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

FY2012

Malaria Operational Plan (MOP)

TANZANIA

16 September, 2011

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ABBREVIATIONS and ACRONYMS

ACT	Artemisinin-based combination therapy
ADDO	Accredited Drug Dispensing Outlet
AL	Artemether-lumefantrine
AMFm	Affordable Medicines Facility-malaria
ANC	Antenatal Care
BCC	Behavior Change Communication
CDC	U.S. Centers for Disease Control & Prevention
COMMIT	Communication and Malaria Initiative in Tanzania
DDT	Dichloro-diphenyl-trichloroethane
DfID	Department for International Development (U.K.)
DHMT	District Health Management Team
DHS	Demographic & Health Survey
DOS	Department of Defense
DSS	Demographic Surveillance System
ELISA	Enzyme-linked ImmunosorbentAssay
FANC	Focused Antenatal Care
FBO	Faith-based Organization
FELTP	Field Epidemiology and Laboratory Training Program
FSN	Foreign Service National
FY	Fiscal Year
GEMS	Global Environmental Management Support
GIZ	*Deutsch Gesellschaft für Internationale Zusammenarbeit* (Germany)
Global Fund	Global Fund to Fight AIDS, Tuberculosis & Malaria
GoT	Government of Tanzania
HIS	Health Information System
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
HPO	Health and Population Office
IEC	information, education and communication
IHI	Ifakara Health Institute
IMALDIA	Improving Malaria Diagnosis Project
IMCI	Integrated Management of Childhood Illness
IMR	Infant Mortality Rate
IPTp	Intermittent Preventive Treatment in pregnancy
IRS	Indoor Residual Spraying
ITN	Insecticide-Treated Bed-Net
JICA	Japan International Cooperation Agency
JSI	John Snow, Inc.
LLIN	Long-lasting insecticidal net
M&E	Monitoring and Evaluation
MAISHA	Mothers and Infants Safe Healthy Alive
MEDA	Mennonite Economic Development Associates
MEEDS	Malaria Early Epidemic Detection System
MIP	Malaria in Pregnancy
MIS	Malaria Indicator Survey
MOHSW	Ministry of Health & Social Welfare
MOP	Malaria Operational Plan

MSD	Medical Stores Department
NATNETS	National Insecticide Treated Nets Program
NBS	National Bureau of Statistics
NGO	Non-governmental Organization
NIMR	National Institute for Medical Research
NMAC	National Malaria Advisory Committee
NMCP	National Malaria Control Program
NPO	National Program Officer
PEPFAR	President's Emergency Plan for AIDS Relief
PERSUAP	Pesticide Evaluation Report and Safer Use Action Plan
PLWHA	People Living with HIV/AIDS
PMI	President's Malaria Initiative
PSI	Population Services International
RBM	Roll Back Malaria
RCC	Rolling Continuation Channel
RDT	Rapid Diagnostic Test
RHMT	Regional Health Management Team
RTI	Research Triangle Institute
SP	Sulfadoxine-pyrimethamine
SPA	Service Provision Assessment
SPS	Strengthening Pharmaceutical System Project
TACAIDS	Tanzania Commission for AIDS
TDY	Temporary duty
TFDA	Tanzania Food & Drug Authority
THMIS	Tanzania HIV & Malaria Indicator Survey
TNM	Tanzania Net Manufacturer
TNVS	Tanzania National Voucher Scheme
U5CC	Under-Five Catch-up Campaign
UCC	Universal Coverage Campaign
UNHCR	United Nations Refugee Agency
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USG	United States Government
WHO	World Health Organization
WHOPES	World Health Organization Pesticide Evaluation Scheme
WVT	World Vision Tanzania
ZTC	Zonal Training Center (renamed Zonal Resource Center)
ZMCP	Zanzibar Malaria Control Program
ZAMRUKI	Zanzibar Malaria Research Unit of Karolinska Institute

A. EXECUTIVE SUMMARY

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

The President's Malaria Initiative (PMI) is a core component of the GHI, along with HIV/AIDS and tuberculosis. The PMI was launched in June 2005 as a 5-year, $1.2 billion initiative to rapidly scale up malaria prevention and treatment interventions and reduce malaria-related mortality by 50% in 15 high-burden countries in sub-Saharan Africa. With passage of the 2008 Lantos-Hyde Act, funding for PMI has now been extended through FY2014. Programming of PMI activities follows the core principles of GHI: encouraging country ownership and investing in country-led plans and health systems; increasing impact and efficiency through strategic coordination and programmatic integration; strengthening and leveraging key partnerships, multilateral organizations, and private contributions; implementing a woman- and girl-centered approach; improving monitoring and evaluation; and promoting research and innovation.

In June 2005, the United States Government (USG) selected the United Republic of Tanzania (including the Mainland[1] and Zanzibar) as one of the first of three countries to be included in the President's Malaria Initiative (PMI). Malaria is a major public health problem in Tanzania. Nearly all 41 million residents on the Mainland and all 1.2 million persons in Zanzibar are at risk. Annual malaria deaths in Tanzania are estimated to be 60,000, with 80% of these deaths among children under five years of age. Approximately 14-18 million clinical malaria cases are reported annually by public health services and more than 40% of all outpatient attendances are attributed to malaria.

The most recent national-level data for malaria interventions in Tanzania comes from the 2009-10 Demographic and Health Survey (DHS) and shows marked improvement in nearly all malaria indicators when compared with 2005 figures. Sixty-three percent of Mainland households owned at least one insecticide-treated net (ITN), with 64% of children under five and 57% of pregnant women sleeping under an ITN. This compares with just 23% ownership and 15-16% usage in the 2004-05 DHS. In Zanzibar, 76% of households now own at least one ITN and estimates of use among children under five and pregnant women are 55% and 50%, respectively. Malaria prevalence in Zanzibar was just 0.8% in a 2007-08 Malaria Indicator Survey.

Within the United Republic of Tanzania, the National Malaria Control Programme (NMCP) on the Mainland and the Zanzibar Malaria Control Programme (ZMCP) have independent malaria control programs. The Mainland has multiple grants from the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund) (Rolling Continuation Channel and Round 4, 7, 8, and 9). These awards have provided most of the funding for artemisinin-based combination therapies (ACTs), including an ongoing nationwide pilot of the distribution of subsidized ACTs in the private sector, and ITN distribution.

[1] Official Government of Tanzania documents and all DHS and MIS documents capitalize the "M" in Mainland.

This PMI FY2012Malaria Operational Plan was developed with full participation of the NMCP on the Mainland and the ZMCP and other malaria control partners. The proposed FY11 activities have been reviewed and approved by both malaria control programs. The proposed FY2012 budget for the country is $45 million. The major activities to be supported by PMI include the following:

Insecticide-treated Nets: Considerable progress has been made over the past two years in Mainland's universal ITN coverage strategy. An Under Five Coverage Campaign, a free net distribution for all children less than five years of age, ended in May 2010 with distribution of more than 8.7 million LLINs, of which PMI contributed 1.8 million nets and also provided funding for distribution of 2.5 million additional LLINs procured by other donors. The much larger Universal Coverage Campaign is now underway and should end by September 2011 with distribution of an additional 14.6 million Global Fund LLINs. PMI support for this campaign included logistics management and training of the community volunteers who distribute the LLINs within their villages and a follow-up campaign to ensure the nets are appropriately hung and used. When completed, it is expected at least 85% of all Tanzanians will be sleeping under an LLIN. Zanzibar is also moving towards a universal coverage strategy that PMI supported with procurement of approximately 85,000 LLINs.

The PMI has also been supporting the Tanzania National Voucher Scheme, a public-private partnership for pregnant women and caregivers of infants to obtain highly-subsidized ITNs using vouchers at local ITN retailers. Interestingly, voucher redemption rates do not appear to have declined following the large-scale free campaigns, attesting to the robust nature of this distribution approach in Tanzania.

With FY 2012 funding, PMI will support the procurement and distribution of more than 1.6 million LLINs through the Tanzania National Voucher Scheme as a means of sustaining universal coverage.On Zanzibar, PMI will procure 220,000 free LLINs for their Universal Coverage Campaign. These commodity procurements will be accompanied with behavior change and communication (BCC) activities to promote demand for and correct usage of the nets.

Indoor Residual Spraying (IRS): In 2010 and early 2011, PMI expanded its support of IRS to all 18 districts of Kagera, Mwanza, and Mara Regions of Lake Zone (near Lake Victoria) on the Mainland were sprayed, covering 1.1 million structures (95% coverage) and protecting nearly 6.3 million people. In one of the districts, which has now had four rounds of spraying, data from the district hospital shows a 56% reduction in hospital admissions and a 75% reduction in deaths attributed to malaria over the past four years. To date, Zanzibar has received six rounds of IRS, with the last round covering about 130,000 structures, and protecting 640,000 residents. Together with increasing coverage with ITNs, this has contributed significantly to reducing the malaria prevalence to less than 1% and advancing Zanzibar to a pre-elimination phase in malaria control.

With FY 2012 funding, PMI will continue to support the IRS in Lake Zone with the objective of spraying 780,000 structures and protecting about four million residents in those areas with the highest risk of transmission based on epidemiological data. Although malaria transmission is now at a very low level in Zanzibar, the islands remain vulnerable to malaria outbreaks because ITN coverage and use is not yet optimal. Therefore, PMI will transition from spraying of all households to targeted spraying of about 55,000 structures (about 25% of the households on the islands) in smaller areas with persistent transmission.

Intermittent Preventive Treatment in pregnancy (IPTp): The 2009-10 DHS showed that the proportion of pregnant women completing the recommended two doses of IPTp remains low at 27% on the Mainland and 47% on Zanzibar in spite of a concerted effort to improve these figures. PMI funding for IPTp has focused on health worker training on a package of antenatal services (Focused Antenatal Care) and a facility-level quality improvement program. More than 6,600 providers (89% of all providers) from 3,400 Mainland facilities have been directly trained. By the end of 2011, 100% of antenatal care providers on the Mainland should have been trained. The PMI has also supported development of a pre-service malaria in pregnancy training curriculum resulting in approximately 1,600 new graduates with FANC skills each year since 2006.Given the relatively low prevalence of malaria on the islands, PMI and ZMCP is conducting a study of placental parasitemia levels in Zanzibari women to assess the need to continue IPTp in Zanzibar

With FY2012 funds, through the Tanzania GHI strategy, PMI will leverage USG funds to develop an integrated supervision system to improve FANC service provision and institutionalize a facility-based quality improvement approach can be established more rapidly in every district through routine supervisory visits by USG-supported staff together with District Reproductive and Child Health Service Coordinators and/or HIV/AIDS Coordinators. Efforts will continue to ensure that ANC clients are counseled on the importance of IPTp, through co-investments in the safe motherhood campaign supported by HIV and MCH funds; and to provide for more consistent supplies of the drug, sulfadoxine-pyrimethamine, for IPTp at ANC clinics. The commodities partner will strengthen national and zonal commodity forecasting and distribution as well as facility based requisitions and reporting. In Zanzibar, PMI will continue to support regular antenatal clinic supervisory visits by ministry staff.

Case Management: During the past year, PMI procured 375,000 RDTs for Zanzibar; all RDT needs on the Mainland were met by Global Fund. PMI also continued to support training in microscopy and development and implementation of a quality assurance/quality control program for malaria microscopy and RDTs on both the Mainland and Zanzibar. On the Mainland, PMI supported the training of more than 40 laboratory technicians in malaria diagnostics who are now certified to serve as part of a quality assurance program for RDTs on the Mainland. During the past 12 months, PMI procured about eight million ACT treatments to avoid stock outs in public health facilities on the Mainland; all ACT needs for Zanzibar were met by the Global Fund. PMI supported updating the curricula of training institutions on malaria diagnostics and treatment, as well as refresher training of District Malaria Focal Persons and District Health Management Team staff. Technical assistance was provided to establish an ACT control system to monitor availability of ACTs in the public sector. PMI continued to support ACT distribution through private sector Accredited Drug Dispensing Outlets (ADDOs) in the same four regions where the USG has worked with ADDOs in the past. PMI also contributed to an integrated health service delivery project in Lake Zone with co-funding from the USAID Maternal and Child Health and HIV/AIDS programs.

With FY2012 funding, PMI will procure an additional 300,000 RDTs for Zanzibar to scale up coverage to private clinics and will also implement an improved quality control system for microscopy and RDT results. The Mainland's needs for RDTs will be covered by the Global Fund. PMI will also continue roll out of the quality assurance/quality control system for malaria diagnostics on both Mainland and Zanzibar. PMI will procure approximately three million ACT treatments for the public sector on the Mainland or for emergency use if stock

outs are imminent. With the launch of the Affordable Medicines Facility-Malaria (AMFm) pilot in Tanzania, support of private sector ACT distribution through Accredited Drug Dispensing Outlets (ADDOs) is passing to the AMFm. With FY2012 funding, PMI support for ADDOs will include technical assistance to the Tanzania Food and Drug Authority (TFDA) for ACT quality control, and training and oversight of drug dispensers and regulation of antimalarial drugs. PMI will also support the integrated commodity logistics system to ensure ACT and other commodity availability in the health facilities. The Ministries of Health on the Mainland and Zanzibar will be supported to roll out the new national diagnostic and treatment guidelines for the management of severe malaria. Additionally, to confirm the continued efficacy of first-line antimalarial drugs in Tanzania, PMI will support antimalarial drug efficacy testing at four sites on the Mainland and one site on Zanzibar. PMI will also procure about 200,000 RDTs and the same number of ACT treatments for UNHCR refugee camps in western Tanzania.

Epidemic Surveillance and Response: During the past year, PMI continued to support and strengthen the Malaria Early Epidemic Detection System (MEEDS) on Zanzibar to identify and respond to sudden increases in malaria transmission. Health facility-based early epidemic detection sites were expanded to 90 health facilities, or more than half of all health facilities in Zanzibar. This system already detected several small outbreaks and investigations were launched.

With FY2012 and previous years' funding, a system similar to MEEDS is being established in two areas on the Mainland where malaria prevalence has been falling for several years – the capital, Dar es Salaam, and the Lake Zone around Lake Victoria in western Tanzania. On Zanzibar, PMI will support MEEDS to expand to all 139 public health facilities and approximately 20 additional private facilities.

Health Systems Strengthening and Integration: During the past year, consistent with GHI principles, PMI has been working to build capacity in the ministries of health and malaria control programs of Mainland and Zanzibar to strengthen their capacity for planning, implementing, and managing malaria control activities and to expand our integration with other USG programs. In 2009, USAID launched the *Wajibika* Project to assist in the transfer of health service delivery responsibilities to the district health teams in support of the Government of Tanzania's decentralization process. This Project works at the national level and directly with District Health Services to promote transparent planning, accounting, and financial reporting for all health interventions. To help deal with the severe shortage of health staff, PMI also contributes to a project to promote recruitment and retention of health workers. PMI also contributed to the two-year Tanzanian Field Epidemiology and Laboratory Training Program (FELTP). Trainees from this program have participated in various malaria control activities at NMCP and ZMCP, including malaria surveillance and outbreak investigations and will return to the Ministry of Health on completion of their training. PMI is also working with the U.S. Department of Defense to train and certify laboratory technicians for improved performance of both microscopy and RDTs for malaria diagnosis.

With FY2012 funding, PMI will help the NMCP and ZMCP to provide supportive supervision and improve coordination among malaria partners. PMI will continue to contribute, along with the USAID HIV/AIDS and Maternal and the Child Health Programs, to the *Wajibika* Project to build capacity for program management and accountability in up to 21 districts. PMI will also continue to co-fund with PEPFAR the training of Tanzanian

epidemiologists through the FELTP and will provide funding to the Department of Defense in improving laboratory diagnosis of malaria.

Monitoring and Evaluation (M&E): A written National M&E plan has been finalized following a consultative process with many malaria stakeholders in Tanzania. During the past 12 months, PMI has continued its support to the NMCP's and ZMCP's strategic information system, which now includes information from a wide range of national and sub-national household surveys, the health management information system, and other more specific studies, and also provided funding for supervisory and quality assurance visits to health facilities. Entomology technicians have been trained and entomologic monitoring of mosquito abundance and insecticide resistance established at 14 sites on the Mainland and seven on Zanzibar where PMI is supporting IRS. Final results of the 2009-10 Tanzania Demographic and Health Survey, to which PMI contributed funding have now been released.

With FY2012 funding, PMI will continue support to the NMCP's and ZMCP's strategic information systems with data management and analysis software and computers, together with funding for supervisory and quality assurance visits to health facilities and continued entomologic and insecticide-resistance monitoring. PMI also supports two technical staff within the WHO/Tanzania office, a malaria officer and an entomology officer. With FY2012 funding, PMI will fund a second HIV/AIDS and Malaria Indicator Survey during the high transmission season of 2011. The Roll Back Malaria/PMI Impact Evaluation has been underway in Tanzania since early 2010 and most data collection and analysis is expected to be completed by the last quarter of 2010.

B. INTRODUCTION: THE GLOBAL HEALTH INITIATIVE

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

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

C. PRESIDENT'S MALARIA INITIATIVE

The President's Malaria Initiative (PMI) is a core component of the GHI, along with HIV/AIDS, and tuberculosis. The PMI was launched in June 2005 as a 5-year, $1.2 billion initiative to rapidly scale up malaria prevention and treatment interventions and reduce malaria-related mortality by 50% in 15 high-burden countries in sub-Saharan Africa. With passage of the 2008 Lantos-Hyde Act, funding for PMI has now been extended through FY2014 and, as part of the GHI, the goal of the PMI has been adjusted to reduce malaria-related mortality by 70% in the original 15 countries by the end of 2015. This will be achieved by reaching 85% coverage of the most vulnerable groups — children under five years of age and pregnant women — with proven preventive and therapeutic interventions, including artemisinin-based combination therapies (ACTs), insecticide-treated nets (ITNs), intermittent preventive treatment of pregnant women (IPTp), and indoor residual spraying (IRS).

The President's Malaria Initiative (PMI) began in three countries in 2006 – Angola, Tanzania, and Uganda. Funding began with $30 million in fiscal year (FY) 06 for the first three countries; increased to $160 million in FY07 and to $300 million in FY08 and FY09, and reached $500 million in 15 countries by FY10.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 Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM), 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. Malaria operational planning sessions for the PMI, as well as subsequent evaluations, are highly consultative and held in collaboration with the National Malaria Control Program (NMCP) and other partners.

This document presents a detailed PMI implementation plan for FY2011 in Tanzania. It briefly describes the current status of malaria control and prevention policies, planned interventions, challenges and unmet needs, and the planned FY2011PMI activities. The operational plan was developed in close consultation with the National Malaria Control Programme (NMCP) and the Zanzibar Malaria Control Programme (ZMCP) and the participation of many national and international partners involved in malaria prevention and control in Tanzania. The total amount of PMI funding requested for Tanzania is $45 million for FY2012.

D. MALARIA SITUATION

The projected 2011 population of the United Republic of Tanzania from 2002 census is 42.7 million, with 41.4 million on the Mainland and 1.3 million on Zanzibar.

Malaria epidemiology in the United Republic of Tanzania exhibits very different transmission settings on the Mainland and Zanzibar. On the Mainland, 93% of the population lives in areas where malaria is transmitted. Unstable seasonal malaria transmission occurs in approximately 20% of the country, while stable malaria with seasonal variation occurs in another 20%. The remaining malaria endemic areas in Tanzania (60%) are characterized as stable perennial transmission. *Plasmodium falciparum* accounts for 96% of malaria infection in Tanzania, with the remaining 4% due to *P. malariae* and *P. ovale*. *P. vivax* is a rare parasite in Tanzania.

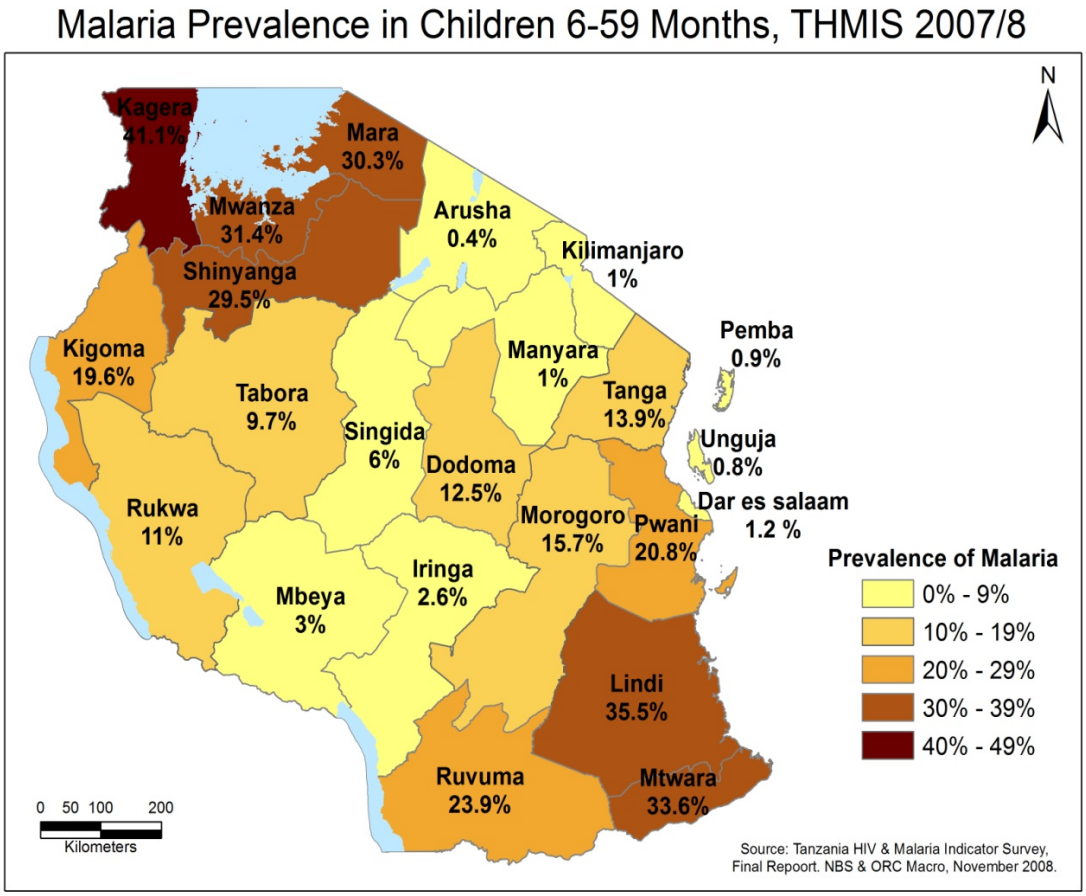
The principal vectors of malaria on the Mainland are the *Anopheles gambiae* complex (*An. gambiae sensu lato* and *An. arabiensis),* and *An. funestus.* The *An. gambiae* complex breeds in clean waters exposed to sunshine with *An. gambiae s.s.* associated more with humid areas, while *An. arabiensis*is found in drier areas and in irrigation schemes. On the other hand, *An. funestus* prefers to breed in slow-running waters with some vegetation and maintains transmission during the drier months on the year.

In Zanzibar, high coverage of ITNs and IRS have changed the composition of the malaria vector population. Routine entomological data shows that *An. arabiensis*, which made up less than 4% of the population before scaling up of vector control interventions in 2005 represents almost 90% of the population in 2010, replacing the more efficient malaria vectors, *An. gambiae and An. funestus* – that are now found in low numbers or non-existent. This is supported by a reduction in the human biting rate from 4.4 to 0.4. There is evidence that the human blood index for *An. arabiensis* has increased from 13% in 2007 to 36% in 2010, indicating an increasing human biting and outdoor biting behavior of *An. arabiensis.*

The 2007–2008 Tanzania HIV/AIDS Malaria Indicator Survey (THMIS) showed that 18% of Mainland children under five had tested positive for malaria, in contrast to 0.8% in Zanzibar (Figure 1). On the Mainland, rural areas had a higher malaria prevalence of 20% compared to urban areas of 8%. In Zanzibar, a 2010 Malaria Indicator Survey (MIS) showed a further reduction in malaria prevalence of 0.07%. The Mainland showed marked regional variations in parasitemia, ranging from 0.4% in the highland areas around Arusha to 41% in the northwestern region of Kagera, with families in the lowest wealth quintile more likely to test positive for malaria than families in the highest quintile. Children whose mothers had no formal education had a malaria prevalence that was four times higher than those who had received at least a secondary education. In partnership with PEPFAR, PMI is now supporting

the 2011 THMIS. Data collection will commence in August and the preliminary report will be out early 2012.

Figure 1



On the Mainland, more than 40% of all outpatient attendances are attributable to malaria, resulting in approximately 12-16 million clinical malaria cases annually (Figure 2). The NMCP estimates that 60,000-80,000 malaria deaths occur annually in the Mainland among all ages (extrapolated from the under-five mortality rate in 2004–2005 Demographic & Health Survey (DHS), size of under-five population, and the proportion of deaths attributable to malaria).

