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

PRESIDENT'S MALARIA INITIATIVE

Malaria Operational Plan – FY10

MADAGASCAR

November 30, 2009

A. EXECUTIVE SUMMARY

Malaria is a major health problem in Madagascar. It is reported to account for about 6% of outpatient visits and 16% of hospital admissions for children under five years of age. The epidemiology of malaria varies considerably in different regions of the country. On the East Coast transmission is stable and perennial, and the West Coast has one long, rainy transmission season and a brief dry season. Almost one third of the Central Highlands is above 1,500 meters elevation, where malaria transmission rarely occurs. In the rest of the Central Highlands, transmission is seasonal and moderately unstable with occasional epidemics. The semi-desert South has highly seasonal transmission and is also vulnerable to epidemics. In the most recent large-scale epidemic in the late 1980s, an estimated 30,000 people died.

A Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund) Round 7, 5-year, $69 million malaria grant was signed in August 2008. In October 2009, Madagascar signed a 4-year, $64 million Global Fund Round 4 Rolling Continuation Channel grant focused on supporting expanded LLIN coverage. Madagascar also received more than $5 million from UNITAID, which has been used to cover ACT needs for 2007 through 2009. The United Nations Children's Fund (UNICEF) has played a major role in the prevention and treatment of malaria during pregnancy, the distribution of insecticide-treated nets (ITNs), and the implementation of integrated community case management of malaria, pneumonia and diarrheal diseases in children under five at the community level. The World Health Organization is a major source of technical assistance to the *Service de Lutte Contre le Paludisme* (National Malaria Control Program; NMCP)

A political crisis in Madagascar starting in January 2009 culminated in a coup d'état on March 17, 2009. The U.S. Department of State has suspended all non-life saving U.S. Government (USG) aid to Madagascar, prohibiting work at any level with government workers and institutions. The political crisis resulted in the delay and suspension of several Fiscal Year (FY) 08 PMI activities. Both PMI resident advisors were obliged to leave the country for four months on ordered departure. All USG technical assistance to the current government, from the primary care health facility level to the central Ministry of Health, has been suspended until free and fair democratic elections are held.

In response to the political crisis, PMI has reprogrammed FY 2009 funds from activities that would have required working with or engaging the Government of Madagascar (GoM) to activities using international and local non-government organization as implementing partners. The FY 2010 Malaria Operational Plan has been developed based on the assumption that the USG suspensions will be lifted within the next year. It is based on planning meetings that took place in Washington DC in July 2009 including representatives from USAID and CDC staff based in Washington, Atlanta, and Madagascar. Although the planning team was unable to meet with NMCP or other GoM personnel, the team obtained input from national and international partners involved in malaria prevention and control in the country. The FY 2010 PMI plan supports the newly-revised National Malaria Strategic Plan and is coordinated with national and international partners to complement their funding and support.

To achieve the goal and targets of the NMCP and PMI in Madagascar, the following major activities will be supported during Year 3:

Indoor residual spraying (IRS): In May 2008, an international conference to address the goal of elimination was held in Madagascar. Based on WHO principles and guidelines, the new National Malaria Strategy calls for a continuation of IRS in the Central Highlands and fringe districts, with an extension to the western 'transition' zone and the South. Long-lasting ITNs (LLINs) will be deployed for prevention in coastal areas. The IRS goal is to spray at least 80% of targeted structures in 53 health districts (10.25 million inhabitants) for four years (one round/year). This will be followed by targeted IRS in high-risk districts identified using clinical data, backed up by an epidemic response system capable of rapid detection and response to outbreaks. During the past 12 months, PMI continued spray operations in six health districts reaching approximately 1.3 million inhabitants. Global Fund-supported IRS activities protected an additional 5.5 million individuals.

In FY 2010, PMI will expand from six to thirteen districts and cover a population of 2.6 million. This will be coordinated with the Global Fund-supported IRS activities, which together with PMI will protect an estimated 10.25 million inhabitants. PMI will continue its environmental mitigation measures, as well as expand its support for entomologic monitoring and evaluation.

Insecticide-treated nets (ITNs): PMI is supporting the Ministry of Health strategy of providing universal coverage (two nets per household) in the 91 of 111 health districts where seasonal or perennial malaria transmission occurs. PMI supports free mass distribution campaigns to achieve equitable coverage as well as free routine distribution through antenatal care (ANC) and immunization clinics to pregnant women and children under five, and social marketing of highly-subsidized ITNs at the community level.

In Year 1, working closely with other partners, PMI provided logistic support for the distribution of approximately 1.8 million free LLINs to the West Coast, South and fringe districts during the October 2007 integrated measles/malaria campaign. A post-campaign evaluation found that the campaign effectively achieved equitable ownership of LLINs across economic quintiles. In response to the GoM decision to achieve nationwide universal coverage by the end of 2010, PMI reprogrammed LLINs earmarked for routine distribution to support a November/December 2009 free, mass distribution campaign. In Years 1 and 2, PMI's contribution of 1.6 million LLINs towards free mass distribution represents 23% of the nets needed to scale up to universal coverage. In addition, PMI supported the sale of 250,000 highly-subsidized LLINs by community health workers and commercial outlets to support keep-up distribution.

With FY 2010 funding, PMI will procure approximately 1.5 million LLINs for distribution in areas of the West Coast, South and fringe districts not covered by the 2009 campaign. Donor-coordinated mass distribution of LLINs in 2009 and 2010 is expected to increase the proportion of houses with two nets to over 80% and usage among pregnant women and children under five to over 85%. PMI will support the distribution of an additional 165,000 LLINs through community-based social marketing and subsidized sales to complement routine keep-up distribution in ANC and immunization clinics supported by the Global Fund. PMI will also provide significant support for information, education and communication and behavior change

communication (IEC/BCC) to increase awareness of the causes of malaria and the use of ITNs to prevent transmission. Interventions will include mass media, community mobilization and post-campaign hang-up activities.

Intermittent preventive treatment of pregnant women (IPTp): IPTp using sulfadoxine-pyrimethamine (SP) was adopted as a national policy in late 2004 in the 91 districts where stable malaria transmission occurs. SP administration during ANC visits has been added to the ANC card and register. Based on records from about one-third of the 91 IPTp districts, 41% of women attending ANC clinics received two doses of SP. Since PMI was unable to work with MOH personnel in Year 2, we focused our efforts on IEC/BCC to promote early and frequent ANC attendance by pregnant women and provide a better understanding of the risks of malaria in pregnancy and the benefits of IPTp. With FY 2010 funding, PMI will continue to support client-targeted IEC/BCC and will resume close collaboration with the NMCP and the Division of Mother and Child Health to improve delivery of IPTp during ANC visits.

Case management: The NMCP policy requires that, where possible, all cases of malaria be diagnosed by microscopy or a rapid diagnostic test (RDT); however, only a small fraction of suspected malaria cases in health facilities are properly diagnosed. During Year 1, PMI supported an assessment of laboratory diagnostic capabilities in Madagascar and developed a detailed plan of action for interventions to improve diagnosis. PMI FY09 activities to improve diagnostics, supply chain management and case management at the health facility level were suspended and funding was redirected towards improving and expanding delivery of ACTs at the community level in about one-third of all communes nationwide. In many of these communes, integrated case management for malaria, pneumonia and diarrheal diseases has been introduced and PMI will introduce RDTs for use by community health workers in two of these health districts. Global Fund grants and UNITAID donations are expected to fill all ACT needs for health facilities and community-level distribution in Madagascar through 2011.

With FY 2010 funding, PMI will resume support to improve malaria laboratory diagnosis including procurement of laboratory equipment and supplies, and implementation of training, quality control, and supervision. PMI will resume work with the NMCP to build capacity in critical areas of pharmaceutical management and monitoring drug quality. PMI will continue its support to rollout ACTs and training for integrated case-management of malaria, pneumonia and diarrheal diseases for health workers at facility level and CHWs at community level. PMI will support IEC/BCC interventions to improve prompt care-seeking for fever and improve the management of childhood illnesses.

Community and NGO mobilization: PMI continues its support for the Champion Commune approach, which works with the MoH, NGOs and RBM partners to establish an innovative and effective community empowerment and mobilization program. This approach is comprehensive in scope, and has resulted in improvements in immunization rates, pre-natal consultations, family planning, and reductions in diarrhea, pneumonia and malaria. In addition, PMI supports a variety of IEC/BCC strategies to improve health enhancing behaviors. PMI partners use mass media, including radio shows, mobile videos with local actors, and print materials for broad dissemination of key malaria prevention and treatment education messages. The restrictions on

work with the government and public health care system during Year 2 resulted in greater investment by PMI in community-based interventions.

In FY 2010, PMI will work with the NMCP and partners to strengthen and harmonize IEC/BCC approaches for malaria prevention and treatment at the community level. This will include expansion of the Champion Commune approach, with a particular focus on an integrated community approach for the management and treatment of pneumonia, diarrheal diseases, and malaria. PMI will also collaborate with Peace Corps Volunteers' at the community level, chiefly on activities to improve treatment seeking and prevention behaviors.

Monitoring and evaluation (M&E): The NMCP, with the support of PMI, Global Fund, and other partners, has developed a National Malaria M&E Strategy and Plan. In Year 1, PMI contributed to the 2008-2009 nationwide DHS, which will provide baseline data for PMI; the results of this survey are expected in December 2009. In Year 2, PMI continued support for fever sentinel surveillance through *Institut Pasteur Madagascar* (Pasteur Institute).

With FY 2010 funding, PMI will strengthen M&E nationally by supporting expansion, improved reporting quality and timeliness of epidemic surveillance. PMI will also continue to support high quality data reporting of malaria indicators from the fever sentinel sites and support national integration of key malaria indicators into the Health Management Information System.

Building NMCP capacity: The updated National Malaria Strategic Plan identifies the ineffective implementation of the "Three Ones" principle (one national strategy, one coordinating body and one M&E plan), as a major weakness of the NMCP in Madagascar. Reaching the goal of elimination of malaria in Madagascar will require considerable strengthening the NMCP, both in quantity and quality of human resources at all levels of the health system. PMI's capacity building activities were suspended in Year 2.

With FY 2010 funding, PMI and its partners will build capacity in the public sector at national, district and health center levels through training and mentoring of local staff for improved diagnostics, case management, supply chain management, supervision and collection and use of data to improve programming. PMI will also contribute materially to increased capacity by providing office and computer equipment for the new NMCP headquarters, as well as equipping a new insectary.

The proposed FY 2010 PMI budget for Madagascar is $33.9 million. Of this amount, 33% will support procurement and distribution of LLINs, 29% IRS and related activities, 19% improvement of malaria diagnosis and appropriate use of ACTs, 3% will support malaria in pregnancy, including IPTp, 5% will support IEC and BCC activities nationally, 7% M&E and 4% for in-country staffing and administration. More than 42% of the total will be spent on commodities.

ACRONYMS AND ABBREVIATIONS

ACT	Artemisinin-based combination therapy
ADE	Adverse drug reaction
ANC	Antenatal care
AS/AQ	Artesunate-amodiaquine
CDC	Centers for Disease Control and Prevention
CHW	Community health worker
c-IMCI	Community Integrated Management of Childhood Illnesses
CSB	*Centre de Santé de Base* (Most basic health clinic)
DAMM	*Direction de l'Agence du Médicament de Madagascar* (Drug Regulatory Authority)
DHS	Demographic and Health Survey
DPLMT	*Direction de Pharmacies, de Laboratoires et de la Médecine Traditionnelle* (Directorate of Pharmacies, Laboratories and Traditional Medicine)
FANC	Focused Antenatal Care
FBO	Faith-Based Organization
FY	Fiscal Year
Global Fund	The Global Fund to Fight AIDS, Tuberculosis and Malaria
GoM	Government of Madagascar
HBMF	home-based management of fever
HMIS	Health Management Information System
IEC/BCC	information, education, communication/behavior change communication
IPM	*Institut Pasteur Madagascar* (Pasteur Institute)
IPTp	Intermittent preventive treatment of pregnant women
IRS	Indoor residual spraying
ITN	Insecticide-treated net
LLIN	Long-lasting insecticide-treated net
M&E	Monitoring and Evaluation
MCH	Maternal and Child Health
MoH	Ministry of Health, Family Planning and Social Welfare
NGO	non-governmental organization
NMCP	National Malaria Control Program (Service de Lutte Contre le Paludisme (SLP))
NSA	Global Fund National Strategy Application
NTD	Neglected Tropical Disease
PAIS	*Programme d'Action pour l'Intégration des Intrants de Santé* (Health Product Integration Project)
PERSUAP	Pesticide Evaluation Report and Safer Use Action Plan
PMI	President's Malaria Initiative
PSI	Population Services International
PSSE	*Postes Sentinelles de Surveillance Epidémiologique* (Epidemiologic Sentinel Surveillance Sites)
QA/QC	Quality control/quality assurance
RBM	Roll Back Malaria

RCC	Rolling Continuation Channel
RDT	Rapid diagnostic test
RTI	Research Triangle International
SALAMA	Madagascar central medical stores
SP	Sulfadoxine-pyrimethamine
SSD	*Service de Santé de District* (District Health Office)
TRaC	Tracking results continuously survey (PSI)
UGP	*Unité de gestion du projet* (Global Fund Rd 7 Principal Recipient for public sector activity)
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USG	United States Government
WHO	World Health Organization

B. PRESIDENT'S MALARIA INITIATIVE

In late June 2005, the United States Government (USG) announced a five-year, $1.2 billion initiative to rapidly scale up malaria prevention and treatment interventions in high-burden countries in sub-Saharan Africa. The goal of this Initiative is to reduce malaria-related mortality by 50% in each of the target countries. This will be achieved by reaching 85% coverage of the most vulnerable groups–children under five years of age and pregnant women–with proven preventive and therapeutic interventions, including artemisinin-based combination therapies (ACTs), insecticide-treated bed nets (ITNs), intermittent preventive treatment of pregnant women (IPTp), and indoor residual spraying (IRS).

The President's Malaria Initiative (PMI) began in three countries in 2006: Angola, Tanzania, and Uganda. In 2007, four countries were added: Malawi, Mozambique, Senegal, and Rwanda. In 2008, eight additional countries were added to reach a total of 15 countries covered under the PMI. Madagascar is one of the eight countries selected for 2008. Funding for PMI began with $30 million in Fiscal Year (FY) 06 for the initial three countries, and increased to $160 million in FY 07, $300 million in both FY 08 and FY09, and will reach $500 million in FY 10.

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

This document presents a detailed implementation plan for Year 3, FY 2010, of PMI in Madagascar. It briefly reviews the current status of malaria control and prevention policies and activities, identifies challenges and unmet needs, and provides a description of planned Year 3 activities under PMI. Due to the political crisis in Madagascar and the USG suspension in March 2009 of non-lifesaving assistance and direct support to the GoM, the PMI team was unable to meet with staff from the National Malaria Control Program (NMCP) or other members of the GoM and activities that directly engaged the government were suspended. The team was however able to consult with many national and international partners involved in malaria prevention and control in the country. Furthermore, the analysis and planned activities are based on the newly-revised National Malaria Strategic Plan and the findings of the Technical Review Panel assisting the GoM in the development of the National Strategy Application under the Global Fund.

The PMI team was allowed to reprogram FY 2009 funds from activities that would have required working with or engaging the Government of Madagascar to activities using international and local non-government organizations as implementing partners. The FY10 MOP has been developed based on the assumption that suspension of USG assistance will be lifted within the

next year. Although PMI/Madagascar is confident that the activities proposed in this MOP are in line with and complementary to other planned activities, all plans will be reviewed with the NMCP upon the lifting of UGS suspension of all non-lifesaving assistance and of direct support to the GOM. Should suspension not be lifted prior to implementation of Year 3 activities, some of the planned activities involving direct support to the GoM will need to be reprogrammed. The total amount of PMI funding requested for Madagascar in FY 2010 is $33.9 million.

C. MALARIA SITUATION

Madagascar has a population of approximately 19.7 million, 19% of whom are children under five years of age and an estimated 4.5% are pregnant women (INSTAT, 2009). One of the poorest countries in the world, the average per capita income in Madagascar is only $320 (World Bank, 2006); 46% of the population is illiterate; 70% of the population lives below the poverty line; and 49% of children under age five are malnourished (DHS 2003/2004). The most common causes of death among children under five are malaria, diarrheal diseases, and respiratory infections, often associated with malnutrition. Life expectancy hovers at 55 years. This dire situation springs from several factors: a weak health system, poor economic growth, and a high population growth rate of 2.8%.

