and case management, \$19 million for general health systems strengthening, and \$6 million for IEC, all over five years. The total funding for Year 1 was \$17.9 million and for Year 2 was \$14.5 million. The grant was signed in February 2009 and phase one of implementation was completed in October 2010. Since then, negotiations have been underway for transitioning to phase two of the grant implementation.

In 2010, Angola successfully submitted a \$111 million Round 10 Global Fund proposal; grant signing is expected toward the end of 2011. This proposal includes approximately \$42.5 million for ITNs, \$17.0 million for ACTs and case management, \$21.7 million for diagnosis, \$20.7 million for general health systems strengthening, \$1.3 million for IEC and \$7.8 million for overhead and program management, all over five years. The total funding for Year 1 is \$21.0 million and for Year 2 is \$19.4 million.

As part of its decentralization plan, the MOH has increased funding to each district and now districts are expected to play a greater role in managing disease prevention and control activities within their borders.

### **CURRENT STATUS OF MALARIA INDICATORS**

When PMI began work in Angola in December 2005, no accurate, up-to-date information on nationwide coverage of key malaria prevention and control measures was available. To provide the NMCP with information on the status of their control efforts and to establish a baseline for the PMI in Angola, a nationwide MIS was conducted between November 2006 and April 2007 with PMI and Global Fund support. This was the first nationwide health survey in more than 20 years in Angola.

Although the MIS was carried out approximately nine months after PMI-supported IRS began in southern Angola and three to four months after the large-scale measles-ITN campaign, this survey represents the only available information on baseline coverage for the four major areas of intervention as of early 2006. At the time the survey was conducted, ACT and IPTp implementation had only just begun, so the figures reported for proportion of children under five receiving an ACT and proportion of pregnant women receiving two doses of IPTp can be considered accurate baselines for PMI. In the case of ITNs, where a large-scale campaign in

seven provinces had occurred several months prior to the survey, families interviewed were asked specifically when they had received their bednets and an adjustment was made in the calculations to take campaign nets into account in estimating the baseline ownership of ITNs.

In May 2008, the National Institute of Statistics carried out a third Multiple Indicator Cluster Survey (MICS) as part of a much larger World Bank Household Income and Expenditure Survey. PMI supported the inclusion of a malaria module in the MICS to provide updated, mid-program information on ITN, IPTp, and ACT coverage. Additionally, the larger sample size (n = 12,000) for the 2008 MICS was also intended to provide an estimation of all-cause mortality rates for the five year period from 2003-2007. Based on PMI review of the final results, it appears that there may have been significant flaws in either the collection and/or analysis of the data, raising serious question about their validity.

In 2010/2011 PMI contributed to a second nationwide MIS, and with an expanded sample size, to provide up-to-date information on progress in malaria prevention and treatment activities in Angola since 2005/2006.

The following table shows the baseline and follow-up results for the major indicators being used by PMI:

<b>PMI Baseline Information</b>		
<b>Indicator</b>	<b>2006–2007 MIS</b>	<b>2010 – 2011 MIS (preliminary data)</b>
Households with at least one ITN	28%*	35%
Children under five years old who slept under an ITN the previous night	18%	26%
Pregnant women who slept under an ITN the previous night	22%	26%
Women who received two or more doses of IPTp during their last pregnancy in the last two years	2.5%	17.5%
Children under five years old with fever in the last two weeks who received treatment with an ACT within 24 hours of onset of fever	1.5%	11%

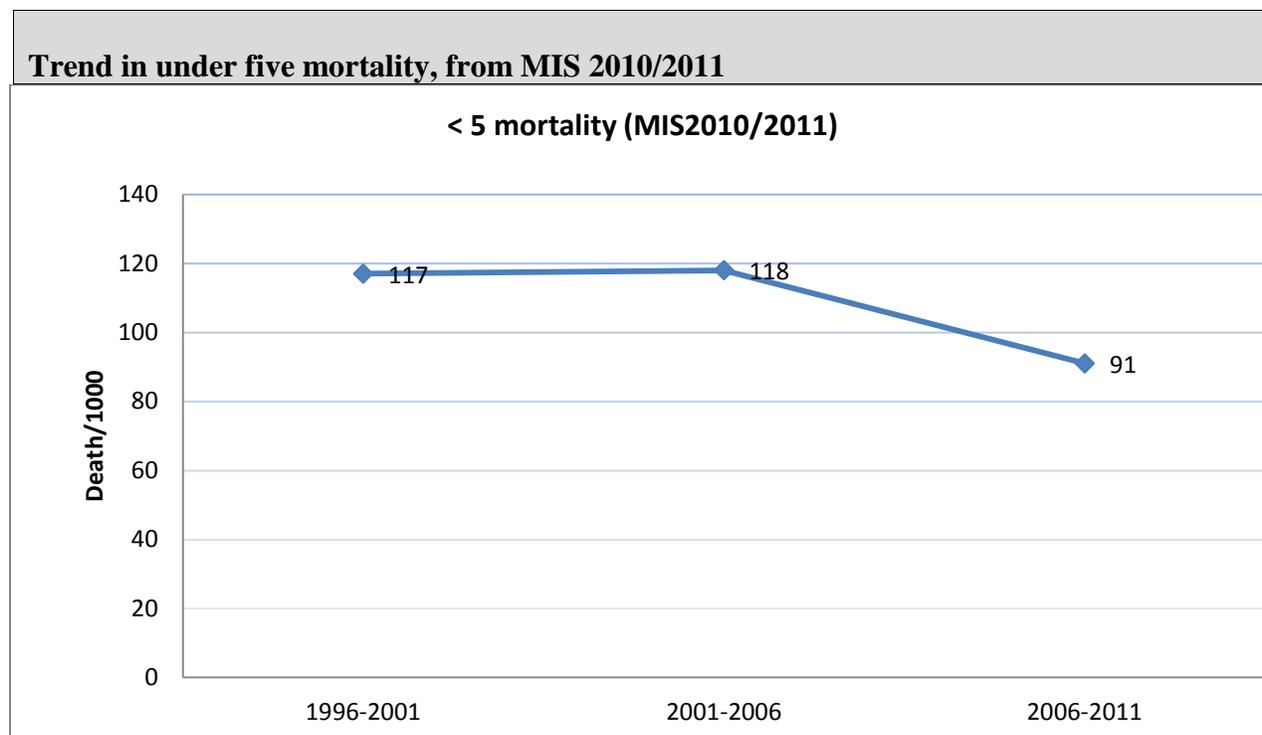
**\*The estimated PMI baseline before the 2006 measles-ITN mass campaign was 11%**

The table below shows parasitemia at baseline in 2006/2007 MIS compared with 2010/2011 MIS, and demonstrates a 50% reduction in parasitemia from 19.5% to 9.6%.

Malaria Transmission Zones	% of parasitemia for MIS 2006/2007	% of parasitemia for MIS 2010/2011 (preliminary data)
Hyperendemic	28.8	14.5
Mesoendemic stable	25.3	12.2
Mesoendemic -instable	18.7	7.2
Luanda City	5.5	1.7%
Total (nationally)	19.5	9.6%

Mortality rates for three five-year periods preceding 2006 MIS survey*						
Years prior to survey	Calendar years	Neonatal mortality (%)	Post-neonatal mortality (%)	Infant mortality (%)	Child mortality (%)	Under 5 mortality (%)
0-4	2006-2011	23.4	26.4	49.9	42.8	90.6
5-9	2001-2006	32.2	34.4	66.7	55.5	118.4
10-14	1996-2001	28.5	36.8	65.3	55.7	117.4

\*Preliminary data



The table and the graph above show that all-cause under five mortality decreased from 118 deaths per 1000 live births in 2001-2006 MIS to 91 deaths per 100 live births in 2010/2011 MIS. This represents a reduction of under-five deaths by 23%.

## **GOAL AND TARGETS OF THE PRESIDENT’S MALARIA INITIATIVE**

Although it is historically accepted that 100% of Angola’s population is at risk of malaria, transmission has been shown to be either absent or very low in the most heavily urbanized areas of the capital, Luanda, where 20-25% of the country’s population resides. Thus, it is reasonable to assume that only about 85% of the population of approximately 19 million (or around 16 million people) are at risk of malaria. The PMI goal is to reduce the burden of malaria (illnesses and deaths) by 70% compared with pre-PMI levels by the end of 2015.

The PMI will assist the GRA to achieve the following targets in populations at risk of malaria:

1. More than 90% of households with a pregnant woman and/or child under five will own one or more ITNs;
2. 85% of children under five will have slept under an ITN the previous night;
3. 85% of pregnant women will have slept under an ITN the previous night;
4. 85% of houses in geographic areas targeted for IRS will have been sprayed;
5. 85% of pregnant women and children under five will have slept under an ITN the previous night or in a house that has been protected by IRS<sup>1</sup>;
6. 85% of women (in areas determined to be appropriate for IPTp use) who have completed a pregnancy in the last two years will have received two or more doses of sulfadoxine-pyrimethamine (SP) for IPTp during that pregnancy;
7. 85% of government health facilities will have ACTs available for the treatment of uncomplicated malaria; and
8. 85% of children under five with suspected malaria will have received treatment with an ACT within 24 hours of the onset of their symptoms.

## **EXPECTED RESULTS — YEAR SEVEN**

By the end of Year 7 of PMI in Angola (31 March, 2012), the following targets will have been met:

### Prevention:

- A total of 2.7 million additional free LLINs will have been procured and/or distributed by Global Fund Round 7 phase two and Global Fund Round 10 and other different NMCP partners (with 640,000 to be contributed by PMI) to children under five and pregnant women through antenatal and child health clinics and municipal- and province-wide campaigns.

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<sup>1</sup> Since transmission in southern Angola is highly seasonal, spraying will be done within three months before the malaria transmission season.

- At least 85% of houses targeted for IRS in Huambo, Huila, and Cunene Provinces will be covered in a fourth annual round of spraying. A total of approximately 136,000 households will be sprayed, benefiting more than 680,000 residents.

#### Treatment:

- A total of one million RDTs will have been procured together with diagnostic reagents and supplies to improve the proportion of patients with suspected malaria who receive a laboratory diagnostic test.
- A total of 4 million AL treatments will have been procured by PMI to ensure appropriate treatment for all patients diagnosed with malaria. This will contribute to the scale up of ACTs to all government hospitals and health centers in all 18 provinces and is expected to increase ACT coverage to 99% of all children under five nationwide.

## **PREVENTION ACTIVITIES**

### **Insecticide Treated Nets**

#### *Background*

Long-lasting insecticide treated nets (LLINs) are a major component of the NMCP's malaria control strategy. The target of the NMCP is to have universal coverage of the population at risk of malaria, one LLIN for every two people. With many residents unable to afford the cost of an LLIN, PMI has supported the Ministry of Health (MOH) strategy of providing nets free of charge. When PMI began, only about 11% of households owned one or more ITNs in Angola, according to MIS 2006. During the last six years, more than 6 million ITNs have been procured and distributed by partners. The majority of PMI nets are distributed free-of-charge in the eight provinces where PMI-supported NGOs are operating. These NGOs are distributing the nets to the communities and child health clinics targeting pregnant women and children less than five years old. Free net distribution is part of Municipal Health Days. In 2006 the Angolan government requested that health campaigns be organized at municipal level to avoid interference with routine health service delivery.