Figure 2: Proportion of malaria cases in children under five, outpatient departments, 2008

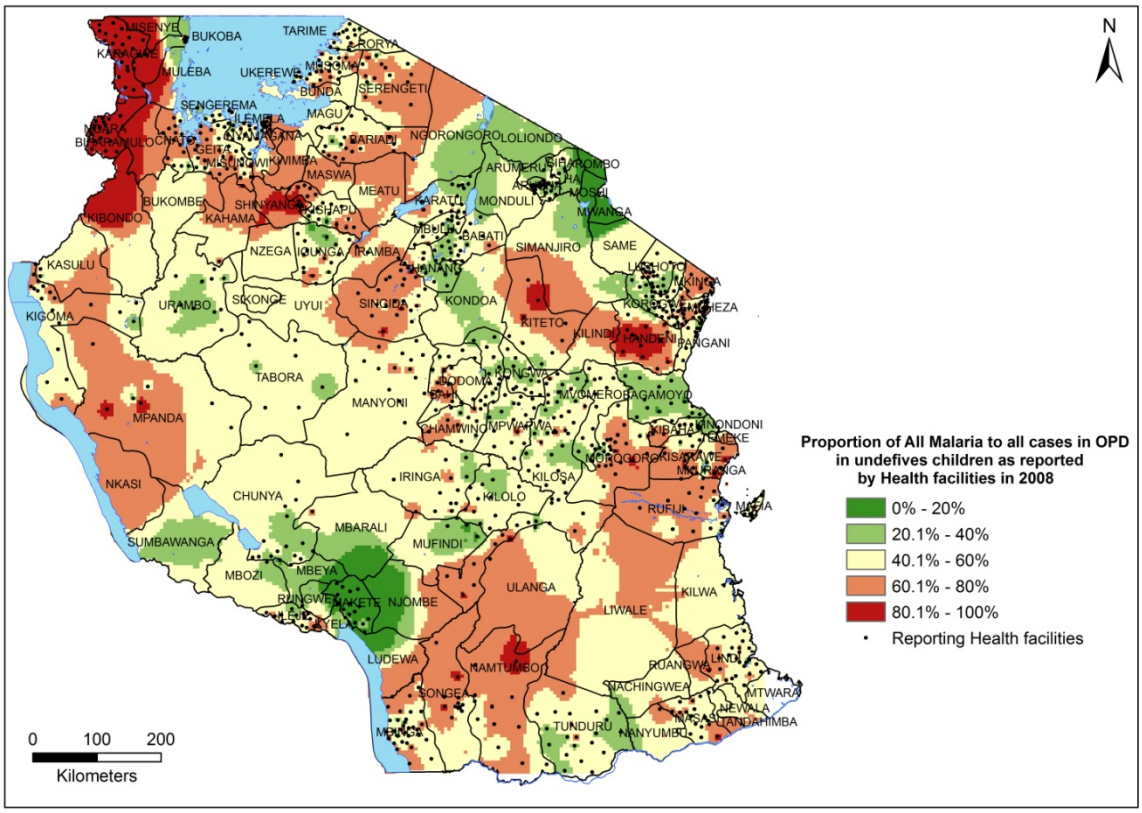
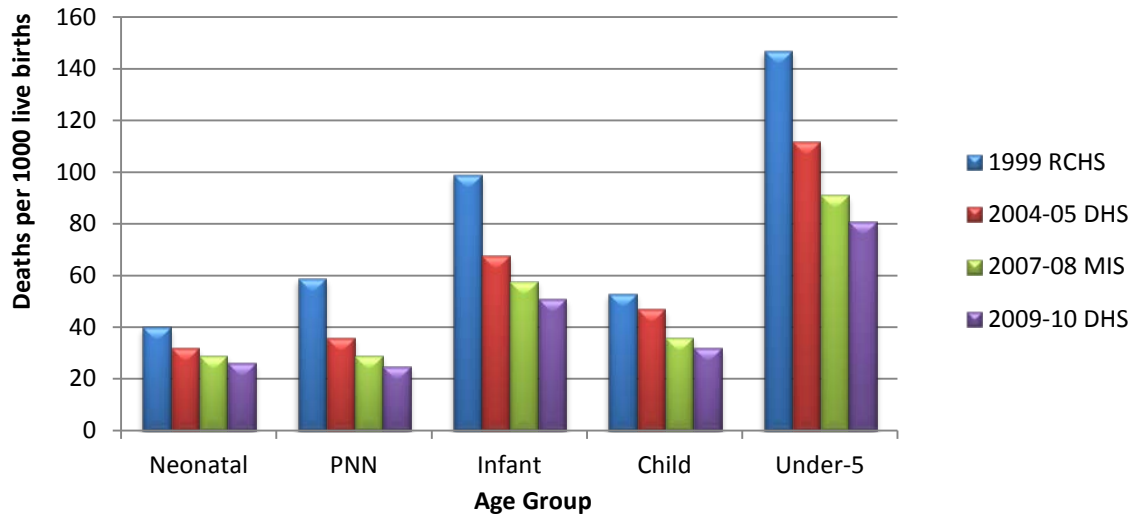


Table 1: Infant and Under-five Mortality Rates for Five-year Periods Preceding Nationwide Household Surveys, Tanzania				
	1999 DHS	**2004-05* DHS**	**2007-08* THMIS**	**2009-10* DHS**
Infant mortality rate (95% C.I.)[2]	99.1 (84.9-113.3)	68.0 (60.7-75.3)	57.7 (50.4-65.0)	51 (44.1-57.3)
Under-five mortality rate (95% C.I.)	146.6 (128.4-164.8)	112.0 (102.6-121.5)	91.4 (82.7-100.2)	81 (72.3-89.9)

[2] The confidence intervals around the estimates for all cause-mortality rates for TDHS and THMIS are given in the appendix of the final TDHS and THMIS reports.

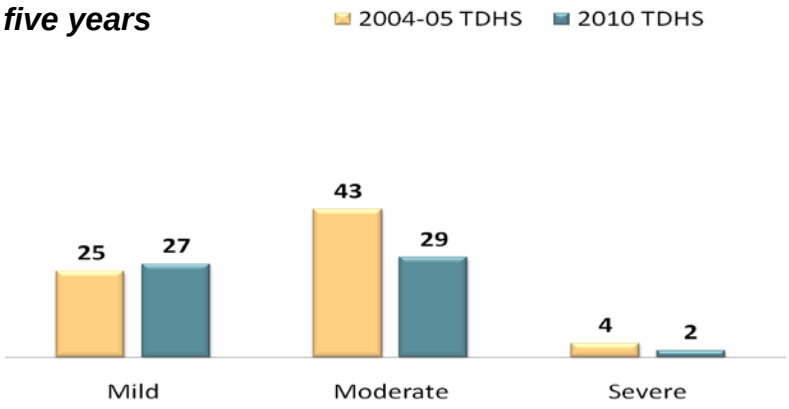
Figure 3. Trends in Early Childhood Mortality in Tanzania, 1999-2010



The 2007-08 infant mortality rate estimates varied across socio-demographic strata. The Northern and Western Zones[3] and Eastern Zone in the Mainland experienced the extremes in this mortality: 63 and 103 per 1000 live births, respectively. Cohorts classified in the richest wealth quintile experienced an infant mortality rate of 73 per 1,000 live births in comparison to 82 per 1,000 live births for the poorest quintile. The infant mortality rate was also strongly associated with mother's education, with rates of 64 per 1,000 live births among women with secondary education and 85 for women with no education. These data suggest that further gains in infant mortality need to come from intensified efforts to reach populations living in certain Zones, particularly among the poorest and least educated.

Malaria contributes significantly to anemia in children under five. Anemia in children under the age of five years has fallen from 2004-05 DHS levels of 72% to 59% in 2010 (Figure 4). Anemia is more prevalent in Zanzibar (69%) than on Mainland (59%). Children aged 9-11 months are the most affected (81%) of all children and have the most severe anemia (6%).

Figure 4: Trend of anemia in children age 6-59 months in last five years



[3] Mainland Tanzania is divided into 8 zones, 21 regions and 113 districts and 133 government councils. Zanzibar has 5 regions, 10 districts and 10 government councils.

Net use for children and pregnant women increased dramatically from 25% in 2007 to 64% in 2010 for children under the age of five years, and from 26% in 2007 to 57% in 2010 for pregnant women (Table 3). There is a wide regional variation in net use with Mwanza region showing the highest net use of 83%, and Singida and Morogoro regions having the lowest net use of 28% (Figure 5).

E. NATIONAL MALARIA CONTROL PROGRAMMES

Two separate Ministries of Health operate in the United Republic of Tanzania, one for the Mainland and one for Zanzibar. Each Ministry has its own malaria control program and malaria strategic plan. The NMCP serves only the Mainland, while the ZMCP serves Zanzibar.

Mainland

Under the leadership of a Program Manager, the NMCP is organized into five cells (organizational units): case management; vector control; ITNs; information and education; and monitoring and evaluation (including operations research). Each cell consists of a Team Leader and two to four staff members. The organizational units of ZMCP are similar and have a comparable number of staff.

The Mainland's NMCP has established several committees to coordinate and direct national malaria control policies and priorities. The National Malaria Advisory Committee (NMAC) is the body that provides strategic and policy direction for malaria control on Mainland. The NMAC links the various NMCP committees to the Sector Wide Approach (SWAp) structures of the Ministry of Health. It has four sub-committees: case management, vector control, monitoring and evaluation, and information, education and communication (IEC). The ITN strategies and policies are coordinated through the National Insecticide Treated Nets (NATNETS) Programme, with its own steering committee. A diagnostics working group guides NMCP policies/strategies for strengthening and expanding malaria diagnostic capacity. In early 2009, an M&E technical working group was formed. PMI is represented in each of these working groups.

The NMCP *Malaria Medium-Term Strategic Plan 2008 – 2013* states that the burden of malaria morbidity and mortality should be reduced by 80% from current levels by the end of 2013. The NMCP has adopted the following WHO-recommended strategies:

- timely and appropriate management of febrile episodes in homes and health facilities;
- protecting pregnant women against malaria by using IPTp;
- integrated vector control, including distribution and consistent use of ITNs, spraying of houses with a safe and efficacious insecticide, and environmental management, including larviciding.

Financing of malaria activities for the Mainland is highly dependent on external donors. According to the gap analysis prepared as part of the Global Fund Round 8 and 9 proposals, the Government of Tanzania malaria budget allocation on the Mainland has been drastically reduced from a high of $5.2 million in (2006–2007) to $2.8 million in (2007–2008) and $2.0 million in 2008–2009. In 2009–2010, donors reduced their contribution to the overall Government of Tanzania budget by approximately $270 million as compared to 2008. This may lead to a further reduction of Government funding for malaria.

The NMCP has four active Global Fund grants: the Rolling Continuation Channel (RCC), Round 7; Round 9 (yet to be signed); and the Affordable Medicines for Malaria (AMFm) pilot that will be financed from the Round 7 grant. The RCC grant budget and scope of work was reduced to $59 million to finance two years of the pregnant woman long-lasting ITN (LLIN) voucher. The Global Fund Round 7 ($52.5 million) grant originally was approved to cover: 1) increased coverage of malaria parasitological diagnosis through the introduction of RDTs where microscopes are unavailable; 2) increased access to ACTs through subsidy in the private sector; 3) improved quality of care for severely ill patients; and 4) monitoring and evaluation. However, the Round 7 grant has undergone major reprogramming to finance ACTs for the public sector and the AMFm pilot. The Global Fund Round 8 grant will support a nationwide universal coverage of LLINs. The ITN universal coverage campaign began in late 2010. The AMFm pilot began in June 2010 and will provide ACTs at a highly subsidized price of $0.105 for both the public (21.7 million treatments) and private sector. The Global Fund Round 9 is a five-year proposal covering: ACTs for the public sector; strengthening malaria diagnostics and quality control; private sector management of malaria through Accredited Drug Dispensing Outlets (ADDOs); behavior change communication; surveillance and monitoring and evaluation. Through USAID, the British Department for International Development (DfID) contributed $1.3 million towards the hang-up campaign for the "Under Five Catch-up Campaign" (U5CC).

Table 2: Major External Sources of Funding for Malaria Control Mainland

Source	Amount (millions)	Period Covered	What is covered
Global Fund R7	$52.5	July 2008 – June 2013	Improved malaria diagnosis through the introduction of RDTs; Access to ACTs in the private sector; Improved quality of care in children with severe malaria; Monitoring and evaluation.
Global Fund RCC	$59.8	Oct 2008–April 2011	Support to the pregnant woman voucher; LLIN Catch-Up Campaign for under fives; BCC; and monitoring and evaluation. Program will be evaluated after two and one half years to assess whether to continue voucher scheme support.
Global Fund R8	$113.3	July 2009 – June 2014	Attain universal coverage through distribution of 14.6 million LLINs to 8.7 million households through a one-time mass "catch-up" campaign. Strengthen regional malaria IMCI focal persons on monitoring and evaluation.
AMFm	$4.6	March 2010–Feb 2012	ACTs for public and private sector, behavior change communication; information systems and operational research, coordination and partnership development.
Global Fund R9	$173.6	July 2010–June 2015	Support for public sector ACTs; malaria diagnostics; home-based management of malaria through ADDOs; behavior change communication; surveillance, monitoring and evaluation.
Embassy of the Kingdom of Netherlands	$7.0	Dec 2007–May 2011	Developing capacities of local net manufactures to bundle nets with insecticide treatment kits; Tanzania national voucher scheme (added in 2010)
DfID	$1.3	2009–2010	Hang-up campaign after U5CC
Swiss Development Corp.	$2.9	Sep 2008 – Aug 2011	ITN Cell within NMCP and procurement of 171,160 LLINs for the U5CC

▪ ***Zanzibar***

The Zanzibar Strategic Plan 2008–2012 targets a 70% reduction in health facility-based morbidity attributable to malaria (from 35% in 2006 to 10% in 2012). This target will be reached by maintaining high coverage with interventions and a well-performing epidemic detection and response system.

The ZMCP currently has no locally-organized, sanctioned committees that provide ongoing expert guidance and advice. PMI will support the Zanzibar MOHSW to develop a charter for an Advisory Council for Malaria Elimination in Zanzibar. This Council will serve as a standing technical body to provide MOHSW and ZMCP expert advice and recommendations regarding the elimination of malaria from Zanzibar.

According to ZMCP, the Zanzibar MOHSW budget is approximately $6.1 million, with approximately $100,000 allocated to malaria control. Global Fund Round 6 remains an important funding source for Zanzibar malaria activities, with expected contributions of $1.8 million and $1.6 million for 2007 and 2008, primarily for ACTs and LLINs. PMI has provided approximately $3 million per year since 2006, focusing on IRS. The ZMCP also receives Global Fund Round 8 money for ACT procurement for public and private health facilities, training and supervision of health workers in case management, and diagnostic capacity and RDT procurement. The grant also includes support for IPTp and universal LLIN distribution, as well as other system and community strengthening activities. The total budget requested in the ZMCP Round 8 proposal was $19.6 million.

F. CURRENT STATUS OF MALARIA INDICATORS

Three nationally representative population-based household surveys and other data sources provide intervention coverage estimates for key malaria outcome indicators between 2004 and 2010. Tables 6 and 7 describe current estimates of intervention coverage for the Mainland and Zanzibar. Several Mainland Tanzania coverage targets remain below desired levels as indicated by the 2009-10 DHS. In Zanzibar ITN ownership is high, but ITN use is showing signs of stagnation due to the lack of a continuous distribution strategy to replace old and worn-out nets. The 2004-05 Tanzania DHS provides baseline estimates for the main indicators of interest.

Table 3: Coverage Indicators

Coverage Indicator	Mainland			Zanzibar		
	2004-05 DHS (%)	2007-08 MIS (%)	2009-10 DHS (%)	2004-05 DHS (%)	2007-08 MIS (%)	2009-10 DHS (%)
% Households with at least one ITN	23	38	63	28	72	76
% Children under five who slept under an ITN the previous night	16	25	64	22	59	55
% Pregnant women who slept under an ITN the previous night	15	26	57	20	51	50
% Women who received two or more doses of IPTp at ANC visits during their last pregnancy	22	30	27	14	52	47
% Children under five years old with fever in last two weeks who received any antimalarial treatment.	58	57	60	61	66	17
%Children under five years old with fever in the last two weeks who received treatment with ACTs within 24 hours of onset fever.	-	14	27	-	9	4
% of targeted houses adequately sprayed with a residual insecticide in the last 12 months	-	xx†	95	-	94	96

Table 4: Impact Indicators

Impact Indicator	Mainland			Zanzibar		
	2004-05 DHS	2007-08 MIS	2000-10 DHS	2004-05 DHS	2007-08 MIS	2009-10 DHS
All-cause under 5 mortality rate	112	92	81	101	79	73
Parasitemia prevalence (6-59 mo. old)	-	18.1%		-	0.8%	
Anemia (Hb<8 g/dL) prevalence (6-59 mo. old)	11.1%	7.8%	5.5%	6.4%	4.7%	tbd

G. GOALS & TARGETS OF THE PRESIDENT'S MALARIA INTIATIVE

The goal of PMI is to reduce malaria-associated mortality by 50% in Tanzania. With full implementation of FY2014 funding, PMI will assist Tanzania to achieve the following targets among persons at risk for malaria:

- More than 90% of households with a pregnant woman and/or children under five will own at least one ITN;
- At least 85% of children under five will have slept under an ITN the previous night;
- At least 85% of pregnant women will have slept under an ITN the previous night;
- At least 85% of houses in geographic areas targeted for IRS will have been sprayed;
- At least 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 six months.

H. EXPECTED RESULTS – FY2012 Funding

Prevention:

- Procure and distribute 1.65 million LLINS for infants and pregnant women through the NMCP "keep-up strategy" (unit cost of $7.50 per net)
- Procure and distribute approximately 220,000 LLINs for Zanzibar's universal coverage campaign, including support for a hang-up campaign in Zanzibar.
- Spray approximately 836,000 structures in Lake Zone districts with a carbamate insecticide and protect approximately four million people (unit cost of $14.58 per structure).
- Transition from blanket coverage of IRS in Zanzibar to targeted spraying of high transmission areas. Approximately 55,400 (25%) of the 220,000 structures in Zanzibar will be sprayed, protecting approximately 280,000 of the 1.3 million population.
- Improve provision of focused antenatal care (FANC) and institutionalize the facility-based quality improvement approach in one regional hospital plus two health centers/dispensaries per district, in all 21 regions on the Mainland.
- Institutionalize a quality improvement and recognition system for antenatal care in at least 20 high-caseload facilities in Zanzibar.
- Intensify BCC activities for net use, IRS, IPTp, and case management.

Treatment:

- Finalize and implement a quality assurance/quality control system for malaria diagnostics on the Mainland and Zanzibar.
- Strengthen malaria surveillance by providing diagnostic consultation/support within 72 hours to health facilities that report sudden increases in confirmed malaria cases in Zanzibar.
- Procure and distribute a two and half -month supply of ACTs (approximately 3 million treatments) for the Mainland to cover supply gaps until Global Fund funding for ACTs is stabilized.
- Procure and distribute 140,000 RDT kits for Zanzibar; and 200,000 ACTs treatments and 190,000 RDT kits for areas of western Mainland covered by the United Nations High Commission for Refugees (UNHCR).

- Support antimalarial drug efficacy monitoring for ACTs for Mainland and Zanzibar.

I. INTERVENTIONS – PREVENTION

I.1 INSECTICIDE-TREATED NETS

Background

▪ ***Mainland***

The initial phase of the Mainland's ITN strategy (2004–2008) provided subsidized nets to children under five and pregnant women through the Tanzania National Voucher Scheme (TNVS) at antenatal clinics. Although this approach was complemented by commercial sales of nets supported by social marketing, these two avenues for net accessibility were not enough to achieve high levels of net coverage. Consequently, several important changes in policy and practice occurred in 2007–2008:

- The TNVS would gradually move from using nets bundled with insecticide packets (these nets required re-treatment every six months) to LLINs following funding commitments from the Global Fund Round 1 RCC grant and PMI.
- The voucher top-up fee would be reduced from Tshs 3,250 ($2.50) to Tshs 500 ($0.45 at 2007 exchange rate) to enable more families to afford a LLIN.
- The opportunities to distribute an infant voucher would be increased from one encounter (at the time of measles vaccination) to at least five (at every child immunization visit).
- An "Under-Five Catch-up Campaign" (U5CC) would be implemented to distribute free LLINs to all children under five.
- A "Universal Coverage Campaign" (UCC) would follow the U5CC to distribute free LLINs for all remaining household sleeping spaces to cover the entire population.
- "Hang-up Campaigns" aimed to improve net-use would be implemented in the wake of both the U5CC and UCC.

Each of these programs is described below:

Tanzania National Voucher Scheme (TNVS). The TNVS began in November 2004 with support from the Global Fund to improve the availability of ITNs to pregnant women through a subsidized voucher scheme. In 2006, PMI supported the expansion of the TNVS to infants. Under the TNVS, vouchers are issued at health facilities offering antenatal services and child health services and redeemed at a retail shop when the pregnant woman or infant caretaker exchanges the voucher, along with a top-up fee (which the retailer keeps), for a net. Net manufacture and distribution are fully-funded by donors and the private sector, so the cost of the net to the retailer is free. The top-up fee provides an incentive for the retailer to participate in the program.

Concerns about the affordability of TNVS ITNs, resulting from increases in top-up payments compelled the NMCP, together with development and implementing partners, to revise the TNVS to address accessibility and equity concerns. Revisions included:

- Improving the quality of nets from a net (bundled with a treatment kit) that needed retreatment every six months to a LLIN.
- Reducing the top-up fee from Tshs 3,250 ($2.50) to a more affordable, fixed Tshs 500 ($0.45 at 2009 exchange rate; $0.33 at 2011 exchange rate).

- Improving the appearance of the net to a more attractive and unique blue-white stripe pattern.
- Expanding the network of targeted retailers from 6,000 to 12,000, with additional retailers located in more remote areas.
- Changing the retailer delivery system from the retailer collecting the nets from the manufacturer to the manufacturer delivering nets to retailers.

The revised TNVS was introduced between August and October 2009 and has been implemented throughout the Mainland.

Before the start of the U5CC (May 2009), the TNVS operated through a network of 6,648 retailers and 253 wholesalers operating throughout the Mainland, accepting vouchers and top-up payments in exchange for nets. However, due to the fear of losing net sales after the free mass LLIN distribution campaigns, some retailers ceased stocking the more-expensive LLINs and others discontinued stocking all types of nets. As of March 2011, 5,232 retailers were participating in the voucher scheme, well short of the target of 12,000.

For the longer term, Mainland Tanzania must identify a viable "keep-up" strategy to ensure continuous availability of affordable nets to both replace existing ones that wear out for the general population, and to cover newly pregnant women and infants. A means of projecting voucher redemptions between calendar years 2011 and 2014, and a gap analysis for infant and pregnant woman voucher nets is given below (Tables 5 and 6), showing that 2.2 to 2.3 million LLINs will be needed in 2012 and 2013, respectively, to cover new pregnancies and births. The TNVS currently has the only infrastructure in place capable of supporting a nationwide keep-up mechanism.

Table 5: Projected Voucher Redemptions

	2011	2012	2013	2014
Projected population	43,200,000	44,400,000	45,700,000	47,000,000
Projected pregnancies (4% of annual population)	1,728,000	1,776,000	1,828,000	1,880,000
Assumed ANC attendance (90%)	1,555,200	1,598,400	1,645,200	1,692,000
Vouchers issued (90% of attendees)	1,399,680	1,438,560	1,480,680	1,522,800
Assumed voucher redemption rate	80%	85%	88%	90%
Total expected pregnant woman voucher redemptions	1,119,744	1,150,848	1,184,544	1,218,240
Expected infant voucher redemptions (95% of PWV redemptions)	1,063,757	1,093,306	1,125,317	1,157,328
Total annual voucher redemptions	**2,183,501**	**2,244,154**	**2,309,861**	**2,375,568**

Table 6: TNVS Gap Analysis						
Fiscal Year Funds	**Type of Voucher**	**Total Voucher Redemptions**	**Cost of Voucher Redemptions at $5.90 per LLIN**	**Operational costs per Annum**	**Total Costs**	**Costs per LLIN**
FY 2012	Infant	1,125,317	$6,639,370	$1,400,000	$8,039,370	$7.14
	Pregnant Woman	1,184,544	$6,988,810	$1,400,000	$8,388,810	$7.08
	Total FY 2012	**2,309,861**	**$13,628,180**	**$2,800,000**	**$16,428,180**	

Notes:

- *Operational costs are fixed at $2.8 million per year, regardless of whether one or both vouchers are supported. As Global Fund support for the pregnant woman voucher ends in July 2011, if another donor is not identified to support the half of the TNVS's operational costs currently covered by the Global Fund, the total cost per LLIN distributed will increase.*

In the meantime, PMI continues to support a market stabilization strategy to provide an incentive to retailers to continue participating in the TNVS, whereby PMI and the net manufacturer(s) provide a one-time subsidy to participating retailers of 10 LLINs (PMI and net manufacturers contribute five LLINs each) on condition that the participating retailer also procures five LLINs at full price. Together, these 15 LLINs capitalize the private sector market and maintain a strong and sustainable retail network.

Under Five Catch-up Campaign (U5CC). In concert with the Government of Tanzania, the Global Fund, the World Bank, and other donors, PMI supported the U5CC—a mass campaign to distribute free LLINs to all children under five from May 2009 to May 2010. A total of 8.7 million LLINs were distributed. PMI procured 1.86 million LLINs for the U5CC and supported the distribution of more than 2.5 million LLINs.

Universal Coverage Campaign (UCC). In May 2008, the Government of Tanzania announced a policy to attain universal LLIN coverage (defined as one LLIN per sleeping space). NMCP expectations were that ITN ownership would rise to 90% upon completion of the UCC (expected in September 2011), after distribution of approximately 18.2 million LLINs (in addition to the 8.7 million distributed through the U5CC, and over 7 million nets distributed to date through the TNVS). The combination of the U5CC and the UCC will deliver an average of 2.5 nets to every household on the Mainland (or one LLIN for every two people), and procured LLINs to cover all institutional sleeping spaces (i.e. hospitals, boarding schools, orphanages, army camps, and prisons). The combined free mass-distribution campaigns will have cost approximately $150 million (including training, community mobilization, and monitoring and evaluation). The majority of funding for the UCC comes from the Global Fund Round 1 RCC (operational costs) and Round 8 (LLINs) grants; PMI contributed to logistics management and training for the UCC.

Hang-up Campaigns. To increase net use, NMCP introduced a hang-up strategy for the U5CC, which was funded by PMI and DfID; PMI funded an additional Hang-up Campaign

for the UCC. Hang-up campaigns have been implemented one month after LLIN distribution in each zone. Trained volunteers visited every household to ensure that nets were properly hung, and educated communities to sleep under a net every night.

▪ ***Zanzibar***

Since 2006, Zanzibar had been distributing free LLINs to pregnant women and infants. In 2008, ZMCP altered its net distribution strategy to provide two free LLINs per household, but the ZMCP now defines universal coverage as 3.1 LLINs per household. The 2007–2008 THMIS showed household ITN ownership of one or more ITNs to be 72%, with 59% of children under five and 51% of pregnant women sleeping under an ITN. The 2010 DHS showed household ITN ownership to be 76%, with 55% of children under five and 50% of pregnant women sleeping under an ITN, indicating a decrease in ITN use. As a keep-up strategy, ZMCP plans to replace approximately 660,000 LLINs between 2011 and 2012, with 220,000 more nets needed for 2013.