The last decade has witnessed marked health improvements in Madagascar, especially among children. According to the 2003/2004 Demographic and Health Survey (DHS), infant and child mortality fell by 43% and 41%, respectively, between 1997 and 2004. Due to lack of confidence in the census data that was used as the basis for DHS sample selection, several partners have raised questions about potential bias and the reliability of the child mortality figure. Nevertheless, other determinants of child survival–such as morbidity and coverage of important health interventions–have improved significantly. For instance, the prevalence of diarrhea in children decreased about 63% and the proportion of anemic children fell about 31% between 1997 and 2004. More recent health data are still pending. Data collection for the 2008/2009 DHS, the baseline for PMI, has been completed and results will be available in late 2009.

Despite recent improvements in child health indicators, Madagascar still faces major health challenges, which threaten social and economic development. Health service quality is substantially below standard and basic medicines and supplies are regularly in short supply. Public and non-governmental sector capacity to plan effectively and manage health programs is weak, particularly in the areas of financial and administrative management, as is the use of data for program planning and

monitoring. National health infrastructure, information and commodity management and logistics systems are extremely weak, and much remains to be done at central and regional levels to ensure sustainable health financing. A political crisis starting in January 2009, culminated in a coup d'état on March 17, 2009 and led to the suspension by the USG and many other partners of financial and technical assistance to the current transitional government. In addition, the overall government-financed health budget for FY 2009 was reduced by approximately 30%. This will have a significant impact on the overall health and malaria activities at every level of the public health system.

As a result of these actions, there have been delays in planned health policy reform; decreased supervisory and monitoring visits due to security issues and lack of funds, delayed data reporting, and interruptions in the supply chain of essential medicines down to the health facility level resulting in stock outs. The non-governmental sector has reported challenges to working under current conditions due to insecurity in the field, and reduced capacity of the health sector at the decentralized level as a result of changes in personnel and delays in fund disbursements.

Administratively, the country is divided into 22 regions, 111 health districts (119 administrative districts), 1,557 communes and 17,500 fokontany (the smallest administrative unit).

Malaria transmission and epidemiology

Malaria is endemic in 90% of Madagascar, however, the entire population is considered to be at risk for the disease. Reported malaria cases and deaths through the national HMIS system has shown decreasing trends in morbidity and mortality between 2003 and 2007.

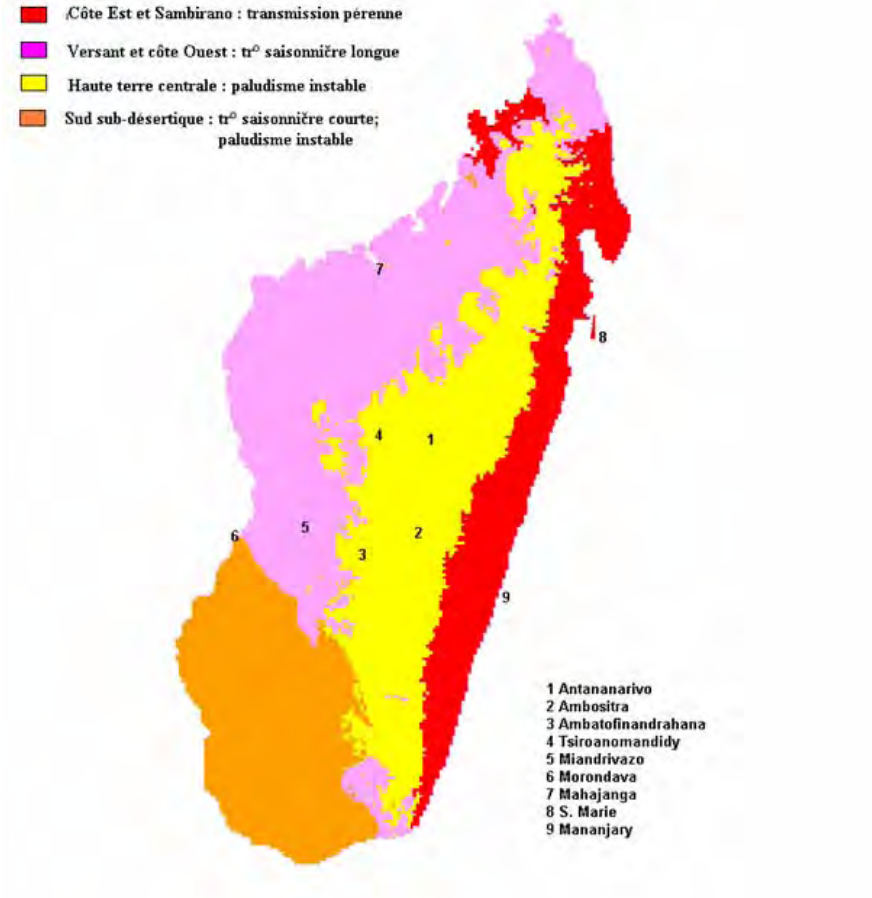
Hospital deaths attributed to malaria decreased from 17% in 2003 to 12% in 2007. In 2008, malaria was responsible for about 8% of all reported outpatient visits while 16% of all children under five years of age admitted to a hospital are diagnosed with severe malaria (INSTAT). Malaria is ranked as a leading cause of under-five mortality and, according to UNICEF, kills approximately 20,000 Malagasy children every year.

The country has been stratified into four distinct malaria epidemiologic zones: the West Coast including the North, the Central Highlands, the East Coast, and the South. For these areas the rainy season usually starts in late October/early November and lasts until April. Cyclone season runs from December to April and the island typically suffers direct hits or near misses, both accompanied by flooding and increased risk of malaria and communicable diseases.

On the East and West Coasts malaria transmission is stable and perennial (although in the West transmission does decrease somewhat in July and August). In both regions, immunity among adults is reported to be high; therefore morbidity and mortality is mainly among children under five and pregnant women. Almost one-third of the Central Highlands lies above 1,500 meters where malaria transmission tends not to occur and the remaining area has seasonal and unstable transmission. In the semi-desert South, transmission is also seasonal but very unstable and in many years is almost absent. Immunity is limited in both the upper Central Highlands and the South and the population in those areas is vulnerable to periodic epidemics, which are often associated with high levels of mortality in all age groups. The most recent large-scale epidemic in the late 1980s killed an estimated 30,000 people. The "Fringe" districts of the Central

Highlands are those areas between 800 and 900m of altitude which lie between the epidemic-prone areas of upper Central Highlands and the malaria endemic areas of the coasts.

Map 2



Malariometric stratification of Madagascar: red, lowland perennial transmission+; pink, lowland long transmission season; yellow, highland unstable seasonal transmission (epidemic prone); orange, semi-desert unstable seasonal transmission (epidemic prone).

All four species of human *Plasmodium* are endemic in Madagascar. While *Plasmodium falciparum* predominates in all areas, *P. vivax* and the two other species may make up as much as 10-15% of all cases, especially in the highlands. The two primary vectors are *Anopheles gambiae* (East and West Coasts) and *A. funestus* (Central Highlands and South). *Anopheles arabiensis* is also present in all four epidemiological zones. *Anopheles funestus* increases in density during the rice-growing season and was the primary vector responsible for the outbreaks which occurred in the Central Highlands in the late 1980s. Since this vector prefers to feed and rest indoors, it is quite sensitive to IRS. *Anopheles arabiensis* is also present in the highlands, but is more ecologically independent of humans and their domestic environment.

In addition to PMI, major partners working with the NMCP include the Global Fund, UNICEF, UNITAID, WHO and the World Bank. Key implementing partners include numerous local and international non-government organizations (NGOs) and faith based organizations (FBOs). As mentioned above, the current political crisis is expected to negatively impact funding for malaria from other donors.

D. NATIONAL MALARIA CONTROL PLAN AND STRATEGY

An International Conference entitled "Intensification of Malaria Control towards Elimination" was hosted in Antananarivo May 28-30, 2008 by the Ministry of Health (MoH) with strong international participation, including representatives from PMI. A key recommendation was that the national strategy be revised to adopt WHO's recommended approach of four program phases: intensification of control, pre-elimination, elimination, and prevention of reintroduction of transmission and to accelerate the scale up of malaria prevention and case management activities in Madagascar. The NMCP subsequently revised its original 2007-2012 National Strategy to integrate recommendations from the conference and republished the revised strategy in early 2009 as the "National Malaria Strategy of Madagascar 2008-2012: from Control towards Elimination of Malaria". This effort was led by the NMCP and local Roll Back Malaria in-country partners. PMI provided substantial technical support to those efforts.

Five key approaches of the revised 2008-2012 National Strategy include:

- Generalized IRS in the Central Highlands and surrounding districts, Fringe, with extension to the South and West, for four consecutive years, followed by targeted IRS.
- Distribution of long lasting insecticide-treated nets (LLINs) in all areas except the Central Highlands, employing the following strategies: "catch up" by scaling up free distribution of LLINs through mass campaigns targeting households to meet the national objective of 2 LLINs per household; "keep-up" through routine free distribution of LLINs to pregnant women as part of antenatal care (ANC) services and to infants during immunization visits; and social marketing of highly-subsidized LLINs to the population in general;
- Intermittent preventive treatment for pregnant women in all areas except the 20 health districts of the Central Highlands.
- Improved case management in health facilities combined with increased use of rapid diagnostic tests (RDTs) nationally; and community-based treatment of fever with ACTs in areas of stable transmission
- Epidemic surveillance, detection and control in areas of low or unstable transmission

The strategy also emphasizes the need for comprehensive and effective information, education, communication and behavior change communication (IEC/BCC), monitoring and evaluation (M&E) and on-going drug resistance surveillance to inform and provide timely feedback on the program's progress.

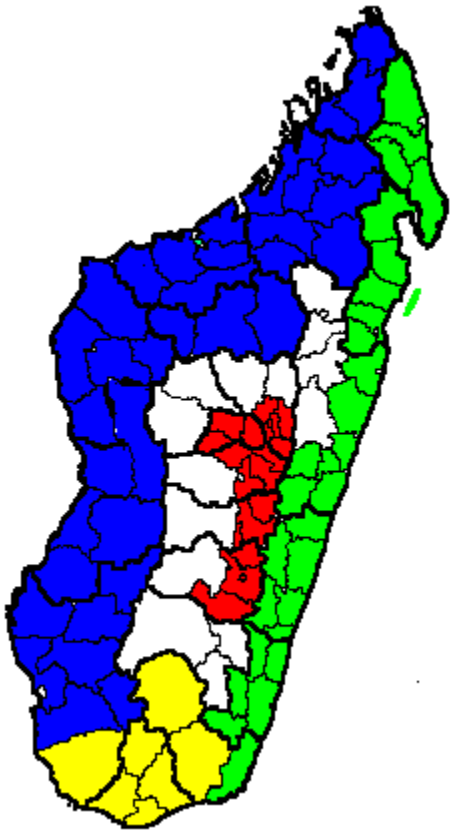
The revised national malaria control strategy divides the country into five operational zones: Central Highlands, Fringe, East Coast, West Coast and South. The interventions in the Central

Highlands focus on IRS, case management, epidemic surveillance and community education. The interventions in the Fringe districts focus on IRS, LLIN distribution, IPTp, case management, home-based management of fever (HBMF), and community education. The interventions in the East and the West Coasts, with stable malaria transmission, focus primarily on LLIN distribution, case management, IPTp, HBMF, and community education. In the South, a semi-arid region with unstable malaria transmission, the main activities are epidemiological surveillance, case management, HBMF, IPTp, LLINs, and community education. In order to scale up prevention efforts with pre-elimination in the highlands and Fringe districts as a medium-term goal, starting in 2010, IRS will be extended to the South and part of the West coast districts. This will create a barrier around the central highlands and fringe districts, moving progressively from the lowest endemic to the highest endemic zones. As transmission drops, expansion of epidemic surveillance and response activities will follow accordingly.

Map 3

West
Fringe
South

LLINs
IRS (W/S starting in 2010)
IPTp
Case Management
c-IMCI
Community Mobilization
Epidemic Surveillance



East

LLINs
IPTp
Case Management
c-IMCI
Community Mobilization

Central Highlands

IRS
Case Management
Community Mobilization
Epidemic Surveillance

E. CURRENT STATUS OF MALARIA INDICATORS

No recent, accurate, national-level malaria data for Madagascar are yet available. The results of the 2008/2009 DHS, the baseline for PMI, are expected in late 2009. This has limited health partners' ability to plan programs based on results from comprehensive, population-based surveys. Routine malaria-specific HMIS data, as well as data compiled by the NMCP, is reported

and centrally stored in a national malaria database. National malaria indicators have been estimated based on these data and additional sources such as special studies and limited surveys.

Prevention: The National Strategic Plan strives to achieve ownership of at least two nets per household in the 91 health districts outside the upper central highlands. The 2003/2004 DHS, carried out during the malaria transmission season (November 2003 to March 2004), reported that 39% of households owned one or more bednets (of all types), and that 36% of children under five and 35% of pregnant women slept under a bednet the previous night. That survey, conducted before a set of standard malaria indicators was available, and before the rapid scale up of ITNs in Madagascar, did not measure ITN ownership. Results from a national-level survey following the-2007 integrated ITN campaign survey found that 71% of households in the targeted districts owned at least one ITN, 27% owned at least 2 ITNs, and that 75% of children under five and 62% of pregnant women had slept under an ITN the previous night. A subsequent PSI Tracking Results Continuously (TRAC) survey at the end of 2008 (one year after the 2007 integrated ITN campaign), using a national probability sample of households, reported 89% of households owned at least one ITN, 43.6% of households owned at least two ITNs and that 69% of children under five and 58% of pregnant women slept had slept under an ITN the previous night.

The NMCP estimates that 41% of pregnant women received two doses of SP for IPTp during their pregnancy in 2008. This estimate is based on partial reporting from health districts.

Treatment: the indicator "children under five years old with fever in the last two weeks who received treatment with ACTs within 24 hours of onset fever" is not available. This will be provided by the 2008/2009 DHS.

PMI will use the results from the upcoming 2008/2009 DHS as baseline for all indicators. For the table below, results were taken from several of the sources cited above.

Recent malaria indicator estimates

Indicator	Estimates
Proportion of children under five years old with fever in the last two weeks who received treatment with ACTs within 24 hours of onset of fever	Not available (not disaggregated by age groups)
Proportion of households with at least one ITN	89%[1]
Proportion of children under 5 years old who slept under an ITN the previous night	69%[1]
Proportion of pregnant women who slept under an ITN the previous night	58%[1]
Proportion of women who received 2 or more doses of IPTp during their last pregnancy in the last 2 years	41%[2]
Proportion of targeted houses sprayed with a residual insecticide in the last 12 months (NMCP)	96%[3]
Footnotes: 1 - PSI TRaC survey in malaria endemic areas - 2008 2 - Results from national HMIS 2008 report to NMCP (note partial data reporting only).	

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

Goal

The goal of the PMI is to reduce malaria-associated mortality by 50% compared to pre-initiative levels in all PMI countries.

Targets

By the end of 2010, PMI will assist Madagascar to achieve the following targets in populations at risk for malaria:

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

G. EXPECTED RESULTS–YEAR THREE

At the end of Year 3 of PMI in Madagascar (March 2011), the following results will have been achieved:

<u>Prevention</u>:

1. At least five million LLINs will have been distributed through free mass campaign distribution nationally between November 2009 and the end of calendar year 2010. PMI will procure and distribute 3.1 million of these LLINs (44% of universal coverage need) using funds from Years 1, 2 and 3. These inputs, along with intense IEC/BCC, also supported by PMI and other partners, is expected to raise the proportion of children under five and pregnant women sleeping under an ITN the previous night to 85%.

2. Approximately 165,000 highly-subsidized LLINs will have been distributed through social marketing.
3. At least 85% of the 2 million houses in the geographical areas targeted for IRS will have been sprayed. PMI will have covered approximately 440,000 houses with a population of about 2.6 million people.
4. The proportion of pregnant women who receive two or more doses of IPTp during their pregnancy will have increased in targeted districts to 60%. PMI will have provided support to expand delivery of IPTp at the primary health care level (*Centre de Santé de Base*; CSB) through training and retraining CSB staff, provision of job aides, and improved pharmaceutical management. It is anticipated that PMI will not achieve the 85% goal because activities supporting this area were suspended by the USG in implementation of Year 1 and Year 2 activities.