The costs of LLIN distribution in Angola are likely higher than in most other PMI countries. According to UNICEF, the cost for net distribution activities to the household level is about \$10.42 per net. This includes \$5.29 for LLIN delivery to Luanda; \$2.31 for port clearance, warehousing, and transportation to the district level; and \$2.82 for training, IEC/BCC, and monitoring and evaluation.

#### *Progress during last 12 months*

Over the past 12 months, PMI supported UNICEF to procure 400,000 LLINs, while an additional 600,000 LLINs were procured for free distribution in nine of the 18 provinces through non-governmental organizations (NGOs). About 60% of these nets were distributed free during municipal health days while the remaining 40% were reserved for free distribution through

antenatal and immunization clinics. None of the free nets procured by the PMI were distributed to the capital, Luanda, where a PMI-supported study has demonstrated very low malaria transmission. With PMI support, a study to assess the longevity and durability of LLINs under field conditions is underway to guide future net replacement strategies.

From the FY2011 budget, \$8,520,000 was allocated for LLIN procurement, distribution, and IEC/BCC to promote net ownership and correct use while \$2,125,000 went for nets to provinces without PMI supported NGOs. A total of \$5,845,000 went for nets to be distributed through the eight provinces with PMI-supported NGOs and \$500,000 for social marketing of nets and GRA will procure 600,000 nets.

The third-generation National Malaria Control Strategic Plan 2011-2015, includes an expanded objective for LLIN targeting 100% access by the whole population especially high-risk groups (such as pregnant women and children under five years of age). Since 2005, almost six million LLINs have been procured and distributed throughout the county, with multi-partner support from Global Fund Rounds 3 and 7 grants, the GRA, PMI, UNICEF, PSI, JICA, UNITAID, ExxonMobil and Malaria No More. If all donor commitments are honoured, it is estimated that by the end of 2010, 55% of the country's malaria control needs towards meeting universal vector control coverage goals (LLINs plus people protected by IRS) will have already been met. Donors (including Global Fund Round 7 Phase II and the GRA) have already committed to provide over 11 million LLINs for distribution throughout Angola from 2010 to 2013 with hopes of increasing the percentage of children and pregnant women sleeping under a LLIN with strong IEC/BCC interventions. Procurement of almost six million LLINs with Round 10 funds (2,032,212 in Phase I and 3,918,832 in Phase II) will ensure that Angola not only reaches universal coverage by 2013 but maintains high level of coverage through at least four years of the proposal.

The NMCP is planning to reach universal coverage through province-wide rolling "catch-up" campaigns slotted for late 2011 or early 2012 (as soon as the 988,015 LLINs needed in Year 1 can be procured and positioned for distribution). In conjunction with these "catch up" campaigns which will ensure that every Angolan has access to an LLIN, the remaining 4,963,029 Global Fund LLINs in years 2-5 (about 1 million LLINs every year) will be delivered through routine systems (ANC and EPI services in addition to targeted distribution at municipal health days) to "keep up" coverage. With FY 10 and 11 funds, PMI is contributing LLINs to cover 23 municipalities out of 164, which supports the GRA in its goal for universal coverage.

<b>LLIN Distribution in Angola 2009 – 2011</b>			
	<b>2009</b>	<b>2010</b>	<b>*2011</b>
PMI	411,000	1,090,000	1,100,000
Global Fund GRA, Partners	2,100,000	1,600,000	700,000
<b>TOTAL</b>	<b>2,511,000</b>	<b>2,690,000</b>	<b>1,800,000</b>

*\*projected*

<b>LLIN Gap Analysis</b>		
	<b>2012</b>	<b>2013</b>
Government of Angola	1,000,000	1,000,000
PMI	900,000	1,000,000
Global Fund Round 7	892,040	734,808
Other donors	400,000	400,000
<b>Total LLINs procured by GRA and donors</b>	<b>3,192,040</b>	<b>3,134,808</b>
LLIN distributed in previous three years ( <i>minus those beyond useful net life</i> )	6,034,704	6,456,031
<b>Total LLINs available</b>	<b>9,226,744</b>	<b>9,590,839</b>
Need (one LLIN per two residents)	10,675,870	10,996,147
Remaining Gap	1,449,126	1,405,308

*Planned activities with FY2012 funding are as follows: (\$6,667,000)*

1. Procure 212,500 LLINs which will be distributed in the nine provinces without PMI-supported NGOs. The nets will be distributed through ANC and child health clinics and outreach programs, (\$2,025,000);
2. Procure 414,500 LLINs for free distribution by municipal campaigns through PMI-supported NGOs in 8 provinces of Huambo, Zaire, Benguela, Huila, Kwanza Sul, Malanje, Uige and Kwanza Norte (\$4,142,000);
3. Support the procurement and IEC/BCC of LLINs through social marketing to urban populations in Luanda and other provinces at full-cost or subsidized prices (\$450,000); and
4. Continue with study to evaluate LLIN longevity and durability under field conditions in Angola (\$50,000).

### **Indoor Residual Spraying**

#### *Background*

PMI and the Global Fund began supporting large-scale IRS operations in the three southern provinces of Huila, Cunene and Namibe in December 2005. In 2007, with evidence of low levels of transmission in Cunene and Namibe Provinces, PMI-supported IRS activities were redirected to Huila and Huambo Provinces alone. In support Namibia's malaria pre-elimination efforts as part of the Southern African Development Community plans for elimination of malaria in the sub-region, PMI agreed to carry out IRS operations in three border towns of Cunene Province, Odjiva, Namacunde, and Santa Clara, where the population mobility between Namibia and Angola is greatest. The focus of malaria control activities for the remainder of Cunene Province and the provinces of Namibe and Kwando Kubango has been on achieving high LLIN

ownership and usage rates, strengthening malaria case detection, and improving malaria case management.

Other vector control efforts include the Angolan-Cuban larviciding program implemented in 2009. Cuban technical personnel in each municipality trained local Angolan personnel to carry out larviciding and entomologic monitoring, in addition to IRS and thermal fogging in certain municipalities.

Entomologic monitoring of IRS in Huambo and Huila has been conducted with RTI short-term technical assistance from Kenya. This included training of eight biologists from the Huambo Provincial Directorate of Health in basic entomology monitoring techniques. The baseline entomologic survey in Huambo Province in November 2009 using pyrethrum spray collections in eight villages, five in non-sprayed areas and the remainder in sprayed areas, showed relatively low numbers of *Anopheles* mosquitoes but >94% were highly susceptible to the lambda-cyhalothrin, which was being sprayed. Following spraying, there has been a nearly 90% mortality by WHO wall assays confirming the high quality of the spraying.

PMI is envisioning some transfer of IRS components to the GRA. RTI has been negotiating with the NMCP and DPS about sharing responsibilities such as training of IRS spray operators, M&E and IEC/BCC of IRS activities. This is an important step to promote sustainability of IRS in the GRA.

#### *Progress during last 12 months*

Between October and December 2010, a sixth round of IRS was carried out in Lubango and Chiba municipalities of Huila Province. In Huambo a fourth round of spraying was carried out in the urban and peri-urban areas of Huambo municipality, capital of Huambo Province. Cunene was added to the IRS target provinces in 2010 in response to the NMCP request to support the SADC initiative for malaria elimination in Namibia. In Cunene, IRS was targeted at Kwanhama and Namacunde municipalities and Santa Clara locality. The longer-lasting formulation of lambda-cyhalothrin insecticide ICON<sup>®</sup> CS was used in the IRS operations for all the provinces. A total of 141,069 structures were found and of these 135,856 were sprayed (96.3%), including 62,021 structures in Huambo, 60,371 in Huila, and 13,464 in Cunene. The 2010 IRS campaign protected 649,842 residents: 302,425 in Huambo, 281,929 in Huila, and 65,488 in Cunene.

As in the past, provincial health department staff participated actively in the 2010 IRS campaign. A total of 897 men and women were hired and trained as spray operators, supervisors, store keepers, security guards and IEC mobilizers. A pre-spray environmental compliance inspection was carried out to ensure that preparations for the spray round were in full compliance with USAID, WHO, and Angolan environmental compliance regulations. Another environmental compliance inspection was carried out during the mid-spray period. The inspection also assessed the systems implemented to safeguard against pilferage, leakage and misuse of the insecticides. These inspections demonstrated that spray operations were in fact compliant with accepted practices and validated standard operating procedures. At the end of the IRS operations, RTI met with the provincial health department staff in Huambo, Huila and Cunene to review the activities/results and to prepare the report. Equipment remaining from the IRS operations was

securely stored in warehouses established at the provincial capitals of Huambo, Huila and Cunene Provinces. In December 2008, a company in Luanda with an incinerator suitable for the disposal of empty insecticide sachets and protective gears was identified. All solid waste generated in the 2010 IRS campaign has been incinerated.

A pre-IRS entomologic evaluation was carried out in Huambo and Huila in October 2010. A temporary insectary and laboratory was set up in Huambo and larvae collected from both provinces were transported to Huambo for insecticide resistance evaluations. *An. coustani* mosquitoes were tested, by the standard WHO resistance assay, against deltamethrin and bendiocarb. The mortality at 24 hours was 100% and 95% respectively. Pyrethrum spray catches to collected mosquitoes resting indoors. In the 52 houses sampled from 6 villages in Huambo, no *Anopheles* mosquitoes were collected. A similar situation was found in the 17 houses sampled in Huila from 3 villages. No *Anopheles* mosquitoes were collected either.

In May 2010 a post-IRS entomologic evaluation was carried in three IRS provinces. No indoor resting adult *Anopheles* mosquitoes were collected from 6 IRS villages in Huambo or three villages in Huila and Cunene. One *An. gambiae* mosquito was collected from two villages sampled in Cunene. In Huambo, resistance testing using *An. coustani* showed 92% mortality to deltamethrin and 95% to bendiocarb, indicating the possibility of emerging resistance. In Huila there was 100% mortality with deltamethrin, using *An. coustani*, however a possible resistance to bendiocarb with 88% mortality using *An. gambiae* s.l. In Cunene Province a mortality of 93% to deltamethrin was seen in *An. gambiae* s.l. However no insecticide resistance testing was carried out for lambda-cyhalothrin, the insecticide used in the IRS operations.

PMI has agreed to assist the NMCP by building an insectary. The NMCP has obtained all the necessary approvals from the *Instituto de Combate e Control de Trypanosomiasis* and Viana Municipality for the insectary in Viana about 30 minutes outside the capital, Luanda. Documents necessary for the insectary construction are being completed for the USAID environmental assessment and construction is expected to begin later this year.

With the MOH policy of universal coverage with LLINs, the high cost of IRS, risk of development of insecticide resistance and the reduction of malaria cases in Huambo, the PMI proposed to support enhanced epidemiologic and entomologic surveillance, through an external consultant, for the evaluation of the vector control strategies in Huambo and Huila. In addition malaria transmission will continue to be monitored in Luanda. The aim is to provide critical information to support future decisions about whether IRS could be moved to other provinces or to go to focal IRS. With the limited budget for FY 2012 there may need to be a reduction in the number of structures to be sprayed in Huambo province, filling the gap with universal access to LLINs. The FY 2010 & 2011 PMI funds will increase the number of municipalities with universal net coverage significantly in Huambo.