Progress over Past 12 Months

▪ ***Mainland***

As of April 30, 2011, 7,111,782 ITNs (4,912,572 for pregnant women and 2,199,210 for infants) had been distributed through the TNVS. Using FY 2010 funds, PMI commissioned an independent effectiveness and cost analysis review of the TNVS as a viable and cost-effective mechanism to provide continuous LLIN distribution to infants and pregnant women. The final report will be released in late July 2011, and will provide recommendations for cost savings for the TNVS, articulate whether the TNVS is an effective strategy to reach the target population, and recommend alternative strategies if the TNVS is not believed to be an effective approach.

A further evaluation is being conducted by the Swiss Tropical & Public Health Institute to identify and articulate a comprehensive keep-up strategy for the Mainland. The conclusion of this evaluation was that the TNVS remains a very cost-effective strategy, but an additional approach to net distribution will be needed to sustain universal coverage between the periodic large-scale campaigns,

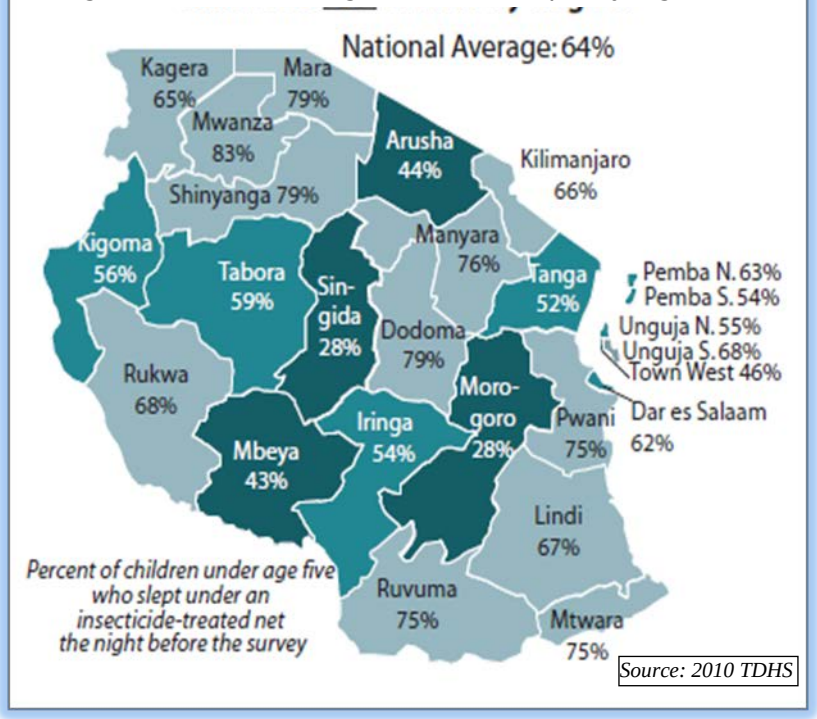
The U5CC ended in May 2010. Due to a delay in signing the Global Fund Round 8 grant and prolonged negotiations regarding the tender for source of the LLIN supply and other UCC contractors, the UCC was launched in September 2010, six months later than expected. The UCC is now expected to end in September 2011. To date, over 11.8 million LLINs have been issued, with the Northern and Coastal Zones remaining.

The UCC Hang-up Campaign is underway using volunteers who visit every house one month after the UCC to ensure LLINs are properly hung, and, if not, offer assistance to hang them. PMI provided $2.3 million in FY 2010 funds to support this hang-up campaign.

On the Mainland, net use for children under five more than doubled from 2007/8 levels, from 25% (THMIS 2007–2008) to 64% (DHS 2009–2010). Household ownership of one or more ITNs also improved from 38% in 2007 to 63% in 2009–2010. The 2009–2010 DHS demonstrated that 57% of pregnant women and 64% of children under five were sleeping under ITNs on the Mainland, a marked improvement over the 2007–2008 THMIS, in which 26% of pregnant women and 25% of children under five were using an ITN. It should be

noted that the 2009–2010 DHS was conducted before the UCC began. The Figure below shows ITN use by region in children under five from the 2010 TDHS.

Figure 5: Net use among children under-five by region



With funding from the Global Fund Round 1 RCC, the NMCP contracted the Ifakara Health Institute (IHI) to conduct five population-based post-campaign surveys to assess the impact of the UCC in the Southern, Lake, and Coastal Zones.

Although previous ITN mass campaigns have sometimes led to a small reduction in voucher uptake and redemption, the impact has generally been transient and limited to the six-month period only after the campaign. Evidence indicates that the UCC has not reduced voucher redemptions; in fact, infant voucher redemptions were higher than ever during the first quarter of calendar year 2011 (84%). The UCC has, however, largely undermined the market for full-priced bed-nets, but this is expected to recover as nets from the two mass free distribution campaigns begin to wear out. By the second half of calendar year 2012, U5CC nets will be at least three years old, and UCC nets distributed to the Southern Zone will be two years old.

▪ ***Zanzibar***

Since 2007, PMI has supported ZMCP to implement its ITN strategy, initially by providing ITNs to pregnant women and infants and more recently through its UCC. To date, ZMCP has distributed nearly 616,000 LLINs in its UCC, of which 160,000 were procured by PMI (in 2006 and 2008). The fall in ITN use in Zanzibar between the 2008 MIS and 2010 DHS is probably due to a combination of factors, including the population's perception of a reduced malaria risk thanks to the successful control efforts, as well as with the fact that many nets distributed between 2005 and 2008 have worn out. Zanzibar's Global Fund Round 8 grant and PMI are main sources of funds for ITN activities in Zanzibar. However, with only two nets per household, ZMCP may not achieve universal net coverage as, on average, each household has 3.1 sleeping spaces.

Proposed Activities with FY 2012 Funding

▪ ***Mainland***

(I.1.a) Keep-up Programs (TNVS or Other). Unless recommended otherwise(by the ongoing TNVS review and the keep-up strategy evaluation), PMI will continue to support the NMCP's TNVS. The TNVS has been a success in Tanzania and has increased the number of

ITNs per household. Since the TNVS is implemented in concert with the private sector, it encourages creation of a private-sector market for LLINs.

PMI will use FY 2012 funds to support the procurement and distribution of up to 1.13 million LLINs for infants and 521,000 LLINs for pregnant women through support to the TNVS, unless another strategy (and/or another donor) is identified. The Mainland will look to other funders to fill in the gap of remaining support of the existing TNVS or another strategy as Global Fund Round 1 RCC support falls away in July 2011. An "eVoucher" will be piloted during the second half of 2011; if successful, PMI will support the expansion of the eVoucher throughout the Mainland. The eVoucher would be distributed to facilities offering antenatal and infant health services. Once issued to pregnant women and infant caregivers, the eVoucher would be activated via cell-phone-based SMS technology and would be automatically voided after 60 days if the voucher is not redeemed (at a participating retailer), enabling the implementer to issue more vouchers. Beyond cutting operational costs, it is envisioned that the eVoucher would provide geospatial data on voucher use throughout the Mainland, which would help target increased BCC efforts. *($13,000,000)*

▪ ***Zanzibar***
(I.1.b) Universal Coverage Campaign. PMI will procure and distribute approximately 220,000 LLINs to support Zanzibar's UCC strategy. PMI-procured LLINs will go to boarding schools and other institutions to ensure coverage of sleeping spaces beyond households. PMI will also support a hang-up campaign for this activity. *($2,000,000)*

I.2 INDOOR RESIDUAL SPRAYING

Background
▪ ***Mainland***
The NMCP's 2008-2013 Medium-Term Strategic Plan targets indoor residual spraying (IRS) in 60 (50%) of the Mainland's 123 districts over a five-year period. Currently, PMI is the only donor contributing to the NMCP's IRS program. The Government of Tanzania (GOT) has not programmed any resources towards IRS and, given its current financial situation, it appears unlikely that the GOT will be able to fund IRS in the near future. The NMCP strategy targets IRS in areas of high malaria prevalence and unstable transmission. The Lake Zone regions have the highest burden of malaria among all 21 regions of the Mainland. Malaria prevalence among children 6-59 months of age is 41% in Kagera, 31% in Mwanza, and 30% in Mara (2007-08 THMIS). Data from 2010 THMIS shows that Lake Zone has the highest under-five mortality rate of 109/1,000 live births, above the national average of 81/1,000 live births.

IRS on the Mainland was launched in 2007 in Muleba and Karagwe Districts, which were experiencing malaria outbreaks at that time. These districts are located in Kagera Region that has the highest malaria prevalence in Tanzania. Kagera region is in located in North Western Tanzania, on the shores of Lake Victoria, and is characterized by stable transmission with seasonal variation. To date, Muleba and Karagwe districts have had five and four rounds of IRS, respectively. In 2009, PMI supported the expansion of IRS to cover the remaining five districts of Kagera Region and in 2010 and early 2011, IRS expanded to cover all the two remaining regions of Lake Zone, Mwanza and Mara. In total, 18 districts in the Lake Zone (7 in Kagera Region, 6 in Mwanza Region, 5 in Mara Region) benefited from IRS by the end of 2010. Entomologic monitoring has shown that the vector is susceptible to pyrethroids, the

class of insecticide used for both IRS (lambda-cyhalothrin CS 10%) and LLINs. Expansion of IRS to cover districts adjacent to Uganda, Rwanda and Burundi provides an opportunity for cross border collaboration for IRS and entomological monitoring. These countries are also conducting IRS in the neighboring districts with Tanzania mainland.

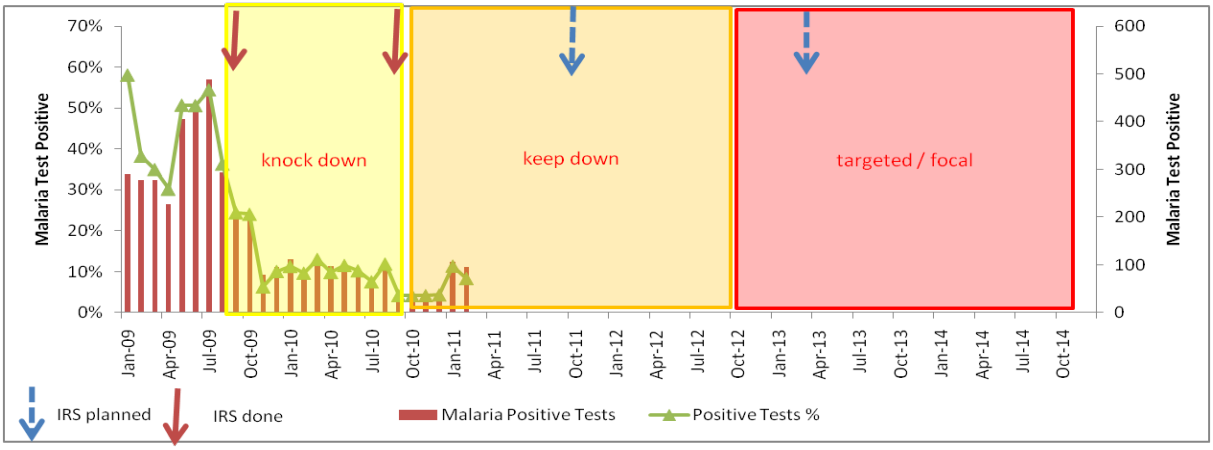
▪ ***Zanzibar***

Since 2006, Zanzibar has conducted six rounds of blanket IRS on the islands of Unguja and Pemba with household coverage over 90% for all the rounds; more than one million residents are protected with each round. Pyrethroid insecticides have been used for all the six rounds of IRS in Zanzibar, initially lambda-cyhalothrin WP 10% and then lambda-cyhalothrin CS 10% in 2009. Monitoring of vector resistance to insecticides in 2008 showed that the vector species (*An. arabiensis*) is still susceptible to pyrethroids (deltamethrin, permethrin and lambda-cyhalothrin), to organochlorines (DDT), and to carbamates (bendiocarb). However, results from 2010 reported a high level of resistance to deltamethrin (80%), permethrin (50%) and lambda-cyhalothrin (49%) in Pemba but no resistance in Unguja. The mosquitoes remain susceptible to bendiocarb. A vector control technical committee has recommended an insecticide rotation strategy for Zanzibar and to immediately change from a pyrethroid to a carbamate, which will costs three times as much as lambda-cyhalothrin CS 10%.

A review of PMI-supported IRS costs in Mainland and Zanzibar was carried out in 2010. The results show a significant difference of unit costs of IRS between Zanzibar that has had six rounds of IRS and Mainland that only scaled up a year ago. The cost per structure was $9.78 in 2008 compared to mainland of $15.78 in 2008 to $14.54 in 2009. The cost per person protected is $1.87 in Zanzibar compared to a mainland cost of $3.36 per person in 2008 and $2.88 in 2009. With a carbamate, the unit cost per structure in Zanzibar will increase from $9.78 to $13.89.

With the reduction in malaria transmission in Zanzibar the ZMCP has decided to transition to a new vector control strategy (Figure 6). The strategy comprises of three phases—blanket spraying spray, targeted spraying in districts showing increased transmission, followed by focal spaying in malaria hot spots. The shift between phases will be based on the malaria blood smear positivity rate, ITN coverage and use, availability of an effective malaria surveillance system, presence of outbreak preparedness and response mechanism, and availability of funding.

Figure 6: Chato District: Malaria trends and actual and anticipated IRS by phase 2009-2014



Progress over Past 12 Months

▪ ***Mainland***

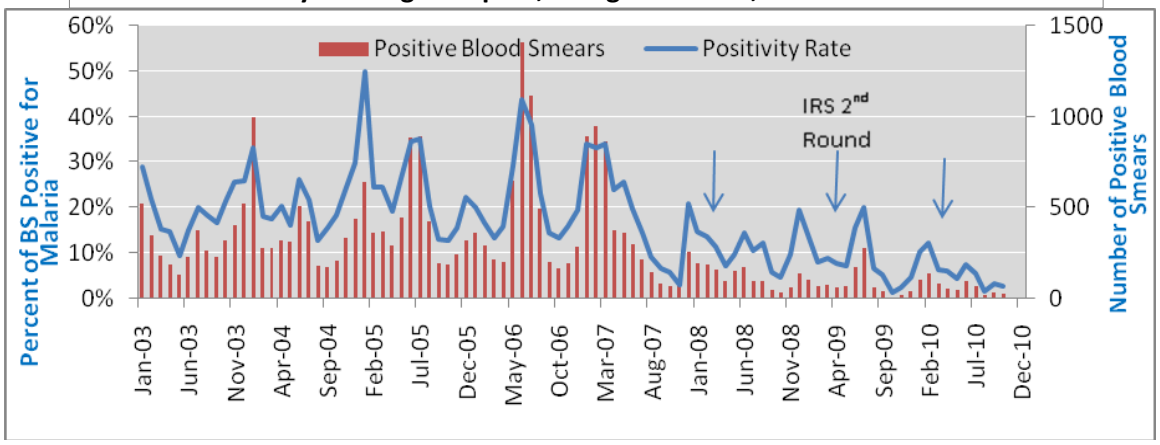
In 2010 and early 2011, all the 18 districts of Kagera, Mwanza, and Mara region in Lake Zone were sprayed covering 1,144,621 structures (95% coverage) and protecting 6.3 million people (Table 7).

Table 7: IRS Coverage and Number of People Protected

Region	Number of Districts	Round	Year	Houses sprayed	Coverage	No. protected
Kagera	1 (Muleba)	1	2006/07	34,745	94.9%	167,871
Kagera	2 (Muleba/Karagwe)	2	2007/08	95,548	98.6%	448690
Kagera	2 (Muleba&Karagwe)	3	2008/09	185,217	96.3%	872,378
Kagera	All 7 districts	4	2009/10	425,118	96.2%	2,138,299
Kagera, Mwanza, Mara	All 18 districts	5	2010/11	1,144,621	94.5%	6,343,091

Data from Nyakahanga Hospital in Karagwe District that has had four rounds of spraying (2008-2011) shows a progressive decline in the blood smear positivity rate with each round of IRS (Figure 7).

Figure 7: Number and Proportion of Blood Smears (BS) positive for malaria, Nyakahanga Hospital, Karagwe District, 2003-2010



▪ ***Zanzibar***

Zanzibar has had six rounds of IRS to date, in addition to one round of focal spraying as part of an epidemic response in July 2008. The six round of spraying took place in early 2011. The last two highly populated districts of Stone Town and West are currently being spayed and will be completed by mid-July 2011. By end of May 2010, eight of the ten districts were sprayed, covering 129,462 structures (96% coverage) and protecting 644,369 people (Table 8).

Table 8: IRS Coverage and Number of People Protected on Zanzibar

Round	Year	Houses sprayed	Coverage	No of people protected
Round 1	2006	203,754	96%	1,059,521
Round 2	2007	196,827	90%	1,023,500
Round 3	2007	212,021	97%	1,102,609
Focal spraying	2008	3,588	100%	18,658
Round 4	2008	200,731	94%	1,067,254
Round 5	2010	183,620	89%	1,019,921
Round 6	2011	194,808	95%	1,033,742

IRS activities in the Mainland and Zanzibar ensure protection of the environment and safe disposal of waste in accordance with the approved Pesticide Evaluation Report and Safe Use Action Plans. Environmental inspection visits are conducted regularly to assess compliance with US Government and Tanzanian national environmental standards.

Proposed Activities with FY 2012 Funding

▪ ***Mainland***

*(I.2.a) Maintain high IRS coverage in the three Regions of Lake Zone (Kagera, Mwanza, and Mara Regions).*PMI will maintain the scale up of IRS in Kagera, Mwanza, and Mara Regions located in the Lake Zone of the Mainland, but because of the reduced funding for IRS in FY2012, the spraying may not cover all the 18 districts sprayed in FY2011. The planned IRS strategy for Tanzania is to move from blanket spraying to targeted spraying in districts showing high malaria transmission and less than 80% ITN coverage and use. Based on the unit costs of $14.58 per structure sprayed and $2.88 per person protected, FY2012 funding will target 836,000 structures in Lake Zone and will protect slightly over 4.2 million people. The selection of the districts for targeted spraying will be based on the epidemiological data

(blood smear positivity rate), and ITN ownership and use from the 2010 DHS updated with results from the planned 2011 MIS. All districts where spraying will be withdrawn will have had at least 4 rounds of IRS by 2013. PMI will also support activities for cross border collaboration with Uganda, Rwanda, and Burundi, environmental compliance, and final disposal of the empty insecticide sachets, in accordance with US Government and Tanzanian national environmental laws. *($12,190,300)*

▪ ***Zanzibar***

(I.2.b) Conduct targeted spraying in high malaria transmission areas in Zanzibar. Zanzibar is now at the pre-elimination stage. The current epidemiologic data (household and health facility-based), complemented by ongoing entomologic data and high coverage levels of ITN ownership and use have provided enough evidence to ZMCP and PMI to scale down IRS in Zanzibar and move from blanket spraying to a targeted IRS strategy focused on districts showing increased malaria transmission and low ITN coverage and use. PMI will procure more ITNs to achieve universal coverage during the scale down of IRS. With a unit costs of $13.89 per structure with bendiocarb, in FY2012, PMI will support ZMCP to spray 55,400 (25%) of the 220,000 structures in Zanzibar and will protect approximately 280,140 of the 1.3 million people in Zanzibar. PMI will also support activities for environmental compliance and final disposal of empty insecticide sachets, in accordance with US Government and Zanzibar environmental laws (22 CFR 216). *($793,200)*

(1.2.c) Environmental monitoring on Mainland and Zanzibar. Monitoring of compliance of PMI-supported IRS with USG and national environmental regulations and guidelines *($35,000)*

I.3 INTERMITTENT PREVENTIVE TREATMENT FOR PREGNANT WOMEN

Background

▪ ***Mainland***

IPTp is a GOT/ MOHSW and RBM intervention for preventing malaria in pregnancy. In Tanzania, since 2004 the WHO has promoted FANC (a complex service delivery strategy for antenatal care) and IPTp as an important part of the approach to reduce maternal and newborn mortality and morbidity including from stillbirths and premature delivery. Over the past four years PMI has invested approximately $7.7 million in FANC/MIP in Tanzania where the annual number of births is 1.5 million. The funding from PMI has been critical to the development of the national FANC curriculum; development of district-level trainers throughout the country; the national rollout of in-service trainings in FANC; up-dating the pre-service curriculum in nursing schools in Tanzania; strengthening supervision and quality improvement of ANC services; the introduction of MIP indicators in the national HMIS system; and creating demand for quality ANC services and advocating for safe motherhood issues. PMI funds were complemented with MCH co-funding in line with the programs' ability.

The Reproductive and Child Health Services' policy for IPTp is two doses of sulfadoxine-pyrimethamine (SP), given as directly observed therapy with the first dose administered at the first visit after quickening (from 20 weeks) and the second dose within the third trimester, no less than four weeks following the first dose. The 2010 TDHS showed that although approximately 70% of women are coming early enough and frequently enough to receive two

doses of SP, IPTp2 coverage had essentially remained constant at about 27% (30% in the THMIS 2007, 22% in the TDHS 2005). Barriers to successful provision of IPTp relate to inadequate numbers of service providers with poor interpersonal skills and recording practices, compounded by frequent stockouts of SP at facility level.

The PMI program's early focus on in-service training will be essentially complete with FY2010 funds; thereafter, district council funds will be solicited to provide catch up FANC trainings using district trainers developed by PMI. The focus of the MIP program since 2011 has been to improve two complementary areas of the health system that affect care in order to improve provision of MIP:

1) The quality of services (including counseling and provision of SP, recording and reporting of services);
2) The forecasting and availability of SP at the national level (working from the national and zonal level with Medical Stores Department and MOHSW).

At the start of the program, due to the change over from SP to ACTs as the first line drug for treatment of malaria there was no SP in about half of the regions in Tanzania; SP had been removed from the Medical Stores Department's list of essential drugs. After advocacy at MSD and with support from the NMCP this oversight was resolved and support for forecasting and quantification of SP continues to be provided through PMI.

▪ ***Zanzibar***

While the endemicity of malaria in Zanzibar has fallen as a result of its successful malaria control efforts, the ZMCP continues the current ANC malaria in pregnancy policy pending the results of a PMI-funded placental parasitemia study currently underway. The Reproductive and Child Health Services division of the MOHSW in Zanzibar has received PMI support in training its providers in FANC/malaria in pregnancy and in improving the quality of antenatal services to improve birth outcomes. Antenatal care uptake is high in Zanzibar, with over 90% of women making at least two antenatal visits to a public health facility during their pregnancy (TDHS 2010).

After the UCC, the ZMCP instituted a keep-up campaign to promote the use of LLINs by pregnant women, and acknowledges the need for prompt and appropriate diagnosis and treatment of malaria in pregnancy to ensure the safety of pregnant mothers. National malaria treatment policies for Zanzibar recommend ACT during the second and third trimester of pregnancy and quinine during the first trimester.

The 2010 THMIS, household survey found coverage of IPTp2 in Zanzibar at 47%; in the same period, facility-based data collected by the ZMCP indicate that IPTp2 is around 80% where training of ANC providers was supplemented with quarterly, facility-based supervision visits to review ANC services. SP is provided free of charge, but stockouts do occur. The MOHSW is implementing community-level BCC to increase the understanding and use of malaria preventive measures in pregnancy.

Progress over Past 12 Months

▪ ***Mainland***

PMI has built the capacity of national- and district-level FANC trainers in every district of Mainland Tanzania and additional trainings and refreshers are being conducted with funds set aside by the District Health Councils. By March 2011, PMI provided training to more than

6,600 providers from over 3,400 facilities in all 137 districts in Tanzania (estimated 73% of all facilities providing ANC services). With the remaining FY2010 PMI funding, it is anticipated that an additional 500 providers from approximately 375 health facilities will be trained, covering close to 100% of all ANC providers and 80% of all ANC facilities. The pre-service curriculum has been updated, and tutors and clinical preceptors from all 53 nurse-midwifery schools in Tanzania have been trained, leading to approximately 1,600 new graduates with FANC skills each year since 2006.

Nevertheless the following critical issues continue to adversely affect IPTp2 provision:

- Regular SP stockouts in facilities: Quarterly data collected from USAID maternal health sentinel sites indicate that 93% of facilities have experienced some level of SP stockouts during the past two years (on average stock out days per quarter have been 19 days per quarter).A quality of care study in maternal health conducted with USG support in 2010 found that approximately 1/3 facilities were out of SP on the day of the survey (hospitals, health centers, and dispensaries inclusive). After investigation and advocacy with the Ministry, technical support in forecasting number of doses of SP was provided through PMI and in late 2010 the MOHSW opened an account and deposited funds to cover SP procurements in Tanzania. Generally, it was felt that stock at the central and zonal levels were available but distribution to the facility level was the real challenge. Additionally, there were circulars from the central MOHSW regarding the "free provision of SP" to pregnant mothers with no clear delineation of where the funds for SP were coming from.

  Recently, through the USG funded commodities security program through SCMS, a quantification and physical count of stock on hand of essential MCH drugs (SP inclusive) at zonal and central MSD was undertaken. The study showed that while 2 out of 9 zonal warehouses have *no stocks of SP*, central medical stores *have less than one month's stock* and the next order for SP is expected in January 2011. This alarming finding was brought to the attention of the MOHSW and partners very recently (September, 2011); it is a result of efforts to leverage existing capabilities of USG's technical assistance program on commodities security at central and zonal level warehouses and in the regions.

  As would be expected, sentinel site data over the past two years has shown consistently that where stockouts are less frequent or non-existent, IPTp rates were almost double the coverage in facilities with frequent stockouts (e.g. in 2010, for facilities with no stockouts IPTp2 rates were 61%, while the overall IPTp2 rates were on average only 39%).

- Supervision is neither routine nor supportive: Of the 40 maternal health sentinel sites, eight sites are the point of attention by the USG Basic Emergency Obstetric and Newborn Care program. The MAISHA program is developing district supervision skills within an integrated package of ANC and delivery services so that district regional coordinators can adeptly oversee service provision and availability of commodities for both areas of care. Three of these sentinel sites are in regions where supervision training and follow-on supervision visits have been introduced. At all three sites, there have been improvements in IPTp2 rates since introduction of these interventions. In all there will be a network of 300 such sites in all districts in Tanzania.