Treatment:

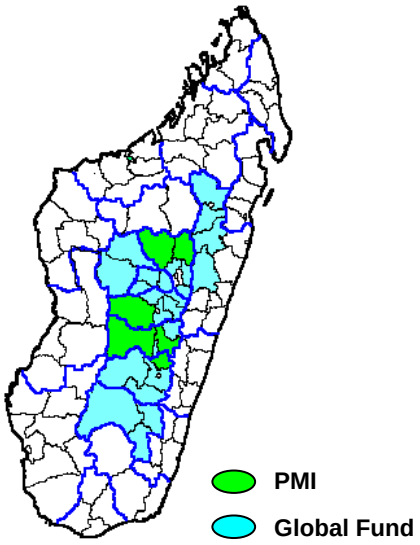
1. PMI will support training, refresher training and supervision for CSB staff in half of the almost 3,000 CSBs nationwide. ACT needs will have been filled by Global Fund and other partners;
2. Home based management of malaria will have been expanded to reach approximately 50% of all communes nationwide, delivering treatment with an ACT within 24 hours of onset of illness to approximately 35% of children under five. PMI, working through local NGOs/FBOs, will have improved performance of community health workers (CHWs) to deliver a package of child health interventions in about half of all communes nationwide.
3. Implementation of RDTs at the community level by CHWs in at least 4 districts.

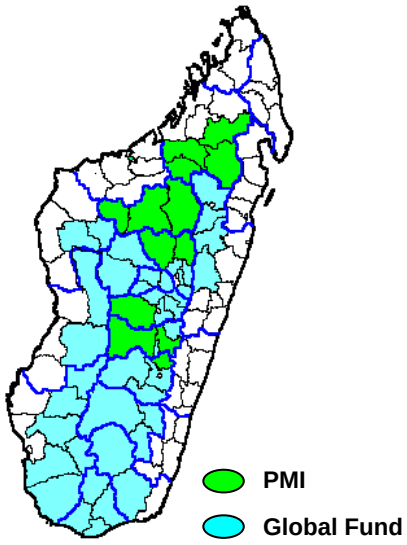
H. INTERVENTIONS–PREVENTION

1. Indoor Residual Spraying (IRS)

Background:

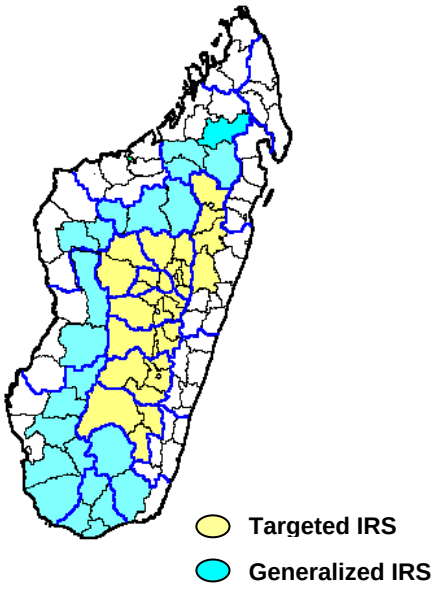
The International Conference on "Intensification of Malaria Control towards Elimination" hosted by the Ministry of Health called for an expansion of the IRS program in order to move to a pre-elimination stage. The National Malaria Strategy calls for implementation of insecticide-based control measures—universal coverage with either IRS or LLINs—in different geographic regions: IRS in the highlands, the fringe districts, with an extension to the western 'transition' zone, and the south, and LLINs in coastal areas. The short-term IRS goal is to spray at least 80% of targeted structures in 53 health districts (10.25 million inhabitants) for four years (one round/year). This will be followed by targeted IRS (districts to be stratified based on epidemiologic data) and an epidemic response system capable of rapid detection and response to outbreaks. Resources from the GoM, the Global Fund Rd 7 grant, and an anticipated Global Fund National Strategy Application (NSA) award, and the PMI will be used to implement this plan.

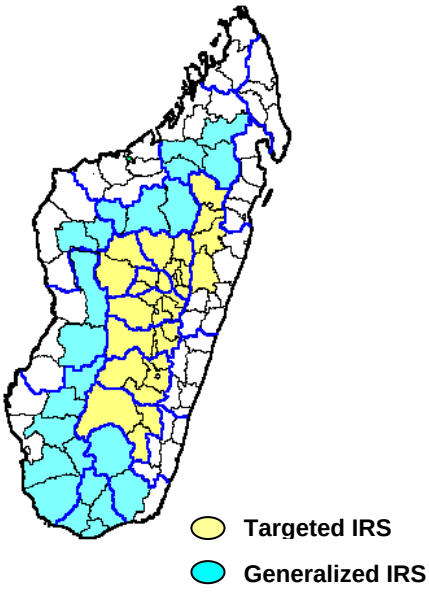




IRS 2008, 2009 (above); IRS 2011 (below)

IRS 2010 (above); IRS 2012 (below)





PMI currently supports the initial phase of this plan by providing technical, managerial, and operational support to the NMCP in six highland districts. The plan, outlined above, creates an opportunity for PMI to scale up IRS support in partnership with the NMCP and the Global Fund to meet the goals of the National Strategy. Activities related to procurement, logistics, storage, training, and supervision, short-term technical assistance, IEC, M&E and environmental impact are envisioned to meet pre-elimination objectives.

Since Madagascar includes extensive areas classified as ecologically sensitive, as required by USG regulations, a Supplemental Environmental Assessment for IRS with the pyrethroid alpha-

cypermethrin was completed in 2007 while an updated Pesticide Evaluation Report and Safer Use Action Plan (PERSUAP) was approved in 2009 to cover the entire class of pyrethroids. The PERSUAP outlines the various conditions necessary to avoid potential negative impacts of IRS. The mitigation measures and conditions described in the PERSUAP are supported by PMI, including insecticide chain-of-custody, disposal of used insecticide sachets, and post-IRS environmental assessment.

Progress in the past 12 months:

The table below provides a summary of recent IRS activities

Year	districts	Coverage Population	% total activity		Key results
			PMI	GF Rd 7	
2007/8	7	1,250,000	100	0	205,383 houses sprayed; 1.24 million people protected >94% coverage PMI supported targeted spraying to 6 districts in highlands
2008/9	32	7,000,000	20	80	1,222,000 houses sprayed; 6.7 million people protected (>95% coverage) PMI supported generalized spraying in 6 health districts (1.4 million population) among the highlands and fringe districts with Year 1 funds
2009 (anticipated)	32	7,000,000	20	80	1,222,000 houses to be sprayed; 6.7 million people to be protected >95% coverage anticipated PMI will support generalized spraying in 6 health districts (1.4 million population) in the highlands and fringe districts with Year 2 funds through the private/NGO sector
2010 (proposed)	53	10,250,000	25	75	Approximately 2 million houses to be sprayed; 10.25 million people to be protected >80% coverage PMI will support generalized spraying in 13 health districts (2.6 million people protected) in the highlands, fringe and western transitional districts with Year 3 funds

PMI trained approximately 3,061 personnel (administrative, operational, clinical, environmental staff and community health workers) in IRS operations. The investment in these individuals will contribute significantly to future rounds of spraying further reducing costs while increasing impact.

The NMCP recognizes that IEC and social mobilization are fundamental to the success of its IRS program. Community sensitization and education drives are conducted before, during and after house spraying.

PMI supported the environmental mitigation measures as recommended in the Supplemental Environmental Assessment. Key activities included: establishing insecticide chain-of-custody and using adequate facilities for insecticide storage, preparation and use of soak pits, progressive rinsing of spraying equipment, adequate insecticide sachet disposal and a post IRS environmental assessment.

PMI has also supported entomologic monitoring and evaluation including a work plan and budget to cover collection of data to guide IRS decision making, for example insecticide resistance monitoring to inform insecticide selection and entomologic measures of IRS impact,

Proposed FY 2010 activities: ($9,674,000)

Within NMCP's strategy for IRS, and in partnership with the Global Fund (to achieve full coverage of the IRS targeted areas), PMI will support spraying in thirteen health districts (six in selected highland districts and fringe districts, plus seven in selected districts in the western transition region) in Oct-Dec 2010. Additionally, the budget includes funding for commodities for a 2011 PMI spray round, anticipated to cover the same districts as in 2010 with generalized IRS. Funds will be available to support the purchase, transport, delivery and safe storage of insecticide, spray pumps, spare parts, and personal protective equipment, and to rent vehicles and storage facilities. The NMCP has also requested assistance for IRS planning, personnel management, environmental and human health safety and logistics management, including forecasting and procurement of insecticide, on-the-job training of spray personnel, and mapping and stratification of areas for IRS.

To develop Madagascar's capacity to expand and sustain IRS operations, PMI will invest in capacity development of the public sector to provide appropriate supervision and oversight of IRS activities. These include ensuring the technical quality, and entomological and environmental monitoring by the NMCP, and district governments. The initial phase of this activity will target district environmental officers and health officers.

With assistance from PMI, the NMCP intends to scale up entomological surveillance as recommended in the "National Policy Guidelines for Malaria Entomology Surveillance." Because IRS and LLINs are priority vector control interventions for the MoH, the NMCP intends to monitor entomologic indicators including : vector resistance, vector species composition, vector behavior and density to detect early signs of vector resistance and measure the impact of vector control strategies. Results from such entomological surveillance will allow decision-makers to assess the feasibility of once-yearly spraying in areas of high seasonal transmission. The NMCP is also considering rotating insecticides to slow the development of resistance, a decision that will be informed by entomological monitoring.

Specific activities supported by the PMI in FY2010 include:

1. *Support IRS in 13 districts as part of the national IRS campaign and strategy towards elimination:* PMI will partner with the NMCP and the Global Fund to support IRS in 2010. Costs include all components of IRS including procurement of insecticides, spray

pumps and other logistics required for spray operation, necessary environmental assessments, monitoring, and IEC/BCC activities specific to IRS. This budget also includes commodity costs for the 2011 PMI spray campaign. *($9,125,000*)

2. Entomological surveillance and monitoring. PMI will continue building local entomological capacity by assisting the NMCP at the central level. The Institute Pasteur will be supported to conduct comprehensive vector surveillance, assess resistance and other indicators of IRS impact: vector taxonomy and density, vector behavior, vector infection rates and insecticide decay rates. Indicators will be measured in six locations targeted for IRS/ITN campaigns in the FY10 plan, costs include training, field costs, procurement of equipment and sample analysis. PMI will also support the finalization of "National Policy Guidelines for Malaria Entomology Surveillance". *($475,000).*

3. *Environmental monitoring oversight:* An independent environmental monitoring oversight is key for monitoring and evaluation of safe use of insecticide used for the IRS program. *($50,000).*

4. *Technical assistance to PMI IRS activities*: PMI will build the capacity of the public sector to oversee quality IRS programs, particularly focusing on technical quality, environmental monitoring, and accountability, in anticipation of additional funding through the Global Fund or other donors. Two CDC and one USAID TDY will be supported for this effort. *($24,000).*

2. Insecticide-treated nets (ITNs)

Background:

Since 2004, the GoM has focused its distribution strategy on LLINs, with a universal coverage target of two nets per household in all areas, except 20 health districts of the Central Highlands. Madagascar also continues LLIN distribution efforts through routine channels that prioritize the most vulnerable populations: children less than 5 years old and pregnant women. There is a culture of net use in Madagascar, high community awareness, and a demand for ITNs from the population.

Madagascar's LLIN strategy supports both the free distribution and the sale of highly-subsidized LLINs. This multi-pronged approach for ITN distribution is outlined in the table below:

Net Distribution Strategies:

Approach	*Target Pop*	*Target Areas*	*Method*	*Current Donors*
Mass distribution	2 LLINs/household in whole country except 20 districts in the Central Highlands (i.e. 91 of the 111 health districts)	Districts selected at time of campaign; goal is universal coverage in 91 health districts	Free of charge	Multiple, including PMI
ANC and EPI clinic distribution	Pregnant women and children under five	Whole country except 20 districts in the Central Highlands	Free of charge	PMI and Global Fund
Social marketing to communities	Pregnant women and children under five who can afford subsidized nets	Whole country except 20 districts of the Central Highlands	Sold for ~$1.80 by community health workers	PMI and Global Fund
Social marketing commercial	Those who can afford subsidized nets	Urban centers	Sold in shops and markets for ~$1.80	PMI and Global Fund

Recently, Madagascar has prioritized free LLIN distribution through mass campaigns as a key strategy in scaling up to universal coverage. In addition, two "keep up" strategies are supported, including routine distribution of free LLINs through ANC and EPI clinics targeting pregnant women and children under five, and the sale of highly subsidized LLINs. With approximately 30% of the Malagasy population living more than 10 kilometers from a health facility, community and commercial distribution of highly-subsidized ITNs has offered an alternative network for routine distribution. Population Services International (PSI), a Principal Recipient of the Global Fund Rd 4 grant, working in cooperation with a network of local and international NGOs, sold approximately 915,000 LLINs in 2007 and 429,332 LLINs in 2008 at a price of ~$1.80/LLIN. There continues to be a high demand for subsidized LLINs, with demand consistently exceeding supply.

Between 2007 and 2009, at least 5,912,954 LLINs will have been distributed as outlined in the chart below. By 2010, LLINs distributed in 2007 will have reached the end of their three-year expected lifespan.

Year	2007	2008	2009
Campaigns	1,810,000	0	1,573,215 (including 1 million PMI nets)
Social marketing	915,000	429,332	187,615
Routine	-	471,720	201,185
Emergencies	200,000	0	-
Total	2,925,000	945,939	2,042,015

Results from a national evaluation by the MoH/NMCP, HealthBridge, CDC, the Malagasy Red Cross and others, conducted six months after the 2007 regional integrated measles/malaria campaign, and supported by PMI, are shown in the table below. High LLIN ownership and use by both children under five and pregnant women was found in areas targeted by the 2007 campaign (the West Coast, South and some Fringe districts). The results also show moderately high ownership and use in endemic areas where there was no campaign in 2007, providing evidence that the multi-pronged approach has helped to achieve and maintaining high LLIN coverage and use.

Bednet ownership and use survey, March 2008 (prepared by Health Bridge and CDC, final report released June, 2008)

	Non-campaign targeted, endemic districts– excluding Central Highlands	**Campaign-targeted endemic districts only**
ITN Ownership – at least 1 ITN[†]	65%	77%
ITN Ownership – at least 2 ITNs	28%	34%
Houses with children U5 and at least on ITN	78%	90%
ITN use in children U5[†]	68%	81%
ITN use by pregnant woman	56%	69%

[†]Significant difference of $p<0.05$ between groups

In the areas covered by the campaign there was remarkable equity across economic quintiles. However, in non-campaign districts, ITN ownership and use was concentrated among those in the highest (richest) economic quintile. Moreover, rural ownership of LLINs was higher in campaign districts and urban ownership was higher in non-campaign districts, showing that the campaign more effectively reached the rural population, which is most vulnerable to malaria.

In May 2008, during an international conference to realign national malaria control strategies towards elimination, Madagascar's national strategy and goals for malaria control through 2012 were revised. The major strategic change regarding LLIN distribution was to scale up to universal coverage (defined as two LLINs per household) by 2010. In November, 2008, the GoM, with assistance from PSI and RBM, submitted a $64 million Rolling Continuation Channel (RCC) Grant proposal for Global Fund Rd 4 to achieve this goal. The approved proposal included two large universal "catch up" LLIN campaigns, one each in 2009 and 2012, with a focus on both free routine and subsidized sales of LLINs for "keep up" activities between mass campaigns.

As a result of this policy change, plans for the 2009 campaign were revised to target East Coast and Fringe districts (approximately 50% of the Malagasy population) that were not covered in

the 2007 mass campaign as the first phase of a universal coverage campaign (2009-2010). Delays in procuring Global Fund RCC Year 1 nets occurred in part because of the political crisis. In August 2009 the LLIN campaign plan was revised to distribute the remaining available 1.6 million nets from other donors to East Coast districts, prioritizing regions with the highest malaria incidence where possible (19 districts), phase I of the universal coverage campaign. The remaining 72 targeted health districts will be reached with two LLINs per household through continuation of the universal coverage campaign in 2010 (two distributions tentatively planned for late May 2010, Phase 2, and late October 2010, Phase 3, based on LLIN availability). This will begin as soon as additional LLINs are available from donors.