A three-week "Entomology Technicians Course - Basic level" course held in Bengo Province in February 2010 trained forty students from all 18 provinces which included technicians either from the NMCP or the Angolan-Cuban National Larval Control Project, participated in the course. In view of the expansion of vector control activities in Angola, the NMCP requested PMI support for an insectary and laboratory facilities in Luanda. However PMI's agreement to

refurbish, equip and train personnel for the insectary have been delayed for several years due to successive changes in the proposed site for the insectary/laboratory. In 2010, the NMCP requested relocation of the insectary/laboratory to the *Instituto de Combate e Control de Trypanosomiasis* facility in Viana, about 25 km outside of Luanda. The relocation of the insectary fits into the MOH plan for an integrated vector control strategy for trypanosomiasis and malaria. A site at the facility was identified and the insectary design modified to incorporate operational and biosafety requirements.

*Planned activities with FY2012 funding are as follows: (\$4,515,000)*

1. Continue to assist the NMCP with IRS in Huambo, Huila and Cunene Provinces using a synthetic pyrethroid. The spray operations will take place between August and December 2011. An estimated total 136,000 houses will be sprayed, 60,000 in Huila, 60,000 in Huambo Province and 16,000 in Cunene. These activities will also include routine environmental monitoring to ensure all IRS activities are compliant with environmental regulations and requirements (\$4,450,000);
2. Establish an insectary and laboratory in Viana and strengthen capacity within the NMCP for entomologic studies. This will include support at the provincial level for monitoring vector populations and insecticide resistance in areas where LLINs and/or IRS are used. In addition, 3-5 week trainings for resistance and monitoring of IRS and LLINs and for the implementation of the insectary will be carried out. The funds for this activity have been provided by PMI in the previous years; and
3. Support for specific laboratory/field reagents/materials will be provided by CDC after the insectary and laboratory are completed and a susceptible mosquito colony established (\$65,000 including four TDY visits by CDC).

### **Intermittent Preventive Treatment of Pregnant Women**

#### *Background*

The Angolan NMCP's policy on malaria in pregnancy is in line with WHO recommendations. It contains a three-pronged approach made up of prompt and effective case management of malaria; use of LLINs; and IPTp with at least two doses of SP during pregnancy. This policy is applied countrywide including areas of low malaria transmission. According to the 2006-2007 MIS, only 5% of pregnant women received IPTp1 and 2% received IPTp2. Although Angola has specialized health centers which provide comprehensive antenatal services, including IPTp, pregnant women who attend other health facilities can also receive SP. Collaboration between the Reproductive Health Division and the NMCP in implementing measures to control malaria in pregnancy remains limited.

#### *Progress during last 12 months*

PMI continues to support NGOs and faith-based organizations (FBOs) in nine of the 18 provinces nationwide to improve access to scale up malaria prevention and treatment activities in

pregnant women. In general, IPTp uptake is increasing in Angola, but malaria in pregnancy interventions need to better link with the antenatal care service delivery system, thereby enabling pregnant women to benefit from a complete package of antenatal interventions. Angola has a MIP policy that conforms to WHO recommendations and is understood by the health workers. A good number of health workers have been trained in MIP; however, the implementation of MIP is being led by the NMCP instead of the Reproductive Health Division. PMI continues to advocate for closer collaboration between the NMCP and the Reproductive Health Division and the use of the data generated for management.

<b>Year</b>	<b>No. of Pregnant Women Treated with IPTp1</b>	<b>No. of Pregnant Women Treated with IPTp2*</b>
2009	387,389	281,394
2010	383,470	288,889

\* NMCP database

*Planned activities with FY2012 funding are as follows:* (These costs are covered under the case management section)

1. Continue to support NGOs/FBOs in IPTp implementation by conducting training and supervision, and ensuring the necessary resources are available (i.e., ACTs and SP), as well as the routine LLIN distribution through ANC, and effective case management of malaria in pregnant women;
2. Continue to support capacity building and standardization of implementation strategies related to control of malaria in pregnancy; PMI funded NGOs will provide initial and refresher training to nurses providing ANC services; this will facilitate a stronger relationship and greater collaboration between the NMCP and Maternal and Child Health program within the MOH; and
3. Monitor the use of traditional birth attendants in IPTp administration in Uige Province by Episcopal Relief and Development, since the population within Uige Province is underserved with respect to health services resulting also in a lower overall access to good health care.

## **CASE MANAGEMENT**

### **Malaria Diagnosis**

#### *Background*

The treatment of malaria in MOH facilities in Angola is still based largely on clinical diagnosis. Malaria microscopy is only available in hospitals and larger health centers and the quality of those diagnoses varies considerably from one facility to the next, although recent efforts to improve laboratory diagnosis are showing positive results. The Angolan Instituto Nacional de Saúde Pública has responsibility for training in laboratory diagnosis and has an experienced team of trainers in the capital, Luanda, with adequate space and training facilities.

The NMCP is now planning to decentralize training through the provincial health institutes, to ensure a more sustained pre- and in-service training and quality control of malaria microscopy. To do this, 12 laboratory trainers underwent a two-week training conducted by Brazilians experts in Luanda, in June 2011. This training was aimed at providing the 12 national trainers the required teaching skills so that they can be the focal points in the training and supervision of the provincial health institutes personnel. The next step will be a meeting of the MOH's National Directorate of Human Resources and heads of the participating health institutes to discuss the way forward in this partnership which is being backed by the Vice-Minister of Health. Funds for this initial training came from a Lusophone network for health research and development. The NMCP has requested that PMI/Angola use this mechanism in future microscopy trainings in the participating provinces.

With the recent change in WHO guidance related to malaria laboratory diagnosis, Angola has updated its strategic plan and now recommends that all suspected cases of malaria be diagnosed parasitologically, using either microscopy or RDTs. The new policy has been widely disseminated in the form of NMCP circulars but problems still exist in terms of scaling up high quality laboratory diagnosis of malaria. These include shortages of RDTs, limited laboratory capacity, inadequate quality control procedures, and perhaps the greatest challenge – failure of health workers to follow the results of laboratory testing when prescribing treatment. In addition the RDTs have not yet been incorporated into the integrated management of childhood illness (IMCI) algorithm.

A NMCP-led parasitological survey conducted in 2010 in Angola comparing the Parachek<sup>®</sup> brand RDT, a single species test that only identifies *P. falciparum*, and the SD Bioline Pf/Pv<sup>®</sup> RDT, a multi-species test, showed a much lower sensitivity with the Parachek<sup>®</sup> test. With molecular studies now showing that about 10% of all malaria infections in Angola are caused by non-falciparum species, the NMCP decided to change to a multi-species RDT. The findings from the NMCP-supported survey regarding the lowered sensitivity of Parachek<sup>®</sup> were corroborated by results from the WHO/CDC/FIND evaluation and supported the need to move to an alternative RDT, despite the slight increase in cost associated with a better performing test. The Global Fund has also agreed to procure the new multispecies RDT.

#### *Progress during last 12 months*

For the past several years, CDC and the Improving Malaria Diagnosis Project have been working with the Instituto Nacional de Saude Publica to organize training workshops for senior provincial-level malaria laboratory technicians. Standardized laboratory training materials and laboratory aids have been adapted to the Angolan context by CDC and translated into Portuguese, however, these need to be updated for the multispecies RDT. Currently, a cadre of 14 senior-level malaria laboratory technicians conduct refresher trainings and supervision across the provinces and municipalities in the country. As noted by a recent independent evaluation of the PMI-funded NGOs, two provinces Huambo and Benguela have an embryonic microscopy quality control system in place built within the respective provincial directorates of health and they are starting to yield some useful information for planning of training and supervision activities. According to the same report, a similar quality control is being established in Huila

and Kwanza-Sul through Africare, another PMI-funded NGO. The evaluator noted, however, that the scale-up of malaria microscopy in Angola is likely to take several years before becoming reality, mainly because laboratory services are not yet institutionalized as an integral part of primary health care services in the country.

During 2011, all PMI-funded NGOs, hired or collaborated with a local malaria microscopy expert to help with on-the-job coaching and on-site quality control of malaria microscopy in the eight target provinces. To complement this effort, all PMI-funded NGOs included specific training targets on differential diagnosis of fever in their work plans for the eight target provinces plus Luanda through the NMCP and the USAID bilateral partner. As part of these efforts, quarterly advocacy meetings on differential diagnosis of fever were planned with provincial directors of health, heads of public health departments, clinical directors of health facilities and heads of the local health teaching institutes. If this level of effort is sustained over time we may start to see changes in the way health workers manage fever cases in the near future.

With FY2010 PMI funding, 450,000 RDTs, 50 microscopes, and 80 microscopy kits (each kit sufficient to test approximately 1,000 patients) were procured and distributed to all 18 provinces. Using savings of money made on LLIN procurement and balances from other commodity procurements, an additional 1.2 million RDTs were procured and are expected to reach the country in July 2011 for distribution countrywide.

With FY2012 funds, PMI plans to procure another 1,000,000 RDTs, together with laboratory supplies for those laboratories strengthened with PMI support over the past several years. This is in addition to the 3.3 million RDTs procured with phase 2, Global Fund, Round 7 grant funds over the next three years, starting in 2011. Most of the remaining gap in RDT needs will be covered with the Global Fund Round 10 grant in which more than 6.3 million RDTs will be procured during phase 1 upon successful signing of the grant and is expected to happen towards the end of the calendar year 2011. As of yet, a specific distribution has not been developed but they will be distributed nationally to all 18 provinces.

*Proposed Activities with FY 2012 Funding: (\$1,325,000)*

The PMI views malaria laboratory diagnosis as a key component of good case management and will continue to support the strengthening of malaria diagnosis (both microscopy and RDTs) in MOH facilities. As prevention measures begin to take effect and malaria cases fall, high quality laboratory diagnosis of malaria will become even more important, including efforts to improve the rational use of ACTs. With FY2012 funding, PMI plans the following activities:

1. Procurement of microscopy kits for those laboratories strengthened with PMI support over the past several years. The kit content is to be reviewed by the NMCP in 2011 to inform the quantity of kits that can be acquired with the available funds (\$200,000);
2. Procure approximately 1,000,000 multispecies RDTs (\$900,000);

3. Continued support to laboratory supervision and quality control of malaria laboratory diagnosis including facilitation of provincial-level training workshops and regular supervision of provincial- and municipal-level laboratory staff on the correct use of RDTs and microscopy for malaria diagnosis in collaboration with the Instituto Nacional de Saude Pública (and a limited group provincial health institutes). Particular emphasis will be placed on training of clinical workers to adhere to the results of laboratory tests when/if administering antimalarial treatment (\$200,000); and
4. Two TDY trips from a CDC technical expert in malaria laboratory diagnosis to provide technical assistance to the MOH and in-country partners in the performance and quality control of malaria laboratory diagnostic tests (\$25,000).