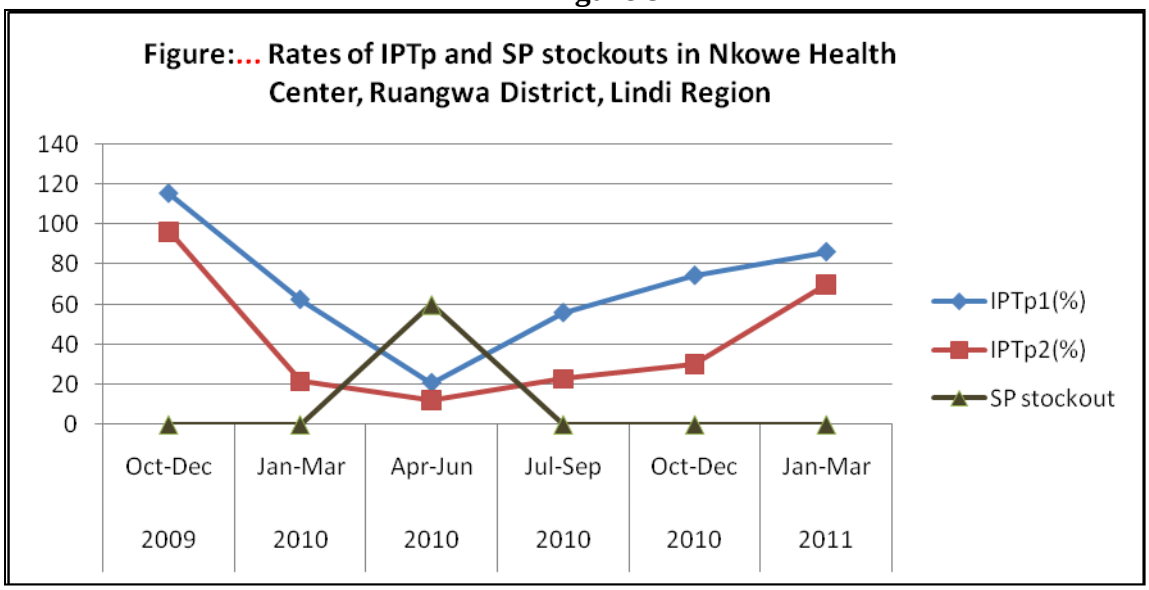
  The supervision system will draw on investments by PMI in ANC to strengthen the quality of service provision:

- FANC performance standards were established as the basis of a quality improvement system that includes internal monitoring / improvement by facilities and external supervision by the HMT.
  - Facilitative supervision workshops were undertaken for supervisors at regional (complete) and district levels (12 out of 21 regions complete); the remaining nine regions will be trained by the end of 2012
- In collaboration with the MOHSW / Health Services Inspectorate Unit, the standards were integrated into the national supervision system tools to facilitate supervision visits by regional and district RCH Coordinators using standardized tools.

- Other service provision challenges that are being addressed through the quality improvement and supervision efforts include:
  - Confusion on the part of providers regarding the safe timing and interval for the provision of SP given the rigid timing promoted by the current FANC policy, which the Ministry is reluctant to change.
  - Inconsistent recordkeeping due to high client loads in ANC and chronic staff shortages, lack of designated IPTp documentation in the routine health information system, and lack of data analysis skills among providers and supervisors.

The figure below shows results from Ruangwa District illustrating the increased use of IPTp coverage and reduction in SP stockouts following the supervision training and the start of supervision visits.

Figure 8



- Community awareness regarding malaria in pregnancy is still inadequate to prompt proactive care seeking. Therefore the MIP team has been working closely with the COMMIT BCC program to increase community knowledge about the importance of two doses of SP during pregnancy; efforts have focused on scaling up of communications through the media, through community change agents and through health providers to reach larger audiences of men and women with focused IPTp messages. But the implementation of this campaign has been delayed due to the recurrent stock outs of SP at facilities and the desire not to build up expectations in the community that the health system will not be able to deliver on.

▪ ***Zanzibar***

All ANC providers were trained in FANC in previous years with support from PMI. In 2010, with FY2010 PMI funds, efforts focused on improving the frequency and quality of supervision of ANC services by district RCH coordinators. In November 2010, MAISHA supported an annual "ANC sharing" meeting where the national ANC team shared results from their supervision and assessment visits with ANC providers from MAISHA-supported facilities. FY2011 funds will continue to support ANC supervision efforts in 2012.

Given the relatively low rate of malaria on the islands, PMI and ZMCP are conducting operational research on placental parasitemia levels in Zanzibari women to assess the need to continue IPTp in Zanzibar. This will be completed by late 2011. If indicated, the study will assist with identifying a need for promoting policy change consistent with the findings regarding a focus on case management versus continued provision of IPTp.

With MCH, funds USG is developing a Zanzibar Community Based Distributors (CBD) platform to distribute commodities such as SP and iron/folic acid to pregnant women and to counsel them on the dangers of malaria and anemia in pregnancy, the dangers of self-treatment, and the need to use ITNs and attend the full set of ANC services. This activity will target women who do not receive the full complement of ANC services at the facility to ensure that they have a chance to receive the full package of MIP interventions. Scale up of the approach can be considered by PMI in other areas of Tanzania as funding and needs permit. FY2011 funds will be used to train an additional 100 CBDs in Zanzibar.

Proposed Activities with FY 2012 Funding

▪***Mainland***

(I.3.a) IPTp/FANC Implementation. The USG/ Tanzania Global Health Initiative strategy which was developed in 2011 intends improved coordination and integration of funding streams to achieve one health goal for Tanzania. As part of the strategy there will be an effort to integrate USG support for antenatal services such that the financial support and field presence of the well-funded PMTCT program can supplement the malaria and MCH funds which target the same pregnant women and newborns. Whereas the initial focus of the PMTCT program was just on HIV positive clients, PMTCT partners have been given additional funds to cover all ANC and safe delivery efforts in the health facilities in which they are working. USG MCH partner Jhpiego has been tasked with ensuring the quality of the efforts from the point of view of MCH and MIP interventions.

PMI will be able to leverage the strength and presence of sister USG programs that have national reach at facility level under the Tanzania GHI strategy. Specific areas of care critical to the success of MIP that will be integrated starting in 2011 include:

- The promotion of a single supervision checklist combined with facility based mentorship and service improvement efforts.
    - The supervision checklist will cover aspects of all funding streams (to be developed and tested in five regions then to roll out nationally);
    - Facility supervision visits by partners and members of the HMTs to oversee all aspects of antenatal care providing mentorship and oversight to provision of care, availability of supplies, and record keeping.

- Integrated oversight of commodities logistics and attention placed not only at the national and zonal levels but down the logistics chain towards facilities:
    - Management support in the monitoring and management of commodity supplies through Supply Chain Management Advisors (SCMA) placed at the nine zonal MSD warehouses
    - More training in the field on Malaria stock management, reordering and reporting procedures
    - Additional advisors (4) to work specifically on malaria issues including SP availability
- Integration of health promotion activities around maternal health to have maximal impact and coverage in the community.
    - USG's PMI and MCH funds function in a complementary manner by integration of key antenatal messages into a national maternal and newborn health campaign which is co-funded with the HIV and family planning program

In addition to the integrated supervision, commodities security and BCC efforts, PMI will support the collection of key MIP service delivery data (including availability of SP) from all MCH-supported facilities so that real time data can be used to address deficiencies in service provision. PMI will continue to work with the national HMIS to push for finalization and printing of the revised ANC patient registers, which will facilitate accurate recording and reporting of ANC data, including IPTp. PMI will strengthen the malaria messaging component of its PEPFAR-funded community-based program in Morogoro and Iringa (to be scaled up to Lindi, Mtwara, Arusha and Kilimanjaro in 2012) to assess impact of a community based approach to improve awareness of malaria in pregnancy issues and prevention measures.

PMI will continue to support participation of mainland and Zanzibar representatives in Malaria in Pregnancy East and Southern Africa (MIPESA) coalition activities and meetings, with a maximum of one regional trip for each country's identified MIP working group. *($750,000)*

▪ ***Zanzibar***

(1.3.b) MIP Activities in Zanzibar. In FY2012 PMI funding for Zanzibar will continue to support the quality improvement and recognition system for antenatal care. The external assessment is conducted by the national ANC supervision team together with District Reproductive and Child Health Service coordinators and is used to overcome bottlenecks to provision of quality care. Together with the efforts being made to assess availability of SP at the central and zonal levels, PMI will keep on top of facility based stockouts and provide support to ensure proper recording and requesting of SP by service providers. Novel ways of ensuring provision of SP by partnering with the private sector or through the newly established CBD program will be monitored.

PMI will also support bi-annual ANC supervision through the RCHS clinics; and based on the results of the placental parasitemia study make policy recommendations consistent with findings with respect to the MIP strategy for Zanzibar. *($100,000)*

I.4 BEHAVIOR CHANGE & COMMUNICATION

Background

▪ ***Mainland and Zanzibar***

Radio, television, and newspaper are common sources of information about malaria. Currently, 60% of Tanzanian households own a radio and 46% have a mobile phone (2010 TDHS). On the Mainland, 13% of households have a television compared to 29% of households in Zanzibar. Overall, 72% of women and 82% of men are literate.

The 2010 TDHS indicated that 9% of women and 20% of men have access to radio, television, and newspaper (Table 9), while 36% of women and 19% of men had no exposure to any type of media. Zanzibar has more access to all three types of media than the Mainland. In general, radio is the most common type of mass media followed by television.

Table 9: Access to media on Mainland and Zanzibar

Type of Media	Mainland		Zanzibar		National	
	Male	Female	Male	Female	Male	Female
Listen to Radio at least once a week	76.3	57.1	84.0	69.7	76.5	57.5
Watch TV at least once a week	38.7	23.1	66.5	37.2	39.5	23.6
Read a newspaper at least once a week	29.4	18.9	48.2	15.0	29.9	18.8
All 3 types of media at least once a week	19.0	8.6	40.4	8.9	19.7	8.6
No media at least once a week					18.8	36.0

Source: 2010 TDHS

Access to radio, television, and newspaper for both males and females is better in urban than in rural areas for both mainland and Zanzibar. There are also regional imbalances in access to media that can be addressed through targeted IEC and BCC activities.

BCC has contributed to the improved coverage of ITN use among children under-five years of age and pregnant women. The preliminary 2010 TDHS results showed a significant improvement in ITN use for children under-five at 64%, from 26% in the 2007/8 THMIS. ITN use for pregnant women improved from 27% in the 2007/8 THMIS to 57% in 2009/10 DHS.

▪ ***Mainland***

Through the Tanzania Communicating Malaria in Tanzania (COMMIT) Project, PMI/Tanzania uses the Omnibus marketing nationally representative household survey; the bi-annual national PSI TRaC survey; and the household surveys of Global Fund TNVS to provide information on knowledge, awareness, access, and attitude about malaria prevention and treatment. These surveys have shown that although knowledge and awareness about malaria appear to be high, access and use is much lower. The TRaC survey has shown significant improvement regarding the impact of BCC interventions at the household level in both knowledge and self-efficacy measures. For example, percentage of people that believe they can hang a bed net rose from 60% in 2008 to 80% in 2010. According to the 2009 COMMIT Community Survey, of the households that reported that all children under-five slept under a bed-net previous night, 77% were exposed to messaging through a COMMIT mobile video unit or road show, as opposed to 35% who had no exposure.

Because of inadequate staffing, the MOHSW Health Promotion Unit's capacity to implement BCC has been weak and is limited to reviewing BCC messages/materials to ensure accuracy and coordination. The NMCP has developed a National Communications Strategy that is yet to be disseminated to the field.

▪***Zanzibar***
Zanzibar has good acceptance and use of all malaria interventions. IRS coverage has remained high at over 90% and ITN coverage increased from 72% in 2007 to 76% (2010 TDHS). However, other indicators – ITN use for children and pregnant women, IPTp2 coverage, use of antimalarials to treat fever, and early seeking behavior showed a decline between the 2007-08 THMIS and the 2010 TDHS. This is thought to be due to the fact that BCC efforts have been fragmented and applied in an ad-hoc manner, focusing on selective interventions. No attempt has been made to evaluate these efforts to determine which approaches are most effective.

Progress over Past 12 Months

▪ ***Mainland***
At national level, PMI supported the NMCP to reactivate the monthly BCC Working Group Meetings. The BCC Working Group is responsible for development of the BCC Master Plan, coordination of BCC implementing partners, and ensuring the quality of the IEC materials. The BCC Working Group and the MOHSW IEC Working Group approve IEC materials. PMI through the COMMIT Project has been able to work with journalists to form journalists' network against malaria. PMI will continue to work with journalists in a more strategic manner by forging links between the NMCP and the media. This year PMI was able to sponsor the best journalist for malaria under the Excellence in Journalism Awards.

At community level, PMI supports national and community interventions aimed at promoting positive household behaviors for ITNs use, proper case management, ACT use, and IPTp in an integrated fashion. In FY2010, PMI supported the rural communication activities in 11 regions in the country. Community Change Agents (CCAs) are now operating in all 11 regions. PSI with Global Fund RCC funds is covering another nine regions. Overall there are about 2,000 CCAs in the whole country. In 2011, PMI supported refresher training of CCAs to strengthen their skills in helping communities design collective activities for malaria control. PMI also supported the distribution of 2,000 solar- and crank-powered radios to CCAs to facilitate listening groups for the Saturday Children Radio Program as well as upcoming distance learning course for CCAs. Community-based organizations have primary responsibility for supervision of the CCAs.

To promote net use, PMI supported the production of 'net norm cards' that were used by Tanzania Red Cross Society to mark the households visited during the ITN hang up campaign. The net norm cards were placed on the doors of each household visited to demonstrate and promote community norms around net use. The COMMIT project promoted the cards through local radio stations and gave meaning to the cards. A house with a card is a "caring and loving house" that makes sure everyone is sleeping under the net every night.

PMI supported the development and airing of a children's radio show named "*PataPata*" (get it right). The program is designed to inform and encourage children in Tanzania aged 6-12 to become involved in the fight against malaria. The Saturday children radio program is being

broadcasted on four national and seven regional radio stations across Tanzania. The goal of the program is to change perceptions about malaria, and build a culture that supports the country's *Malaria Haikubaliki* ("Malaria is not acceptable") campaign. PMI also supported the production of a malaria in pregnancy film "CHUMO" that presents a subtle yet important message about preventing malaria in pregnancy. This film will be shown in villages all over the country through mobile video cinemas. Through a public-private partnership, the film is distributed in the commercial market through a local private partner. All BCC/IEC activities include messages on: the importance of acquiring an ITN and sleeping under ITNs every night; early antenatal attendance and demand for SP during antenatal visits; early care-seeking for fever at health facilities; and using the recommended malaria treatment medication.

▪***Zanzibar***
The ZMCP IEC unit has five staff. PMI funding has been provided to hire a BCC consultant to help the ZMCP. Zanzibar has a written malaria communication strategy and for the past several years has conducted BCC activities similar to those on the Mainland, including training community health committees and using road shows to disseminate malaria prevention and treatment messages; training teachers to conduct malaria education; employing billboards that promote "*maliza* (eliminate) malaria,"; and training journalists to report on malaria issues. The USG has worked to build capacity in the Health Promotion Unit by procuring equipment such as computers, scanners and cameras. However, there are no data to determine which BCC approaches have been most effective. In 2010, Zanzibar will address this situation with a qualitative assessment employing key stakeholder interviews and targeted focus group discussions to assess which activities are most effective, and to tailor messages to Zanzibar's recent drop in malaria prevalence.

Proposed Activities with FY 2012 Funding

▪ ***Mainland***
(I.4.a) IEC/BCC across all intervention areas. In FY 2012, PMI will support interventions that are intended to improve ITN use rates and will include BCC messaging and hang-up campaigns, especially in regions showing low coverage from 2010 TDHS. A major net use campaign will be implemented to promote continued net use and re-enforce community norms around nets. In the area of case management, PMI will promote health worker and patient adherence to RDT test results and to medication. For IPTp, PMI will support the ongoing national "Safe Pregnancy/ motherhood campaign" with a "pregnant mother" reminder system that uses SMS to provide weekly reminders for pregnant mothers for services they need and hints on a health pregnancy. Health facilities will be a main partner in case management and malaria in pregnancy with continued supervision and improvement of counseling skills for the providers. The Community Change Agent (CCA) network will be strengthened to support "Community Initiated Actions" where communities are facilitated to identify their needs and take necessary actions. PMI will support the broadcasting of the second round of the children's radio program, and the continuation of the radio distance learning program for CCAs and other health workers.

To promote sustainability of BCC activities, PMI will continue to engage district authorities through CHMTs to work with PMI-funded CBOs to advocate for inclusion of BCC activities into Comprehensive Council Health Plans. PMI will pilot this initiative in selected districts to assess the best mechanism to forge strategic partnership between PMI funded CBOs and district authorities. *($2,300,000)*

(I.4.b) IEC/BCC across all intervention areas by Peace Corps Volunteers
In FY2012, PMI will support three Peace Corps Volunteers to work with the NMCP and PMI implementing partners to assist with BCC activities, including distribution and hanging of the nets; organizing malaria awareness and behavior change activities, community talks, theatre, radio spots, house-to-house counseling; and assist with dissemination of health messages. ($25,000)

▪***Zanzibar***
(I.4.c) IEC/BCC across all intervention areas. PMI will support Zanzibar to implement its BCC strategy to improve the use of ITNs, IPTp, IRS and early seeking behavior. Sustainability will be emphasized, as further support will be provided to strengthen the MOHSW's Health Unit's capacity to implement malaria BCC. Community-based approaches will include directly working with Shehia health committees and selected community-based organizations to promote early health seeking behavior, and supporting a hung-up campaign to promote net use. *($200,000)*

I.5 PRIVATE SECTOR PARTNERSHIPS

Background

▪ ***Mainland***
PMI, in partnership with the Global Fund, is supporting the Tanzania Food & Drug Authority (TFDA) to implement the Accredited Drug Dispensing Outlet (ADDO) program through a public-private partnership that has been in operation since 2006. Implementing partners include the NMCP, TFDA, and ADDOs (ordinary retail "drug shops" accredited to dispense prescription drugs). PMI is supporting the training and development of systems for drug quality control, pharmacovigilance, and inspection of ADDOs. Because of language in the Lantos-Hyde Bill, PMI support to the ADDOs is limited to those regions where the USG supported ADDOs before the AMFm pilot began. The Global Fund is supporting the accreditation process, including renovating and upgrading the physical infrastructure and providing highly-subsidized ACTs for the private sector. The private sector ADDOs are purchasing ACTs at highly-subsidized prices, contributing to the physical infrastructure (drug shops), and the personnel dispensing ACTs.

Since 2007, PMI has been funding the Tanzania National Voucher Scheme (TNVS) through a public-private partnership with the local retail shops. To date, PMI has supported the procurement of LLINs for infants from a local net manufacturer as well as part of the operational costs for the program. The private sector retail shops stock the nets and exchange them for a voucher from infant caretakers.

▪ ***Zanzibar***
Since 2008, PMI has supported a partnership between ZMCP and a private company, Selcom Wireless Ltd., (which provides short message service [SMS]-based products, services, and games in Tanzania) to establish an SMS-based Malaria Early Epidemic Detection System (MEEDS) in Zanzibar. MEEDS is used to monitor the number and rate at which new malaria cases are being seen at health facilities and enables ZMCP and PMI to predict an epidemic before it occurs, or detect an epidemic early and make a timely intervention, before adverse

effects occur. Data from the health facilities is transmitted on a weekly basis through mobile phones to Selcom; MEEDS is operating in 90 of Zanzibar's 148 health facilities.

Progress over Past 12 Months

▪ ***Mainland***
PMI supported the provision of LLINs to infants through the TNVS. On average, more than 80,000 LLINs are exchanged for a voucher (and a top-up fee) at retail shops every month. From April 1, 2010 to March 30, 2011, the average redemption rate was 74%. There are currently 5,232 retail shops participating in the program. In late 2010, USAID/Tanzania awarded a new integrated social marketing cooperative agreement that socially markets health and HIV commodities and services in the private sector. The social marketing program worked with TFDA to support ADDO roll-out in one region and training support in four other regions. This includes ongoing technical and marketing support to points of sale and management of the range of products offered.

▪ ***Zanzibar***
In Zanzibar, the responsibility to manage the public-private partnership for MEEDS was transferred to ZMCP. The Zanzibar Ministry of Health is currently working out the contractual arrangements for taking on this responsibility.

Proposed Activities with FY 2012 Funding

▪***Mainland***
On the Mainland, PMI intends to continue support for the TNVS or a newly-identified keep-up strategy to sustain high LLIN coverage in the wake of the free mass distribution campaigns, with a focus on the vulnerable populations of infants and pregnant women. The activities and budget for this public-private partnership are described in the ITN section. PMI will also continue support for the quality control and regulation of ACTs for the private sector ADDO program. The activities and budget are described in detail under the case management section. *(Funding for this activity is under the Case Management section)*

PMI will also support a MEEDS-like activity for monitoring malaria testing and positivity rates for Lake Zone where PMI supported interventions -TNVS, IRS, management of febrile illness- are taking place.

▪***Zanzibar***
PMI will use FY 2012 funds to continue support to ZMCP's private partnership to implement MEEDS. The activities and the budget are detailed in the monitoring and evaluation section. *(Funding for this activity is under the Case Management section).*

J. INTERVENTIONS – CASE MANAGEMENT

J.1 DIAGNOSTICS

▪ ***Mainland***
Malaria diagnostics are a key programmatic area in urgent need of strengthening if Tanzania is to improve overall case management and ensure confidence in surveillance data. Microscopic examination of Giemsa-stained blood films remains a cornerstone of malaria

diagnosis throughout the country, but is only available at higher-level facilities (hospitals and some health centers). Historically, the more than 5,000 lowest-level facilities (dispensaries and some health centers) had no laboratory diagnostic capacity for malaria, leaving health care workers at more than 90% of facilities to diagnose malaria on the basis of clinical signs and symptoms.

Since 2006, PMI has supported the procurement of RDTs for purposes of evaluating different approaches to scaling-up this diagnostic tool on the Mainland. This work helped Tanzania prepare a successful Round 7 application for Global Fund support to scale-up RDTs at the national level.

The Global Fund Round 7 award allocates $15.5 million for RDT procurement, and quality assurance of both RDTs and microscopy. Part of the Global Fund grant will support purchase of 26 million RDTs for national deployment during 2009-2011, but a large gap in RDT needs will still exist. The NMCP objective is to increase the percentage of laboratory-confirmed malaria cases in public health facilities from a baseline of 20% to 80%. It is clear from numerous assessments that the quality of malaria microscopy is very poor at almost all levels of the health system and this is likely to be a key barrier to developing a functional quality control/quality assurance system for RDTs.

According to the recent WHO guidelines, all suspected malaria cases should be parasitologically confirmed prior to treatment, including children under five. To implement this policy, NMCP has to change from presumptive treatment to confirmatory parasitological diagnosis. Currently, laboratory confirmation is happening in only 20% of the suspected cases and there is no system for laboratory quality assurance and quality control. Phased rollout of RDTs began in April 2009, starting in areas of low/moderate transmission and expanded to areas of stable/high transmission.

- ***Zanzibar***

Through PMI support in previous years, ZMCP has been able to provide RDTs to all 139 peripheral health facilities and enhance microscopy at hospitals and larger facilities. Moreover, the program has adapted its treatment algorithm to permit parasitological confirmation for all patients with fever. This step has enabled the program to operate the Malaria Epidemic Early Detection System (MEEDS).

Progress over Past 12 Months

- ***Mainland***

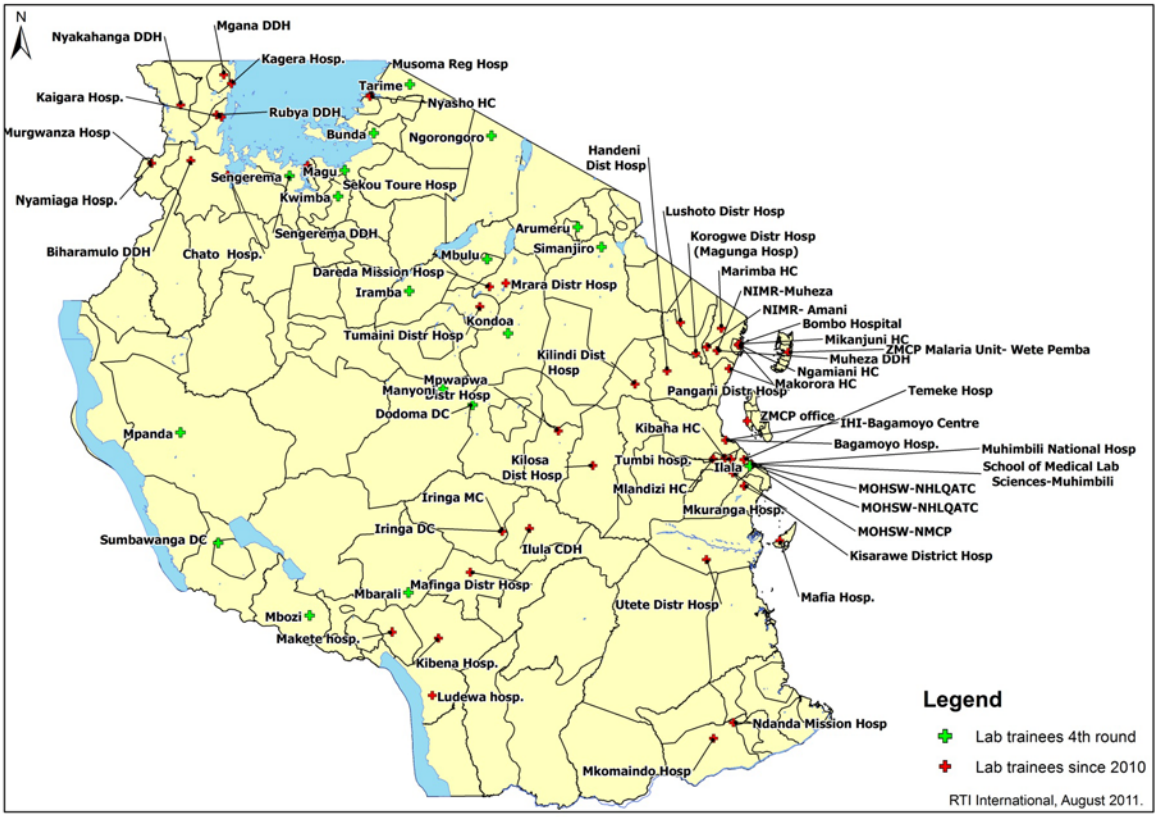
Implementation of RDTs at all government health facilities has been completed in 11 regions (Iringa, Kagera, Coastal, Arusha, Manyara, Mwanza, Mara, Singida, Dodoma, Mbeya, and Rukwa), but had to be postponed until additional RDTs could be procured. Working with the Walter Reed Army Institute of Research (WRAIR), PMI has assisted the MOHSW's Diagnostic Services Section to conduct four comprehensive malaria diagnostics training sessions at the National Health Laboratory and Quality Assurance Training Center since November 2009. More than 80 supervisory-level laboratory technicians from 45 districts have participated in these trainings (Figure 9). The intention is to use these highly skilled microscopists as part of a larger cadre to support a quality assurance program for RDTs currently being developed by NMCP, WRAIR, and CDC. The National Health Laboratory and Quality Assurance Training Center is a facility constructed and equipped through PEPFAR funding. PMI has made excellent use of this facility since it became operational in 2009.