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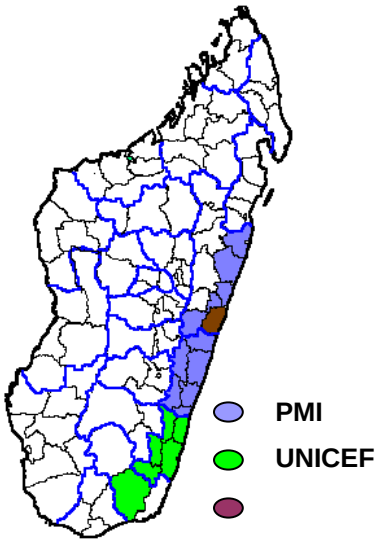
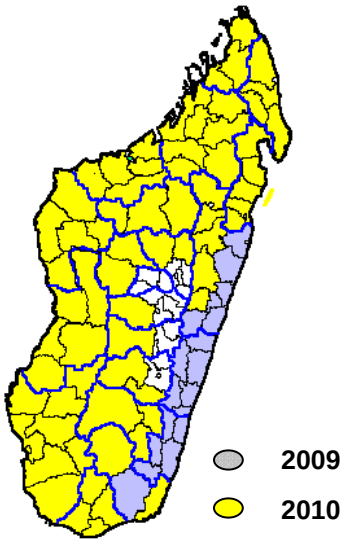


2009 LLIN Mass Distribution Campaign: 19 Districts



2010 LLIN Mass Distribution Rolling Campaign: 72 Districts

By the end of 2010, Madagascar is aiming to achieve 100% coverage of households with two LLINs per household in targeted areas. Efforts are now underway to apply for and seek donor support for the remaining gap for the rolling campaign in 2010. The table below shows the LLIN gap analysis for Madagascar for 2008 to 2012:

Universal Coverage 2010 ITN Gap Table	
A. Total ITNs needed in 2010 based on universal coverage targets	7,043,789
B. Total ITNs distributed through free mass distribution in 2009[2]	1,570,554
C. Total ITNs gap in 2010 to reach universal coverage *(A - B)*	5,473,235
D. Number of ITNs in 2010 from other partner funding (estimate)	1,932,908
E. PMI contribution for ITNs in 2010 (Year 3 PMI funds)	1,500,000
F. Remaining ITN gap to reach universal coverage for 2010 (C - (D + E))	**2,040,327**

Assumptions

1. Universal coverage target is two ITNs per household
2. ITNs have an annual loss of 5% per year and need replacement every 3 years; this number reflects nets distributed in 2009 – 5% loss
3. Total population: 20,291,930
4. 16,009,611 population at risk for malaria; five persons per household

Of note, Madagascar participated in a recent multi-country WHOPES evaluation of Permanet 2.0 to assess Permanet 2.0 efficacy, longevity and fabric integrity. Results showed that nets collected from four sites in Madagascar under normal use conditions had high insecticide decay, poor insecticide performance and were in poor physical condition (poor fabric integrity, very dirty despite > 15 washes reported by users) after three years. As a result, a maximum of three years is used as an estimate for net longevity modeling to establish the net gap.

Progress in the past 12 months:

Free distribution in "catch up" campaigns: To scale up to universal coverage, PMI reprogrammed FY08 and FY09 funds to procure about one million LLINs for the the first phase of the 2009-2010 universal coverage "catch up" campaign targeting the East Coast. In addition with FY09 funds, PMI procurement is underway for 620,000 LLINs to be distributed as part of Phase 2 of the rolling universal coverage mass campaign in late May, 2010. PMI will also provide logistic and IEC/BCC support for the 2009-10 campaign.

The 2009-10 mass distribution campaign will be the largest free mass distribution of LLINs to date in Madagascar and the first campaign targeting households versus pregnant women and children. PMI put in place plans to conduct a post-2009 campaign evaluation to identify lessons learned and to inform the planning of the 2010 rolling campaign to effectively cover the rest of the country.

Social marketing of highly-subsidized ITNs through community health workers and rural shops: In the past 12 months (July 08 – June 09), PMI procured 250,000 LLINs for social marketing and helped to support CHWs and rural shop outlets to sell 473,111 LLINs. Revenue from the

sales of the nets was reinvested by commercial shop owners and community health workers toward the purchase of additional LLINs.

National LLIN specifications: During Year 2, PMI provided technical assistance to the GoM in partnership with other RBM partners to change the national, non-standard net specification to a standard-sized 150x180x190cm nets. This resulted in savings of approximately 10-30% per net purchased.

Information, education, communication/behavior change communication: PMI, through a partnership with PSI, aired radio spots, displayed mobile cinema shows at the community level and disseminated posters to CSBs and CHWs promoting use of LLINs with educational and promotional messages. PMI also educated CHWs through SanteNet2 community-based activities to promote LLIN use among pregnant women and children under five years old.

Proposed FY 2010 activities: ($11,132,600)

PMI proposes a continuation of its multi-faceted support to LLIN distribution in Madagascar. This approach ensures that universal coverage is achieved quickly and that continuous access to LLINs is provided to new cohorts of pregnant women and infants. The FY10 strategy of support is based on the following assumptions and information from in-country partners:

- The 1.8 million LLINs distributed in 2007 to these districts as part of an integrated campaign will be three years old and should be replaced.
- The consensus of the NMCP and its partners that free mass distribution campaigns are successful in boosting ITN ownership and use most equitably
- The proposed campaign would achieve universal coverage of remaining districts to meet the two LLINs/household goal by the end of 2010 in order to achieve very high levels of protection for the entire country.

Specific activities supported by PMI in FY2010 include:

1. *Procure LLINs for the rolling campaign to reach the national goal of 2 LLINs/HH*: PMI will procure approximately 1.5 million LLINs in Year 3. These will be added to approximately 620,000 LLINs purchased with FY09 funds to support the 2010 rolling campaign focused on the 72 remaining East and West Coast, South and Fringe districts not covered in the 2009 campaign. The PMI contribution of nets distributed in 2009-10, represents approximately 43% of an estimated 7 million LLINs needed to cover the entire targeted area with 2 LLINs/household. Other partners (Global Fund, UNICEF, Canadian Red Cross, etc.) will be recruited to fund the remaining net gap to achieve universal coverage targets by the end of 2010. (*$9,000,000)*

2. *Support logistics, distribution, social mobilization, IEC/BCC and hang-up activities as part of the LLIN rolling campaign:* PMI will contribute toward associated logistics, distribution, social mobilization, IEC/BCC and active Hang-Up activities by CHWs for the PMI LLINs distributed in the 2010 rolling campaign. *($820,600)*

3. *Post-campaign evaluation to describe ownership and use of LLINs and effectiveness of Hang-Up activities:* Work with the NMCP and other partners to evaluate the national level ownership and use of LLINs at the end of 2010 and the effectiveness of Hang-Up activities conducted during the free mass campaign distribution. *($300,000)*

4. *Support social marketing of LLINs through CHWs and rural shops*: PMI will support social marketing of approximately 250,000 LLINs through CHWs and rural shops as outlets in areas with poor access to health facilities. Social marketing of LLINs will be conducted in conjunction with IEC/BCC to promote demand for and correct use of ITNs in these areas. This continues PMI support for an approach that has been highly successful and received multi-donor support in Madagascar over the past several years. *($1,000,000)*

5. *Provide support for implementation of national and targeted mass media and community focused IEC/BCC campaigns*: This activity will promote correct use of ITNs, communicate the risks and danger signs of malaria in children less than five years, and educate pregnant women about the benefits of prenatal care, including iron/folate, IPTp, and ITNs. *(Costs covered in Community-based interventions section)*

6. *Training, supervision and community mobilization for a community package of interventions:* Work with the NMCP and other partners to strengthen community interventions, including community-based malaria treatment; strengthening links between community health workers and CSBs; and developing uniform training modules for community health workers. *(Costs covered in Community-based interventions section)*

7. *Technical assistance to LLIN activities* PMI will provide technical assistance for evaluation of the rolling campaign and to build local management and evaluation capacity. One CDC and one USAID TDY will be supported for this effort. *($12,000)*

3. Intermittent preventive treatment of pregnant women (IPTp)

Background:

The 2003/2004 DHS reported that 80% of women made one or more antenatal clinic visits, although many of these occur late in pregnancy. In addition, according to the 2003/2004 DHS approximately 50% of pregnant women are anemic. In June 2004, the MoH adopted the strategy of providing two doses of directly observed sulfadoxine-pyrimethamine (SP), free of charge to pregnant women, for the prevention of malaria during pregnancy in 91 coastal and lowland districts, where malaria transmission is stable or seasonal. Twenty districts in the Central Highlands, which are epidemic-prone, were excluded from this policy. Sulfadoxine-pyrimethamine is provided free of charge at CSBs by personnel with a medical, nursing, or midwifery background. All focused antenatal care activities (FANC), including tetanus vaccination and malaria prevention activities are integrated at the level of the CSB. The NMCP works closely with the *Direction Santé Familiale* (Directorate of Family Health) to plan and implement malaria in pregnancy activities, including IPTp.

The MoH began training health workers in the CSBs on delivery of IPTp in late 2004 with support from USAID. To date, training has focused on public health care providers and thus far has not included the private health sector, although this is planned as part of the national malaria control strategy. There are currently no plans to involve CHWs in the delivery of IPTp; however, these workers play an essential role in promoting the use of antenatal services.

Sulfadoxine-pyrimethamine administration is noted on the ANC card and in the ANC register. CSBs collect and report data on the number of women who attend prenatal consultation and receive one or two doses of SP and forward this aggregated information to the district level monthly. In 2007, CSBs began reporting the number of women who receive both the first and second dose of SP to the central level. The current ANC register and HMIS data reporting form only include formal entries for the first dose of SP. Health care workers are instructed to report the second dose by writing in the result in both the ANC register and the aggregate monthly report. Thus far, reporting from the district to the central level is incomplete. As a result, accurate national figures for coverage of IPTp are not yet available. For 2008, partial data regarding the number of pregnant women who took the first and second doses of SP are available and estimate that 41% of women attending ANC services took two treatment doses of SP.

In 2010, an estimated 3 million SP tablets are needed to treat approximately 515,000 pregnant women expected to attend ANC clinics in the 91 malaria endemic health districts. Global Fund will provide the entire SP need for IPTp from 2009-2011 and will use its own distribution channels to deliver the drug to the district level. The *Service de Santé de District* (District Health Office) is responsible for assigning the estimated amount of SP needed by each CSB. CSB staff or community members are responsible for transporting the SP from the District Health Office to their local CSB. The SP administration kits include cups for administration of SP and a water purifier.

It is national policy to treat malaria infections during pregnancy with quinine during the first trimester and with ACTs during the second and third trimesters; however, this practice is highly variable. Some health workers prescribe chloroquine during the first trimester and SP during the second and third trimesters.

An area of need within the system is strengthening the package of services offered to pregnant women through the CSBs, especially improving supply chain management and distribution systems to ensure that LLINs and SP will be available at ANC clinics. Though health care providers at CSBs have been trained in IPTp, there is an urgent need for supervision and reinforcement of training both in IPTp and in treatment of malaria during pregnancy as part of FANC. In addition, support and continued training of CHWs is necessary to promote demand for and utilization of prenatal services.

Progress in the past 12 months:

In Years 1 and 2, PMI has supported activities to strengthen the implementation of IPTp as part of ANC services in the 91 health districts where malaria transmission is stable or seasonal. This included: a desk review of existing reports, program data and program evaluations to identify

barriers to IPTp uptake. However, the workshop and training activities originally scheduled to commence mid-2009 were cancelled because of the USG suspension of support for all non-lifesaving assistance and direct support to the GoM. The scope of PMI activities has now shifted from implementation at the CSBs to specific IEC/BCC messaging to encourage adoption of MIP activities at the community level via NGOs and promote regular ANC attendance.

Proposed FY 2010 activities: ($1,100,000)

The MoH has trained CSB staff and implemented IPTp delivery through ANC clinics in 91 districts (excluding the Central Highlands). Training thus far has focused on public service providers only and will be expanded to include private service providers. CHWs, through a network of NGOs, play an important role in delivering key IEC/BCC messages. ANC clinic attendance rates are approximately 80%, but the percentage of women who complete two doses of SP remains low at an estimated 41%. For FY 2010, all SP needs are met through funding from Global Fund. Specific activities to be supported by the PMI in FY2010 include:

Specific activities to be supported by the PMI in FY2010 include:

1. *Strengthen implementation of IPTp at the central and district levels as part of Focused Antenatal Care:* PMI will support intensive technical assistance to the NMCP/MoH to implement best practices of increased IPTp uptake. This will include an assessment of current bottlenecks delaying the implementation of IPTp, especially the second dose. Lessons learned from other countries should be taken into consideration while developing innovative approaches to increase IPTp uptake in Madagascar. *($300,000);*

2. *Continue to strengthen implementation of IPTp as part of FANC at the CSB level:* PMI will support refresher trainings, integrated, supportive supervision of ANC services, job aids, and quality monitoring and evaluation of IPTp. In addition, PMI will support the implementation of the DOT strategy for SP at health facilities. Training will be expanded to include private and civil society service providers to ensure that all health service providers are trained according to the national malaria control strategy for MIP. *($800,000);*

3. *Provide support for implementation of national and targeted mass media and community focused IEC/BCC campaigns:* PMI will support IEC/BCC activities focusing on early and frequent ANC attendance by pregnant women in order to prevent malaria in pregnancy. Messages will focus on nightly ITN use, IPTp and prevention of anemia. *(Costs covered in the IEC/BCC section).*

I. INTERVENTIONS – CASE MANAGEMENT

1. Malaria Diagnosis

Background:

The national policy on malaria diagnosis states that malaria cases should be confirmed by microscopy at hospitals, and, if possible, by RDTs at CSBs. Where this cannot be done, diagnosis should based on clinical evaluation after all other causes of fever have been eliminated. Community-based treatment of malaria by CHWs is based on the presence of fever and management follows national integrated c-IMCI guidelines.

The NMCP has been rolled out training and reinforced supervision for both RDTs at CSBs and microscopy at district hospitals, beginning in the Central Highlands and the East Coast in 2005–2006. In the following year, the RDT training was expanded to the West Coast and the southern, semi-arid region. Currently the national preferred RDT is the CareStart™ Malaria test.

In order to improve malaria diagnosis by microscopy, 24 regional laboratory supervisors were hired in 2007-2008 to provide training and to perform quality control of the malaria slides in all 22 regions. To date, approximately half of all districts nationwide—54 districts on the East and West Coasts—have received refresher training in microscopy. Health workers from both the public and private sectors have been involved in these training sessions. Financial support for these activities has been provided through Global Fund Rd 4 and the African Development Bank.

The Institut Pasteur of Madagascar (IPM), in collaboration with the NMCP, conducted a study to evaluate the feasibility, acceptability, and effectiveness of the combined formulation of AS/AQ delivered in the community. Specific objectives of the study included assessing the feasibility and effectiveness of the use of RDTs by the CHWs, pharmacovigilance for the co-formulated AS/AQ, and determining the incidence of malaria in children under five years. Data collection for the study was recently completed and data cleaning, analysis, and report preparation are underway. Results of this study will be available in September 2009 and will guide national HBMF and c-IMCI policy in the future.

Availability of diagnostic supplies for microscopy is difficult to interpret because of the under-utilization of the laboratory services. The fee charged to the patient for malaria microscopy is set by the hospital, at approximately $1 per test and the funds generated are used to support its operations. Healthcare workers attribute the low use of microscopy to the reluctance or inability of the patient to pay for the test. The situation is different for RDTs which are free of charge to the patient. However, observations from field visits and supervisory visits confirm that RDTs are also under-utilized with stocks of RDTs expired or near expiry. To improve this situation, the NMCP began collecting average monthly consumption data in 2008 to more accurately estimate the number of RDTs needed for procurement and distribution. Consumption of RDTs was far below anticipated levels in 2008. The table below shows that Global Fund Rd 7 funding for RDTs from 2009 to 2011 will be more than adequate to cover health facility demands based on current consumption data. Estimated RDT needs shown in the table reflect conservative estimates assuming increased uptake and use of RDTs by health care workers.

RDT supply for 2009 to 2011		
	Year	
	2010	**2011**
RDTs available UGP GF Rd 7	1,723,950	1,455,890

Estimated RDT needs*	1,539,627	1,537,848
RDT GAP**	**-184,323**	**81,958**

*Conservative RDT needs estimated with RBM locally in 4/09; assumes increased uptake and use of RDTs with improved implementation of the national policy to test all suspect malaria cases
** No gap if negative

A quality assurance/quality control (QA/QC) system for microscopy has yet to be developed; however, there is a system of standard quarterly reports from regional supervisors on their quality control of slides at the District Hospital. Also, financial support for some microscopy supplies at the 63 *Centres Hospitaliers de District* (District Hospitals) has been included in Global Fund Round 7.

Currently there is no existing system for ensuring the quality of RDT kits. IPM does lot testing of their own RDT supply at the central level but is not currently staffed nor equipped to lot test all incoming RDTs for public use. A QA/QC system for implementation of RDTs at the CSB level is needed to ensure the accuracy of diagnostic test results when performed by the healthcare workers.

Progress in the past 12 months:

The 2008 PMI support to reinforce Madagascar's national strategy on malaria diagnostics began with a rapid laboratory assessment of nine health facilities with microscopy capacity representing the Central Highlands and both coasts. The goal of the assessment was to inform future training needs and to guide the development of a QA/QC system (including an external QA system). Findings indicated that health care workers were not following standard guidelines for the use of diagnostic tests, patients were still treated with antimalarials despite negative test results, blood slides examinations can cost up to $1 for the patient, no system exists for maintenance of laboratory equipment, available laboratory services are under-used, and data reporting is inconsistent and incomplete. An evaluation of the use and accuracy of RDT results at the level of the CSB was suspended following current USG prohibition of direct assistance to the GoM. Almost all other FY 08 and FY 09 PMI activities to support and strengthen diagnostics were suspended.