### **Pharmaceutical management**

#### *Background*

Angola has been and continues to remain dependent upon oil, ranking as the second largest supplier of oil in Sub-Saharan Africa, which has resulted in a relatively unstable economy, sensitive to global fluctuations in the oil market. In spite of this, the GRA has increased its contributions to the health sector. The growing contribution of GRA has, however, resulted in a rapidly growing sector without commensurate capacity of trained professionals. In the pharmaceutical sector for example, there is significant lack of trained personnel in entire pharmaceutical and supply chain continuum, the 2011 – 2016 Angola Health Sector Strategy will place significant emphasis on both the sub-national and national health systems to better integrate service delivery at the facility level. In 2001 the GRA announced a movement toward a highly decentralized government where more responsibility, management and accountability were placed on the 164 districts. In line with the movement toward decentralized health care, the 2011 – 2016 strategy will focus the majority of the non-malaria activities in more highly populated provinces along the Cunene-Lunda Norte corridor but will extend malaria-related activities nationally across all 18 provinces.

Most of Angola's nine primary hospitals are centered in and around Luanda or within other provincial capital cities. There are 45 general (smaller) hospitals, 155 district-level hospitals (almost one for each of the 164 districts), about 350 health centers and just over 1,800 health posts. Historically, health sector resources went to the more central tertiary and secondary levels, leaving fewer resources available to the lower, more rural facilities. With the movement during the past five to ten years away from a centralized health system, this has created a growing gap in the availability of trained health care workers and infrastructure where it is most needed. Compounding the problem is the weak health management information system.

Forecasting and quantification of all malaria commodities – oral ACTs, RDTs and severe malaria medicines – are dependent upon functional LMIS. Like other parts of the health care system, the lack of trained professionals, including pharmacists and logisticians and/or procurement specialists has hindered progress in supply chain management in Angola. Furthermore, the

absence of even basic consumption data impairs significantly the ability of donors and the GRA to provide an uninterrupted supply of life-saving medicines like ACTs. Although desperately needed, routine supervision of health workers remains weak and verification of the availability of antimalarial drugs is primarily dependent on donor-supported implementing partners. To help address this and as part of on-going pharmaceutical management strengthening efforts, PMI, through its implementing partners, continue to support pharmaceutical management training program implemented jointly by the MOH and National Directorate of Medicines and Equipment.

During the six years PMI has supported malaria control in Angola, significant levels of funding have been directed toward strengthening pharmaceutical management capabilities within the NMCP and some progress has been made although weaknesses remain, particularly in the area of supervision, forecasting, and overall supply chain management. PMI continues to enjoy the full support of the NMCP, and PMI advisors in Luanda work closely with the NMCP director and staff as well as closely liaising with Global Fund colleagues. This relationship has greatly facilitated efforts toward scaling-up ACTs nationally to all 18 provinces as well as recent LLIN campaigns and RDT roll-out.

As mandated by the Department of National Medicines and Equipment, the National Essential Drugs Program (NEDP) bears responsibility for procurement, and distribution of malaria commodities (in addition to all other non-HIV/AIDS essential medicines and equipment). Lists are submitted to the NEDP and the requisite commodities are procured. For the NMCP, the NEDP procures only WHO-prequalified products, but occasional, small donations from international donors are accepted by the GRA, some of which may include antimalarials that have not been approved through the prequalification program.

#### *Progress during last 12 months*

As a result of several thefts of ACT from Angola airports, in 2008, PMI began using chartered aircraft flights into Luanda, where commodities were then funneled into the central medical stores. Subsequent to those security measures, however, additional incidents of ACT theft occurred through the middle of 2009. As a result of such weak commodities security and a lack of transparency into central-level chain-of-custody measures, PMI has been supporting an alternate supply chain for all PMI-financed commodities – RDTs, ACTs and laboratory equipment including microscopes and kits since 2010.

Commodities are staged by province in Europe and are then flown into Luanda where they are immediately distributed to each of the 18 provincial warehouses using private sector distributors to that point. At that level, the national supply chain has the technical ability and absorptive capacity to absorb malaria commodities, which are distributed to the district level. PMI adopted this system as a temporary measure to ensure life-saving commodities reach their intended population until there is sufficient evidence that the central level can manage these commodities. To date, several consignments of commodities have been delivered successfully into Angola and transported down through to the provincial level without any loss.

In an attempt to provide some clarity into service delivery points, providing information on commodities availability and use, the first round of the end-use verification tool was implemented in two provinces in Angola, Bengo and Luanda. Data was collected from a small sample of health facilities (representative for the province) using mobile phone technology, and in collaboration with the PNME and NMCP as well as provincial health offices from the two provinces. This will continue again with a second round during the fall of 2011.

Although currently working through an alternate supply chain distribution system that circumvents all central level involvement, PMI has continued to support warehousing capacity at the provincial level, building on inventory management best practices training provided by PMI. Ongoing drug management trainings have been provided for staff from all 18 provinces including a training of trainers for a core group of staff specifically for drug management at the lower health unit. Basic logistics management mechanisms, such as conducting multiple distribution records reviews at the central level and then corroborating with information collected at the provincial and municipal levels with subsequent follow-up corrective actions are relatively quick and simple ways to strengthen basic ACT management. The management trainings incorporate these basic components of pharmaceutical management to provide a relevant set of guidelines to lower level health facilities. The training materials and the revised standard operating procedures have been finalized in preparation for country-wide dissemination to the lower level health units. These standard operating procedures have been validated and approved by the GRA and are now in place in most NEDP drug stores and their application is monitored through periodic review of stock cards, stock levels and audits of delivery/receipt procedures by PMI implementing partners.

During the past 12 months, PMI funds have also supported the MOH and *Direção Nacional de Medicamentos e Equipamentos* (DNME), the Essential Medicines Department, to strengthen pharmacovigilance-related activities. Specifically, staff within the DNME pharmacovigilance unit have been trained on medicines safety, based on WHO materials.

Following on previous efforts regarding the development of standardized, national supervision checklists for both ACTs and essential medicines, implementing partners in Angola continue their work with the MOH, DNME and the NMCP to provide technical assistance in support of supervisory visits for all commodities and programs, including malaria. Progress reports on these activities are submitted to USAID following supervisory visits. While PMI has supported these efforts and the NMCP had been working toward increasing both the frequency and number of supervisory visits, there have been some issues with the quality of the visits, resulting in a temporary hold from the NMCP until these issues can be addressed.

Although the GRA procurements of AS/AQ are intended only for distribution to hospitals, it is unclear at this point how much will be procured and the implications on the already overburdened supply chain and how these will be distributed. The impact of large-scale procurements of another first-line antimalarial drug on forecasting, quantification and overall supply chain management will have to be monitored.

*Planned Activities with FY2012 Funding:* (Costs covered under “Malaria Treatment” section)

PMI will continue to provide supply chain security, including technical assistance, when necessary, to ensure the successful delivery of PMI commodities. At the same time, PMI will support efforts to build capacity at the provincial level by strengthening warehousing and pharmaceutical management activities, in collaboration with PMI-supported NGOs in those provinces where the NGOs are active. Increased efforts will also be made to monitor the antimalarial drug supply chain, through the end-use verification tool in the periphery and the pharmaceutical management tool at the warehouse level. PMI will also continue supporting implementation of a joint national supervision plan for supply chain management using the national supervision tool, through relevant local partners and in collaboration with the National Directorate of Medicines and Equipment, PNCM, PMI-supported NGOs, and other relevant stakeholders. Technical assistance will also focus on issues related to pharmaceutical policy development/strengthening, drug selection, and quantification.

## **Malaria treatment**

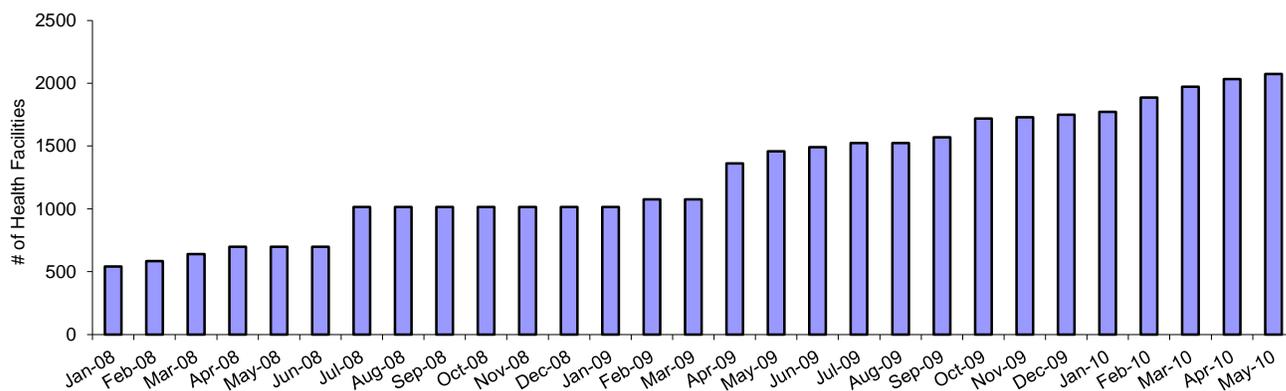
### *Background*

According to the NMCP, if the ongoing drug efficacy testing confirms DHP to be effective and safe in the Angolan population and the drug is approved by an international stringent regulatory authority, the NMCP may change its policy to make DHP the first-line treatment, with AL and AS/AQ as alternative treatments. The primary argument used by the NMCP for this potential change in policy is the relatively fewer number of tablets required to complete a full course of malaria treatment with DHP (a full course of treatment for an adult requires just nine tablets with DHP vs. 24 tablets with AL).

Another challenge to the scale-up of ACTs has been the presence of many foreign physicians serving in rural areas of Angola with little or no first-hand experience in malaria case management. Although the former Vice Minister has required that all physicians receive training in the new policy, this requirement is not systematically implemented.

The system for monitoring the roll out of ACTs (and IPTp) has been greatly strengthened during the past several years and NMCP officers at the provincial level are reporting on a monthly basis to the NMCP the number of patients receiving ACTs and IPTp. This is being reinforced through M&E officers in each municipality who are government employees and receive a monthly financial incentive through the Round 7 Global Fund malaria grant. However, this effort was severely affected by the long delays in the negotiation of the Round 7's phase 2 (still pending as of October), which is causing delays of seven months or more in salary payments for the National Program Officers, the Municipal Focal Points as well as some key staff at central level. As of July 2011, all of Angola's 164 municipalities continued implementation of ACTs through a network of 2,209 out of the 2,261 functioning health facilities, which represents about 98% of the Angola's functioning health facilities. The following graphs show the dramatic increase in the number of health facilities in Angola where ACTs are now regularly used:

### Number of Health Facilities distributing artemether-lumefantrine (2008-2011)



The GRA has also been increasing its contribution to malaria treatment. While PMI only purchases the Coartem<sup>®</sup> brand of AL, the GRA has been purchasing generic formulations of this drug. In 2011, the MOH procured a total of 400,000 ACT treatments.. The MOH continues to meet 10% of the country's need for ACTs and will continue to meet all national needs in terms of intravenous quinine and intravenous artesunate for the treatment of severe malaria in public health facilities. Nevertheless, due to problems with procurement of health commodities by the MOH, the country has been facing frequent stock outs of both intravenous quinine and intravenous artesunate. New NMCP treatment guidelines include pre-referral treatment with rectal artesunate, however, according to the NMCP, a recent WHO report has questioned the stability of artesunate in these drug presentations.