In June 2011 WRAIR hired a full time Training Coordinator to work with the NHLQATC to facilitate microscopy training and, in close coordination with the NMCP, to develop a Malaria Reference Laboratory within NHLQATC and identify additional regional training facilities. Additionally, WRAIR has been successful in securing additional Congressional Special Interest funding and is using these funds, in part, to develop and test a shortened five-day microscopy training course. The shortened course will allow for an increase in training numbers, lower per trainee costs, while effectively teaching critical technical skill sets.

In 2010 WRAIR conducted microscopy (Mainland and Zanzibar) and mRDT (Mainland) assessments at 22 regional and district hospitals and health care facilities on the mainland (Coast and Kagara regions) and Zanzibar. WRAIR has used these assessments to design capacity development programs for targeted facilities and has procured $122,000 in malaria microscopy equipment and reagents (via JSI) to conduct laboratory capacity development. Capacity development on the Kagera Region is scheduled to occur in October 2011.

PMI has provided technical and financial support to NMCP's efforts to develop and implement a nationally scalable approach to ensure high quality RDT results. With WRAIR's input, a QA/QC program for RDTs is nearing the final stages of development.

Figure 9. Locations of health facilities with staff who attended 2009-11 malaria diagnostics training workshops conducted at the MOHSW's National Health Laboratory and Quality Assurance Training Center, Dar es Salaam.



▪ *Zanzibar*

PMI supported the procurement of 292,000 RDTs for Zanzibar in 2010. This universal availability of RDTs at government health facilities has provided the basis for the MEEDS, which has allowed the ZMCP to identify and respond to unusual or unexpected increases in reported malaria cases. The ZMCP still reports over treatment of malaria at health facilities in spite of negative results.

In July 2011 WRAIR conducted mRDT baseline site assessment at twenty health clinics in all 10 districts in Zanzibar (Unguja and Pemba). The site assessments evaluated the general laboratory and diagnostic capabilities for RDT use at selected sites. The assessment tool kits include malaria RDT surveys and checklists. The assessment surveys document general information regarding the laboratory, staff, and workload (e.g., number of patients seen in the last month or year, or the average number of slides or RDT prepared per technician). The checklists are specifically designed as planning tools to identify gaps in each laboratory's malaria diagnostics programs, and in the future, for quality improvement.

Proposed Activities

▪ *Mainland*

(J.1.a) RDT and Microscopy Quality Assurance and Quality Control. The new diagnostic policy emphasizes parasitological confirmation for all suspect malaria cases among children under five. This will mainly be accomplished through national implementation of RDTs at peripheral levels, but microscopy will remain at higher-level facilities. Reliance upon these methods for clinical decision making will require a robust QA system to monitor performance of both microscopy and RDTs. PMI will continue to support the development and implementation of a QA program for microscopy or RDTs. The strategy will rely upon

continued expansion of a network of highly skilled microscopists and the establishment of a national reference laboratory that can validate microscopy results at the district-level and RDT results at the peripheral health facility level.

PMI will continue to support national-level capacity building at the National Health Laboratory and Quality Assurance Training Center's national and regional training workshops and expand the number of certified microscopists available to serve in a nationwide QA/QC network for malaria diagnostics. In addition, three key activities will be undertaken to improve malaria diagnostic capacity throughout Tanzania. First, the QA/QC system piloted with FY10-11 funds will be finalized and developed into a scalable package for national implementation (described above). PMI's diagnostics partner will work with the necessary MOHSW units to develop an appropriate M&E strategy (including indicators) for the QA/QC program. Second, results of baseline site/personnel assessments completed with FY10-11 funding will be used to inform the PMI and NMCP strategy for diagnostics strengthening at all levels. Finally, a mechanism for supportive supervision and follow-up of trained technicians serving the QA/QC plan at district and regional levels will be built into the program. (*$400,000)*

(J.1.b) Strengthening Malaria Diagnostics. In FY2012, PMI will support NMCP to expedite the roll out of RDTs and improve laboratory-based diagnosis of malaria at government health facilities throughout the country. This activity is to provide technical assistance to NMCP to: roll out RDTs, develop strategies for malaria diagnostics integration with other health programs, establish a monitoring and supervision system, and support the implementation of the QA/QC system being developed by WRAIR. The support will increase understanding, acceptance, and correct use of microscopy and RDTs by laboratory staff and health care workers providing direct care to patients. The support will include updating of the policy and malaria diagnostic strategic plans and documents, development of training materials, training of health workers in malaria diagnostics and compliance to malaria test results, updating of the training curricula of health professions to include malaria diagnostics, follow up support to ensure improved diagnostic practices, and promotion of malaria diagnostics in health facilities and the community. Where possible, PMI will support the integration of malaria diagnostics with HIV/AIDS and tuberculosis diagnosis through integrated planning, training, and encouragement of use of the same laboratory services and human resources. Improved malaria diagnosis at health facilities will improve case management, reduce the irrational use of ACTs, and provide more valid malaria surveillance data. *($500,000)*

(J.1.c) RDT Procurement for UNHCR. Currently, there are approximately 300.000 refugees in UNHCR camps in western Tanzania who do not have access to malaria diagnostic capacity through MOHSW health facilities. In FY2012, PMI will procure and distribute 200,000 ACTs treatments and 190,000 RDT kits for UNHCR. *($190,000)*

- ***Zanzibar***

(J.1.d) RDT and Blood Slide Microscopy Quality Assurance and Quality Control. Continued progress in Zanzibar is highly dependent upon reliable, accessible diagnostics. PMI will support the finalization and implementation of a flexible system to confirm RDT and microscopy results from every health facility in Pemba and Unguja at least once per year. It is expected the insights gained from Zanzibar regarding diagnostic QA/QC approaches will provide valuable lessons for other PMI countries as they too begin to expand RDT accessibility. *($150,000)*

(J.1.e) RDT Procurement. PMI will procure an additional 300,000 RDTs for health facilities in Zanzibar and scale-up RDT coverage to private sector hospitals and health facilities and avoid future stock-outs of this key diagnostic approach. In addition, these supplies may be used for active case detection and response in the event of an unusual increase in reported cases identified through the MEEDS. (*$140,000)*

J.2 CASE MANAGEMENT

Background

▪ ***Mainland***

Pharmaceutical Management and Logistics. ACTs were officially launched in Mainland Tanzania on December 15th, 2006. The NMCP adopted artemether-lumefantrine (AL) as the first-line drug and artesunate-amodiaquine as the second line drug for the treatment of uncomplicated malaria. Quinine is currently being used for treatment of severe malaria but this is being reviewed to substitute injectable artesunate. Funding for ACTs in the public sector has been supported primarily by Global Fund (Round 4 and Round 7) and PMI. The NMCP is now using Global Fund Round 7 funds to procure malaria rapid diagnostic tests (RDTs). To date, PMI has procured over 18.9 million ACT treatments for the Mainland public health units. PMI has also procured three million RDTs for the Mainland and another half a million RDTs for Zanzibar (Table 10)

Table 10: ACTs and RDTs procured from 2006-2011 for the Mainland and Zanzibar

	2006	2007	2008	2009	2010	2011	Total
ACTs-Mainland	380,160	694,050	146,730	4,001,880	8,754,150	5,006,850*	**18,983,820**
mRDT (Mainland)	775,000	400,200	1,075,000	750,000	0	-	**3,000,200**
mRDT (Zanzibar)	0	150,000	0	200,000	175,000	-	525,000
Total mRDTs	**775,000**	**550,200**	**1,075,000**	**950,000**	**175,000**		**3,525,200**

**ACTs on order*

PMI provides technical assistance for the annual quantification and procurement planning for ACTs and RDTs, including procurement planning for commodities funded by the Global Fund. Bi-annual reviews are done to update stock tables and procurement plans. This exercise has assisted the Ministry of Health Social Welfare NMCP, Medical Stores Department (MSD), and the Pharmaceutical Services Unit to manage the commodity pipeline for the country. The MOHSW has set minimum and maximum standards for stock availability at 6 and 9 months, respectively.

Funding from the Global Fund is expected to increase and stabilize with Single Stream Funding (SSF), which is expected to start in mid-2011. The SSF will provide $26 million worth of ACTs to cover a period of 2.5 years. The current yearly ACT consumption is 16.6 million with an average monthly consumption of 1.38 million ACT treatments. However, the combined effect of highly effective interventions of universal coverage and use of ITNs, IRS in Lake Zone, and improving malaria diagnostics is expected to reduce the consumption of ACTs. The projected ACT requirement for 2012 is 14 million treatments and a monthly

consumption of 1.20 million treatments (Table 11).

Table 11: Historical, Current, and Projected ACT requirements for Tanzania Mainland

	Historical		Current		Projected Country Needs			
	2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Annual ACT requirements	16,227,818	15,387,302	15,834,582	16,080,280	13,870,477	11,340,483	7,926,437	4,874,548

- Adapted from Global Fund Round 9 proposal.
- Projected 2013-2015 figures assume a 10% annual reduction in ACTs needs due to universal LLIN coverage, and a further 2.5% annual reduction due to RDT roll out and improved case management.

In 2009, PMI supported the MOHSW, NMCP, PSU, and MSD to carry out quarterly end-use verification surveys. The purpose of the end-use verification survey is to monitor the stock levels of malaria commodities like ACTs, SP, and RDTs and other service delivery indicators like training, ordering and receipt of malaria commodities, and appropriate malaria treatment. Initially, the survey covered two regions, 20 health facilities and one MSD Zonal Store. In early 2011, the methodology was revised to a nationally representative sample. On a quarterly basis four zones, two regions in each zone, two districts in each region, and 20 facilities in each district will be selected. In total, 4 zones, 8 regions, 16 districts and 320 facilities will be visited on quarterly basis. The first 320 health facilities visited in quarter one will be revisited in quarter three and the 320 health facilities visited in quarter two will be revisited in quarter four. Therefore, every year 640 facilities will be visited. Data collection using the new methodology started May 1, 2011. The end use verification survey is the only source of information for providing facility-based data on the logistics system for malaria.

Treatment. The goal of NMCP malaria case management policy is to improve access and use of safe, effective, quality, and affordable antimalarial drugs. The national 2013 targets for the National Malaria Medium-Strategic Plan (2008-2013) for case management are to:

- increase the proportion of children under five years of age with fever receiving appropriate treatment within 24 hours of onset of fever from 28% in 2007 to 80%;
- increase the proportion of children under five with uncomplicated malaria who are appropriately managed from 64% in 2007 to 80%;
- increase the proportion of children under five admitted with severe malaria receiving appropriate treatment according to national treatment guidelines from 66% in 2007 to 80%; and
- increase the proportion of drug outlets selling antimalarial drugs according to the national treatment guideline from 2007 levels to 80%.

The NMCP's priority is to: maintain and improve antimalarial drug supplies in the public sector; improve access, quality and affordable ACTs in the private sector through the roll out of ADDOs and access to subsidize ACTs; strengthen the pharmacovigilance system; and strengthen therapeutic drug efficacy monitoring.

Artemether-lumefantrine is the first-line drug for treatment of uncomplicated malaria and is now being used in all public health facilities. At the recommendation of WHO and based on the results of the PMI-funded Ifakara Health Institute (IHI) study on management of severe

disease, the NMCP is currently revising the guidelines to change the regimen for treatment of severe malaria from quinine to injectable artesunate with parenteral quinine as an alternative where artesunate is not available. Rectal artesunate is also being considered as a pre-referral drug for severe malaria.

The frequent ACT and RDT stockouts, the slow rollout of RDTs and the poor compliance of health workers with test results has affected the quality of treatment of malaria at health facilities. Presumptive malaria treatment leads to over-diagnosis and possible missed opportunities to detect and treat other causes of febrile illnesses in children. The 2010 DHS also showed that ACT use at community level is low with only 60% of children with fever treated with an antimalarial drug, out of whom, 41% are given the drug on same or next day. Availability of a trained workforce is essential for the rational use of antimalarial drugs. Since 2006, PMI has been funding the Zonal Training Centers of Arusha, Iringa and Kigomato conduct the training of the health workers (clinicians, pharmacists, nursing staff). The training covers case management, including management of severe malaria and malaria in pregnancy.

The 2003 National Health Policy and the National Malaria Medium-Term Strategic Plan (2008-2013) recognize the importance of collaborating with the private sector to improve access to antimalarial drugs. The NMCP, in collaboration with the Tanzania Food and Drug Authority (TFDA) has been proactive in addressing challenges of malaria treatment in the private sector. In 2007, the TFDA permitted the sale of subsidized ACTs through the accreditation and regulation of the ADDO Program. The ADDO-based malaria treatment program was initially funded by PMI but it is now funded mainly by Global Fund Round 7 Affordable Medicines Facility for Malaria (AMFm), which is designed to provide highly subsidized ACTs to the private sector at an average of $0.07 per treatment. The pilot phase of the AMFm in Tanzania started in August 2010 and will end December 2012.

Therapeutic drug efficacy monitoring. Programmatic decision regarding changes to malaria treatment policy require continuous data to demonstrate that first and second-line regimens remain effective at treating malaria parasitemia. WHO recommends that countries endemic for malaria routinely monitor the efficacy of antimalarial drugs in order to detect changes in their therapeutic efficacy and guide national treatment policy. Regular monitoring and surveillance are critical for identifying new foci of artemisinin resistance rapidly and guiding containment and prevention activities. Until molecular markers of resistance are identified, measurement and reporting of parasite clearance on day 3 after treatment with ACTs is particularly important, as this is one of the first signals of artemisinin resistance available today.

According to the WHO protocol, national malaria control programmes should evaluate the efficacy of first- and second-line antimalarial drugs at sentinel sites at least once every 24 months. In some instances, it may be appropriate to initiate containment activities when ≥ 3% but < 10% of cases have parasites detectable on day 3 after treatment with an ACT.

▪ ***Zanzibar***

ACTs were deployed for the first time in Zanzibar in 2003 and the current first-line malaria treatment is amodiaquine-artesunate. ACTs are widely available in health facilities. PMI is providing technical assistance to the ZMCP in forecasting, quantification, and procurement planning for ACTs and RDTs. The effective malaria interventions have reduced the total need for ACTs to 37,200 ACT treatments per year with a monthly consumption of 3,100. The

change of policy from presumptive treatment of malaria to confirmatory diagnosis has doubled RDT consumption from 12,000 to 24,000 RDTs per month. The total annual RDT requirement is 288,000. With the reduction in malaria case load in health facilities, there is now an increased focus on diagnosis and attention to non-malarial causes of fever and death in children under five. Other challenges include inadequate differential diagnosis of severe febrile illnesses (e.g. septicaemia, pneumonia, etc.) from severe malaria; and a lack of a mechanism to supervise private health facilities on the management of malaria.

Progress over Past 12 Months

▪ ***Mainland***

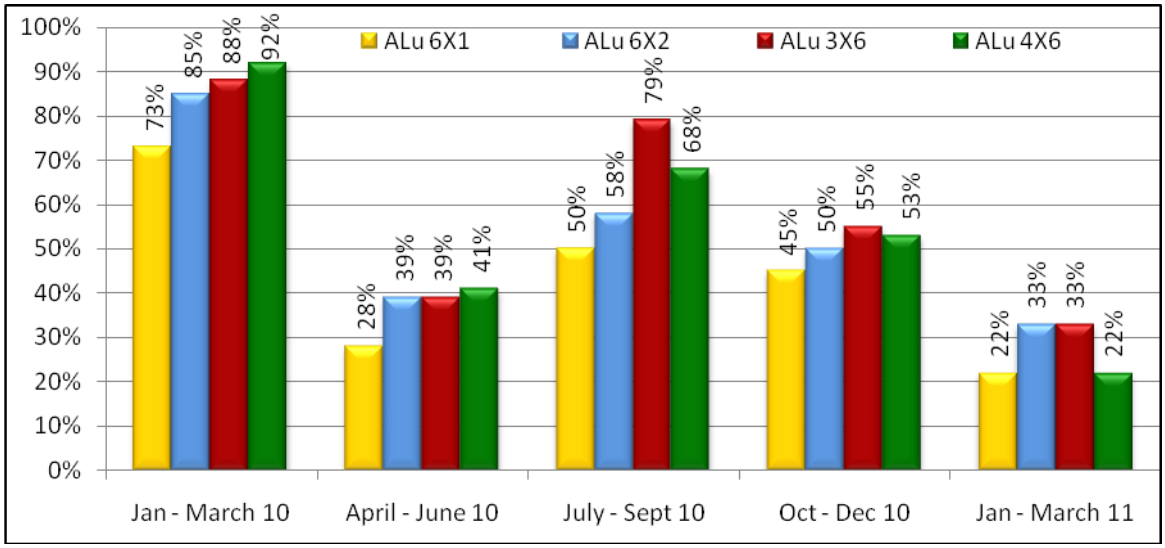
Pharmaceutical Management and Logistics. PMI has continued to provide technical assistance for strengthening the logistics system of the MOHSW NMCP, MSD, and the Pharmaceutical Supply Unit. Support has focused on integrating ACTs into the new integrated logistics system, which is transitioning from a push to a pull system. The Mainland completed its conversion to the integrated logistics system in December 2009 and all the health facilities are now ordering drugs using the pull system. Specific activities include: facilitation of the NMCP case management Working Group to plan and oversee the implementation of case management activities; quantification and procurement planning for malaria drugs and new inventory control procedures; and implementation of the quarterly end use verification surveys.

PMI also supported the establishment of an ACT control system to: 1) assess the availability of ACTs at health facilities and MSD zone; 2) determine the extent of discrepancies between quantities supplied and received at all levels; 3) assess the use of the logistics management information system; 4) identify strengths and weaknesses in the supply chain management of ACTs; and, 5) conduct supportive supervision to the district level and health facilities. The monitoring exercise that started in May will be carried out every month and will involve a physical count of ACTs at all MSD zonal warehouses.

Since January 2009 when Global Fund Round 4 expired, PMI has been the main source of funding for ACTs with occasional funding from Global Fund. However, there has been frequent ACT stockouts for the last two years because funding from PMI and Global Fund was not enough to satisfy the national annual requirement of 16.6 million ACT treatments. A global shortage of ACTs has compounded the problem. To date, PMI has procured 18,983,820 ACT treatments—16,981,320 for the public sector, 646,050 for UNHCR, and 1,356,450 for ADDOs.

The results of the most recent five quarterly end-use verification surveys are presented in Figure 10. They show improved ACT stock levels in the health facilities visited each quarter in 2010 and the 20 health facilities visited early 2011. There is significant variation of ACT stocks between the 20 health facilities visited each quarter. The health facilities visited in the first and third quarters of 2010 experienced the worst stockouts of ACTs. The results also show that ACT stockouts affects all weight bands of the drug. Data from the MOHSW SMS for Life electronic system shows that ACT stockouts have worsened since March 2011, with over 60% health facilities in ten regions reporting stockouts of all weight bands.

Figure 10: Stockouts of ACTs of 3 Days or More in Public Health Facilities in the past 3 Months



Key: Alu = artemether-lumefantrine

The survey also revealed poor use of the Logistics Management Information System (LMIS) tools (stock keeping and transaction records, Request and Report forms), low reporting of health facilities, and discrepancies between quantities ordered, issued, and received.

Treatment. In FY2011, PMI provided technical assistance and funding to NMCP to review the 2006 National Diagnostic and Treatment Guidelines based on WHO recommendations and the results of the PMI-funded IHI study on management of severe disease. The review process will be finalized early 2012. PMI has supported several interventions to improve access to ACTs and case management at the health facility level. Since FY2007, PMI has been funding the training of nurses for comprehensive malaria case management, including management of severe malaria and malaria in pregnancy. To date, the three Zonal Resource Centers of Arusha, Iringa, and Dodoma have trained 8,908 health workers (with 1,162 in 2010) from all 21 regions of the Mainland. In FY2011, PMI supported NMCP to conduct a rapid assessment of the effectiveness of the training conducted by the three Zonal Resource Centers of Arusha, Iringa, and Kigoma. This assessment found that the Zonal Resource Centers have shown excellent performance in coordinating and managing trainings and are cost-effective when compared with similar training implemented by other partners..

In March 2011, USAID Tanzania issued a new award to improve facility-based diagnosis and management of severe febrile illness in the three regions of Lake Zone namely, Kagera, Mwanza, Mara, and, potentially, Shinyanga Regions (the TibuHoma Project). These four regions cover a population of over 11.7 million—approximately 28% of the population on mainland. This activity will complement the pediatric hospital initiative established in the Global Fund Round 7 proposal in the Lake Zone regions, where PMI is conducting IRS. The objective of this activity is to reduce morbidity and mortality of children under five years of age due to severe febrile illness in the Lake Zone of Tanzania by: increasing availability of and accessibility to facility-based curative and preventive child health services; ensuring sustainability of critical child health care activities; and increasing linkages within the community to promote healthy behaviors thereby increasing knowledge and use of child health care services. During the first year, the program will target one regional hospital, two district hospitals, four health centers, and eight dispensaries. The program will expand in the second year to cover three district hospitals, six health centers and 12 dispensaries. Health centers and dispensaries will be selected from a particular hospital catchment area. In total,

the program will be operational in 900 public/private health facilities, covering Mwanza, Mara, and Kagera.

To improve malaria case management of newly qualified clinical, dispensing, and nursing health professionals, PMI supported updating of the curricula of the training institutions to include up-to date practices in case management, malaria diagnostics, IRS, malaria in pregnancy, and ITNs. This activity covered the training institutions on both The Mainland and Zanzibar. PMI also supported continuous medical education for the District Health Management Teams (DHMTs) and the District IMCI/Malaria Focal Persons, and replacement of District IMCI/Malaria focal persons.

In 2006, PMI supported the NMCP and the TFDA to implement a community-based ACT distribution mechanism through the ADDO network. With funding from the Global Fund, NMCP and TFDA expanded the ADDOs network to cover more regions. ADDO rollout is completed in eight of the Mainland's 21 regions (Ruvuma, Morogoro, Singida, Mbeya, Lindi, Mtwara, Rukwa, and Coast). However, ADDO rollout has not progressed since late 2009 because of the delayed disbursement of Global Fund Round 7 funds. To date, there are 2,215 ADDOs and 7,126 dispensers trained to dispense ACTs. NMCP is piloting a study on RDT use in ADDOs. The study will provide guidance as to whether it is feasible to introduce RDTs at community level.

The national requirement for ACTs for the private sector is 8-10 million. The MOHSW has negotiated with nine first line buyers to procure ACTs and sell them at set prices of not more than $0.67 per course of treatment. The first-line buyers have placed orders for 4 million ACTs, of which 1.2 million have been delivered and distributed to the private sector. The MOHSW has contracted one group to promote ACTs and another to monitor ACT distribution in the private sector. However, it is too early to conclude whether ADDOs are accessing these drugs. PMI has also funded activities to promote awareness and demand for ACTs in the private sector and to reinforce TFDA's ban on artemisinin monotherapies

ADDOs have become an avenue for a variety of public health initiatives, such as:

- subsidized ITNs for children under five and pregnant women provided under the TNVS
- education messages and over-the-counter drugs for the Integrated Management for Childhood Illnesses (IMCI)
- reproductive health education and health commodities like condoms and contraceptive pills
- drugs for treatment of opportunistic infections for HIV/AIDS; and provision of other health services through National Health Insurance Fund scheme

Therapeutic drug efficacy monitoring. PMI funding has permitted an implementation partner to work in close collaboration with NMCP and WHO staff to begin this activity in mid-2011. Currently, data for Coartem or amodiaquine-artesunate susceptibility are being collected from patients at four (Mlimba, Kibaha, Muzi and Ujiji districts) of the eight sentinel sites. Data will become available in late 2011. The other four sites will implement this activity in 2012.

▪ ***Zanzibar***

The first-line treatment for Zanzibar is amodiaquine-artesunate. Global Funds supports ZMCP to procure ACTs while PMI procures RDTs and provides technical assistance for forecasting, quantification, and procurement planning for ACTs and RDTs. Since 2006, PMI

has procured 525,000 RDTs for Zanzibar. ZMCP lacks a mechanism for the final disposal of medical waste, including expired/unusable ACTs and RDTs, and has requested support from PMI.

Proposed Activities for FY 2012 Funding

▪ ***Mainland***

(J.2.a) Diagnosis and Management of Febrile Illness. PMI will continue to contribute to the new integrated service delivery project (TibuHoma) in Lake Zone aimed at improving child health through strengthening the capacity of facility-based health workers to provide fundamental diagnostic and treatment services for malaria and other major causes of severe febrile illness and death in children under five. Lake Zone is one of the most populous of the eight zones making up Mainland Tanzania with a total population of 6.3 million. At the same time, community-focused efforts with funding from Maternal and Child Health and HIV/AIDS and is expected to contribute to reductions in under-five mortality by strengthening the referral of sick children identified in the community; this is part of the PMI and through joint USAID programming in child health. By the third year the program is expected to expand to at least one other region (e.g. Shinyanga).