PMI reprogrammed suspended funds to support implementation of RDTs use by CHWs at the community level in two districts. This will build on lessons learned in an IPM study in Madagascar and on best practices from other countries, such as Zambia, that are expanding RDT use by CHWs. Approximately 270,000 RDTs programmed in Year 1 by PMI for use in public health facilities will be instead procured to support introduction of RDTs by community health workers. These activities are consistent with the current work underway by the NMCP to develop a strategy for scale up and use of RDTs at the community level.

Proposed FY 2010 activities: ($1,512,000)

In FY 2010, PMI will assist the NMCP in scaling up its strategy to increase malaria laboratory diagnostic capacity, ensure accuracy of test results, increase the supervisory support to the districts through a decentralized structure, and support the increased utilization of microscopy

and RDTs. Although additional RDTs will not be needed from PMI in FY 2010, support for laboratory equipment and other commodities will be needed for the 108 hospitals in order to improve microscopy. Finally, the financial barrier (i.e., fee charged to the patient), which prevents the use of microscopy, will need to be addressed by working with the GoM to advocate for a policy change for microscopy free of charge and by providing the supplies needed for microscopy.

Specific activities supported by PMI in FY 2010 include:

1. *Procure laboratory microscopy equipment and supplies*: Based on recommendations from Year 1 assessment for 2010 and 2011, PMI will purchase diagnostic equipment and supplies. This may include additional microscopes, parts for maintenance, EARL lights, teaching microscopes, adjustable laboratory stools, bench aids, slides and stains/reagents. Funding will also be used to build local capacity for on-going equipment maintenance. *($250,000)*;

2. *Technical support for the continued development and implementation of the QA/QC system for microscopy and RDTs nationally*: This activity will support technical assistance and training to improve availability and usage of diagnostic testing, strengthening the link between laboratory services and case management (improve ease of ordering a diagnostic test and using results to guide clinical management of suspect malaria cases), and addressing the practice/policy of charging for microscopy. Implementation of the previously planned RDT evaluation to assess use of RDTs by health workers under routine program conditions will be resumed and will inform the development of the QA/QC system. *($150,000)*;

3. *Implementation of the QA/QC system for microscopy and RDTs*: This activity will include development of standards, procedures, supervisory tools/registers/guidelines, training of supervisors or trainers, extension of lot quality testing for RDTs at the community level and district pharmaceutical depots, and reinforcement of logistics and human resources for these activities. Decentralize QA/QC to the district level. *($500,000)*;

4. *Expand community-based case management using RDTs* to additional districts, develop a streamlined M&E system to report confirmed cases to the local CSBs, at the district level and centrally to the NMCP. ($500,000);

5. *Procure additional RDTs for community based case management of malaria in roll-out districts*; including an estimated 100,000 RDTs for use in calendar year 2011. ($100,000);

6. *Provide technical assistance for QA/QC activities*: one CDC TDY to support implementation of national QA/QC system for microscopy and RDTs. *($12,000)*.

2. Malaria Treatment

Background:

In 2005, artesunate/amodiaquine (AS/AQ) combination therapy was adopted as the first-line and artemether/lumefantrine (AL) as the second-line treatment for uncomplicated malaria in Madagascar. The national rollout of training for health facility workers on the new policies for malaria diagnostics and treatment with ACTs, as outlined in the *Politique Nationale de Lutte Contre le Paludisme a Madagascar*, 2005, was completed in 2007. The treatment and referral guidelines are in line with IMCI protocols and diagnosis and treatment for uncomplicated malaria is currently free at public health facilities. The policy calls for diagnostic testing in public health facilities for all suspected cases of malaria but, where this is not possible, patients should be treated based on clinical signs. The GOM is currently considering changing the national policy to charge a minimal fee for malaria treatment at public health facilities. This change is an attempt to find ways to move towards sustainability and to create equity in the cost of care provided by CHWs at the community level, which currently costs 200 Ariary (~ $0.10/treatment), and the cost of care in public health facilities. Without an international policy on recommending free case management of malaria, it is unlikely that PMI will be able to reverse this decision.

In the 91 health districts outside of the Central Highlands, the national policy supports presumptive treatment at the community level with ACTs of all children under five years of age with a fever in accordance with national policy. Since 2003, PSI has distributed highly subsidized prepackaged antimalarial treatment for children under five at community level. In October 2008, ACTs called ACTIpal®, a prepackaged AS/AQ, replaced chloroquine for malaria treatment at the community level for children under five. The current formulation is a co-blister pack with tablets of both artesunate and amodiaquine. The preference in Madagascar is to use the co-formulated AS/AQ, but due to delays in prequalification by WHO, it was necessary to procure an initial stock of the co-blister combination. ACTIpal® is available through pharmacies, CHWs, and private sector workers at 200 Ariary (~ $0.10/treatment).

Because an estimated 30% of the population lives more than 10 km from the nearest health facility, the GoM adopted an integrated approach to community case management of malaria, pneumonia, and diarrheal diseases through CHWs. In January, 2009 national guidelines on the implementation of Community Integrated Management of Childhood Illnesses (c-IMCI) was completed in an effort to standardize and guide activities. Community case management of malaria is largely funded by the Global Fund (Rd 3 and Rd 7) and is being implemented through local and international NGOs. The national guidelines identify remote community sites for c-IMCI based on their distance from the nearest health facility (>5km) or if they are naturally isolated (for example, on an island or by a river). Ideally, each remote community will be staffed with two trained CHWs responsible for community case management and community education. The staff of the closest CSB is responsible for participating in the selection, training, and supervision of the CHWs. CHWs are trained in c-IMCI, including the assessment and management of uncomplicated cases of malaria, pneumonia, diarrhea, and malnutrition, as well as recognition of danger signs of severe illness and appropriate referral if required. CHWs are given a standard list of supplies and are responsible for reporting cases to the CSBs on a monthly basis.

Introduction and scale-up of RDT use by CHWs was included in the recent revision of the National Strategic Plan for Malaria but has not yet been implemented.

Severe malaria: Quinine is the treatment of choice for severe malaria. The policies do not include a recommendation for pre-referral treatment. There have been several discussions at the national level of needed policy changes to ensure that diagnosis and treatment of severe malaria is free, however, no significant progress has been made. Confirmed cases of malaria in pregnant women are treated as severe malaria.

Monitoring drug efficacy: Responsibility for *in vivo* monitoring of therapeutic efficacy of antimalarial drugs is coordinated between the IPM and the NMCP. Monitoring activities are conducted every two years and currently funded by the Global Fund. Results from monitoring conducted in 2006 showed that chloroquine was effective in treating only 53% of malaria cases and AS/AQ was effective in treating over 92% of malaria cases based on standard parasitological and clinical indicators per the WHO protocol. Training in monitoring of molecular PCR and other laboratory techniques has improved the capacity of the NMCP. The IPM will retain responsibility for *in vitro* drug resistance monitoring.

Progress in the past 12 months:

By July 2008, national level coverage with prepackaged AS/AQ and training of health facility staff in public facilities had been rolled out. The NMCP estimates that 89% of all public health facilities have access and are stocked with ACTs, however, preliminary data from a recent ACTWatch study reported that only 71% of the public health facilities sampled had WHO-approved ACTs in stock. Uptake of AS/AQ has been slow and many facilities continued to have significant stocks of chloroquine. An evaluation conducted by IPM in Moramanga in 2008 showed that many patients self-treat for symptoms of malaria and a wide range of antimalarials are available and sold at local pharmacies (SP, chloroquine, AL). An evaluation of public and private prescriptions dispensed showed that both CQ and SP are still sometimes prescribed by public and private health workers. Discussions with the NMCP and partner personnel indicate that other factors, including a reluctance to use AS/AQ when diagnostic tests are not available, have been obstacles to consistent use of AS/AQ. PMI-supported refresher training for health workers to improve adherence to diagnostic and treatment guidelines, and with the NMCP on strategies to recover stocks of chloroquine, was suspended.

In August 2008, PMI and USAID helped to support an international workshop in Madagascar, "The Third International Conference on Integrated Community Case Management of Childhood Illness", which was attended by representatives from 22 countries. Approximately one-third of the conference was spent reviewing the Madagascar program. Major recommendations from the conference included: standardize c-IMCI implementation across partners; ensure incentives for CHWs for sustainability; develop standard tools for IEC/BCC; strengthen supervision of CHWs and feedback, link CHWs to closest CSB; simplify and standardize data reporting; harmonize and ensure medication supply chain and accelerate roll out of ACTs. PMI provided technical assistance in finalizing guidelines for implementation of community case management and developing standard national training tools for community management of malaria, pneumonia and diarrheal diseases.

Although USG and other donor support for the government was suspended, assistance directed at communities and private sector continued. The Champion Commune network, supported through the USAID SanteNet2 project provided an innovative and effective community mobilization program that empowers the community to improve the overall health and well being of the population. PMI has supported Champion Commune interventions in 168 communes and provided training in various health interventions to 1,139 CHWs, of these 353 have been trained in treatment of childhood illnesses at the community level, including treatment for malaria for children under five with AS/AQ. This program has been carried out through grants to international and local NGOs working at the community level. In total, 20 grants will be awarded in order to reach 800 communes or about half of the country by 2010. In the private sector, PMI supported PSI's social marketing activities but the civil unrest negatively affected their activities when key field personnel were forced to evacuate the country. PSI's pre-packaged ACT, ACTIpal®, has been a success and over 663,000 treatment doses have been distributed since its launch in late 2008, principally to CHWs.

Quantification of AS/AQ: The absence of consumption data for antimalarials at health facilities in Madagascar makes accurate estimation of the need difficult. In 2008, the NMCP began to track ACT consumption; however, reliable data was not available at the time this plan was prepared. As part of the development of a Global Fund National Strategy Application, the NMCP and partners, including PMI, projected the number of cases of malaria, the treatment needs and gaps for ACTs for 2009 to 2012. Because the assumptions used for these calculations vary over time and with geographical setting, these figures are at best rough estimates of the actual number of cases of malaria and ACT needs. Until consumption data are available; however, these figures serve as an appropriate guide for the facility and community needs for ACTs in 2009, 2010 and 2011.

The table below presents a summary of the estimated ACT needs from 2009-2011.

	2009	2010	2011
Total ACT treatment doses needed at public health facilities*	612,091	419,912	247,113
Total ACT treatment doses needed for children <5 at the community level	548,360	527,884	492,309
Total needed	**1,160,451**	**947,796**	**739,422**
Total projected procurement for all donors	2,378,939	2,452,033	1,225,494
Gap (doses)	**-1,218,488**	**-1,504,237**	**-486,072**

* Estimated with RBM locally in 4/09

Proposed FY 2010 Activities: *($3,012,000)*

Planned procurements of AS/AQ by other partners will more than fill the needs for 2009, 2010 and 2011. In this setting, PMI will invest to ensure appropriate use of ACTs at facility and community levels, targeting both improved service delivery and increased knowledge and treatment seeking behavior. Anecdotal evidence indicates that many adults continue to self-treat

with inappropriate antimalarials, including ACT monotherapy received from private pharmacies. To address this concern, PMI will also support social marketing of highly subsidized ACTs for older age groups through private health facilities, but only for those who test positive for malaria using a RDT. The goal of this approach is to expand the availability and use of high quality, affordable ACTs and at the same time reduce the inappropriate use of ACTs in the private sector by linking treatment to diagnosis.

Specific activities supported by PMI in FY2010 include:

1. *Facilitate implementation and supervision of case management with ACTs at CSB level*: Provide support for training /refresher training and routine supervision of health workers at CSB level nationwide for appropriate use of RDTs and ACTs. *($1,000,000);*

2. *Support introduction of a socially-marketed, highly-subsidized ACT treatment for older age groups through the private/NGO sector*: Provide subsidized ACTs, train private sector providers in standard case management with RDTs and ACTs, reporting and M&E. *($1,000,000);*

3. *Facilitate implementation and on-going supervision of community case management of malaria with ACTs*: Provide support for training/refresher training and routine supervision of community health workers. *($1,000,000);*

4. *Strengthen and harmonize IEC/BCC materials and activities for malaria prevention and case management*: Support national IEC/BCC for malaria prevention, and case management activities. Liaise with GoM, and other partners working in Malaria to ensure consistency and harmonization of IEC/BCC tools nationally. Evaluate effectiveness of IEC/BCC activities in terms of knowledge and behavior change *(Cost covered in Community based interventions and IEC/BCC section);*

5. *Provide support for implementation of national and targeted mass media and community focused IEC/BCC campaigns*: IEC/BCC for malaria activities including promoting ownership and use of LLINs, uptake of IPTp, case management with RDTs and ACTs and promotion of IRS. *(Cost covered in Community based interventions and IEC/BCC section);*

6. *Support implementation of community-based malaria through NGOs/FBOs*: Support for NGO/FBO grants to expand the implementation of community-based IEC/BCC interventions. *(Cost covered in Community based interventions and IEC/BCC section);*

7. *TA to support community case management of malaria*: One CDC and one USAID TDY to provide technical support for community case management of malaria. *($12,000);*

3. Pharmaceutical and Commodity Management

Background:

Public Sector: SALAMA, the central purchasing agency of the MoH, is responsible for procurement of products for use in the public sector and for their distribution to the districts. SALAMA is an autonomous, non-profit organization that was established in 1997 with the support of various donors. SALAMA finances all its activities from the resources generated by sales.

At the district level, the district pharmaceutical depots are the intermediary points in the public sector supply chain. They are managed primarily by NGOs under a contract with the MoH through the Department of Pharmacies, Laboratories and Traditional Medicine and sell to the health facility pharmacies. All medicines dispensed at public health facilities are sold with a mark-up of 35% of the SALAMA price.

The introduction of the free distribution of some malarial products through the public sector has resulted in alternative procurement and distribution channels to the district level for these products. There are also multiple channels for distributing antimalarial medicines and products within districts. Free and donated antimalarial products are received and managed by the District Health Office while the products from SALAMA are managed by the district pharmaceutical depots. In both cases, CSBs are responsible for the actual collection and transportation of their supplies from the district level, thus limiting the quantities that most of them can transport at any one time, as they mainly rely on public transportation.

In response to the multiple procurement and distribution strategies in use, the MoH, with support from UNICEF, established the health product integration project, *Programme d'Action pour l'Intégration des Intrants de Santé* (PAIS), for which planning was completed in 2008.

Pharmaceutical Management System: An assessment of the national pharmaceutical management capacity highlighted the following areas/issues: (1) a lack of trained pharmacists in the public pharmacies; (2) weak institutional capacity; (3) insufficient pharmaceutical policies and guidelines; (4) low capacity and inadequate human resources for pharmaceutical management in the health care system; (5) multiple vertical programs challenging integration and coordination; (6) logistics and distribution challenges at the peripheral level.

PMI interventions have been aimed at addressing point (1) by supporting the *Institut National de Santé Publique et Communautaire* (INSPC) in pre-service training on pharmaceutical management; points (2), (3), (5) and (6) by strengthening the *Direction des Pharmacies, des Laboratoires et de la Médecine Traditionelle* (DPLMT) pharmaceutical management capacity; and (6) through training personnel and to support supervision. However, implementation of these activities was stopped in March 2009, as part of the USG suspension of non-lifesaving assistance and support to the GoM.

Private sector: Highly-subsidized ACTIpal and LLINs are distributed to CHWs through various NGOs, private sector pharmacies, pharmacy depots, and private doctors through PSI-contracted pharmaceutical wholesalers. PSI determines the margins at which these items are sold to the consumers by these private providers.

There is also a small but active distribution system of antimalarials in the commercial private sector, particularly in urban areas. There are at least three local manufacturers who mostly import finished products for repackaging and sales, in addition to approximately 20-30 wholesalers, 200 private pharmacies and 2,000 pharmacy depots. As of February 2007 the largest local manufacturer was producing chloroquine, amodiaquine, artesunate, AS/AQ, quinine and SP.

Quality Assurance: The *Direction de l'Agence de Medicament de Madagascar* (DAMM) which includes the national medicines quality control laboratory, is responsible for testing most pharmaceutical products destined for use in the country and products already on the market. The medicines quality monitoring program is designed to help the national drug authority, the DAMM, to detect substandard and counterfeit medicines and take immediate action to remove such medicines from the market. The DAMM has established seven peripheral sentinel sites where samples of antimalarials are regularly collected and tested using minilab kits.