Since 2009, the GRA requested that future PMI procurements of Coartem<sup>®</sup> have included the recently approved dispersible formulation of the drug for lower age groups, while the standard oral tablet form continues to be used for adults. In 2011, the National Directorate of Medicines and Equipment continued the partnership with Novartis for the supply of the private sector packaged Coartem<sup>®</sup> with the aim of making it available at cost in private drug shops, which treat more than 50% of all suspected malaria cases. According to the National Director of Medicines and Equipment, this private sector packaged Coartem<sup>®</sup>, continues to be available in five provinces (Cabinda, Luanda, Benguela, Huila and Namibe) and there are plans to expand to the provinces of Bie and Malange. A variety of antimalarial drugs, including chloroquine, artemisinin monotherapies, and generic formulations of ACTs, continue to circulate in the private sector in Angola, although, the NMCP director stated that the Minister of Health is about to issue an order banning the importation of monotherapies into the country.

In 2010, the recently revised and approved malaria treatment guidelines recommended parenteral quinine as the approved treatment for severe malaria with parenteral artemether or artesunate as the alternative therapies. However, given the recent recommendation by the WHO of parenteral artesunate over parenteral quinine for both children and adults in the treatment of severe malaria, the program has indicated they will follow the new WHO guidelines and talk of a roll-out pilot are underway. For the treatment of uncomplicated malaria in pregnant women, oral quinine is recommended during the first trimester and AL or quinine during the second and third trimesters.

*Progress during last 12 months*

Since 2008, MENTOR, has been working in all 11 municipalities of Huambo Province and all 176 MOH health facilities in the province to strengthen malaria prevention and treatment services in health facilities. MENTOR coordinates closely with the provincial staff, including the provincial NMCP officer as well as Malaria Supervisor. Training has been provided to health workers on malaria diagnosis (including use of RDTs), malaria case management with ACTs, malaria in pregnancy and IPTp, and pharmaceutical management.

The same model has been followed in other provinces, and PMI-supported NGOs are now facilitating training in ACT management and use, IPTp, and IEC/BCC related to ITNs in seven additional provinces. This was made possible by combining PMI funding and the ExxonMobil Foundation donation to PMI. With FY10 funding, more than 1,088 health-workers have already been trained in case management with AL across these eight provinces by end of March 2011. In addition, in 2011, these NGOs received additional PMI funding, through DELIVER and were engaged in community-based mass distribution campaigns of 650,000 PMI-funded nets aimed at universal coverage in 23 municipalities in the eight provinces. Another province, Luanda Norte, was added as part of the ongoing ExxonMobil Foundation donation to PMI, bringing the total number of provinces where PMI is supporting NGOs/FBOs to nine.

Additionally, as part of the Malaria Communities Program launched in December 2006, awards were made to two NGOs: Episcopal Relief and Development (ERD) for Uige Province and *Ajuda de Desenvolvimento de Povo para Povo* (ADPP) for Zaire Province. ADPP's work is coming to an end in September 2011 but negotiations are currently under way for a no cost extension of activities up to April 2012. ERD's work will continue for one more year in Uige.

In the process of updating the 2008 – 2012 National Malaria Strategic Plan and its accompanying gap analysis, a refined ACT quantification and budgeting was carried out using the following assumptions: total population of 16 million residents, a malaria prevalence of 50%, health system coverage of 60% for Luanda and 40% for other provinces, and an average number of malaria episodes per age group varying according to endemicity level. This exercise led to the calculation of a total annual need of approximately 6.3 million ACT treatments for the whole country (See Table below). With the ongoing scale-up of malaria prevention activities, it is expected that the annual ACT consumption will remain stable for the next several years, but will then gradually decline as the differential malaria diagnosis of fever improves and the number of malaria episodes falls.

**Estimated artemether-lumefantrine needs per year:**

<b>Estimated artemether-lumefantrine needs per year</b>				
<b>Patient weight</b>	<b>Age group</b>	<b>Blister type (#tablets)</b>	<b>No. of blisters needed</b>	<b>%</b>
5 to 14 kg	Under 3 years	1 x 6 (6)	1,748,882	28
15 to 24 kg	4 to 8 years	2 x 6 (12)	1,230,546	20
25 to 34 kg	9 to 14 years	3 x 6 (18)	1,940,300	31
>34 kg	More than 14 years	4 x 6 (24)	1,302,915	21
<b>Total</b>			<b>6,222,643</b>	<b>100</b>

With FY10 funding, PMI procured more than 3.6 million AL treatments and with FY11 funding another 4.6 million treatments will be procured.

In 2010, Global Fund Round 7 procured 1.3 million AL treatments. The second phase of Round 7 Global Fund grant has a total of \$2.5 million programmed over three years for procurement of 2 million AL treatments in total. Phase 1 of the Global fund Round 10 proposal does not contemplate AL procurement for the public sector. Instead, more than 600,000 AL treatments are planned to be procured for distribution at a subsidized price through the private sector in two target provinces (Huila and Benguela). The Phase 2 Global fund Round 10 plans to procure a total of about 1.5 million and 260,000 AL treatments for the public and private sectors respectively, over the three-year period. The Global Fund Round 7 grant has no funding for training in case management and only very limited funds for supervision, but Round 10 does have substantial funds for both training and supervision. Global Fund ACTs are being distributed through the MOH's distribution chain. A pharmacist has been hired for the MOH's Project Management Unit and a logistician placed at the NMCP to oversee the distribution of all NMCP's commodities.

USAID/Angola supported the establishment of the MOH Global Fund Project Management Unit (PMU) through a series of consultancies in three major areas, financial management, monitoring and evaluation, and procurement and supply management. As a result of the challenges faced during implementation of phase 1 of the Global Fund Round 7 malaria grant and in view of the possible inclusion of the HIV/AIDS and tuberculosis grants into the PMU, USAID is supporting additional technical assistance to the PMU through the Office of the U.S. Global AIDS Coordinator (OGAC). This will be done in two ways: i) three short-term technical assistance visits will be provided through the Grants Management Solution Project to help strengthen financial management, procurement and supply and monitoring and evaluation of the PMI, and ii) the placement of one or two long-term consultants within the PMU to help with the management of global grants – USAID Angola has secured \$1 million from OGAC for this purpose.

As part of the Global Fund Round 7 grant, funds are available to maintain the sentinel sites for monitoring the efficacy of antimalarial drugs. Currently, drug efficacy studies to assess the

efficacy and safety of DHP are ongoing in three sites located in an equal number of provinces. With FY12 funds, PMI will support two to three selected sites.

## **Private Sector ACTs**

### *Background*

Throughout Africa, more than half of all patients with suspected malaria first seek treatment from the private sector. Since it is clear that the Angolan NMCP will be unable to achieve their RBM targets for treatment coverage with ACTs without involving the private drug shops, they requested that PMI fund a pilot field trial of AL delivery through the private sector. With FY08 funding, PMI competitively awarded the pilot to the MENTOR Initiative in the municipalities of Huambo and Cáala of Huambo Province. The pilot was conducted in close collaboration with the Provincial Health Directorate and the Private Sector Pharmaceutical Association. A total of 95 licensed private pharmacies were trained and registered, by both the Provincial Health Department and an association of private pharmacists. These pharmacies provided a competitively priced, over-branded AL product selling for about 75 Kwanza (\$0.75) per treatment in conjunction with training on clinical assessment, accurate diagnosis (based on clinical history) and rational use of ACTs, and followed up with routine supervisory visits from MENTOR staff. All costs recovered by MENTOR from the over-branded AL is recycled back into the program to help manage overhead costs as well as support various related projects and other on-going activities, including the re-packaging of the AL.

### *Progress during last 12 months*

During 2010, activities focused on improving adherence by already registered private pharmacies to DPS regulations as part of on-going quality control through supervisory visits. With FY 2011 funds, the focus of the ACT pilot project will be modified. The geographic coverage of the pilot will be expanded beyond the current, more heavily populated municipalities in Huambo Province to include all municipalities in the province. In addition, the expanded pilot will target all age groups (rather than just children under five) and RDTs will be included to improve case management. Direct supervisory visits are complemented by ‘mystery shopper’ visits to help verify AL usage and adherence to sales guidelines (i.e., if the pharmacy is adhering to their contractual agreement with MENTOR and the NMCP to sell only AL to only children under five in the absence of confirmatory testing). A post-pilot survey will be conducted to evaluate the impact of the pilot, feasibility in rolling out to other areas and will be compared to pre-pilot survey results.

The current Cooperative Agreement with Mentor Initiative is ending on September 30, 2011 and a follow-on implementing partner is being competitively-selected to continue with implementation of the project in Huambo. Results obtained to date will be communicated to the NMCP, who will ultimately make the decision to expand the rollout to additional municipalities in Huambo and/or to other provinces. The Round 10 Global Fund grant application will expand this effort to two additional provinces (Huila and Benguela) and, the lessons learned in Huambo Province will be applied to those new provinces.

*Planned Activities with FY2012 Funding: (\$10,410,000)*

Ensuring prompt, effective, and safe ACT treatment to a high percentage of patients with confirmed or suspected malaria in Angola represents the single greatest challenge for the NMCP and PMI, given the weaknesses in the country's pharmaceutical management system, continued poor access to health services by a large number of Angolans and the lack of accurate diagnostic capabilities. As the Global Fund and PMI remain the two primary sources of ACTs for Angola, a collaborative approach between the two organizations to work with the MOH/NEDP is critical. It is also important that weaknesses in the supply system be promptly addressed. Given the poor access to health care in Angola, PMI in collaboration with the Global Fund Round 7 grant is supporting NGOs/FBOs to facilitate ACT implementation in areas that are currently underserved by the MOH. This will be coordinated with efforts to improve case management and malaria prevention of pregnant women in ANCs within health facilities, and will include assistance with training and supportive supervision of health care workers, IEC, and monitoring and evaluation. In addition, the results of the private sector pilot of ACT distribution will help inform future expansion of that approach.

*Planned activities with FY2012 funding are as follows:*

1. Procure approximately four million AL treatments (\$3,760,000);
2. Provide support to the MOH for import/clearance, distribution and management of ACTs in order to overcome the complex clearance process and initial distribution from port of entry through central medical stores and down to the municipal level (\$450,000);
3. Together with the MOH and other partners, continue to provide technical assistance to the MOH and NEDP at the central, provincial, and municipal levels in pharmaceutical management and implementation of ACTs that will address:
  - a. Importing, quality control, storage, and inventory management;
  - b. Coordination with the MOH on quantification and distribution;
  - c. Quality improvement in the context of a multi-donor and decentralized procurement system at all levels;
  - d. Appropriate use;
  - e. Training and supportive supervision of health workers at provincial, district, and lower levels to ensure good ACT prescribing and dispensing practices;
  - f. IEC for patients;
  - g. Surveillance for adverse drug reactions and rapid response to reports/rumors of severe reactions;
  - h. Monitoring of implementation/evaluation of coverage; and
  - i. Promotion of correct use of ACTs in the private sector through IEC efforts.