PMI will support the training of 120 health care workers in 15 hospitals in case management. It will also train laboratory workers on RDT and quality malaria microscopy, and develop a system for checking accuracy. The team will train the RHMTs and CHMTs in supportive supervision and onsite mentoring to facility-based quality improvement teams, and will arrange for monthly visits from coaches. These interventions will upgrade the skills of health workers in quality improvement and case management of febrile illness. The program will ensure availability of updated guidelines and algorithms for health facilities to aid in differential diagnosis for febrile illnesses. PMI will also facilitate linkages between the primary health facilities and the community health workers.

In order to increase locally-raised resources to support case management, PMI will facilitate identification of private sector organizations to support child health and management of malaria and febrile illness as part of their corporate social responsibility. A course on leadership, supportive supervision, and financial management will be designed to improve the capacity of RHMT, CHMT and facility teams to market health services and negotiate with local partners for resources. Community networks and leaders will be organized and trained to promote health-seeking behaviors and address obstacles to accessing services. These partnerships and networks will strengthen referral systems and improve access for the most vulnerable children. *($1,750,000)*

(J.2.b) ACT Procurement to fill Emergency Needs in the Public Sector. Tanzania has enough support from Global Fund to procure ACTs for the public sector. However, because of the expected delays in disbursement of funds from Global Fund and the MOHSW MSD procurement systems, PMI will provide an emergency stock of approximately 3 million ACT treatments In the event that these funds are not needed, they will be reallocated to fill the other priority gaps for ITNs and/or IRS. *($3,000,000)*

(J.2.c) ACT Procurement for UNHCR. Currently, there are approximately 300.000 refugees in UNHCR camps in western Tanzania who do not have access to ACTs through MOHSW health facilities. In FY2012, PMI will procure and distribute 200,000 ACTs treatments for UNHCR. *($200,000)*

(J.2.d) Strengthen Pharmaceutical Management and Supply Chain System. PMI will support forecasting, quantification, and procurement planning for ACTs, RDTs, and other PMI- and Global Fund-procured commodities and support to MSD and the MOHSW Pharmaceutical Supply Unit to institutionalize supply chain management functions. Support for malaria commodity logistics will continue to focus on monitoring the Integrated Logistics System to ensure continued availability of ACTs and other malarial commodities at health facility level. The logistics monitoring capacity of the district malaria/IMCI focal people will be strengthened and additional support provided on inventory control procedures at central, regional and facility levels.

Pharmaceutical and supply chain strengthening activities will also include: conducting quarterly end use verification surveys to a sample of health facilities and Zonal warehouses to monitor the availability of key antimalarial commodities; visits to health facilities and regional warehouses to detect and respond to critical issues such as ACT (or other drug) stock outs; establishing systems for monitoring, reporting, and taking action on expired ACTs at health facilities, drug leakages, and anomalies in ACT use. PMI support will address medical waste management and final disposal, as per U.S. Government and local environmental laws. (*$750,000)*

(J.2.e) Strengthen the ADDO Regulatory System for Private Sector ACTs. PMI will use FY 2012 funds to indirectly support the distribution of ACTs through ADDOs and other private sector facilities, including regulation and commodity detailing, by coordinating with TFDA's efforts to manage the ADDO program. TFDA has a prominent role in ensuring the safe rollout of ACTs in the private sector. It is responsible for developing systems to train, accredit and supervise the ADDOs, and for ensuring the safety, quality and efficacy of all medication, including antimalarial medicines in Tanzania. As the Global Fund Round 7 grant does not cover this activity, PMI will complement USAID Family Planning and MCH funding to provide technical assistance to TFDA to support the following activities: capacity building of the drug inspectors at all levels; developing and implementing tools for preparing, reporting, storage and management of data generated from inspection activities; training and re-training of ADDO personnel, creating demand among consumers for ADDO services through branded promotion using the TFDA's branding; supporting regional and district health authorities to develop ADDO infrastructure; providing technical support to national drug distributors; orienting drug dispensers on proper dispensing and documentation of ACTs; and supporting monitoring and evaluation of the ADDO program and ACT distribution. This activity will be focused on those regions where USAID had previously supported ADDOs prior to the launch of the AMFm. *($500,000)*

(J.2.f) Training and Follow-up for Malaria Case Management. In FY2012, PMI will help implement the recommendations from the rapid assessment of the effectiveness of the training in malaria case management conducted by the three Zonal Resource Centers of Arusha, Iringa, and Kigoma. The Zonal Resource Centers will also be supported to roll out RDTs and the new national diagnostic and treatment guidelines for the management of severe malaria. *($500,000)*

(J.2.g) Therapeutic Drug Efficacy Monitoring. In FY2012 PMI will continue to support therapeutic efficacy monitoring for artemether-lumefantrine and amodiaquine-artesunate on the Mainland and Zanzibar. The primary goal is to provide NMCP and ZMCP with essential information regarding clinical and parasitological responses to these first-line antimalarials. The results will be used for developing an evidence-based antimalarial treatment policy as

Tanzania continues to scale-up the availability and use of ACTs nationwide. The simplest and most universally accepted measure of testing for antimalarial drug treatment efficacy follows a standardized World Health Organization protocol. Funding will support drug efficacy monitoring at four of the eight sites where this monitoring effort is alternated each year.

Monitoring systems will be established in four selected sentinel sites on the Mainland and one site on Zanzibar. Patients (6-59 months of age) with microscopy-confirmed uncomplicated malaria will be selected according to specific parasitologic and clinical criteria and administered the appropriate ACT. The patient's caregiver will then schedule routine follow-up visits. Patient assessments will occur on days 1, 2, 3, 7, 14, 21, 28, 35, and 42 days after starting treatment. The primary outcome to be assessed is clinical cure, defined as resolution of both fever and parasitemia by Day 3 and maintained until day 42. *($200,000*)

▪ ***Zanzibar***

(J.2.h) Strengthen Pharmaceutical Management and Supply Chain System. In FY2012, PMI will support ZMCP to: collect consumption and logistics data needed for annual quantification and procurement planning; implement end use verification surveys to monitor availability and use of malaria commodities at health facility level; and support ZMCP in medical waste handling and final disposal of expired ACTs and RDTs. *(150,000)*

K. INTEVENTIONS – EPIDEMIC SURVEILLANCE & RESPONSE

K.1 EPIDEMIC SURVEILLANCE & RESPONSE

Background

▪ ***Mainland***

Epidemic malaria is defined as 'an acute exacerbation of disease out of proportion to the normal to which the community is subject.' True malaria epidemics are uncommon on the Tanzania Mainland, but seasonal increases in transmission do occur. Recent data and ongoing implementation of intervention scale-up warrant some degree of sustainable early epidemic detection systems in at least two Regions on the Mainland: Dar es Salaam and the Lake Zone. In Dar es Salaam, malaria prevalence has begun to decline to levels that are similar to parts of Zanzibar and the city is certainly epidemic prone given its large population (four million) who now have a reduced level of immunity due to infrequent malaria exposure and the fact that it is surrounded by regions with high levels of malaria transmission.

Similar to Zanzibar, Kagera Region in the Lake Zone should expect dramatic declines in malaria prevalence following the multiple rounds of IRS conducted since 2008, plus distribution of free LLINs to children under five in 2010 and completion of the universal coverage campaign in early 2011. IRS was extended into Mwanza and Mara Regions in late 2010, followed shortly thereafter with the universal LLIN coverage campaign. These combined interventions should have a profound impact on malaria morbidity and mortality. At a minimum, Kagera Region needs a surveillance system capable of detecting sudden increases in transmission that will trigger a response from malaria control staff to avert possible high case-fatality rates in the community.

▪ ***Zanzibar***

PMI continues to focus epidemic surveillance and response activities in Zanzibar where malaria has become an uncommon occurrence. It should be possible to avert severe morbidity and mortality and negative economic consequences if ZMCP anticipates epidemics, detects them early, and initiates appropriate response activities.

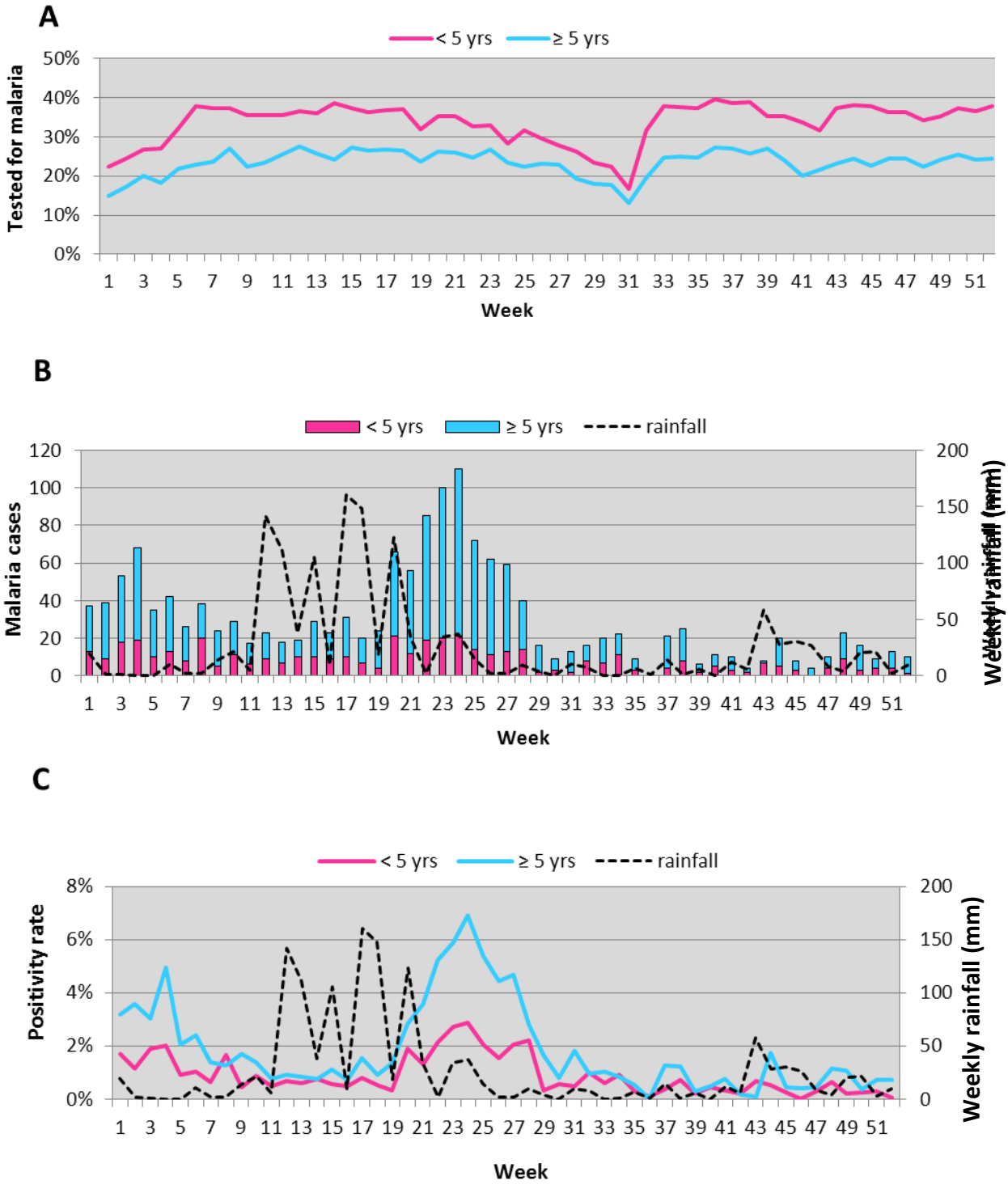
In FY08, PMI provided technical and financial support to ZMCP to develop and implement a Malaria Early Epidemic Detection System (MEEDS) in Unguja and Pemba. The system includes a strategy to collect daily data for three key indicators (total visits, confirmed malaria positive, confirmed malaria negative) among outpatients visiting peripheral health facilities. The system was inaugurated in April 2008 and expanded to 69 facilities by early 2010. Weekly aggregated data, stratified by age, are transmitted from each health facility using a customized cell phone menu. All data are received by a computer server operated by a Tanzanian telecommunications company. The weekly data are processed by the server and packaged into two useful formats: 1) text messages with weekly data summaries sent to cell phones of key ZMCP staff and district medical officers; and 2) longitudinal weekly data made available for viewing over a secure web site.

Progress over Past 12 Months

- ***Zanzibar***

In late 2010 the MEEDS was expanded to 21 additional facilities, bringing the new total to 90 reporting sites, including five private facilities. This represents approximately 60% of all health facilities in Zanzibar. In mid-2009 and again in early 2011, data quality assessments were conducted at MEEDS sites. The system was found to capture over 90% of all malaria cases diagnosed and recorded at the enrolled facilities. Multiple outbreaks have been detected by the system and four separate field investigations initiated. As of mid-2011, all MEEDS data have been summarized and disseminated in the form of a Biannual Report. Four of these reports have now been completed by ZMCP since mid-2009. Quantitative epidemic thresholds are being refined to determine when an epidemic response by ZMCP and district-level officials should be triggered. Finally, additional studies in Zanzibar indicate that transmission foci exist across both islands. Leaving 40% of health facilities out of the MEEDS may be compromising our ability to detect important transmission foci that would benefit from earlier detection and response.

Figures 10A, B, and C: Proportion of out-patients tested for malaria (A), laboratory-confirmed malaria cases (B), and malaria positivity rate (C) according to age group and surveillance week number — 69 Zanzibar MEEDS sites, 2010.



Proposed Activities

▪ ***Mainland***

(K.a) MEEDS Reporting in Lake Zone and Dar es Salaam. Mainland has scaled up a number of vector control interventions in the Lake Zone. These include IRS and the recently concluded U5CC and UCC. With these effective interventions, the Lake Zone is expected to

experience dramatic declines in malaria transmission and a surveillance system for timely detection and reporting of increased malaria transmission is needed. A MEEDS will be established in at least 20 peripheral health facilities each in Kagera, Mwanza, and Mara Regions and at 20 facilities in Dar es Salaam by the end of 2013. PMI will work in collaboration with ongoing efforts of the MOHSW, funded by PEPFAR and other donors, to scale-up an IDSR system in these regions. A successful pilot of this cellphone-based IDSR system was recently completed in two districts. Initially, the reporting frequency will be monthly. *($200,000)*

- ***Zanzibar***

(K.b) Maintain MEEDS and Outbreak Preparedness/Response Throughout Zanzibar. Data from recent field investigations indicate instances of increased malaria transmission in areas surrounding non-MEEDS health facilities. Unless these other health facilities become enrolled in MEEDS, timely detection of malaria outbreaks and response cannot be assured. PMI will support maintenance of MEEDS to all remaining 139 government health facilities and at least 25% (approximately 20) of private health facilities. Epidemic confirmation procedures will be maintained and response systems further strengthened to allow ZMCP to deploy a small cadre of trained staff to investigate all suspected epidemics. Readiness for malaria epidemic investigation and response (e.g., active case detection using RDTs, mass treatment of fever cases in the affected community, focal IRS, and supplies for management of severe malaria) will require adequate stocks and periodic rotation of commodities. *($300,000)*

L. INTEGRATION WITH OTHER GLOBAL HEALTH INITIATIVE PROGRAMS

L.1 MALARIA AND HIV/AIDS INTEGRATION

HIV prevalence in Tanzania was 5.7% at time of the 2007-08 THMIS. Regional prevalence estimates on Mainland range from 1.5% in Manyara to 15.7% in Iringa. HIV prevalence in Zanzibar was 0.6%. The PMI-Tanzania team works in collaboration with PEPFAR-Tanzania on many cross-cutting programmatic issues related to HIV/AIDS and malaria interventions. Early collaborative efforts were made to include ITNs as part of a basic care package provided to Persons Living with HIV/AIDS (PLWHA) who are enrolled in PEPFAR-funded home-based care. However, with the introduction of a national campaign to distribute free LLINs to all children under five years of age and to all remaining sleeping spaces, inclusion of ITNs in home-based care packages has become less important. Once the U5CC and UCC are completed though, special BCC efforts may be undertaken to ensure use of LLINs by PLWHA. Also, a specific LLIN keep-up strategy may be considered for PLWHA.

The PMI Tanzania team is currently working with a PEPFAR partner to implement malaria RDTs in several HIV/AIDS Care and Treatment Centers. Currently, Care and Treatment Center clients in need of a malaria diagnostic test typically report to a separate laboratory at the health facility where the Center is located. Due to long waiting periods, many clients decline to wait for this diagnostic service and consequently fail to receive an ACT for malaria. The goal of the PMI strategy is to increase the proportion of Center clients with fever who receive parasitological confirmation and subsequent treatment for malaria, when appropriate. It is hoped that this approach will provide the National AIDS Control Program with a strategy to improve clinical management of fever cases among PLWHA in Tanzania.

The CDC Resident Advisor also serves on a PEPFAR-Tanzania committee that reviews the initial concepts, final protocols, implementation and progress of PEPFAR-funded public health evaluations.

Progress over Past 12 Months

▪ ***Mainland and Zanzibar***
The PMI and PEPFAR teams, along with the National Bureau of Statistics and other stakeholders have begun discussions around another combined Tanzania HIV/AIDS and Malaria Indicator Survey (THMIS). PMI support for the THMIS is included in the FY 2010 MOP and additional PEPFAR support will likely be included with FY 2010 or FY 2011 funds. The in-country PMI and PEPFAR teams have also successfully leveraged their resources and obtained Embassy approval to develop a combined 2-year surveillance officer position in Zanzibar. This Malaria and HIV/AIDS Surveillance Officer will be assigned to both ZMCP and Zanzibar AIDS Control Program to strengthen surveillance activities and help coordinate disease cluster investigations. Perhaps most importantly, PMI's support for strengthening malaria diagnostics has done so using infrastructure and equipment supplied by PEPFAR. Three malaria diagnostics training have been conducted in the recently completed National Health Laboratory and Quality Assurance Training Center in Dar es Salaam.

Proposed Activities

▪ ***Mainland and Zanzibar***
During 2011-12, the PMI and PEPFAR teams will work together with the MOHSW and National Bureau of Statistics to implement, analyze, and disseminate results from the THMIS. The PMI-PEPFAR funded Malaria and HIV/AIDS Surveillance Officer will assist ZMCP and Zanzibar AIDS Control Program with urgently needed surveillance strengthening efforts over the next two years. During this time, PMI will continue to request MOHSW investment in more personnel for malaria outbreak detection and response, a severely under-staffed and under-resourced section within ZMCP. PMI's implementation partner for diagnostics strengthening will be requested to collaborate with the existing PEPFAR laboratory system strengthening working group. Alignment with this working group, the largest source of funding for laboratory strengthening in Tanzania, will help avoid duplication of efforts and should facilitate the mutual interest in developing and implementing appropriate laboratory QA/QC programs. (*No FY 2011 PMI funds are requested for these activities*).

L.2 MALARIA AND NEGLECTED TROPICAL DISEASES INTEGRATION

Background
Tanzania's programs to control 11 prioritized neglected tropical diseases (NTDs) are spread across multiple units of the MOHSW and even within other Ministries (e.g., Ministry of Education for soil transmitted helminthes). PMI has begun to engage with representatives from these different NTD programs, particularly lymphatic filariasis. The Lymphatic Filariasis Control Program in Tanzania is part of the National Institute of Medical Research and has a long history using community health volunteers in lymphatic filariasis treatment campaigns.

Progress over Past 12 Months
Discussions and planning sessions will continue. PMI-Tanzania staff and USAID staff from

the Africa Bureau's NTD program have met on several occasions over the past year to discuss ways to monitor the impact of malaria vector control activities (IRS and ITNs) on NTD prevalence.

Planned Activities
PMI will work with implementation partners in entomologic monitoring to request screening of mosquito specimens for evidence of filariasis infection. A PCR-based approach is available to detect either ingested microfilariae in the mosquito gut or infective filariform larvae in the thoracic muscles of the vector. This may ultimately serve as a reasonable approach to monitoring the indirect impact PMI activities have on filariasis transmission. No PMI funding is being sought for this activity at the present time.

M. CAPACITY BUILDING AND HEALTH SYSTEMS STRENGTHENING

M.1 CAPACITY BUILDING WITHIN NMCP AND ZMCP

Background

▪ ***Mainland and Zanzibar***
Since 2007, PMI has used USAID-Tanzania Implementation Letters to provide funding directly to NMCP and ZMCP. The funds are generally targeted to field supervision activities, data collection and dissemination projects, review of policy documents and guidelines, national program reviews, and in-country transport. Additional support goes to training of District IMCI/Malaria focal persons and facilitating them to implement and monitor malaria interventions. The two malaria programs submit quarterly reports outlining their successes and challenges and undergo periodic financial and programmatic audits to review the use of these funds.

Progress over Past 12 Months

▪ ***Mainland and Zanzibar***

On Mainland, in 2011, PMI supported NMCP to strengthen their capacity for planning, implementing, and management of malaria activities, including monitoring of vector control and case management activities. PMI provided $75,000 in funding to the Malaria Program Review that will identify and recommend areas for program improvement. PMI also supported support supervision visits by MOHSW staff for both Mainland and Zanzibar. Part of the funding was used to review the diagnostic and treatment guidelines that will continue in 2012. In 2011, PMI will support one person at NMCP for three years to assist with oversight, administration, and management of PMI funds within NMCP. The recruitment of the person is in progress.

In Zanzibar, PMI supported refresher training of the health workers, development and printing of BCC materials in response to the changing malaria epidemiology on the island, and supervision of malaria activities including MEEDS, entomological monitoring, and malaria case management. In partnership with WRAIR, PMI supported ZMCP to conduct a malaria diagnostic baseline assessment and conduct the first training in malaria diagnostic quality assurance and quality control. PMI has supported the ZMCP to hire an accountant to establish systems for internal control and timely accountability of PMI and Global Funds. PMI will also contribute $45,000 for the Malaria Program Review.

Proposed Activities with FY 2012 Funding

▪ ***Mainland***
(M.1.a) Strengthening capacity of NMCP for health service delivery and management. In PMI will continue support to the NMCP to strengthen their capacity for planning, implementing, and management of malaria activities. NMCP will be facilitated to conduct support supervision of malaria activities, and strengthen the central capacity for policy review, and coordination of malaria interventions among the malaria stakeholders. PMI will continue providing technical assistance and funding to NMCP to finalize the review of the 2006 National Diagnostic and Treatment Guidelines. NMCP will be supported to print, disseminate, and implement a nationwide rollout of the new diagnostic and treatment guidelines nationwide. The NMCP will be supported to conduct supervision and monitoring of interventions in the district. PMI will continue to support one person at NMCP to provide program oversight, administration, and management of PMI funds within NMCP for an additional period of two years. *($114,000)*

▪ ***Zanzibar***
(M.1.b) Strengthening capacity of ZMCP for health service delivery and management. PMI will support ZMCP to strengthen their capacity for planning, implementing, and management of malaria activities. Activities will include training ZMCP staff, coordination of malaria activities, development of plans and implementation guidelines, and monitoring of vector control and case management activities. PMI will continue with the support of an accountant to strengthen the internal controls and accountability of PMI and Global Fund resources. *($90,000)*

M.2 FIELD EPIDEMIOLOGY & LABORATORY TRAINING PROGRAM

Background

▪ ***Mainland and Zanzibar***

Two PMI Resident Advisors each spend considerable time at the NMCP offices and make frequent visits to the Zanzibar Malaria Control Program. PMI resident advisors are a short-term strategy to provide technical assistance within NMCP and ZMCP. Longer-term, more comprehensive strengthening of human capacity is a key area where PMI can help ensure sustainability of malaria control programs at the national and regional levels.

The African Field Epidemiology Network, the USAID Global Health Bureau, CDC-Atlanta and CDC-Tanzania (with PEPFAR funding) have all worked with Tanzanian colleagues since February 2007 to develop the Tanzania Field Epidemiology and Laboratory Training Program (FELTP). FELTP is a public health training program to enhance competencies in applied epidemiology, implementation, evaluation, and management of disease interventions, surveillance strengthening, epidemic preparedness and response, and leadership skills. PMI-Tanzania began to support this program in FY08. The program is managed by the MOHSW in collaboration with Muhimbili University of Health and Allied Sciences and National Institute of Medical Research (NIMR).

During the two-year program, FELTP trainees are embedded within the MOHSW where they work daily with the staff of specific disease control programs (e.g., NMCP and ZMCP). The program was formally launched in September 2008. The FELTP office is strategically located within the NMCP/NIMR/CDC/WHO compound. The PMI CDC resident advisor participates in the ongoing steering committee for the Tanzania FELTP and assists with field placement options, thesis project development, and preparation of abstracts and presentations for scientific conferences.

Progress over Past 12 Months

▪ *Mainland and Zanzibar*

The 2008 inaugural class of 11 Tanzania FELTP trainees graduated with their Master's Degrees in December 2010. All but one graduate retuned to positions within the MOHSW. One graduate was assigned to Zanzibar's new Integrated Disease Surveillance and Response (IDSR) unit, which works closely with ZMCP to investigate unexpected increases in malaria cases across Pemba and Unguja. The fourth consecutive cohort will commence training in August 2011. Field placement assignments for FELTP trainees have included numerous rotations with NMCP and ZMCP. Topics have included: evaluation of a Zanzibar malaria epidemic early detection system, collection of recent travel history from malaria patients diagnosed in Zanzibar, and continued participation on the malaria M&E technical working group. All trainees have participated in outbreak investigations in Tanzania, thereby developing their skills for future malaria outbreak investigations. The CDC resident advisor has assisted with mentoring these trainees and participates in classroom teaching (surveillance, study design, outbreak investigation, data analysis). The second cohort of 15 trainees will graduate in December 2011.