Pharmacovigilance: In early 2006, Madagascar's national pharmacovigilance center and system were established. The impetus for the development and establishment of an effective pharmacovigilance system has come from the NMCP as part of the introduction of the new antimalarial treatment policy. Since its inception, the center has developed its national strategy, developed a national adverse events reporting form, conducted a training of trainers workshop (with the assistance of the Moroccan pharmacovigilance center), and conducted trainings in four districts of the Atsinanana region (around Toamasina), which were coupled with the scheduled ACT trainings implemented by WHO/Madagascar and NMCP

In 2008, PMI supported the DAMM and the University Hospital of Antananarivo (*Hôpital Joseph Ravohangy Andrianavalona*), to establish a drug information centre (*Centre d'Information sur les Médicaments et les Intoxications* or CIMINTOX). PMI supported the training of center staff by the Moroccan centre of pharmacovigilance. The role of the drug info center is to provide information to health professionals and the public on the safety of pharmaceuticals and any other health care or household products which could cause side effects and/or poisoning and to disseminate such information frequently.

Madagascar became the 94th full member of WHO's international pharmacovigilance program. As a member, Madagascar has access to valuable resources that will help the country to strengthen its pharmacovigilance system.

Progress in the past 12 months:

In FY 2009, PMI supported the DPLMT/PAIS to reorganize the supply chain management system. Specifically, PMI supported the development of a draft pharmaceutical management indicators manual with draft procedures guidelines for the district and communal levels of the pharmaceutical management system. These management tools were developed to address the practical implementation of the five-year PAIS strategy, with the goal of integrating vertical program products into a single management system. PMI also worked with SALAMA to improve its capacity to store, deliver and forecast commodity needs in order to ensure a steady supply of essential medicines.

In FY 2009, PMI supported the national medicines quality control laboratory with resources, reagents and reference standards to conduct one round of sampling and testing, and procured a Minilab® kit for the new site in Taolanaro. A total of three out of the 237 samples essential drugs collected have been confirmed substandard. . The national center of pharmacovigilance and the national medicines quality control laboratory issued orders to withdraw the substandard lots.

During the past twelve months, PMI supported the national pharmacovigilance center to expand the national pharmacovigilance program to the regions by facilitating the training of 365 health care professionals in reporting adverse drug events (ADE) in eight districts. As a result, the number of ADE reports has increased. Of the 496 ADE reports received since the launch of the program, 33 reports concern anti-malaria medicines. The involvement of malaria sentinel sites in active pharmacovigilance was discussed with members of the national pharmacovigilance center, the NMCP, and WHO. It was agreed to integrate pharmacovigilance into Global Fund-supported activities.

During the last year, PMI provided support to the *Direction des Pharmacies, des Laboratoires et de la Médecine Traditionelle*

Proposed FY 2010 activities: ($1,800,000)

- *Strengthening pharmaceutical and commodity management system:* PMI will resume support to SALAMA, PAIS, and the NMCP to strengthen the national pharmaceutical management system which includes forecasting, management and distribution of pharmaceuticals, LLINs and RDTs. The main objective is to prevent and eliminate stock-outs of malaria commodities and to ensure that expired drugs are disposed of properly. *($1,000,000);*

- *End-use verification of malaria commodities:* PMI will conduct the end-use verification and monitoring of the availability of key antimalarial commodities at the facility level. Specifically, this will entail quarterly supervisory monitoring visits to a random sampling of health facilities and regional warehouses to detect and trigger further action on the following critical areas: ACT (or other drug) stockouts, expiration dates of ACTs at health facilities, leakage, anomalies in ACT use, and verifying quantification/consumption assumptions. *($100,000);*

- *Support and improve drug quality control:* PMI will support the DAMM to ensure that antimalarials, especially ACTs, available in the public and private markets, are of high quality. This includes some refresher training and frequent supportive supervision. In addition PMI will support the procurement of equipment and reagents. *($400,000);*

- *Strengthen and expand the national system for pharmacovigilance:* PMI will support the DAMM to strengthen and expand the national pharmacovigilance system which may include some active surveillance at the current malaria fever sentinel sites. PMI will support training for the continued expansion of the system as well as supportive supervision. *($300,000).*

J. INTERVENTIONS - COMMUNITY-BASED INTERVENTIONS AND IEC/BCC

Background:

Mobilizing traditional and religious community leaders and civic organizations to support and promote malaria prevention and control is critical for achievement of the new national malaria strategy and PMI objectives. These include activities that promote the use of LLINs by pregnant women and children under five, correct prompt treatment of suspected malaria, and antenatal clinic attendance for IPTp.

In 2009, the MoH adopted the new National Community Health Policy (*Politique Nationale de Santé Communautaire*) which provides a framework for all working in community health. This document also validates the use of the Champion Commune approach for working with communities. Through the Champion Commune program, the MoH, with NGOs and RBM partners, has established an innovative and effective community empowerment and mobilization program. This approach empowers the community to make positive changes that improve the overall health and well-being of the population. The results have been comprehensive in scope, including improvements in immunization rates, pre-natal consultations, family planning, and reductions in diarrhea, pneumonia, and malaria.

The Champion Commune approach is reinforced by a comprehensive behavior and community norm change strategy that makes full use of a variety of IEC channels. Partners use mass media, including radio shows, mobile videos with local actors, and print materials for broad dissemination of key malaria prevention and treatment education messages.

To complement these mass media efforts, interpersonal communication and community-based behavior change interventions are implemented through NGOs and CHWs. CHWs work with local civic groups to implement malaria prevention education through participatory radio listening groups, skits and local drama, small group education sessions, mobile videos, and puppets, which are popular in Madagascar. CHWs can also be instrumental in getting pregnant women and women with children needing immunizations to visit the health center for ANC and EPI clinics and to receive a free ITN.

CHWs and NGOs help support the nationwide, biannual mother and child health weeks, which provide catch-up immunizations, vitamin A, deworming medicine and, at times, free ITNs for children under five years. The CHWs that distribute socially-marketed products are also responsible for educating local residents on ITNs and their use, on the necessity of prompt, correct treatment with ACT for children under five at the household level, and to recognize the danger signs of severe malaria that require immediate treatment at the clinic.

The revised *Plan Stratégique National* for malaria cites the adoption of the new *Politique Nationale de Santé Communautaire* as a key element in mobilizing communities but decries the lack of any mention of a sustainable motivational strategy to encourage retention of community health workers.

Progress during the last 12 months:

During the past year, SantéNet2 began an expansion of the Champion Commune approach, both to reach new communes and to update and expand its scope. As part of the Champion Commune approach, SantéNet 2 and partners are developing a monitoring and supervision system for CHWs that will utilize local-level *Comités de Développement Social*, whose objectives are to identify communities' health services needs and to monitor and supervise CHWs service provision. To date approximately 800 CHWs have been trained in malaria prevention under SantéNet2 and other partners.

Over the past year, PMI implementing partners carried out preliminary activities for the training of CHWs in community case management of malaria, pneumonia and diarrheal diseases, as a part of overall c-IMCI. Final training of CHWs was hindered, in part, because of the suspension of work with the GoM. Over 1,500 CHWs will be trained in c-IMCI using the newly-revised, harmonized curriculum and will begin implementing HBMF.

In a further response to the USG assistance to the GoM, SanteNet2 completely redesigned the supply chain management system. The new system uses the social marketing network, bypassing the CSB. The redesigned system was introduced in about 60 communes by the end of August 2009 and will be rolled out to all communes before the end of 2009.

During this period, PSI aired malaria radio spots 6,605 times and presented 685 mobile video unit shows. Most of these radio spots were to promote behavior to use LLINs. Posters were developed and displayed in CSBs, at the house of community-based health agents and in villages to announce the upcoming visit of the mobile video unit team.

Regional launches of ACTIpal® in eight malaria-endemic regions were organized in collaboration with regional medical associations and local authorities. Distribution through CHWs began in November 2008 after they had received adequate training. To date over 663,000 treatment doses of ACTIpal® have been distributed.

PMI also provided technical assistance to the MoH for the development of the new *Politique Nationale de Santé Communautaire*.

Proposed FY2010 Activities: ($1,630,000)

PMI support to community mobilization activities will continue and broaden to cover more of the country. The channels of communication will be focused on rural areas and will include community-based interpersonal communications, mobile video unit activities, and radio spots. In addition, PMI will support national level mass media and community IEC/BCC for increasing knowledge and enabling behaviors related to malaria prevention and treatment. PMI will continue support for the NMCP's goal to implement community case management of malaria, pneumonia and diarrheal diseases in all 91 districts outside the Central Highlands.

Specific activities to be funded by PMI in FY10 include:

1. *Strengthening and harmonization of IEC/BCC materials and activities for malaria preventions and case management*: PMI in collaboration with GoM, and other partners and stakeholders working in malaria will inventory existing IEC/BCC materials, review, update and standardize IEC/BCC strategies and messages, and provide technical assistance in the development (message and material development, pre-testing/post-testing) of IEC/BCC materials. PMI will also support an evaluation of the effectiveness of IEC/BCC activities in terms of knowledge and behavior change. *($400,000*

2. *Implementation of national and targeted mass media and community focused IEC/BCC campaigns*: IEC/BCC for malaria activities including LLINs promoting ownership and use, uptake of IPTp, case management with RDTs and ACTs, and promotion of IRS. *($700,000)*;

3. *Support implementation of community-based malaria activities through integrated CCM interventions with NGOs/FBOs*: Support for NGO/FBO grants to expand the implementation of community-based IEC/BCC interventions. *($500,000)*;

4. *Support to Peace Corps Volunteers*: Provide support for volunteers to promote malaria prevention and treatment seeking behaviors in their communities. *($30,000)*;

K. INTERVENTIONS – EPIDEMIC PREPAREDNESS AND RESPONSE

Background:

The Central Highlands, the transition zones between the highlands and the coast, and the South are the areas where epidemics can occur as a result of to meteorological factors favoring transmission. In preparation for epidemics, ACTs, insecticides, RDTs, and ITNs are pre-positioned at the regional level for deployment. The response using targeted IRS is based on surveillance information, altitude and monitoring of key entomological, environmental, and demographic variables. The response also uses mass treatment with AS/AQ distributed by CHWs in targeted areas. To illustrate the epidemic response in the Central Highlands, an outbreak of malaria cases was detected in the village of Marinarivo in late December of 2006. One week after the epidemic was confirmed, 2,500 doses of AS/AQ had been distributed over a 17-20 day period to all children under five in the affected communities and to all household members of the cases. Indoor residual spraying was not conducted during this outbreak, because the community had already been sprayed in early December.

The current epidemic surveillance monitoring system (*Postes Sentinelles de Surveillance or* PSS) was established in 1997 for 12 areas at risk for epidemics in the Central Highlands and South. This system has been enhanced and expanded with support from Global Fund Rd 3 and currently supports 12 staff working at the district level to report district level suspected and confirmed malaria case weekly covering 36 high epidemic risk districts. District level and central level data bases are established and functional, although data reporting is of variable quality and timeliness. It is, however, of superior quality and completeness when compared to data from districts outside

of the 36 epidemic risk districts. The national strategic plan aims to expand the number of districts and improve both epidemic detection and timely response, and data reporting on the number of confirmed malaria cases. Districts in areas of the expanded generalized IRS (West and South) will be prioritized, as transmission is likely to decrease substantially making these areas more epidemic-prone in the coming years.

As part of the MOP FY 08 plan, PMI was planning to support PSS coverage in 16 new districts in 2009. This was coordinated at the NMCP to complement expansion of sites supported by Global Fund 7 which currently supports additional staff and has expanded PSS in 16 districts in 2009. This expansion will includes both epidemic surveillance and general malaria surveillance aimed at improving quality and timeliness of routine malaria indicators. Terms of reference for local staff were developed for PMI districts and training planned when all activities were suspended as part of the US government response to the coup d'état in March 2010. No additional support could be planned for FY 2009 because of the USG suspension of technical assistance to the government.

Proposed FY 2010 activities*: ($1,000,000)*

PMI will provide support to the PSS sites to increase supervision and training to improve the quality of data and improve the analytical capacity at the district level to enable rapid detection and response to outbreaks. In addition, PMI will support distribution of LLINs, targeted IRS, prompt case management, and IEC to prevent and contain malaria epidemics. During emergencies related to cyclones and flooding, risk factors are assessed and interventions put in place to respond to the situation as appropriate.

1. *Support for strengthening epidemic surveillance , Postes Sentinelles de Surveillance:* PMI in-country staff will work with the NMCP and other partners to revise, update, strengthen, implement the national plan for epidemic prevention, preparedness and response, and monitor progress. Reinforce surveillance and epidemic preparedness by decentralizing surveillance, program supervision and data collection; (including training, equipment, active data collection, cleaning, analysis, identifying alerts, regular transport for supervision visits to CSBs) for 24 districts at risk/52 total at risk districts. *($360,000)*

2. *Reinforce regional and district level response to epidemic alerts, investigation and mitigation* – support for human resources, travel costs, district level meetings, training, equipment; prioritizing 53 IRS targeted districts (highlands, fringe, south, starting in 2010 ($10,000/district per year plus partner overhead costs). *($640,000)*

3. *PMI is prepared to support targeted IRS in response to an outbreak*: Following the NMCP protocol, PMI will assist with a rapid IRS response complimenting the response by the malaria program with LLINs and ACTs. *(Costs covered in the IRS section under the annual spray campaigns)*

L. MONITORING AND EVALUATION PLAN

Background:

In the context of malaria elimination, M&E has become a critical component of the national strategy requiring the establishment of an M&E system that is integrated into the existing national health information system. Thus, the M&E strategy for malaria has been developed to facilitate the collection, analysis, and quality assurance of data from health centers, partners, communities, sentinel sites, and household surveys. A comprehensive National Monitoring and Evaluation Plan, 2008-2012, has been recently revised. The current M&E system for malaria is comprised of: 1) the national Health Management Information System (HMIS); 2) a malaria specific sentinel surveillance system for epidemic prone districts (described above); 3) an integrated fever sentinel surveillance system which provides highly accurate and rapid reporting of data; and 4) population-based surveys. These data can be triangulated to assess progress in malaria prevention and case management. Additional M&E data are available, including entomologic assessments on insecticide resistance monitoring and residual insecticide testing; antimalarial drug resistance (15 sites, conducted every two years); and pharmacovigilance monitoring.

As a key component of the M&E strategy, the NMCP is expanding the 12 epidemic surveillance sentinel sites, *Postes Sentinelles de Surveillance*, that cover 36 high risk districts for from the Central Highlands and the semi-arid southern region, to the margins of the plateau and the West Coast, and then throughout the remainder of the country. The NMCP strategy calls for a total of 93 sites (4-5 per region) to be functional by the end of 2010, prioritizing IRS districts. The 12 existing PSS sites are funded by Global Fund Round 3 through October 2009 and then again by Global Fund Rd 7 from Oct 2010-Sept 2013 (the gap was a result of delayed Global Fund Rd 7 financing), 16 new sites were established in 2009 supported by Global Fund Round 7, totaling 28 decentralized staff nationally covering 52 districts. Data from these sites will be critical to assessing impact of malaria interventions and build long term capacity to improve surveillance as Madagascar moves from malaria control towards elimination.

A complementary fever surveillance system developed by the *Direction des Urgences et de la Lutte contre les Maladies Transmissibles, Service de la Lutte contre les Maladies Emergentes et Ré-émergentes, Service de la Surveillance Epidémiologique,* the NMCP, and IPM is actively collecting data on fever cases from 23 sentinel CSB sites. These sites use syndromic surveillance coupled with biologic confirmation to systematically classify all fever cases as a laboratory-confirmed malaria case, a suspected case of an outbreak-prone disease (i.e., arbovirus, influenza), or other fever. Supported by World Bank funding since March 2007, thirteen sites were initially established in CSBs across four malaria epidemiological zones. Aggregate data on the number of fever cases is transmitted daily to the central level from each site using short message service phone technology. Detailed patient data, including demographic information, clinical symptoms, RDT or thick blood smear results, and history of antimalarial treatment before clinical consultation, are recorded on triplicate forms and sent to the central level on a weekly basis. Of note, several of these fever surveillance sites are also part of the network of IPM sites used in monitoring antimalarial resistance every two years. Weekly feedback on

reported data is provided by IPM to the sentinel sites, and a monthly newsletter summarizing the reported cases and trends is distributed to the MoH and partners.

A total of 16,432 fever cases (12% of all consultations) were reported from the original 13 fever sentinel surveillance sites in 2008, of these, 95% were tested for malaria with an RDT and among those tested, 9% were confirmed malaria cases. Promptness of reporting and quality of data is good--the aggregate reports were received daily >95% of the time. On average, fewer than 5% of reports required correction of errors.