This will be provided by experts in pharmaceutical management based in country, as well as through short-term technical assistance visits (\$450,000);

4. Continue to support ACT implementation (together with IPTp distribution of LLINs, and BCC) through national and international NGO/FBOs working in areas that are currently underserved by the MOH. Implementation activities include procurement, training, supervision, and logistics. This will include continued support in up to eight provinces: Huambo, Kwanza Sul, Kwanza Norte, Malange, Benguela, Huila, Uige and Zaire (\$4,300,000);
5. Expand the private sector ACT program to include all 11 municipalities in Huambo Province, all age groups, and the use of RDTs (\$650,000); and
6. Facilitate malaria program implementation as it relates to health system strengthening and in collaboration with the NMCP. This will include focusing on monitoring the use and uptake of RDTs in conjunction with ACTs and case management. This will be done in the provinces of Huambo and Luanda (\$800,000).

## **EPIDEMIC SURVEILLANCE AND RESPONSE**

### *Background*

Angola's four southern provinces, Namibe, Cunene, Huila, and Cuando Cubango, have low levels of malaria transmission but are prone to malaria epidemics. One of the objectives of the NMCP 2008-2012 Strategy is the establishment of a system for early detection and containment of malaria epidemics in these provinces.

### *Progress during last 12 months*

In late 2008, a PMI-supported consultant worked with provincial health teams in southern Angola to develop plans for epidemic detection and containment. Funding from WHO will be used to establish and operationalize a malaria detection system based on collection and analysis of routine health facility data. With Global Fund Round 7 support, the WHO provided training to 214 provincial and municipal supervisors on monitoring and evaluation. This includes 73 technicians from the four provinces at risk for malaria epidemics. Since IRS has been carried out in Huambo Province for the past five years, a cadre of trained spray personnel exists at the provincial level that could respond rapidly in the case of an upsurge in malaria. As an emergency stock for possible future epidemics, a supply of spray pumps, protective gear, and insecticide has been stored securely in a 40-foot container in Lubango, the capital of Huila Province. These materials could be used to conduct IRS in response to sudden increases in malaria cases. A rotating stock of ACTs is also kept at the provincial level. PMI is also working with WHO and the NMCP in the development of an early warning system for malaria epidemics.

In 2010, with PMI support, 72 MOH staff members were trained in Malaria Early Warning System (MEWS) in Huila, Namibe and Cunene. In 2011, WHO and NMCP team members conducted supervisory visits to the above provinces to see if the recommendations which were included in the MEWS training are being followed. The supervisory visits showed that all the trained staff are still in place, malaria epidemic thresholds have been established and the health

facilities have a stock of ACTs. The areas which needed improvements are weekly reporting on time and complete reporting from all health centers. The WHO is working with the provinces to overcome those weaknesses.

*Planned Activities with FY2012 funding are as follows: (\$300,000)*

1. PMI will support the NMCP to strengthen epidemiological surveillance and timely reporting on malaria as part of an early warning system in Huila, Cunene, Namibe and Kwando Kubango. The technical support for this activity will be provided by WHO. PMI will also help NMCP to maintain an epidemic response stockpile of antimalarial drugs, insecticides, spray pumps, and protective IRS gear at two provincial level sites in the four southern epidemic-prone provinces in Lubango, the capital of Huila Province. WHO is contributing personnel and technical leadership and the current system has been operational for the past three years. PMI will also support the NMCP in the SADC malaria surveillance system preparedness. This will include strengthening laboratory diagnosis of malaria, weekly reporting of cases and the development of district-level epidemic response plans. As a separate activity, the NCMP will collaborate with the Government of Namibia to implement IRS in the sparsely populated areas along the border. These costs will also include local staffing to support these activities. This will be the last year of funding for this activity by PMI, as the NMPC and other partners will be responsible for maintaining the early warning surveillance system along the southern border (\$300,000).

## **INTEGRATION WITH OTHER GHI PROGRAMS**

### *Background*

Under the process of national decentralization of health services, Angola has embarked on a revitalization of Municipal Health Systems. This is intended to improve infant and maternal health, as well as overall access to primary health care by the Angolan people. The program which is led by the MOH with the support of several donors, including UNICEF, the World Bank, USAID, the Cuban Government, the Spanish Cooperation, and GAVI and has the following components:

- Capacity development of the local public health network for the provision of an essential integrated health package;
- Fixed and outreach strategies to deliver services in health units and hard-to-reach communities; and
- Training and micro-planning to strengthen integration of service delivery, including on IMCI and BCC.

The Municipal Health Systems revitalization process is intended to improve the quality of existing services, staff training and supervision, availability of essential medicines, diagnosis of communicable diseases and integration of service delivery. Community outreach is planned through Municipal Health Days to provide communities with an integrated package of health interventions including LLIN distributions, vaccination, de-worming and other essential interventions. The decentralization process has placed planning and coordination of the MHDs

with the provincial and municipal health authorities. MOH estimates that MHDs reach at least 80% of the population in targeted areas.

These efforts are consistent with GHI's business model which is based on: 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 and monitoring and evaluation; and promoting research and innovation.

#### *Progress during last 12 months*

In the past year NMCP, via its cross-sectoral technical working group, has continued to integrate its work with various health programs, such as revitalization, IMCI, vaccination, nutrition, reproductive Health, and EPI under the framework of the Angolan health sector development plan. The NCMP has been working closely with the principal policy and implementation bodies including the National HIV/AIDS Prevention Commission, Inter-agency Committee for Immunization, Country Coordinating Mechanism for TB, Malaria and HIV/AIDS, various UN organizations including WHO, UNICEF, and UNDP, multi- and bi-lateral organizations such as USAID, PMI, and other Government Ministries.

*Planned activities with FY2012 funding: (Costs are included in the section of prevention, case management, capacity building and Monitoring and Evaluation)*

## **CAPACITY BUILDING AND HEALTH SYSTEMS STRENGTHENING**

### *Background*

The NMCP faces multiple challenges in scaling up major malaria prevention and control interventions nationwide. Prior to approval of the Global Fund Rounds 3 and 7 malaria grants, the NMCP was critically understaffed and overstretched as the few available functionaries were based in Luanda. Global Fund resources, however, have allowed the NMCP to recruit five National Program Officers (NPOs), based in Luanda. These NPOs provide technical support in the areas of monitoring and evaluation, finance, logistics, data management, and IPTp/IMCI. To strengthen capacity at the provincial level, an additional 18 NPOs, one for each province, have been recruited with Global Fund support to enhance management and coordination of malaria control by working within the Provincial Health Directorates. Provincial NPOs provide technical support on planning, capacity building, implementation, supervision, and monitoring and evaluation of the malaria control activities in their provinces. In addition, in each of the 164 municipalities, an existing staff member has been designated as the malaria focal point and trained to collect and report routine malaria surveillance data, with a monthly incentive paid for by the Round 7 Global Fund grant.

In spite of these advances, a gap still exists in terms of human resources, particularly for case management, increasing diagnostic capacity and covering the needs of Luanda Province where a single staff member is disproportionately expected to manage the most densely populated area in the country. In addition, capacity within the Provincial Health Directorates is unevenly

distributed and in some cases insufficient to meet the demands. The provincial Malaria Partner's Forum reinforcing the main central level Malaria Partner's Forum creates an important opportunity for the systematic engagement of NGOs, CBOs and FBOs at the national and provincial level to broaden capacity for implementation of the national strategic objectives. However, there are currently only four provincial Malaria Partners' Fora across Angola's 18 provinces and their enthusiasm seem to be waning over the years; further external support is needed.

*Progress during last 12 months*

The presence of the two PMI Malaria Advisors and the improving in-country partnership has helped to energize malaria control activities in Angola. The two PMI advisors meet and interact regularly with the NMCP and they spend a considerable proportion of their time at the NMCP offices. Thanks to their daily interaction with the NMCP Director and his staff and to the efforts of major partners such as WHO, UNICEF, the UNDP/Global Fund, and several of the larger NGOs, major progress has been made in recent years, including finalization and publication of malaria case management guidelines, finalization and publication of IEC/BCC strategic plan, and finalization of a costed National Malaria Strategic Plan for 2008– 2012 under the NMCP leadership. This document was used to develop a gap analysis that formed the basis for preparation of the successful \$78 million Global Fund Round 7 malaria proposal.

In early 2008 the Angola PMI team worked with NMCP to respond to Global Fund Round 7 queries and helped develop the Global Fund Procurement, Supply and Management Plan and the Monitoring and Evaluation Plans. After approval of the Round 7 grant, where the MOH was proposed as the new Principal Recipient, PMI provided technical assistance to the MOH in setting up a new Global Fund grant management unit that could accept and manage the grant. In 2010, the PMI advisors helped update the National Malaria Strategic Plan for 2011– 2015, and with the writing of the successful \$111 million Global Fund Round 10 malaria proposal. The PMI Resident Advisors have also played major roles in the conduct of a malariometric survey in Luanda and a health facility survey in Huambo, field supervision of malaria prevention and control activities, and working with the NMCP on developing technical guidelines on monitoring and evaluation, RDTs, ACTs, LLINs and IPTp.

*Planned activities with FY2012 funding are as follows: (\$350,000)*

1. Facilitate provincial-level supervision by the NMCP in order to strengthen NMCP capacity to supervise malaria activities at provincial level. With these funds, the central level NMCP staff will visit each of the 18 provinces at least twice a year. The follow-up supervision visits will focus on previously identified problems (\$200,000);
2. The PMI resident advisors will continue to provide technical assistance to the NMCP in all areas of malaria prevention and treatment (no additional cost); and
3. Build capacity in malaria control through support to the new CDC Field Epidemiology and Laboratory Training Program (FELTP) in Angola. (\$150,000).

## COMMUNICATION AND COORDINATION WITH OTHER PARTNERS

Communication and coordination among partners involved in malaria prevention and control in Angola continue to improve due to increasingly strong leadership from the NMCP with greater willingness to ask for and accept assistance and advice. Other contributing factors include a growing sense of partnership among key international and national organizations and groups supporting the NMCP; greater transparency in terms of funding and activities by all partners; and the catalytic effects of placing the two highly experienced PMI Malaria Advisors in the NMCP offices together with the move of several Global Fund-supported National Malaria Program Officers to the NMCP offices.

### *Progress during last 12 months*

While much still remains to be done, the successful Global Fund Round 7 and 10 proposals prepared by the NMCP and its partners are prime examples of what can be accomplished by a strong and effective NMCP supported by a coalition of partners. The Global Fund Country Coordinating Mechanism (CCM) is not very proactive in Angola, meeting only on request of the health programs. To help resolve this and other governance issues, USAID/Angola is currently providing technical assistance to the CCM through the Office of the U.S. Global AIDS Coordinator.

The National Malaria Partners' Forum, which integrates more than 40 partners including national and international NGOs, churches, professional associations, community organizations, and private sector companies, has been much less active recently. The same is true of the Provincial Malaria Partners' Fora, currently rolled out to the provinces of Malange (11 partners), Benguela (30 partners), Huambo (14 partners), and Huila (7 partners). In August 2011, the National Forum will organize its annual national meeting to renew its mandate, organize and debate operational issues. It is hoped that the annual meeting will discuss these issues and strategies to increase partners' participation. Besides the partners in the Forum there has been improved technical and operational assistance from key partners including WHO, UNICEF, USAID/CDC, PSI, the Strengthening Pharmaceutical Systems Project, and PMI-funded NGOs.