Proposed Activities

▪ *Mainland and Zanzibar*

(M.2.a) Continue Support to Tanzania FELTP Program. PMI will continue support to the FELTP program and contribute to the advanced training of Tanzanian epidemiologists. The fourth class will initiate training in August 2011. The trainees will receive assistance from Resident Advisors and participate in malaria field assignments and investigations throughout Mainland and Zanzibar. PMI will continue to track the placement of FELTP graduates into

post-training MOHSW assignments that directly influence malaria control policies and practices. *($175,000)*

M.3 STRENTHENING SYSTEMS FOR DELIVERY AND MANAGEMENT OF QUALITY HEALTH SERVICES

Background

▪ ***Mainland***

In 1994, Tanzania introduced Decentralization by Devolution, designed to shift responsibility for budgeting and management of government services from the central government to Local Government Authorities. Since 2001, District Health Services became part of the Local Government Authorities, separating them from most operational oversight from the MOHSW. In this context, Local Government Authorities face demands to improve the health sector infrastructure together with significant challenges in financing health services, prioritizing and planning, and addressing the severe human resource crisis. Health financing currently falls short of the 15% pledged by the Heads of State in the Abuja Declaration in 2001, and rising costs and a growing population make it difficult to cover critical components of maternal-child health, family planning, malaria, and HIV/AIDS. Manpower is also a critical problem, as only 35% of government-recommended staffing positions are filled. This problem is particularly acute in rural areas.

In a decentralized health system, the central NMCP is responsible for: setting national malaria priorities, policies and guidelines; development of strategic plans and monitoring framework; mobilization of resources for malaria; quality control and assurance; training of health workers; and response to and containment of malaria outbreaks. However, NMCP does not have direct responsibility for planning, implementation, and monitoring of malaria activities in the district, including supervision to the district health facilities. This is the responsibility of the Regional and District Health Management Teams under the Regional and District Local governments.

The GOT and USG priorities for health systems strengthening align with the WHO Health System Building Blocks, including strengthening management and governance, as well as efforts at recruitment and retention at the local government level; and working with the national government to identify ways to expand financing for health services.

USAID manages an innovative program to stimulate programmatic and fiscal accountability, called "*Wajibika*," which is Kiswahili for "be accountable." The program helps to support effective transfer of health service delivery responsibilities to the district level. *Wajibika* works directly with District Health Councils to boost transparent prioritization and planning, execution of programs, and accounting and financial reporting for all health interventions. *Wajibika* similarly works strategically with the MOHSW and the Prime Minister's Office for Regional Administration and Local Government (PMORALG) to advance policies that support unambiguous decentralization, including role clarification and allowing for local decision making.

Also at the district level, USAID has initiated a program to strengthen local authorities to better plan and budget for the required number of health workers, recruit appropriate cadres of health workers, and retain them. Presently, nearly 25% of health workers either do not report to post or leave their posts within the first year, because of poor management and

working conditions, and untenable living conditions (such as a lack of housing, access to water, power, and other basic services).

Financing remains a challenge, with 55% of funding for health services provided through donor support. The MOHSW has initiated work on a Health Financing Strategy that will identify alternative funding bases that are more sustainable and not so donor dependent. Expansion of financing, such as community-based or social insurance programs is critical, complemented by protection of the poor, increased efficiency and strengthened provider incentives, effective risk pooling, strengthened revenue collection, improved aid effectiveness, a robust regulatory environment, and improved transparency and sustainability.

Progress over Past 12 Months

The *Wajibika* activity has been underway since January 2010, and receives funds from a variety of USAID funding streams, including the President's Emergency Plan for AIDS Relief (PEPFAR), Family Planning, Maternal and Child Health, and PMI. *Wajibika* has been underway in all eight districts of Iringa, where focus is being placed on strengthening districts to prioritize, implement, and monitor programs, catalyzing synergy between and among health programs, demonstrating results, ensuring fiscal accountability, and coordinating health resources such as faith-based, private, Global Fund, basket funds, and USG funding. Now the program has been expanded to an additional 19 districts in the Coast, Dodoma, and Morogoro regions. Both the MOHSW and PMORALG have agreed to 1) implement promising practices or systems remedies identified under *Wajibika* to the remainder or the country, and 2) reduce ambiguity that precludes effective health system decentralization. During this past year, *Wajibika* also participated in a performance-based financing pilot in the Coast Region, designed to better align incentives with desired performance and outcomes.

Proposed Activities with FY 2012 Funding

▪ ***Mainland***
(M.3.a) Support the Strengthening of Health Systems. PMI, will partner with other USG programs like Child Survival, PEPFAR, Family Planning to co-fund and support the MOHSW to strengthen the health system in Tanzania. Based on observed needs and gaps, the USG will take a three-pronged approach to health systems strengthening, targeting: 1) local planning and implementation to make the most effective use of the funds for integrated health services; 2) strengthening districts ability to plan for, recruit, retain, and better manage the health workers that are essential for quality service delivery; and 3) expanding the overall health financing base in a sustainable way. PMI, Child Survival, PEPFAR, and Family Planning funds will be used to support the *Wajibika* program to strengthen programmatic and fiscal accountability in districts, linking with other donor funding to strengthen regions to ensure effective decentralization of health services by clarifying roles and responsibilities with MOHSW and the Prime Minister's Office for Regional Administration and Local Government. Focusing on targeted districts, *Wajibika* will strengthen a small set of critical skills at the district council level, using mentors at the workplace. These districts must demonstrate success in their ability to prioritize, budget for and monitor programs, and manage funding in an auditable way. The expertise provided will result in better managed, integrated and sustainable health services. PMI funding will contribute to two specific objectives that will be accomplished in FY 2012.

First, *Wajibika* will continue to build local capacity for program management and accountability through mentoring and supervision in 21 districts in Iringa, Morogoro, Dodoma, and Coast, and will expand to at least one additional region. Since PMORALG will be an active partner in the district interventions, they will be working to effect policy change that will impact how health programs are planned and managed in all districts. In addition, each district will consider some form of performance-based financing in the health sector, and, if appropriate given the upcoming MOHSW health financing strategy, some may launch performance-based approaches and document results. A critical result that is expected is for at least 80% of districts receiving support to obtain clean results through the LGA basket funds audit. In the 2006/2007 audit done by Price Waterhouse Coopers, only two (1.6%) of 121 Local Government Authorities received clean audits. More recent audits by the Government of Tanzania Controller's Auditor General showed improvement with 45% of the Local Governments receiving unqualified audits, but there are concerns about the quality of the audits.

Within the *Wajibika* Program, the MOHSW and PMORALG will participate in the intervention in order to facilitate their appropriate roles under decentralized management. While the GoT has embraced decentralization, considerable ambiguity remains and some national-level over-involvement in program implementation continues, rather than norm and standards setting and program monitoring. *Wajibika* will work closely with government to identify central and regional barriers that undermine district performance in terms of providing seamless, integrated health services such as maternal and child care, malaria prevention and control, family planning, prevention of mother-to-child transmission and HIV/AIDS care and support. As a result of this support, more than 80% of targeted districts will demonstrate the ability to prioritize and plan appropriate costs for needed health services and take responsibility for effective program implementation. *($340,000)*

(M.3.b) Support the Recruitment and Retention of Health Workers. In FY 2012, PMI, through the Tanzanian Human Resource Capacity Project will assist the GOT to address the dramatic shortage of health workers who are so essential for the effective service delivery. Emphasis will be both on strengthening recruitment and retention to address the estimated 25% attrition rate within the first year after training and the inequitable distribution of skilled health workers. Since over 75% of Tanzania is rural, there is great difficulty getting health workers posted to these areas. Through funding from the USG, leveraged with funds from the Global Fund, all districts will be supported in methods to strengthen recruitment, improve performance management and work climate, and identify non-financial incentives to attract health workers(such as access to housing, power, water, communications, etc.). Critical interventions at the district level will ensure effective and geographically balanced recruitment, with priority given to underserved districts. District interventions will also help to optimize the existing work force by improving performance management and productivity. Presently the program works in 40 districts, and will expand to an additional 25 during FY 2012. *($200,000)*

(M.3.c) Support the Financing of Health Sector. PMI will support the GOT to identify strategies to address inadequate funding in the health sector, which is also highly donor dependent and vulnerable to external forces. For 2011/12, the GOT is proposing 8.9% of the budget on healthcare, which falls short of the 15% pledged by the Heads of State in the Abuja Declaration in 2001. In addition, out-of-pocket health care costs are a major contributor to poverty, and they keep people from seeking needed care. In FY 2012, PMI will contribute to the completion of a Health Financing Strategy, helping to identify innovative and sustainable

ways to expand pre-paid financing mechanisms for health coverage. These planning and implementation of financing options will be undertaken with the MOHSW, Ministry of Finance and Economic Affairs, and other development partners (World Bank, GIZ [German Cooperation], Swiss Development Cooperation Office, and WHO). *($200,000)*

N. COMMUNICATION AND COORDINATION WITH OTHER PARTNERS

Background

The overall success of PMI in Tanzania is largely attributable to the complementary design of the PMI malaria operational plan to the national malaria control strategy, and with an emphasis placed on effective PMI participation in the ongoing coordination process led by the Government of Tanzania. PMI-funded malaria activities have been undertaken in close coordination with the Mainland's NMCP and the ZMCP and other national and international partners, including WHO, UNICEF, Global Fund, World Bank, DfID, Embassy of the Kingdom of the Netherlands, Swiss Agency for Development & Cooperation, and the private sector. PMI and the development partners subscribe to one planning and monitoring framework within in the "Health Sector-Wide Approach" (SWAp). A prime example of this type of coordination is the planning and execution of the Under-Five Catch-up Campaign (U5CC; May 2009–May 2010) for ITNs whereby PMI, Global Fund, and the World Bank strategically realigned their roles and resources to support the national implementation plan. Implementation of the Tanzania National Voucher Scheme has exhibited a similar arrangement, with funds provided by Global Fund, PMI, and Embassy of the Kingdom of the Netherlands. Other examples are the procurement of ACTs and roll-out of RDTs on both the Mainland and Zanzibar, where both activities are co-funded with PMI and Global Fund resources funds, with WHO providing policy guidance and training tools. PMI and DfID also co-funded the hang-up campaign following the U5CC.

PMI understands the importance of effective communication and coordination from the global to the national level, and the effort required to maintain the degree of participation that optimizes PMI contributions to malaria control. PMI headquarters in Washington and Atlanta—while representing PMI at global malaria fora—routinely communicate and share information with the PMI/Tanzania team. In Tanzania, the USAID and CDC in-country technical advisors maintain offices at the National Malaria Control Program office to optimize communication. Additionally, the PMI team, which includes the two technical advisors, also meets regularly with NMCP personnel to discuss and prioritize issues and problems. The two PMI technical advisors enjoy open communications with the country coordinators for the WB, WHO, Global Fund, Embassy of the Kingdom of the Netherlands, and DfID.

Local coordination of PMI activities begins at the planning stage and is followed through to the implementation and monitoring phases. Upon its inception, the PMI/Tanzania team adopted a transparent consultative process centered around an annual consultative meeting with all malaria stakeholders both on the Mainland and in Zanzibar. This annual meeting serves as the initiation point for the next fiscal year's Malaria Operational Plan (MOP). To date, PMI has held seven such consultative meetings both on the Mainland and in Zanzibar, with the growth number of malaria stakeholders and increasing NMCP and ZMCP ownership and leadership. These meetings have also attracted the participation of other USG agencies (Department of Defense and Peace Corps) and other development partners.

Efforts toward local coordination of PMI activities is furthered in multiple existing fora, which include the various NMCP technical sub-committees: (1) ACT and medicine access steering committee for case management; (2) NATNETS coordination committee and NATNETs Steering committee for ITN implementation; (3) BCC working group for standardization of IEC materials and BCC activities; (4) vector control working group for IRS and environment management activities; and, (5) monitoring and evaluation working group to harmonize monitoring, evaluation, and studies for malaria control. All NMCP coordination structures are linked to the MOHSW and the SWAp process through the National Malaria Advisory Committee. In addition, the NMCP also holds monthly PMI meetings with all PMI implementing partners to coordinate implementation and share best practices. These monthly meetings also allow implementing partners to provide activity updates and discuss challenges that they face.

Progress during last 12 months

In 2011, PMI/Tanzania expanded its team by filling the jointly-funded (by PMI and PEFPAR) Zanzibar Surveillance Officer position. This position has seats in both ZMCP and the Zanzibar AIDS Control Program (ZACP) offices and facilitates communication with ZMCP and other malaria partners, as well as with ZACP and HIV/AIDS partners. PMI/Tanzania also held consultative meetings to launch the planning of the FY 2012 MOP in May 2011.

In mid-2011, the Embassy of the Kingdom of the Netherlands provided $2.3 million in “gift” funds to USAID largely to provide more infant voucher bed-nets in support of its investment in the Tanzania National Voucher Scheme.

In late 2010, ZMCP began working with PMI to hold sporadic PMI implementing partners meetings, similar to the monthly meetings held with NMCP. The follow-on meeting took place in March 2011 and discussed insecticide resistance and management plan and the IRS keep-down strategy. The ZMCP is a smaller program, making communications easier and less bureaucratic. In 2011, PMI continued to communicate on funding and policy issues with both the ZMCP Manager and the Principal Secretary of the Zanzibar MOH. Communications related to programmatic issues has continued directly with the heads of each ZMCP unit (ITN, laboratory services, IRS, case management, IEC/BCC, etc.).

Proposed Activities with FY 2012 Funding

In the coming year, PMI plans to enjoy its continued close relationship with both NMCP and ZMCP in coordinating and executing activities. As Global Fund support for bed-nets ends after September 2011, PMI will work with NMCP and ZMCP to pursue other avenues of support. PMI will also work with both ZMCP and NMCP to implement the insecticide management plan for IRS.

O. MONITORING & EVALUATION PLAN

Background

Monitoring is used within PMI-Tanzania to verify incremental progress of malaria control program outputs. This allows stakeholders to see whether activities have been implemented as planned, ensure accountability and transparency, detect problems and constraints related to particular interventions, and promote evidence-based decision making. *Evaluation* uses social, epidemiological, and statistical methods to assess and improve the implementation of interventions and determine overall impact on malaria morbidity and mortality. Rigorous monitoring and evaluation (M&E) is a cornerstone of PMI, with the overall goal to measure program effectiveness and demonstrate impact on malaria morbidity and mortality.

PMI has worked closely with colleagues from NMCP, ZMCP, Global Fund, WHO, World Bank, Malaria Control and Evaluation Partnership in Africa, other units of the MOHSW (e.g., HMIS, Integrated Disease Surveillance and Response, and Health Sector Reform) and other sectors of the Government of Tanzania (National Bureau of Statistics, Ministry of Education) to promote coordinated M&E efforts. PMI and other stakeholders have assisted NMCP and ZMCP to finalize written M&E plans extending through 2013.

The M&E framework supported by PMI is based on the goal to achieve a 50% reduction in malaria-related deaths by scaling-up four highly effective interventions to 85% coverage of pregnant women and children under five. Monitoring the progress of PMI-funded activities via input, process, and output indicators is carried out on a quarterly basis via the submission of quarterly reports from all PMI implementation partners. Data from these quarterly reports are entered into a central database maintained by the PMI team and are presented in the PMI Annual Report.

The following data sources and timelines provide the foundation for PMI's evaluation of malaria control outcomes and impact in Tanzania.

- ***Mainland and Zanzibar***

Demographic and Health Surveys (DHS). Every four to five years, the DHS collects nationally representative, population-based data fora wide variety of demographic and health indicators, including core malaria intervention coverage indicators, anemia, and all-cause, under-five child mortality. It is conducted by National Bureau of Statistics with technical assistance from Macro International. The last DHS was conducted in Tanzania during December 2009 – May 2010.

Malaria Indicator Survey (MIS). The MIS survey assesses core household coverage and morbidity indicators used in Tanzania. The first MIS was conducted in Tanzania in 2007-08 (as part of the larger Tanzania HIV/AIDS and Malaria Indicator Survey). Follow-on MIS surveys are planned for 2011 and 2013. Parasitemia and anemia data will be included in these surveys. The 2011 Tanzania MIS will again be combined with an HIV/AIDS Indicator Survey (AIS) and data collection will occur during the same period as the 2007-08 survey. The main benefit to malaria is that with the larger AIS funding and sample size, regional level data are obtained for parasitemia (as with HIV prevalence) without an added cost. The 2011-12 survey is funded by both PMI and PEPFAR.

Other household surveys. The Tanzania National Voucher Scheme (TNVS) nationally representative household survey was conducted annually between 2005 and 2008. The primary objectives of the survey were to measure net coverage (ownership and use), voucher coverage, equity, average voucher top-up payments, and voucher redemption rates. The survey design was a random two-stage cluster sample of 24 districts (21 districts in 2005, 2006, 2007) across Mainland Tanzania. In NMCP's recently finalized M&E plan, the TNVS surveys will not continue after 2008. However, considerably smaller surveys were implemented in eight districts to monitor the implementation progress of the 2009-10 campaign to distribute free LLINs to children under five and the 2011 campaign to distribute free LLINs universally. These surveys were funded by Global Fund.

The table below summarizes these major household surveys conducted in Tanzania since 2004, and the more streamlined plan through 2013. Baseline data for coverage and impact indicators will be based on 2004-05 Tanzania DHS data. Mid-point data will stem from a 2007-08 MIS (including parasitemia, anemia, and mortality data). The 2009-10 DHS will include coverage indicators and impact data (excluding parasitemia) following four full years of PMI implementation.

Table I2: Major Malaria Household Surveys in Tanzania, 2004–2013

Calendar year	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
PMI Year			Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8
DHS	X					X				
MIS				X				X		X
TNVS		X	X	X	X	X	X			
ZAMRUKI		X	X	X	X	X	X	X	X	X
ZMCP mortality					X					

Service Provision Assessment (SPA)

The Service Provision Assessment is an evaluation conducted every 4-5 years in public and private health facilities and collects actionable information on the availability and quality of facility infrastructure, resources, and management system and on services, including child health, maternal health, and infectious diseases such as malaria, tuberculosis, and HIV. SPA findings can be presented both at the national and regional levels. Using PEPFAR funds, Tanzania carried out a SPA in 2006 that included a malaria case management module that provided baseline information for the PMI. There has not been a follow-on SPA in Tanzania since then.

Health Management Information System (HMIS). The HMIS has been used to collect routine data from all health facilities for over a decade. The objectives of the HMIS are to provide data for monitoring key impact indicators over time: 1) standardized laboratory-confirmed malaria cumulative incidence per year, among patients under five years old, patients older than five years, and pregnant women; 2) IPTp uptake among pregnant women; and 3) standardized crude laboratory-confirmed malaria death rate among patients under five years, patients older than five years, and pregnant women. Currently, the majority of malaria cases reported to this system represent clinical diagnoses, usually non-specific fever. However, this situation is slowly evolving as Tanzania continues to scale-up the use of RDTs at health facilities of all levels. HMIS information is reported annually through Council Health Management Teams and the Health Statistics Abstract. Data flows from the health facility level up to the central level, where it is compiled, analyzed, and reported. Currently, a major multi-donor initiative (including PEPFAR) is underway to reform the existing HMIS platform. Multiple donors have committed over $5 million to strengthen the system and an

operational plan has been developed. PMI staff continue to ensure that malaria is well represented in the ongoing implementation plans for HMIS reform,

Entomologic monitoring.

Insecticide resistance monitoring, residual efficacy of insecticides for both LLIN and IRS, mosquito abundance and species distribution data are crucial to vector control interventions. In 2008 the Gates Foundation/WHO, the NMCP and NIMR implemented a malaria vector control project aimed at strengthening national capacity for effective delivery of vector control interventions. As part of the program, insecticide resistance surveillance implemented at 13 national sentinel districts showed variations in reduced susceptibility to the insecticides tested (permethrin, lambda-cyhalothrin, deltamethrin and DDT) among the districts. This indicated the presence of low level resistance in Tanzania and the need for continued monitoring. PMI-supported IRS in the Kagera region began in 2007; however, insecticide resistance monitoring has not been carried out on a regular basis. Building on the Gates/WHO/NIMR project, in 2010 PMI agreed to support NIMR in conducting insecticide resistance monitoring in Muleba District, where several rounds IRS has been carried out. Muleba will be an addition to the 13 WHO sentinel districts for resistance monitoring in Tanzania.

With PMI support, NIMR-Mwanza worked with the Regional/District Health authorities to implement routine entomologic monitoring of IRS activities. Two entomology laboratories at NIMR-Mwanza facility were refurbished to serve as a regional entomology laboratory for the Lake Victoria basin. Following the entomology training courses in March 2010 for the District Vector Control Officers and village collectors, three sentinel districts, Chato, Kagera and Muleba, were selected to represent different geographical setting of Kagera region. Within the three sentinel districts one village with two sub-villages each were selected. Village collectors, carry out monthly mosquito collections, supervised by the District Vector Control Officers and NIMR-Mwanza. All the material collected is sent to NIMR-Mwanza for processing and analysis. With Tanzania's program of universal coverage of LLINs, entomologic activities have expanded in on the mainland to include LLINs. PMI is supporting collaborative efforts of NMIR/ IHI in national monitoring of treated bednets using the WHO cone bioassays. In the IRS Lake Basin area this activity will include the monitoring of residual insecticide activity for IRS. In addition, through a partnership between NIMR, IHI, London School of Hygiene and Tropical Medicine (LSHTM) and the Kilimanjaro Christian Medical College (KCMC), PMI will support an assessment of whether LLINs can sustain the transmission reduction gains made by IRS following the withdrawal of IRS in an area with high ITN coverage. The assessment will be conducted in Muleba District, which has high ITN coverage and has already had five rounds of IRS and has experienced a marked reduction in malaria transmission, using a two-arm cluster-randomized design. In one arm, IRS will be continued and in the other it will be withdrawn. Entomologic evaluations will be carried out as part of this study.

Routine and systematic entomological monitoring continues in Zanzibar at seven sentinel sites, four sites on Unguja and three on Pemba. The sentinel sites provide information on vector species and density, vector behavior, human blood feeding index and malaria infection rates in the various vector species. Data from the 2008 WHO resistance testing indicated a possible emergence of insecticide resistance to lambda-cyhalothrin (96%) in Unguja and to lambda-cyhalothrin 98% and DDT (90%) in Pemba. The ZMCP, with support from IHI, has intensified efforts of insecticide resistance monitoring in both islands. In addition, the ZMCP

conducted wall contact bioassays to monitor the efficacy of the insecticide on sprayed surfaces, using their colony of susceptible *An. gambiae s.s.* In addition, ZMCP/IHI, have implemented an in-depth entomologic assessment of three malaria "hot spots", identified from the MEEDS data.

USAID Monitoring and Evaluation. PMI administrative monitoring consists of managing all the contracts and cooperative agreements and data reporting for the Annual Report, as well as to the USAID Operational Plan. USAID regulations require that all data reported to Washington be verified according to a Program Management Plan, including conducting biannual Data Quality Assessments. Since this requires considerable time from PMI technical staff, the USAID/Tanzania Mission decided to issue a Mission-wide contract to provide these services for all Teams (i.e., Health, Natural Resources, Democracy and Governance, etc.).

Progress over Past 12 Months

▪ Mainland

Strengthening NMCP's strategic information system and supportive supervision. NMCP's strategic information database has become more comprehensive. It now includes longitudinal data from the NMCP household surveys conducted in 2001, 2003, 2005, and 2008 (plus biomarker data for 2005 and 2008) across 21 Districts. While these surveys will *not* continue in the future, the earlier surveys will serve as a source of comparison data for many years ahead. These data are supplemented each year by HMIS data contributed by district malaria focal persons during NMCP's annual malaria/IMCI conference. The HMIS dataset includes information from all 21 regions, 128 districts, and over 5,000 health facilities on the Mainland. NMCP has also incorporated 2008 MIS data into their strategic information system. They regularly use these three data sources to generate informative maps widely used by many stakeholders, including PMI.

Support to strengthen NMCP's field supervision and quality assurance. The PMI-funded activities to improve supervision and quality assurance have allowed NMCP staff to visit health facilities and households to interview staff, view supplies of drugs and vouchers, review registers, observe case management and provide immediate oral and written feedback. In 2009-10, PMI funds allowed NMCP to conduct multiple rounds of systematic support supervision visits. These visits use a check-list of activities to address deficiencies in case management, commodity stocks, and laboratory. NMCP staff summarize these findings and use the information to highlight critical issues during regular meetings with program managers.

Entomologic Monitoring. The national resistance monitoring at all 14 sentinel sites (including the PMI IRS district of Muleba) is currently supported by PMI through its implementing partners at NMRI and WHO. Resistance testing in Muleba District in May 2010, using the WHO assay, indicates no resistance to permethrin, deltamethrin, lambda-cyhalothrin or DDT. Resistance testing for 2011 is on-going. In an effort to improve national entomologic monitoring of malaria transmission intensity, PMI is also supporting IHI in implementation of surveillance in 9 national sites using the Ifakara tent traps. Some of sites are located in the same national sentinel sites for resistance testing and will provide additional vector species data. Four of these sites have been are currently functioning and the rest of the sites are expected to be running by June 2011.

In the Lake Zone, the PMI-supported refurbishment of two entomology laboratories at NIMR-Mwanza was completed and fully equipped to conduct morphologic as well as molecular Anopheles species identification (PCR) and ELISA capability to test vector infection rates. The refurbishment of the insectary was also completed and has susceptible colony of *An. gambiae* s.s to support the WHO cone bioassays for testing LLIN residual insecticide and treated wall surfaces for IRS. The three sentinel sites for routine entomologic monitoring in Chato, Karagwe and Muleba districts are now operational. In 2010, IRS was scaled up in the Lake Zone to include Mwanza and Mara regions. Sentinel sites have been selected in both these districts and are in the process of implementing entomologic surveillance to these two districts.

A combination of light traps, pyrethrum spray catches (PSC) and pit traps are used in the routine entomologic monitoring. The mosquitoes are morphologically identified at the district level and the samples are sent to NIMR-Mwanza monthly for further PCR and ELISA testing. Of a total of 406 Anopheles mosquitoes collected from Sept 2010 – Jan 2011, the highest numbers were collected in Karagwe (53.2%), followed by Chato (39.7%) and the lowest was in Muleba district (7.1%). Of the 220 mosquitoes that have been processed, 87.4% were morphologically identified as *An. funestus*, 10.7% as *An. gambiae* s.l and 1.9% as *An. pharensis*. PCR species identification of the *An. gambiae* s.l indicated that 85.2% were *An. arabiensis* and 14.8% were *An. gambiae s.s*.