Coverage data for malaria interventions and program indicators have been reported from several sources. Compilation of malaria data reported through the routine national health information system is completed with the assistance of a data manager financed by UNICEF. All submitted reports through 2008 have been entered into the central database and are available for use. The NMCP is developing a format for a periodic report of key indicators to be shared with all partners. The creation of a central M&E unit in the NMCP, consisting of one epidemiologist, one computer expert and an assistant is being supported by Global Fund Round 7. The staff of the central M&E unit will train regional staff and create 22 regional M&E units that will assist in data collection and analysis. All sites will be equipped with computer equipment, office equipment, and a motorcycle.

Progress in the past 12 months:

A MESST workshop was conducted in June, 2008 with key GoM and RBM partners. The MESST workshop highlighted several important weaknesses in the current M&E system: weak coordination among partners; insufficient collection, analysis, dissemination, and use of data at the program level and decentralized level; absence of harmonized M&E tools; insufficient data quality monitoring systems; and insufficient human resources. With financing and resources from the GoM and partners, an action plan was developed and has been 90% implemented.

One key activity was to revise the HMIS system – an activity that is likely to take 2 years or more. Meetings have begun to plan this effort. Key malaria indicators – diagnostics and complete IPTp data will be added.

In Year 1, PMI supported 13 fever sentinel sites and continued this support in Year 2 by adding two additional sites. These sites are managed by IPM, a non-governmental organization. In the past 12 months, IPM has consistently and reliably conducted fever and malaria case reporting to PMI for 13 sentinel sites, and has begun to report treatment and IPTp indicators from 8 of the 13 sites. These original 13 sites were established in 2007 and provide trend data over time. IPM has funding from other donors and has expanded their total number of functional sites to 23. As part of FY 09, PMI will continue to support expanded malaria surveillance activities in 15 fever sentinel sites.

The national post-2007 Campaign Bednet Survey conducted by HealthBridge/CDC was finalized and disseminated widely in June, 2008. These data have been used regularly by RBM partners for program planning, resource allocation and has informed national policy. PMI also provided technical assistance to the preliminary design and discussion of methodology for a parasite

prevalence survey planned with Global Fund funding. Key PMI M&E activities that were suspended and will not be supported in Year 2 include: 1) support for the verbal autopsy component of the 2008/2009 DHS; 2) technical assistance in the development of a parasite prevalence survey in 2009 3) support for 16 new sentinel surveillance districts within PSS; and 4) strengthening NMCP M&E capacity at central and district levels.

The 2008/2009 DHS, began in December 2008 and data collection ended in August, 2009, with some delays due to insecurity in the field exacerbated by the political crisis. This survey will provide regional-level program information and anemia measurement. UNFPA recently agreed to fund completion of the DHS activity and preliminary results are now expected in October, 2009. These data will provide the baseline for the PMI project in Madagascar.

PSI also conducted its national TRAC survey which measured a standard set of indicators assessing behavior/knowledge of risk-reducing behavior and exposure to social marketing (e.g., ITN usage and exposure to IEC radio spots) and final results are anticipated in September, 2009.

PMI will build on the experiences of IPM in Madagascar and those from other countries to implement RDTs at the community level in two districts and develop a simplified M&E system of reporting confirmed malaria cases.

Proposed FY 2010 activities: ($1,392,000)

In Year 3, PMI will resume strengthening of central-level, as well as district-level, M&E activities by updating the MESST action plan and implementing the recommendations that result from the a second MESST workshop. This will include support for both epidemic surveillance and sentinel surveillance through the PSS districts and fever sentinel surveillance, respectively, and both will provide data on malaria indicators and function as early warning sites for malaria epidemics. The extensive reach of the PSS surveillance sites will essentially provide a structure for decentralized M&E supervision at the district level as described above. This strategy will improve the quality and availability of the malaria-specific data collected at health facilities.

The rationale for supporting both "sentinel site" systems is that the PSS will provide the framework for decentralized supervision for M&E activities (these sites are now under development in the stable transmission zones and will require some time before they are fully functional), while the fever surveillance sites (functioning since March 2007) will provide complementary information on trends of confirmed malaria cases and other fever cases. Both systems will be coordinated, and the possibility of merging the systems in the future will need to be explored. Finally, coordination with other partners working on the control of other epidemic-prone infectious diseases will be actively pursued in order to leverage resources for the non-malaria components of the fever surveillance sites.

PMI M&E activities in Year 3 are:

1. *Provide technical assistance for the 2011 MIS*: PMI will provide support to complement the operational funding provided by the Global Fund (Rd 7 and RCC 4). *($500,000);*

2. *Strengthen HMIS monitoring and evaluation system for malaria* by conducting a rapid evaluation of data quality, completeness, flexibility and operating characteristics. Technical assistance to revise the HMIS data collection system to include malaria diagnostic and malaria in pregnancy indicators. *($250,000);*

3. *Support implementation of MESST recommendations*: Support a review and update of the MESST with key partners and implement revised MEEST recommendations. *($50,000);*

4. *Continue support for 15 fever sentinel sites* including the original 13 CSB sites plus at least two referral hospital sites in order to monitor impact of program interventions on severe malaria within the same catchment areas as the CSB level sentinel sites; selection of hospital sites will be coordinated, and indicators will be harmonized between the fever surveillance sites and the PSS. *($300,000)*;

5. *Evaluate integration of RDTs, and management of severely ill children under 5 in community-based management of fever* in 4 districts to inform the scale up and use of RDTs by CHWs. *($200,000);*

6. *Strengthen epidemic surveillance and response* by actively supporting PSS in at least 25 districts to enhance supervision and ensure complete and accurate data collection, provide additional trainings or refresher training to reinforce the analytic capacity at the district level, equipment or supplies needed for data collection, and transportation support. Support the national scale up of epidemic response capacity with a focus on IRS districts (Central Highlands, Fringe, South and West). *(Cost covered in the Epidemic Surveillance and Response section)*;

7. *Provide technical assistance to support national malaria M&E implementation, reporting and regular use of data*: including local technical assistance to support the maintenance of the national malaria database, data quality monitoring, reporting and training. *($80,000)*;

8. *Technical assistance* to support strengthening NMCP M&E capacity: one CDC TDY and one USAID TDY. *($12,000).*

M. HIV/AIDS AND MALARIA

The seroprevalence of HIV infections remains low in Madagascar at approximately 1%. Areas where integration has been pursued between the HIV/AIDS program and the NMCP include promoting adherence to universal precautions when taking blood samples, integrating pharmacovigilance activities, providing LLINs to people living with HIV/AIDS, and ensuring appropriate malaria prevention services at Prevention of Mother-to-Child Transmission clinics. As in the previous two years, PMI will continue to collaborate with the NMCP and other partners to maximize any potential area for synergy between the two programs.

N. NTDs AND MALARIA

Madagascar is endemic for six of the seven diseases targeted for mass drug administration under the neglected tropical disease (NTD) programs and five of these are widely prevalent in the country: lymphatic filariasis (LF), schistosomiasis, and soil transmitted helminthes (ascaris, trichuris and hook worms). Trachoma is present but rare in Madagascar. Currently there is no USAID NTD program in Madagascar, however, other partners have implemented large-scale campaigns to treat filariasis and schistosomiasis. In the most recent effort, more than one million school-aged children were treated for schistosomiasis in Madagascar between June and October 2008. This was done through a collaboration of partner support, including a donation of 2.5 million praziquantel tablets by Merck KGaA. The Ministries of Health and Education led the effort.

In addition, Madagascar is tackling filariasis, which is endemic in 98 out of 111 districts and puts 16 million inhabitants at risk of disease. With WHO and Japanese support mass drug administration campaigns with dethylcarbamazine began in 2005 and now cover 30 districts. The project plans to treat 3.3 million people in 2009.

PMI will work with the MoH to identify how best to integrate future NTD and PMI activities. PMI will also encourage its NGO partner organizations and others to apply for future funding from the USAID NTD program.

O. CAPACITY BUILDING WITHIN NATIONAL MALARIA CONTROL PROGRAM

Background:

Although Madagascar has made many improvements in child health indicators, it still faces major health challenges which threaten social and economic development. Health service quality is substantially below standard for basic medical services and supplies are regularly in short supply. Public and non-governmental sector capacity to plan effectively and manage health programs is weak, particularly in the areas of financial and administrative management, and the collection and use of data for program planning and monitoring. Much remains to be done at central and regional levels to ensure sustainable health financing.

The updated National Strategic Plan identifies the ineffective implementation of the three ones principle (one national strategy, one coordinating body and one M&E plan), as a major weakness of the NMCP in Madagascar. The plan recognizes that reaching the goal of elimination of malaria will require strengthening the NMCP, both in quantity and quality of human resources, at all levels of the health system. The plan further states that, as the coordinating body for malaria control interventions, the NMCP needs to “increase its capacity to plan, coordinate and monitor implementation of malaria control activities.”

Progress in the past 12 months:

Most of the intervention areas in Year 1 have activities that directly or indirectly strengthen the NMCP. In Year 2, many of the planned activities could not be completed as envisioned due to the USG suspension of assistance to the GoM.
These capacity building activities are treated in more detail in the issue specific sections, they include:

- Technical assistance to strengthen the entomological capacity of the NMCP
- Support for training and supportive supervision for malaria case management
- Strengthening the MoH pharmaceutical and commodity management system through the development of tools and indicators, and training of staff at SALAMA, the Department of Pharmacies, Laboratories and Traditional Medicine, SLP and other vertical programs
- IRS activities (spraying operations, supervision, IEC)
- Pharmacovigilance
- Training and support of Minilabs® at sentinel sites for drug quality monitoring

Another major mechanism of capacity building at NMCP was continuous direct technical assistance from the in-country PMI team during Year 1 implementation. This technical assistance was a key input into:

- Development of the new National Strategic Plan, including budgeting and gap analyses for commodities.
- Updating of the MEEST and development of a single national malaria monitoring and evaluation plan
- Development and review of global fund proposals, including the National Strategy Application proposal
- Donor/partner coordination through the RBM mechanism

In Year 2 of PMI, all capacity building activities were suspended.

Proposed FY 2010 activities: ($150,000)

The revised National Strategic Plan recognizes the complex issues of long-term sustainability and building national capacity over time. With malaria program resources expanding rapidly, especially with the potential approval for the Global Fund NSA grant, the NMCP must acquire adequate managerial and technical capacity to provide effective leadership and coordination within the MoH, with other Government ministries, and with partners. PMI and its partners will help to develop and improve capacity in the NMCP and the broader MoH through the activities described above for prevention and case management. In addition PMI will engage the NMCP and MoH to strengthen capacity in key cross-cutting areas, including supply chain management, communication for behavior change, monitoring and evaluation and epidemic preparedness. PMI interventions in these areas are designed to maximize the role of the MoH, with PMI and partners providing guidance as needed and resources to implement programs where MoH budgets fall short.

In addition, to directly strengthen MNCP capacity, PMI will:

1. *Contribute to equipping the new NMCP headquarters building* by fully equipping the insectary and laboratory, purchasing office supplies and computer equipment. ($150,000)

P. COMMUNICATION AND COORDINATION

Background:

Commitment to malaria elimination is evident at the highest levels of the GoM. The Health Donors Group, which includes USAID, meets on a monthly basis to discuss issues of mutual interest. The Global Fund Country Coordinating Mechanism also meets monthly (and more often as necessary). Up until the change in governments, USAID played an active role in this group. Once normal relations between the USG and the GoM resume, it is expected that USAID will resume its strong participation in meetings at all levels.

The RBM Partnership has greatly improved during the past year thanks to better information sharing and coordination among partners. Good examples of that effective partnership are the 2008-2009 IRS campaign which was supported by both PMI and Global Fund in a harmonious manner and with good results and the development of the Global Fund National Strategy Application (technical input from all RBM partners).

Under the previous government, the MoH included a Malaria Executive Secretariat (*Secretariat Executif de Lutte contre le Paludisme*) reporting to the MoH Secretary General. The Executive Secretary played a major role in advocacy with the President's office on malaria matters. The new government has eliminated this function.

Progress in the past 12 Months:

Year 2 was the first year in which all PMI positions in Madagascar were filled. The in-country team consists of the CDC and USAID PMI Advisors and two Malagasy staff, a Senior Public Health Specialist/Epidemiologist and a Program Management Assistant. All PMI staff were closely engaged with partners on key activities. These included assistance in the development of the new strategic plan and the various Global Fund submissions, including the Global Fund National Strategy Application proposal, and planning and monitoring of malaria activities, such as the IRS campaign and the LLIN mass distribution campaign. In addition, PMI staff continued to be active in coordinating bodies such as the RBM, CCM and fever surveillance coordinating group.

The PMI staff developed a matrix detailing the technical and managerial roles of each PMI member. This matrix was shared with the NMCP, donor and technical partners, implementing partners, and USAID staff to facilitate communications regarding the PMI program in Madagascar. PMI and NMCP instituted regular meetings to discuss issues related to PMI. These meetings are meant to be held monthly with the NMCP PMI focal person and on a quarterly basis with the NMCP coordinator.

Although the NMCP committed to provide office space for the PMI advisors at the NMCP headquarters, this never materialized due to space constraints. The new NMCP headquarters building funded by the Principality of Monaco is expected to be completed by October 2009. NMCP has promised an office for PMI in this new building. PMI funds will be used to furnish the office.

At the planning and implementation levels, PMI and other partners continued working together to effectively fill commodity and human resource gaps. PMI worked with others in USAID to ensure coordination of PMI-supported activities within the broader context of the health strategies. This coordination was extremely important for the large number of activities implemented by the two USAID-funded bilateral projects: SanteNet2 and Social Marketing of Health Products. The PMI FSN Public Health Specialist acts as the AOTR of the Social Marketing of Health Products cooperative agreement.

Proposed FY 2010 activities: (No additional costs to PMI)

PMI, led by the PMI in-country team, will continue to work closely with the two USAID bilateral projects and other health-related programs in Madagascar to provide integrated services at facility and community level. The focus will be malaria and childhood illnesses, but also include integration with maternal, newborn and child survival programs, family planning, HIV/AIDS activities and others. These approaches will ensure the most cost-effective implementation of prevention and treatment measures.

The PMI in-country team will continue to work closely with the NMCP and partners. The team will also continue to participate in coordination bodies and meetings. The PMI advisors will spend a significant portion of their time working closely with the NMCP staff on program implementation, monitoring and evaluation.

Q. PUBLIC-PRIVATE PARTNERSHIPS

Background:

Opportunities to collaborate in malaria control with private national or international industries have been complicated by the civil and political unrest beginning in early 2009. Two potential public-private partnerships are with QIT Minerals Madagascar, QMM -- a subsidiary of Rio Tinto, and Sherrit, a nickel and cobalt mining company, which works across the stable east transmission zones. It is worth mentioning that PSI and SanteNet2 have independently contracted Sherrit for community-based approach activities and preventing sexually transmitted infections and HIV/AIDS. Investments by private companies to improve the health of their workers and their families have repeatedly been shown to be economically sound investments.

In view of the USG suspension on direct assistance to the GoM, private sector implementing partners and international and local NGOs and FBOs will take on a greater importance for PMI during much of 2009 and perhaps 2010. Distribution of ITNs and ACTs and the 2009 IRS campaign are major areas for public-private partnerships in Madagascar. PMI will work with international and local companies in Madagascar to identify opportunities to provide cost-

effective malaria interventions. PMI will also partner with international NGOs for a LLIN campaigns in 2009 and 2010.

R. STAFFING AND ADMINISTRATION

All PMI positions in Madagascar have been filled. The in-country team consists of the CDC and USAID PMI Advisors and two Malagasy staff, a Senior Public Health Specialist/Epidemiologist and a Program Management Assistant. All PMI staff members are part of a single inter-agency team led by the USAID HPN Officer who has been delegated that authority by the USAID Mission Director. 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. Candidates for these positions (whether initial hires or replacements) will be evaluated and/or interviewed jointly by USAID and CDC, and both agencies will be involved in hiring decisions, with the final decision made by the individual agency.

The two PMI professional staff work together and oversee all technical and administrative aspects of PMI in Madagascar, including finalizing details of project design, implementing malaria prevention and treatment activities, monitoring and evaluation of outcomes and impact, and reporting of results. Both advisors report to the USAID HPN Officer who has been delegated that authority by the USAID Mission Director. The CDC advisor is supervised by CDC, both technically and administratively. All technical activities are undertaken in close coordination with the MoH/NMCP and other national and international partners, including the WHO, UNICEF, the Global Fund, World Bank and the private sector.