### *Planned activities with FY2012 funding are as follows: (\$30,000)*

1. Continue to support Partners' Forum meetings and salary for an administrative assistant, facilitating improved communication between partners, dissemination of minutes, etc. (\$30,000); and
2. In-country PMI staff will continue to provide administrative support to the NMCP in the monthly meetings of the Malaria Partners' Forum to strengthen communication and coordination among malaria partners (no additional cost to PMI).

## **PUBLIC-PRIVATE PARTNERSHIPS**

From 2006 through 2009, ExxonMobil contributed \$1 million each year (with exception of 2008) to support PMI objectives in Angola. ExxonMobil 2009 funds are being used, together with PMI funds, to support the scale up of ACTs and IPTp through subgrants under the World Learning Civil Society Strengthening Project to five NGOs/FBOs that are working in Benguela, Huambo, Kwanza Sul, Kwanza Norte, Uige, Huila, Malange, and Zaire Provinces, as well as through a USAID bilateral working in Lunda Norte where the government health infrastructure is weak. The results of this effort have been very positive. The NGOs are coordinating closely with provincial authorities and provincial NPOs and Malaria Supervisors.

*Planned activities with FY2012 funding are as follows: (No additional cost to PMI)*

In 2010 and 2011, ExxonMobil donated \$500,000 each year, totaling \$1 million for the two years. This amount will be carried over into FY12 (with exception of \$50,000 which has already been obligated to the USAID bilateral working in Lunda Norte). These funds (\$950,000) will be channeled through the follow-on of the World Learning Civil Society Strengthening Project to be used as in the past, to support NGOs/FBOs in the eight target provinces. These activities will continue to be planned and carried out in coordination with the NMCP, PMI, and will take into account the results of a recent PMI-funded evaluation of the NGOs. Additional technical support in pharmaceutical management, laboratory diagnosis, rational use of ACTs, malaria in pregnancy and IPTp, ITNs, and IEC related to malaria prevention and treatment will be provided by other PMI partners.

## **BEHAVIOR CHANGE COMMUNICATION**

### *Background*

The main focus of the NMCP's BCC strategy is to address misconceptions and improve knowledge and key behaviors that are essential to achieve sustained malaria control. With support from Global Fund Round 7, communication campaigns for health education have greatly increased over the past four years. To date, two campaigns using radio and television have been launched promoting the importance of owning and using a net on a daily basis – and another is in the final stages of production. Additional radio spots have also promoted the importance of antenatal care for women to receive IPTp and announced the recent availability of soluble ACTs for children. More intensive community-level BCC such as community theatre and mass media messages are also an integral part of the national IEC strategy. Posters to promote awareness within communities of their right to receive an LLIN are available in public health facilities and other community gathering places and mosquito net use promotion material are also provided with each LLIN distributed. All campaigns are developed with the NMCP, the Malaria Forum, and the Cabinet of Health Promotion within the Ministry of Health to ensure clarity of messaging and coordinated efforts.

In the approved GF Round 10 malaria grant, there is provision for a behavioral study to be conducted prior to roll-out in each province to determine knowledge, attitudes and practices

around malaria treatment. The results of this study will guide communication activities and will be measured again at the end of the project to determine any behavior change due to project activities. BCC materials for caretakers of children less than five years related to treatment of malaria with ACT have been developed for the Huambo Province pilot project and will be adapted for use province-wide as well as in the new provinces funded through Global Fund Round 10 grant. Acceptance of confirmatory diagnosis before taking or providing ACTs as well as application of confirmatory diagnosis to all age groups will continue to require behavior change strategies and capacity building at all levels. To complement PMI efforts in FY 2011, multi-prong BCC activities are planned under Global Fund Round 10 to inform communities of the availability of private sector subsidized RDTs and ACTs and the importance of prompt (i.e., within 24 hours of onset of symptoms) and effective malaria treatment (requesting an ACT and not a monotherapy).

*Progress during last 12 months*

This is covered under each of the specific interventions described above.

*Planned activities with FY2012 funding: (\$150,000; other intervention-specific BCC-related activities are covered under the interventions above)*

1. Support the dissemination of malaria-specific messages through the Voice of America radio broadcast. The VOA in Angola is transmitting broadcasts on a number of health education topics, including malaria. The USAID Mission requested contributions from PMI in an effort to reach a broader target audience through a popular medium and using local radio stations (\$150,000).

## **MONITORING AND EVALUATION**

*Background*

In Angola, rapid scale-up of malaria prevention and control interventions, and the achievement of high coverage rates with ACTs, ITNs, IPTp, and IRS are common goals of the NMCP, PMI, Global Fund, and other national and international partners working on malaria. The PMI evaluation framework is based on the goal of reducing malaria deaths by 70% and achieving 85% coverage targets with specific interventions over the course of the program (2009-2014). This framework is aligned with the standard methodology for malaria program evaluation that is being adopted and promoted by the Roll Back Malaria Partnership. Program evaluation will be based on coverage outcomes that will be measured at baseline, midpoint, and the end of the Initiative, and impact on mortality, which will be measured at baseline and the end of the Initiative. Information used to evaluate program outcomes and impact will be collected primarily through household surveys of a representative sample of the national population. All-cause mortality will be interpreted together with data on anemia, parasitemia, available information on malaria cases and external factors (e.g., rainfall), and coverage indicators to account for changes in mortality at the population level that can be attributed to reductions in malaria over the course of PMI.

The PMI monitoring framework aims to complement and support the existing NMCP monitoring and evaluation efforts. The collection of this information is done by PMI implementing partners to avoid an additional burden to NMCP staff. According to the PMI framework, specific activities are monitored on a regular basis to allow in-country program managers to assess progress and redirect resources as needed. Activities within the four main intervention areas, ITNs, IRS, IPTp, and case management with ACTs, are tracked through periodic reports from groups providing commodities, health facilities, and international and local partners. Types of activities that are monitored include procurement and distribution of commodities, availability of commodities for prevention, diagnosis and treatment of malaria, health worker performance, IEC efforts, and supervision and training for healthcare workers. To supplement this information, targeted operational evaluations and record reviews may be required to answer specific questions or identify problems with program implementation.

*Progress during last 12 months*

In 2010/2011 PMI funded a nationwide Malaria Indicator Survey with an expanded sample size of 8,000 households. This study provides the most up-to-date information on progress in malaria prevention and treatment activities in Angola since 2005/2006. The MIS 2010/2011 has shown an increase of ITN coverage from 28% to 35% but a decrease in usage for children under five from 18% to 16%. There is also a decrease in net use for pregnant woman, from 22% to 20%. The coverage of IPTp 2 increased from 2.5% in MIS 2006/7 to 17.5% in 2010/2011. The MIS 2010/2011 has shown a reduction of 50% in parasitemia from 19.5% in 2006/7 to 9.6% in 2010/2011. It seems likely that this reduction is due in large part to the scale-up of malaria control measures. The MIS 2010/2011 also showed all-cause under five mortality decreased from 118 deaths per 1000 live births in 2001-2006 MIS to 91 deaths per 100 live births in 2010/2011 MIS, which represents a reduction by 23% of under-five death between 2001/2006 and 2006/11.

The data management capacity of the NMCP has been improved. The NMCP now has a full time M&E officer and data manager hired with Global Fund support. A supervision and reporting system have been put in place to gather data on malaria indicators on a monthly basis, including data on malaria commodity consumption. The Global Fund Round 7 grant, which focuses on building capacity in monitoring and evaluation at the municipal and provincial levels, and in implementing regular data collection, complements PMI support in this area. To date, with Global Fund support and technical assistance of WHO all 164 municipal malaria focal points and 36 provincial malaria focal points have been trained. With PMI funding and technical assistance from WHO, 73 technicians from the provinces at risk of malaria epidemics (Huila, Cunene, Namibe and Kuando Kubango) were trained on the MEWS.

In March 2010, a member of the PMI M&E team spent a week working with the Resident Advisors to introduce the PMI impact evaluation to the NMCP and other partners and identify potential data sources. The PMI M&E team will have access to MIS 2010/2011 data and a local partner will be hired to collect missing data.

With PMI support, Management Sciences for Health's Strengthening Pharmaceutical Systems (MSH/SPS) Program had provided technical assistance to the Angola MOH's National

Directorate of Medicines and Equipment, National Essential Medicines Program and NMCP to conduct a pilot survey of the availability (and use) of malaria and other key MOH program commodities in 19 health facilities in two of the 18 provinces of Angola, Luanda and Bengo using the PMI's End Use Verification tool. Implementation of the actual finalized version of the tool has only recently taken place and was applied in eight provinces at the time of publication of this document and results from this first round are not available.

The NMCP with the assistance of the PMI and its partners have invested much time and money into the training of health workers to improve malaria case management in public health facilities in Angola. A health facility survey was performed in Huambo Province in November 2007 to evaluate the quality of the case management of malaria shortly after health workers were trained on the new antimalarial policy (e.g., ACTs and use of RDTs). Consultations were observed, patients were interviewed and re-examined, and health workers were interviewed. The survey demonstrated much progress in malaria case management scale up, but also demonstrated some deficiencies in health care worker knowledge, and proficiency of the new policy

The evaluation of malaria case management quality as well as preparedness of health facility to manage cases, and quality of laboratory diagnosis will be evaluated again in 2011. Comparisons of results will be looked at to determine progress and update the current level of proficiency. This information will provide the national and provincial government and other national governments with similar situations ideas of how to move forward with malaria case management scale up.

From July 11 to July 21, 2011 PMI Angola received two external evaluators who arrived in Luanda to assess the impact associated with the first five years of PMI funding jointly with the resources and efforts of other major partners. The evaluation was structured to collect timely information on key issues related to (a) the degree to which PMI has put its operating principles into practice; (b) the partnership environment; (c) identification of lessons for USG global health initiatives; and (d) the results of a rigorous statistical analysis of the initiative's intended outcomes and impacts. The evaluation team visited the National Malaria Control Program, WHO, UNICEF, Global Fund, National Institute of Public Health and held interviews with USAID and CDC staff, PMI Resident Advisors, and PMI implementing partners including national and international NGOs and ExxonMobil in Angola. In addition to extensive review of documents and records, the team undertook a site visit to Kwanza Sul Province to observe PMI activities in course in Kibala at the health center and interview local health officials. Following the visit, the evaluation team will prepare a country report and submit to the PMI Angola for review and comment.