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

Table 1
Year 3 (FY 2010) Timeline of Activities

Activity	2010	2011										
	Oct-Dec	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov
IRS in 13 health districts as part of the National IRS campaign and strategy towards elimination.												
Entomological surveillance and monitoring												
Environmental Assessment of IRS												
Procure LLINs for the rolling campaign to reach the national goal of 2 LLINs per household												
Support the hang-up activities as part of the LLIN rolling campaign												
Evaluate ownership and use of LLINs distributed during the campaign to achieve universal coverage goals and evaluate the effectiveness of hang-up activities												
Procure LLINs for social marketing												
Strengthen implementation of IPTp at the central and district level as part of Focused Antenatal Care												
Strengthen implementation of IPTp as part of Focused Antenatal Care												
Procure laboratory microscopy equipment and supplies and provide TA for maintenance												

Technical support for the continued development and implementation of the QA/QC system												
Implementation of the QA/QC system for microscopy and RDTs												
Expand community-based case management using RDTs												
Procure RDTs for community based case management of malaria												
Facilitate implementation and supervision of case management with ACTs at CSB level												
Introduce socially-marketed, highly-subsidized treatment dose of ACT for older age groups in the private/NGO sector												
Facilitate implementation and on-going supervision of community case management of malaria with ACTs												
Strengthen pharmaceutical and commodity management system												
Support for end-use verification of malaria commodities												
Improve drug quality control												
Strengthen and expand the national system for pharmacovigilance												

Strengthen and harmonize IEC/BCC materials and activities for malaria prevention and case management												
Provide support for implementation of national and targeted mass media and community focused IEC/BCC campaigns												
Support implementation of community-based malaria activities through integrated CCM interventions through NGOs/FBOs												
Support to Peace Corps Volunteers to promote malaria case management and control.												
Provide equipment for the NMCP program												
Support for strengthening epidemic surveillance												
Reinforce regional and district level response to epidemic alerts, investigation and mitigation												
Provide technical assistance to conduct the 2011 MIS												
Strengthen HMIS monitoring and evaluation for malaria												
Review and update MESST and determine new priority activities in view of changing nature of malaria transmission in Madagascar.												

Continue support for 15 fever sentinel sites of the fever surveillance system												
Evaluate community-based management of fever in children under 5, including integration of RTDs												
Technical assistance to support national malaria M&E and regular reporting												

Table 2
FY 2010 Planned Obligations Madagascar

Proposed Activity	Mechanism	Total Budget	Com-modities	Geographic area	Description of Activity
IRS					
IRS in 13 health districts as part of the National IRS campaign and strategy towards elimination.	IRS Global Task Order	$9,125,000	$3,555,000	13 Districts	Conduct PMI IRS operations in 6 health districts in the central highlands and fringe districts, 7 new districts in the transitional Western districts. Also covers cost for insecticide for 2011 IRS campaign (18 month budget) and environmental mitigation. GF will support IRS in an additional 40 districts.
Entomological surveillance and monitoring	IRS Global Task Order	$475,000	$0	6 sites within the 13 districts	Undertake entomological monitoring (subgrant to in-country partner) including comprehensive vector surveillance, assessment of resistance and other indicators of IRS impact: vector taxonomy and density, vector behavior, vector infection rates and insecticide decay rates.
Environmental Assessment of IRS	IRG/EMCAB	$50,000	$0	53 IRS Target Districts	Conduct an independent evaluation of the environmental effects of the GOM's entire IRS program
Technical assistance to PMI IRS activities	CDC IAA	$24,000	$0	53 IRS Target Districts	2 CDC TDYs to provide support for IRS
Technical assistance to PMI IRS activities	USAID	$0	$0	53 IRS Target Districts	1 USAID TDY to provide support for IRS (costs covered in core budget)
Subtotal: IRS		***$9,674,000***	***$3,555,000***		

ITNs					
Procure LLINs for the rolling campaign to reach the national goal of 2 LLINs per household	DELIVER	$9,000,000	$9,000,000	57 targeted districts in the Fringe, West, South	Purchase an estimated 1.5 million nets (budgeted at $6/net) to deliver, in coordination with LLINs from other partners, 2 LLINs per household in 57 districts that were not covered in the 2009 E. Coast mass distribution campaign. Budget includes procurement and distribution to the community level.
Support the hang-up activities as part of the LLIN rolling campaign	TBD	$820,600	$0	57 targeted districts in the Fringe, West, South	Conduct hang up activities for 2,190,000 PMI nets used in the 2010 rolling campaign (690,000 procured with FY09 funds + 1.5 million with FY2010 funds).
Evaluate ownership and use of LLINs distributed during the campaign to achieve universal coverage goals and evaluate the effectiveness of hang-up activities	TBD	$300,000	$0	Targeted comparison districts	Conduct household survey to evaluate ownership and use of LLINs after a universal coverage mass distribution
Procure LLINs for social marketing	PSI	$1,000,000	$1,000,000	Nationwide	Procure approximately 165,000 nets (at $6/net) for social marketing; budget includes distribution and promotion costs for highly subsidized LLINs and promotes community-based activities.
Technical assistance to PMI LLIN activities	USAID	$0	$0	Nationwide	Technical assistance for the 2010 rolling campaign (costs covered in core budget)

Technical assistance to PMI LLIN activities	CDC IAA	$12,000	$0	Nationwide	Technical assistance to evaluate the LLIN campaign and build local capacity
Subtotal: ITNs		***$11,132,600***	***$10,000,000***		
IPTp					
Strengthen implementation of IPTp at the central and district level as part of Focused Antenatal Care	MCHIP	$300,000	$0	91 Target Districts	Provide targeted short-term technical assistance to the MoH for the introduction of state-of-the-art practices to promote FANC uptake, including IPTp, and the development of guidelines for implementation. MCHIP will work in close coordination with SanteNet2 and MOH to implement IPTp interventions at the facility level.
Strengthen implementation of IPTp as part of Focused Antenatal Care	SanteNet2	$800,000	$0	91 Target Districts	Conduct refresher training, support supervision, supply job aids, and promote implementation of DOT for SP at the health facility level.
Subtotal: IPTp		***$1,100,000***	***$0***		
Case Management					
Diagnostics					
Procure laboratory microscopy equipment and supplies and provide TA for maintenance	DELIVER	$250,000	$175,000	Nationwide	Provide needed microscopes and supplies, including $60,000 for slides and reagents, to improve diagnostics at 126 health facilities. Build local capacity for on-going equipment maintenance.

Technical support for the continued development and implementation of the QA/QC system	IMAD	$150,000	$0	Nationwide	Improve availability and usage of diagnostic testing, and improve the oversight for QA/QC and the link between laboratory services and case management
Implementation of the QA/QC system for microscopy and RDTs	SanteNet2	$500,000	$0	Nationwide	Continuation of QA/QC implementation based on IMaD activities from FY08; this will include training, RDT QA/QC, Microscopy QA/QC at the hospital, CSB level and community level.
Expand community-based case management using RDTs	SanteNet2 (subgrants to NGOs/FBOs)	$500,000	$0	4 Districts	Expand community-based case management in an RDT context, while also strengthening case reporting to the NMCP. Includes subgrants to NGOs/FBOs.
Procure RDTs for community based case management of malaria	DELIVER	$100,000	$100,000	4 Districts	Procure an estimated 100,000 RDTs for community based case management
Provide technical assistance for QA/QC activities	CDC/IAA	$12,000	$0	Nationwide	One TDY for CDC to provide technical support for diagnostics
Subtotal		*$1,512,000*	*$275,000*		
Treatment					
Facilitate implementation and supervision of case management with ACTs at CSB level	SanteNet2	$1,000,000	$0	Nationwide	Provide support for training/refresher training and routine supervision of health workers at CSB level for appropriate use of RDTs and ACTs
Introduce socially-marketed, highly-subsidized treatment dose of ACT for older age groups in the private/NGO sector	PSI	$1,000,000	$350,000	Nationwide	Train private sector providers in standard case management with RDTs and subsidized ACTs, and improve reporting and monitoring of these private sector activities

Facilitate implementation and on-going supervision of community case management of malaria with ACTs	SanteNet2 (subgrants to NGOs/FBOs)	$1,000,000	$0	50% of all communes	Provide support for training/refresher training and routine supervision of community health workers. Support ACT supply chain and reporting of cases from the community level. Includes subgrants to NGOs/FBOs.
TA to support community case management of malaria	USAID	$0	$0	Nationwide	One USAID TDY to provide technical support for community case management of malaria
TA to support community case management of malaria	CDC IAA	$12,000	$0	Nationwide	One CDC TDY to provide technical support for community case management of malaria
Subtotal		*$3,012,000*	*$350,000*		
Pharmaceutical Management					
Strengthen pharmaceutical and commodity management system	DELIVER	$1,000,000	$0	Nationwide	Work closely with SALAMA and PAIS to strengthen all aspects of the pharmaceutical management system in order to prevent stockouts of malaria commodities and ensure that expired drugs are disposed of properly.
Support for end-use verification of malaria commodities	DELIVER	$100,000	$0	Nationwide	End-use verification of malaria commodities
Improve drug quality control	USP	$400,000	$150,000	Nationwide	Strengthen and expand quality control of publically and privately sold antimalarials in the country. Support minilab testing including purchase of equipment and reagents.

Strengthen and expand the national system for pharmacovigilance	USP	$300,000	$0	Nationwide	Expand supervision and refresher training for pharmacovigilance activities
Subtotal		*$1,800,000*	*$150,000*		
Subtotal: Case Management		***$6,324,000***	***$775,000***		
IEC/BCC					
Strengthen and harmonize IEC/BCC materials and activities for malaria prevention and case management	C-Change	$400,000	$0	Nationwide	Support national IEC/BCC for malaria prevention and case management activities. Adapt and optimize IEC/BCC tools for IRS. Liaise with GOM, and other partners working in Malaria to ensure consistency and harmonization of IEC/BCC tools nationally. Evaluate effectiveness of IEC/BCC activities in terms of knowledge and behavior change.
Provide support for implementation of national and targeted mass media and community focused IEC/BCC campaigns	PSI	$700,000	$0	Nationwide	IEC/BCC for malaria activities including promoting ownership and use of LLINs, uptake of IPTp, case management with RDTs and ACTs
Support implementation of community-based malaria activities through integrated CCM interventions through NGOs/FBOs	SanteNet2 (subgrants to NGOs/FBOs)	$500,000	$0	Nationwide	Support for NGO/FBO grants to expand the implementation of community-based IEC/BCC interventions to reach approximately half of all communes nationwide.
Support to Peace Corps Volunteers to promote malaria case management and control.	Peace Corps (SPA)	$30,000	$0	Nationwide	Support PCVs to promote malaria prevention and treatment seeking behaviors at the community level.

Subtotal: IEC/BCC		***$1,630,000***	***$0***		
Capacity Building					
Provide equipment for the NMCP program	SanteNet2	$150,000	$150,000	Nationwide	Equip insectary and laboratory, purchase computers and office equipment.
Subtotal: Capacity Building		***$150,000***	***$150,000***		
M&E					
Epidemic Preparedness and Response					
Support for strengthening epidemic surveillance	SanteNet2	$360,000	$0	Nationwide	Revise, update, strengthen and implement the national plan for epidemic prevention, preparedness and response. Reinforce surveillance and epidemic preparedness by decentralizing surveillance, program supervision and data collection; (including training, equipment, active data collection, cleaning, analysis, identifying alerts, regular transport for supervision visits to CSBs) for 24 districts at risk/52 total at risk districts.
Reinforce regional and district level response to epidemic alerts, investigation and mitigation	SanteNet2	$640,000	$0	53 Districts	Enhance regional and district level capacity in epidemic preparedness and response through support for human resources, travel costs, district level meetings, training, equipment; prioritizing 53 IRS targeted districts (highlands, fringe, south, starting in 2010)
Subtotal		*$1,000,000*	*$0*		
Other M&E					

Provide technical assistance to conduct the 2011 MIS	MACRO	$500,000	$0	Nationwide	Provide technical assistance for the national MIS planned in 2011 to complement GFATM funding.
Strengthen HMIS monitoring and evaluation for malaria	SanteNet2	$250,000	$0	Nationwide	Evaluate current HMIS system for malaria data quality and completeness. Revise HMIS data collection to include malaria diagnostic data and IPTp data.
Review and update MESST and determine new priority activities in view of changing nature of malaria transmission in Madagascar.	SanteNet2	$50,000	$0	Nationwide	Support the national M&E plan by reviewing MESST with stakeholders and identifying new priority activities based on changing nature of malaria transmission in Madagascar.
Continue support for 15 fever sentinel sites of the fever surveillance system	CDC/IAA (subgrant to IPM)	$300,000	$0	Nationwide	Support 15 fever sites with possible expansion to two associated district or referral hospitals in order to monitor impact of program interventions on severe malaria. Subgrant to IPM.
Evaluate community-based management of fever in children under 5, including integration of RTDs	TBD	$200,000	$0	4 Districts	Evaluate integration of RDTs, and approach to management of severely ill children <5, as part of community case management of fever.
Technical assistance to support national malaria M&E and regular reporting	SanteNet2	$80,000	$0	Nationwide	Technical assistance to support maintenance of national malaria database, including regular data quality monitoring, reporting and training.
TA for M&E strengthening	USAID	$0	$0	Nationwide	One USAID TDY to provide technical support for monitoring and evaluation
TA for M&E strengthening	CDC IAA	$12,000	$0	Nationwide	One CDC TDY to provide technical support for monitoring and evaluation

Subtotal		*$1,392,000*	*$0*		
Subtotal: M&E		***$2,392,000***	***$0***		
Staffing and Administration					
In country staffing and administration costs	USAID/CDC	$1,497,400	$0	Nationwide	Support for USAID and CDC annual staffing and administration costs.
Subtotal: Staffing and Administration		***$1,497,400***	**$0**		
GRAND TOTAL		**$33,900,000**	**$14,480,000**	**Commodities represent 43% of total budget**	

Table 3
Estimated Budget Breakdown, by Intervention

Intervention	Commodities		Non-Commodities		Total	
	($)	(%)	($)	(%)	($)	(%)
Insecticide-treated Nets	$10,000,000	29.5%	$1,132,600	3.3%	$11,132,600	32.8%
Indoor Residual Spraying	$3,555,000	10.5%	$6,119,000	18.1%	$9,674,000	28.5%
Case Management	$775,000	2.3%	$5,549,000	16.4%	$6,324,000	18.7%
Intermittent Preventive Treatment	$0	0.0%	$1,100,000	3.2%	$1,100,000	3.2%
Monitoring and Evaluation	$0	0.0%	$2,392,000	7.1%	$2,392,000	7.1%
IEC/BCC	$0	0.0%	$1,630,000	4.8%	$1,630,000	4.8%
NMCP Support	$150,000	0.4%	$0	0.0%	$150,000	0.4%
Administration	$0	0.0%	$1,497,400	4.4%	$1,497,400	4.4%
Total	**$14,480,000**	**42.7%**	**$19,420,000**	**57.3%**	**$33,900,000**	**100.0%**

Table 4
Year 3 (FY 2010) Budget Breakdown, by Partner

Partner Organization	Geographic Area	Activity	Budget
IRS Global Task Order	13 Districts	IRS in 13 health districts as part of the National IRS campaign and strategy towards elimination.	$9,125,000
	6 sites within the 13 districts	Entomological surveillance and monitoring	$475,000
IRG/EMCAB	53 IRS Target Districts	Environmental Assessment of IRS	$50,000
DELIVER	57 targeted districts in the Fringe, West, South	Procure LLINs for the rolling campaign to reach the national goal of 2 LLINs per household	$9,000,000
	Nationwide	Procure laboratory microscopy equipment and supplies and provide TA for maintenance	$250,000
	4 Districts	Procure RDTs for community based case management of malaria	$100,000
	Nationwide	Strengthen pharmaceutical and commodity management system	$1,000,000
	Nationwide	Support for end-use verification of malaria commodities	$100,000
TBD	57 targeted districts in the Fringe, West, South	Support the hang-up activities as part of the LLIN rolling campaign	$820,600
TBD	Targeted comparison districts	Evaluate ownership and use of LLINs distributed during the campaign to achieve universal coverage goals and evaluate the effectiveness of hang-up activities	$300,000
PSI	Nationwide	Procure LLINs for social marketing	$1,000,000
	Nationwide	Introduce socially-marketed, highly-subsidized treatment dose of ACT for older age groups in the private/NGO sector	$1,000,000
	Nationwide	Provide support for implementation of national and targeted mass media and community focused IEC/BCC campaigns	$700,000
SanteNet2	91 Target Districts	Strengthen implementation of IPTp as part of Focused Antenatal Care	$800,000
	Nationwide	Implementation of the QA/QC system for microscopy and RDTs	$500,000
	Nationwide	Facilitate implementation and supervision of case management with ACTs at CSB level	$1,000,000
	Nationwide	Provide equipment for the NMCP program	$150,000