*Planned activities with FY2012 funding are as follows: (\$450,000)*

1. End-use verification/monitoring of the availability of key antimalarial commodities at the facility level. This will entail regular supervisory/monitoring visits to a random sample of health facilities and regional warehouses to better identify overt malaria commodities supply chain weaknesses, focusing on malaria drugs availability, ACT use, and general stock management, including quantifications/consumption capability (\$100,000);

2. PMI will continue to support the efforts of other donors to strengthen the HMIS. WHO has recently conducted an assessment of the performance of HMIS in Angola and the results are encouraging. Overall, according to this assessment, HMIS continue to provide useful information for the MoH and its partners. This activity will support data collection, analyses of data collected and reporting and will include the number and treatment outcome of malaria cases from each of Angola's province (\$100,000); and
3. With the MOH policy of universal coverage with LLINs, the high cost of IRS, risk of development of insecticide resistance and the reduction of malaria cases in Huambo, the PMI proposed to support enhanced epidemiologic and entomologic surveillance, through an external consultant, for the evaluation of the vector control strategies in Huambo, Huila and Cunene. The aim is to provide critical information to support future decisions about whether IRS could be moved from Huambo, where the 2010/2011 MIS describes zero *Anopheles* mosquitoes and zero parasitemia to other provinces with higher levels of *Anopheles* mosquitoes and parasitemia *or* to go to focal IRS (\$250,000).

## **STAFFING AND ADMINISTRATION**

*Planned Activities with FY2012 Funding: (\$3,003,000)*

The USAID and CDC in-country Malaria Advisors assumed their posts in late 2006. They have been provided space within the NMCP offices and spend much of each work day there. This has greatly improved communication and coordination between PMI and NMCP, and they are now regarded as valued advisors to the NMCP. In the afternoons both advisors work out of the USAID Mission.

Both PMI staff members are part of a single inter-agency team led by the USAID Health Team Lead. The PMI team shares responsibility for development and implementation of PMI strategies and work plans, coordination with national authorities, management of collaborating agencies, and supervision of day-to-day activities. Both staff members report to the USAID Health Team Lead. The CDC staff member 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, Global Fund, World Bank, and the private sector.

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

**ANNEXES**  
**Year 7 (FY2012) Budget Breakdown by Partner\***

<b>Partner</b>	<b>Geographic Area</b>	<b>Activity</b>	<b>Budget (\$)</b>
UNICEF	Nationwide	Procurement and distribution of LLINs	2,025,000
DELIVER/NGOs	Nationwide	Procurement/distribution of LLINs through NGOs	4,142,000
DELIVER	Nationwide	Procurement of diagnostic equipment and supplies, RDTs, AL and LLINs, including LLINS distribution	5,409,000
TBD	Nationwide	Commercial sales related to integrated IEC/BCC for ITNs	450,000
CDC	Uige, Kwanza Sul, Malange, and Huambo (HFS only) Provinces	a) Assist in implementation and evaluation of study to gather data on LLIN longevity and durability; b) Assist with <i>in vivo</i> drug efficacy studies; and c) conduct repeat health facility survey	265,000
CDC	TBD	FELTP program	150,000
IRS IQC Global Task Order	Huila, Huambo & Cunene Provinces	Procurement of insecticide, spray equipment and related IRS commodities to spray 160,000 households; conduct pre- and post-campaign surveys and entomologic monitoring	4,450,000
SIAPS	Nationwide	a) Strengthening MOH drug management system; and b) implement end-use verification.	550,000
USAID	Nationwide	Extend outreach of health messaging, including malaria using Voice of America	150,000
TBD	9 provinces, nationwide	a) ACT and IPTp implementation in underserved areas, including BCC/IEC; and b) also quality assurance for laboratory diagnostics; and c) assist NMCP with provincial level supervision	4,500,000
Mentor	Huambo	Implementation of ACT private sector pilot and expansion to other municipalities	650,000
TBD	TBD	Facilitate malaria program implementation through health system strengthening	800,000
WHO	Huila, Cunene, Namibe, Cwando Cubango	Refresher training and supervision as part of continued support to WHO to help strengthen the epidemic preparedness & response through development	300,000
TBD	Huila, Huambo and Luanda Provinces	Enhanced case and entomologic surveillance for evaluation of vector control strategies.	250,000
TBD	Nationwide	Oversight of Malaria Partners' Forum	30,000
WHO or Measure	TBD	Provide technical assistance to strengthen HMIS system development based on WHO assessment	100,000

\*Does not include budget for staffing/administration of \$3,003,000 or \$90,000 for CDC temporary duty (TDY)

**Table 2**  
**President's Malaria Initiative — Angola Planned Obligations for FY2012 (\$)**

<b>Planned Activity</b>	<b>Mechanism</b>	<b>Budget (<i>commodities</i>)</b>	<b>Geographic Area</b>	<b>Description of Activity</b>	<b>Relation to Interventions</b>
<b>PREVENTIVE ACTIVITIES</b>					
Procurement of LLINs	Grant to UNICEF	2,025,000 (2,025,000)	Nationwide	Purchase/distribution of 212,500 LLINs to pregnant women/children <5 through clinics, routine distribution, including BCC/IEC and tracking	ITNs
Procurement of LLINs	DELIVER Task Order 7/NGOs	4,142,000 (4,142,000)	Nationwide	Purchase/distribution of 412,500 LLINs for increased population coverage distributed through municipal campaigns	ITNs
Commercial sales for LLINs	TBD	450,000 (450,000)	Nationwide	Procurement and integrated IEC/BCC related to ITNs	Malaria prevention and control
LLINs durability study	CDC	50,000	Uige, Kwanza Sul & Malange Provinces	Assist in the implementation of three-province study to gather data on LLIN longevity and durability; also provide technical assistance for evaluation	ITNs
Indoor residual spraying	IRS IQC 2 Global Task Order 4	4,450,000 (400,000)	Huila, Huambo, and Cunene provinces	Procurement of insecticide, spray equipment/supplies to spray 160,000 households; pre- and post-campaign surveys including entomologic monitoring	IRS

<b>Planned Activity</b>	<b>Mechanism</b>	<b>Budget (<i>commodities</i>)</b>	<b>Geographic Area</b>	<b>Description of Activity</b>	<b>Relation to Interventions</b>
Entomologic monitoring and insecticide resistance testing	CDC	65,000 (includes CDC TDYs)	Huila, Huambo and Cunene Provinces	Technical assistance visit for entomologic monitoring and resistance testing in NMCP; technical oversight of new insectary includes support for specific reagents and other laboratory diagnostic materials	IRS
<b>SUBTOTAL: Preventive Activities</b>		<b>11,182,000</b>			
<b>CASE MANAGEMENT ACTIVITIES</b>					
Procurement of laboratory supplies	DELIVER Task Order 7	200,000 (200,000)	Nationwide	Procurement of laboratory diagnostic reagents and supplies	Case management
Procurement of RDTs	DELIVER Task Order 7	900,000 (900,000)	Nationwide	Procurement of 1,000,000 RDTs	Case management
Facilitate training, supervision and quality control of malaria laboratory diagnosis	World Learning follow-on	200,000	Nationwide	Technical assistance on quality control of laboratory diagnosis (microscopy and RDTs)	Case management
Technical support for laboratory training	CDC	25,000 (CDC TDYs)	Nationwide	Four TDY visits to provide assistance to in-country partners in the correct use of laboratory diagnostic test results	Diagnosis and treatment
Procurement of artemether-lumefantrine	DELIVER Task Order 7	3,760,000 (3,760,000)	Nationwide	Purchase of artemether-lumefantrine and other antimalarial drugs as needed	ACTs

<b>Planned Activity</b>	<b>Mechanism</b>	<b>Budget (<i>commodities</i>)</b>	<b>Geographic Area</b>	<b>Description of Activity</b>	<b>Relation to Interventions</b>
Technical assistance and support for import, clearance, storage, distribution and management of RDT and ACT commodities	DELIVER Task Order 7	450,000	Nationwide	Provide assistance in the clearance, distribution from port, and storage through customs, and down through provincial level	Case management
Strengthen Ministry of Health antimalarial drug management system	SIAPS	450,000	Nationwide	Strengthen pharmaceutical mgmt. related to antimalarial drugs including regular supervision, provincial training of pharmacist, help with printing of management	ACTs
Support to NGOs/FBOs in ACT implementation in non-MOH supported provinces	TBD	4,300,000	TBD	Implement ACT treatment of malaria in areas not currently served by the MoH and include IEC/BCC related to ACTs, ITNS, IPTp in the same areas;	Diagnosis and treatment
Continue ACTs private sector pilot	Mentor	650,000	Huambo	This activity will include an expanded geographic focus, broader target age population and incorporate RDTs to better understand case management practices in the private sector	Case management
<b>SUBTOTAL: Case Management</b>		<b>10,935,000</b>			
<b>OTHER ACTIVITIES</b>					
Facilitate malaria program implementation and health systems strengthening in collaboration with NMCP	TBD	800,000	TBD	Facilitate malaria program implementation through health systems strengthening.	Health system strengthening

<b>Planned Activity</b>	<b>Mechanism</b>	<b>Budget (<i>commodities</i>)</b>	<b>Geographic Area</b>	<b>Description of Activity</b>	<b>Relation to Interventions</b>
Epidemic preparedness and response	WHO	300,000	Huila, Cunene, Namibe, Cuando Cubango	Refresher training and supervision as part of continued support to WHO for an early warning system and resources mobilization to detect and respond to epidemics (\$200,000); to support these activities, local staffing costs also included (\$100,000).	Epidemic response
FELTP	CDC	150,000	TBD	The Agostino Neto University, the Ministry of Health with CDC are collaborating to establish a program to train health personnel in field epidemiology where participants will acquire skills in data analysis, epidemiologic methods and use of strategic information to make appropriate health decisions.	Capacity building
Support to Malaria Partners' Forum secretariat	TBD	30,000	Nationwide	Continued support to Malaria Partners' Forum	Coordination of malaria partners
Voice of America	USAID	150,000	Nationwide	Through the USAID Mission, PMI will contribute to	BCC/IEC
<b>SUBTOTAL: Other Activities</b>		<b>1,430,000</b>			
<b>MONITORING AND EVALUATION</b>					
End-use verification	SIAPS	100,000	Nationwide	At least biannual monitoring of commodity availability and use at health facility level	M&E

<b>Planned Activity</b>	<b>Mechanism</b>	<b>Budget (<i>commodities</i>)</b>	<b>Geographic Area</b>	<b>Description of Activity</b>	<b>Relation to Interventions</b>
Strengthening HMIS	WHO or Measure	100,000	Nationwide	Support to strengthening HMIS based on results of WHO assessment	M&E
Enhanced integrated surveillance for Huambo, Huila and Luanda	TBD	250,000	Huambo, Huila and Luanda Provinces	Enhanced case and entomologic surveillance by external consultant, for evaluation of vector control strategies for Huila and Huambo Provinces; continue to monitor malaria transmission in Luanda Province	M&E
Provincial level supervision with NMCP	TBD	200,000	Nationwide	Strengthen provincial-level supervision by the NMCP for malaria activities. Provide technical assistance to NMCP to visit each province at least twice a year	M&E
<b>SUBTOTAL: Monitoring and Evaluation</b>		<b>650,000</b>			
<b>STAFFING AND ADMINISTRATION</b>					
Staffing and administration	USAID and CDC IAA	3,003,000 (1,060,000 for CDC IAA and 1,943,000 for USAID)	Nationwide	Support to salaries and benefits of Resident Advisors and support staff	
<b>SUBTOTAL: Staffing &amp; Administration</b>		<b>3,003,000</b>			
<b>GRAND TOTAL</b>		<b>27,200,000</b>			