From June 2010 – January 2011, a total of 6 rounds of WHO cone bioassays were conducted at each of the sentinel sites. The cone bioassays were tested on different wall surfaces (cement, mud, whitewash and wood in Chato and Muleba; cement, mud and whitewash in Karagwe). In all three districts the residual effect of the lamba-cyhalothrin CS exceeded the WHO standards. In Chato the average residual effect was 95.8% mortality at 24hrs for all 4 surfaces at 250 days (8.3 months) post-spray. In Muleba and Karagwe, the residual effect was 93.7% and 94.2% at 270 days (9 months) post-spray.

Tanzania Demographic and Health Survey. The 2009-10 DHS field work was completed in May 2010 and a preliminary report was issued in August 2010. National-level dissemination of the final DHS report occurred in May 2011 and Zonal dissemination will continue through September 2011. The final report has provided critical data for NMCP/PMI's effort to evaluate the impact of malaria control efforts on reducing all-cause mortality among children under five years of age over the past decade.

▪ Zanzibar

*Strengthening malaria strategic information system and support supervision.*The malaria database maintained by ZMCP now includes data from three household surveys (2003, 2005, 2007) and one mortality survey (2008), published in the Roll Back Malaria Indicator Survey Main Report.

Entomologic monitoring. Routine entomologic monitoring is continuing at 4 sentinel sites in Unguja and 3 in Pemba. Mosquito collections from pit traps, pyrethrum spray catches, light traps and man landing collections are morphologically indentified at the Pemba and Unguja entomology laboratory. The material is then tested for malaria infection using the ELISA method at the Unguja entomology laboratory. The PCR species identification and blood meal analysis is currently being carried out at IHI since there is no PCR capability in Zanzibar. There has been a shift in vector species composition and vector dynamics on both islands since 2005. *An. gambiae* s.s was the most prevalent malaria vector in Pemba but that *An.*

*arabiensis*was the most common in Unguja. Data from 2008 onwards show that *An. arabiensis*is now dominant on both islands. In 2010 the Unguja collections were 63% *An. arabiensis*, 1.5% *An. gambiae s.s* and 0.6% *An. merus*. Similarly in Pemba 66.3% were *An. arabiensis*, 0.9% *An. gambiae s.s* and 0.9% *An. merus.* However 32.1% and 34.8% of the material from Unjuga and Pemba respectively could not be identified by PCR indicating the possibility of the presence of another mosquito, such as *An. quadriannulatus* and is this currently being tested. 2010 resistance testing using the WHO assay indicates that in Unguja there continues to be no resistance to bendiocarb, deltamethrin and permethrin with mortality of 100-99%. There was 95% mortality to lambda-cyhalothrin, suggesting an emerging resistance and further testing will be necessary. In Pemba however, mosquitoes tested were resistant to deltamethrin (80%), permethrin (50%) and lambda-cyhalothrin (49%). The mosquitoes remain susceptible to bendiocarb. This is a change to the situation found in Pemba in 2008 when no resistance was found to deltamethrin or lambda-cyhalothrin (permethrin was not tested). Comparative WHO cone bioassays were carried out in Pemba and Unjuga, 86 and 90 days post-IRS respectively, using a susceptible strain of *An. arabiensis* and field collected mosquitoes. There were differences in the efficacy of the lambda-cyhalothrin (CS) in efficacy between the two islands. In Pemba, there was 77- 53.3% mortality in susceptible mosquitoes depending on the wall surfaces (mud, water paint, cement, lime washed and oil painted) and 46.6 - 23% in field collected mosquitoes. Stone treated surfaces showed the lowest mortality, 46.6% in susceptible mosquitoes and 16% in field mosquitoes. In Unguja, there was 90-40% mortality in susceptible mosquitoes and 80-33% in field collected mosquitoes for mud, water paint, cement, lime washed and oil painted surfaces. No stone surfaces were tested in Unguja. From the WHO resistance data, this suggests a decreased efficacy due to resistance especially in Pemba.

Persistent malaria “hot-spots” have been identified from the MEEDs data. An entomologic investigation into three hot-spots, Bumbwini and Cheju/Jendele in Unguja and Shumbavyamboni in Pemba was carried out. Three houses were selected at each of three hot-spots and human landing collections were carried out from 6 pm – 7 am, for 4 nights per month, both indoors and outdoors. Biting behaviour (Sept 2010 to Jan 2011) shows that the majority of the Anopheles mosquitoes bite outdoors. Peak biting hours were from 9pm-midnight and 50% of the bites occurred before 11pm. The large numbers of *An. coustani* collected both indoors and outdoors was unexpected. These do not appear to reflect the species makeup of collections at other sites, or from larval habitats in Pemba. *An. coustani* is thought of as a very minor vector. This points to the complex mosquito species dynamics on Zanzibar and the need continued surveillance, as this may impact the effectiveness of IRS and the current LLIN universal coverage strategy.

- ***USAID Monitoring and Evaluation***

USAID/Tanzania awarded a Mission-wide contract which assists in developing required Program Monitoring Plans, Data Quality Assessments, collecting and compiling data for quarterly and annual reports, develops scopes of work for evaluations, and other monitoring functions required by USAID regulations. The contractor has established a web-based reporting system that is being used by USAID and PMI implementing partners to report data and upload quarterly reports. The Contractor has provided training to all implementing partners in USG reporting for results. The Contractor also conducted data quality audits on all indicators that the Mission reports to AID/W and PMI.

Proposed Activities

▪ *Monitoring and Evaluation Support*

(O.1.a) Strengthening NMCP's strategic information system. The NMCP receives reports and data from a wide array of their own M&E activities, plus ongoing activities in other parts of the MOHSW, sentinel surveillance sites, and from all PMI-funded partners. These diverse, complex data are often overlooked and not sufficiently used to guide programmatic decision making. PMI support will strengthen the data management unit within NMCP to collect, store, analyse, display, and disseminate information for decision making. These upgrades will assist NMCP and other stakeholders, including PMI, to improve overall planning based on trends in malaria cases and delivery of interventions. Support will also enable NMCP staff to complete supervision visits every other month, including per diem and vehicle expenses. Districts and health facilities for supervision will be prioritized based on agreed criteria and will include monitoring of malaria prevention activities in the communities like IRS and TNVS. Supervisors will use checklists to record their findings, and incorporate data into quarterly HMIS reports and presentations for NMCP and partners. *($100,000)*

(O.1.b) Strengthening ZMCP Strategic Information System. Similar to the Mainland, the challenges of data management, analysis, and interpretation continue to increase as more stakeholders generate data and reports. PMI funds will support ZMCP to strengthen their capacity for data analysis, management, and use. PMI will also support staff to complete supervision visits every other month, including per diem and vehicle expenses to help ensure district staff are regularly briefed on the evolving progress of malaria control and changing epidemiology of malaria in Zanzibar. (*$50,000)*

(O.1.c) Support to WHO/Tanzania Office. FY2012 will be the third and final year of PMI funding for WHO/Tanzania. In FY2012, PMI will provide $137,000 for salary support for two WHO/Tanzania local malaria technical staff (Malaria National Program Officer and Malaria Entomology Officer) and another $50,000 for field activities for the two officers . This will ensure WHO continues to provide technical assistance to NMCP, ZMCP, and other PMI-funded monitoring and evaluation activities. The WHO malaria officer will provide valuable technical expertise and policy guidance, particularly in the areas of case management and therapeutic drug efficacy and entomological monitoring. The entomology officer will play a leadership role in maintaining the network of 14 sites for monitoring insecticide resistance. *($187,000)*

▪ *Entomologic Monitoring*

(O.2.a) Mainland. With scale-up to universal LLIN coverage as well as IRS in the Lake Victoria Basin, there will be continued strengthening of activities in the three established sentinel districts as well as expansion of entomologic monitoring sites in the two new IRS areas of Mwanza and Mara. The entomologic monitoring will be lead primarily by NIMR-Mwanza. Insecticide resistance monitoring at the national sentinel sites will be carried out by NIMR–Amani and in the Lake Victoria Basin area, this activity will be assisted by personnel from NIMR-Mwanza. Resistance monitoring will be expanded to include several new sentinel districts in the Lake Victoria Basin. RTI/PMI will provide logistical/supervisory support, with CDC providing technical assistance. NIMR-Mwanza will serve as the regional laboratory for mosquito identification, sporozoite rate testing, and insecticide resistance monitoring for the IRS and LLIN activities in Kagera, Mwanza and Mara Region. The insectary will provide the material for WHO bioassays to monitor both IRS and LLINs *($300,000)*

(O.2.b) insecticide Resistance and Bioassays. In FY2012, PMI will continue to support vector surveillance in 14 national sites using tent traps as well as wall and net bioassays to monitor the residual effect of IRS and LLINs. This will provide a database pm? insecticide resistance and efficacy for the NMCP and other partners. *($100,000)*

(O.2.c) Zanzibar. PMI will continue support to ZMCP in maintaining the entomological monitoring and to increase resistance monitoring in view emerging pyrethroid resistance in Zanzibar and the change in insecticide class for IRS activities. This will be critical to assess the impact change in insecticide class, the shift from blanket to targeted/focal IRS activities and scale-up to universal LLIN coverage. The program will continue to review and re-focus the current entomology surveillance strategies in view of the decrease in malaria cases. Investigation into malaria "hot-spot" areas will continue as the understanding of the vector dynamics of these "hot-spots" is crucial to Zanzibar's strategy for malaria elimination. PMI will continue to assist the ZMCP in developing entomological guidelines for the malaria early warning system.
($150,000)

(O.2.d) Procurement of Entomological Reagents. CDC will continue to support procurement of entomology supplies and laboratory reagents for the insectary, testing mosquito material collected in entomological surveillance for malaria parasites, for blood meal analysis, and for insecticide resistance testing. These reagents have been difficult to obtain locally *($10,000)*

▪*Nationwide Surveys*

(O.3.a) Health Facility Survey. In FY2012, PMI will co-fund a nationwide Service Provision Assessment (SPA) in a representative sample of public and private health facilities. The SPA will provide information at regional level on availability, readiness, and quality of malaria and other health and HIV/AIDS services. It will be co-funded with MCH, Reproductive Health, and HIV/AIDS funds. The total cost is estimated at $2.0 million out of which PMI/Tanzania is proposing $450,000 to come from FY2012 budget. This is a follow on to the 2006 SPA that provided baseline information on malaria case management for PMI. This SPA will enable PMI and other malaria funders to assess whether the investments made in training of health workers, strengthening the logistic management system, provision of malaria commodities, supportive supervision, and improvement of malaria diagnostics has resulted in improved malaria case management and provision of IPTp. The sample size and the methodology for the SPA will be worked out jointly with ORC Macro, PMI/Tanzania, PMI M&E Team, USAID Health and Population Office, PEPFAR, and the Ministry of Health and Social Welfare on Mainland and Zanzibar. SPA findings will be disseminated at national, regional, and district health management level. Policy briefs will be produced to inform the development of the next malaria strategies for both NMCP and ZMCP.*($450,000)*

▪*USAID/Tanzania M&E*

(O.4.a) USAID Mission-wide M&E Contract. USAID/Tanzania awarded a Mission-wide contract which assists in developing required program monitoring reports and data quality assessments, collecting and compiling data for quarterly and annual reports, developing scopes of work for evaluations, and other monitoring functions required by USAID regulations. The contractor has established a web-based reporting system that is being used by USAID and PMI implementing partners to report data and upload quarterly reports. The contractor has also provided training to all implementing partners in USG reporting for

results and is conducting data quality audits on all indicators reported to USAID/Washington and PMI. *($200,000)*

P. MANAGEMENT & ADMINISTRATION

Background

Two expatriate health professionals (Resident Advisors) oversee PMI in Tanzania: one representing CDC and the other USAID. Two full-time Foreign Service National (FSN) Program Management Specialists were hired to support the PMI team, one located in USAID and one in CDC. In addition, PMI is providing partial support to two full-time USAID FSNs: a Monitoring & Evaluation (M&E) Officer and Acquisition & Assistance (A&A) Specialist. The M&E Officer manages the PMI M&E agenda, PMI program monitoring plan, web-based reporting, data quality audits, and assists implementing partners to develop monitoring and evaluation plans. The A&A Specialist attends to the procurement actions for PMI and ensures compliance to USAID contractual and financial regulations. The USAID Deputy Health & Population Officer—a U.S. Direct Hire—is part of the PMI team, but is paid by USAID Operating Expenses. A U.S. Personal Services Contractor (USPSC) assists the PMI team (part time) as Agreement Officer's Technical Representative or Activity Manager and is partially supported by PMI funding.

All PMI staff members are part of a single interagency team led by the USAID/Tanzania 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 (initial hires or replacements) are evaluated and interviewed jointly by USAID and CDC. Both agencies are involved in hiring decisions, with the final decision made by the individual agency.

The PMI/Tanzania team oversees all technical and administrative aspects of the PMI portfolio, including finalizing project design details, implementing malaria prevention and treatment activities, monitoring and evaluation of outcomes and impact, and reporting on results. Both Resident Advisors report to the USAID/Tanzania Mission Director. The CDC Resident Advisor is supervised by CDC both technically and administratively, while the USAID Resident Advisor is supervised by the USAID Deputy Health & Population Officer. All technical activities are undertaken in close coordination with the NMCP and ZMCP of their respective MOH and other national and international partners, including WHO, UNICEF, the Global Fund, World Bank, DfID, the Embassy of the Kingdom of the Netherlands, and the private sector.

Locally-hired staff to support PMI activities—either in ministries or are USAID/Tanzania—are approved by the USAID/Tanzania Mission Director. Because of the need to adhere to specific country policies and U.S. Government accounting regulations, any transfer of PMI funds directly to ministries or other host government entities require approval by the USAID/Tanzania Mission Director and the USAID Controller.

Proposed Activities with FY 2012 Funding

With FY 2012 funds, PMI will support salaries and travel costs of the two PMI Resident Advisors, the two FSN PMI Project Management Specialists, the M&E Officer, the A&A Specialist, and half the salary of a USPSC managing some of the PMI portfolio. Total management and administrative costs, excluding the salary and benefits of the two PMI advisors for CDC and USAID, are less than 2% of the total budget.

Salary and benefits of the USAID PMI Technical Advisor	$400,000
Salary and benefits of FSN Program Management Specialist	$120,000
Salary and benefits of FSN M&E Officer	$100,000
Salary and benefits of FSN A&A Specialist	$100,000
	$720,000

In addition to the USAID PMI Resident Advisor and support staff, $545,800 is retained by USAID to fund managerial and administrative costs:

50% Salary and Benefits of USPSC	$250,000
IT Cost Recovery (estimate)	$30,000
Wider Mission Staff Allocation Tax	$125,000
PMI Program Development & Support	$140,800
	$545,800

$770,000 is provided to the CDC Interagency Agreement (CDC IAA) for the following technical support, TDY and administrative purposes:

Salary and benefits of the CDC PMI Resident Advisor	$550,000
FSN program specialist	$110,000
CDC/Atlanta technical/admin support via TDY	$84,700
	$744,700

CDC/Atlanta technical assistance comprises:

- Two technical visits for entomological monitoring to Zanzibar and Mainland
- One technical visit for malaria diagnostics—RDT Quality Assurance and Quality Control Program
- One technical visit for malaria case management
- One technical visit for M&E support

ANNEX A

TABLE 1 - BUDGET BREAKDOWN BY PARTNER

President's Malaria Initiative - Mainland Tanzania and Zanzibar
Year 7 (FY 2012) Budget Breakdown by Implementing Partner

Partner Organization	Geographic Area	Activity	Budget ($)
Abt Associates	Mainland	M.3.b Health Systems Financing	200,000
CDC	National	M.2.a Capacity Building FELTP	175,000
	National	O.2.c CDC Reagents Procurement	10,000
	National	P.5 CDC Resident Advisor	550,000
	National	P.6 CDC Program Specialist	110,000
	National	P.7 CDC Admin & Technical Support	84,700
GEMS	National	I.2.c Environmental Monitoring	35,000
Ifakara Health	Mainland	J.2.e Therapeutic Drug Efficacy Monitoring	200,000
Institute	Mainland	O.2.b Insecticide Resistance Monitoring and Bioassays	100,000
ICF MACRO	National	O.3.a Tanzania "SPA"	450,000
IntraHealth	Mainland	M.3.a Recruitment and retention of health workers	200,000
JHPIEGO	Mainland	I.3.a Malaria in Pregnancy	750,000
MAISHA	Zanzibar	I.3.b Malaria in Pregnancy	100,000
JHU COMMIT	Mainland	I.4.a Behavior Change Communication	2,300,000
NMCP	Mainland	M.1.a Capacity Building	114,000
	Mainland	O.1.a Strategic Information System	100,000
Peace Corps	National	P.6.a Support to Peace Corps Volunteers	25,000
PSI	Mainland	J.2.d Follow-up support to ADDOs	500,000
RTI	Mainland	I.2.a Indoor Residual Spraying	12,190,300
	Zanzibar	I.2.b Indoor Residual Spraying	793,200
	Zanzibar	K.b MEEDS	100,000
	Mainland	O.2.a Entomologic Monitoring	300,000
TBD	Mainland	I.1.a ITN Keep-up Program	13,000,000
	Zanzibar	I.1.b Universal Coverage Campaign	2,000,000
	Mainland	K.a MEEDS	200,000
The Mitchell Group	National	O.5.a Monitoring and Evaluation	200,000
URC	Mainland	J.2.a Service Delivery Strengthening	1,750,000
USAID	National	P.1 USAID Resident Advisor	400,000
	National	P.2 USAID Program Specialist FSN	120,000
	National	P.3 USAID Monitoring & Evaluation Officer FSN	100,000
	National	P.4 USAID Acquisition & Assistance Specialist FSN	100,000
	National	P.5 USAID Admin & Technical Support	545,800
USAID	Zanzibar	J.1.e RDT Procurement	140,000
DELIVER	Mainland	J.1.c RDT Procurement	190,000
	Mainland	J.2.b ACT Procurement	3,000,000

	Mainland	J.2.c ACT Procurement	200,000
	Mainland	J.2.d Malaria Commodity Logistics	750,000
	Zanzibar	J.2.h Malaria Commodity Logistics	150,000
WAJIBIKA	Mainland	M.3.c Support the Health Systems Strengthening	340,000
WHO	National	O.1.c Support to WHO	187,000
WRAIR	Mainland	J.1.a RDT and Microscopy QA/QC	400,000
	Mainland	J.1.b Strengthening Malaria Diagnostics	500,000
	Zanzibar	J.1.c RDT and Microscopy QA/QC	150,000
ZMCP	Zanzibar	I.4.b Behavior Change Communication	200,000
	Zanzibar	K.b MEEDS	200,000
	Zanzibar	M.1.b Capacity Building for ZMCP	90,000
	Zanzibar	O.1.b Strategic Information System	50,000
	Zanzibar	O.2.b Entomological Monitoring	150,000
Zonal Training Centres	Mainland	J.2.f Health Worker Training	500,000
GRAND TOTAL			**45,000,000**

Mainland	37,784,300	84%
Zanzibar	4,123,200	9%
National	3,092,500	7%
Total	45,000,000	100%

Table 2 President's Malaria Initiative - *Tanzania Mainland and Zanzibar* Planned Obligations for FY 2012 ($45,000,000)				
Proposed Activity	**Mechanism**	**Budget**	**Geographic Area**	**Brief Description of Activity**
I. PREVENTIVE ACTIVITIES				
I.1 Insecticide Treated Nets				
a. Keep-up Program – Tanzania National Voucher Scheme (TNVS)	*TBD*	13,000,000	Mainland	Support to TNVS (or another approach) for vouchers covering the procurement and distribution of LLINs for infants (1.1 m) and pregnant women (521,000)
b. Universal Coverage Campaign	*TBD*	2,000,000	Zanzibar	Procurement of 220,000 LLINs for the Universal Coverage Campaign
I.2 Indoor Residual Spraying				
a. Mainland IRS	*RTI*	12,190,300	Mainland (Kagera, Mwanza, Mara Regions)	Continued spraying in Lake Zone (approx. 780,000 structures)
b. Zanzibar IRS	*RTI*	793,200	Zanzibar	Targeted spraying in persistent high malaria transmission areas
c. Environmental monitoring	GEMS	35,000	Mainland and Zanzibar	Monitoring of compliance with USG and national environmental regulations
I.3 Control of Malaria in Pregnancy				
a. IPTp/Focused Antenatal Care implementation	*JHPIEGO*	750,000	Mainland	Improve quality of FANC services
b. IPTp/FANC implementation	*JHPIEGO*	100,000	Zanzibar	Improve quality of FANC services
I.4 Behavior Change & Communication				
a. BCC across all intervention areas	*JHU*	2,300,000	Mainland	BCC to increase demand for and correct use of ITNs, IRS, ACTs, and IPTp
b. BCC across all intervention areas by Peace Corps Volunteers	*Peace Corps*	25,000	Mainland	BCC conducted by Peace Corps Volunteers
c. BCC across all intervention areas	*ZMCP*	200,000	Zanzibar	BCC to increase demand for and

				correct use of ITNs, IRS, ACTs, and IPTp
SUBTOTAL: Preventive Activities		***$31,393,500***		
J. CASE MANAGEMENT ACTIVITIES				
J.1 Diagnostics				
a. Microscopy and RDT QA/QC	*Walter Reed Army Institute of Research*	400,000	Mainland	Development and implementation of QA system for malaria microscopy and RDTs
b. Strengthening malaria diagnostics	*Walter Reed Army Institute of Research*	500,000	Mainland	Implementation of monitoring and supervision system for microscopy and RDTs
c. RDT procurement	*JSI*	190,000	Kigoma Region	Procure RDTs for UNHCR refugee camps in Kasulu
d. Microscopy and RDT QA/QC	*Walter Reed Army Institute of Research*	150,000	Zanzibar	Development and implementation of QA system for malaria microscopy and RDTs
e. RDT procurement	*JSI*	140,000	Zanzibar	Procure 300,000 RDTs
J.2 Case Management				
a. Management of febrile illness	*University Research Corporation (Tiba Homa Project)*	1,750,000	Mainland (Lake Zone)	Contribution to integrated service delivery project at health facilities and community level
b. Artemether-lumefantrine procurement for emergencies	*JSI*	3,000,000	Mainland	Support emergency procurement of AL to prevent stock outs in MOHSW facilities
c. ACT procurement for refugee camps	*JSI*	200,000	Kigoma Region	Procure AL for UNHCR refugee camps
d. Strengthen supply chain management system; end use verification surveys	*JSI*	750,000	Mainland	Support forecasting, and procurement planning for PMI and Global Fund AL and RDTs; implement quarterly end use verification surveys
e. Support to Accredited Drug Dispensing Outlets	*Population Services International*	500,000	Mainland (Ruvuma, Morogoro, Lindi, Mtwara Regions)	Technical assistance to Tanzania FDA for support to ADDOs in regions where USAID has supported them in

				past
f. Training and follow-up for malaria case management	*Zonal Training Centres*	500,000	Mainland	Implement improved training/supervision for malaria case management
g. Therapeutic drug efficacy monitoring	*IHI*	200,000	Mainland/ Zanzibar	Monitoring efficacy of AL and AS-AQ at selected sites
h. Strengthen supply chain management system; end use verification surveys	*JSI*	150,000	Zanzibar	Support forecasting, and procurement planning for PMI and Global Fund AL and RDTs; implement quarterly end use verification surveys
SUBTOTAL: Case Management		***$8,430,000***		
K. EPIDEMIC SURVEILLANCE AND RESPONSE				
a. Malaria Early Epidemic Detection System (MEEDS) reporting in Mainland	*TBD*	200,000	Mainland (Lake Zone/ Dar es Salaam)	Implement malaria surveillance and reporting system
b. MEEDS reporting in Zanzibar	*RTI*	100,000	Zanzibar	Continued support and expansion of epidemic detection and reporting system to additional health facilities
	ZMCP	200,000		
SUBTOTAL: Epidemic Surveillance		***$500,000***		
M. CAPACITY BUILDING AND HEALTH SYSTEMS STRENGTHENING				
M.1 Capacity Building within NMCP and ZMCP				
a. Capacity building for NMCP	*NMCP*	114,000	Mainland	Support to training, supervision, and coordination of NMCP activities
b. Capacity building for ZMCP	*ZMCP*	90,000	Zanzibar	Support to training, supervision, and coordination of ZMCP activities
M.2 Field Epidemiology & Laboratory Training Program (FELTP)				
a. Support to FELTP	*CDC*	175,000	Mainland/ Zanzibar	Support to 2-year in-country field epidemiology training program

M.3 Strengthening Systems for Delivery and Management of Quality Health Services				
a. Support the strengthening of health systems	Abt Associates (*Wajibika)*	340,000	Mainland (21 districts)	Build capacity for program management and accountability at district level
b. Recruitment and retention of health workers	*IntraHealth*	200,000	Mainland	PMI contribution to strengthening recruitment/retention of MOHSW workers
c. Health systems financing	*Abt Associates*	200,000	Mainland	PMI contribution to completion of Health Financing Strategy
SUBTOTAL: Capacity Building		***$1,119,000***		
O. MONITORING AND EVALUATION				
O.1 M&E Support				
a. Strategic information system	*NMCP*	100,000	Mainland	Strengthen NMCP capacity to manage malaria database; supervisory M&E visits
b. Strategic Information System	*ZMCP*	50,000	Zanzibar	Strengthen ZMCP capacity to manage malaria database; supervisory M&E visits
c. Technical support through WHO/Tanzania office	*WHO*	187,000	Mainland/ Zanzibar	Salary and field activities support to WHO malaria/M&E officer and entomology officer
O.2 Entomological Monitoring				
a. Entomological monitoring	*RTI*	300,000	Mainland	
b. Entomological monitoring	*IHI*	100,000	Mainland	Routine monitoring of entomologic variables at selected sites
c. Entomological monitoring	*ZMCP*	150,000	Zanzibar	Routine monitoring of entomologic variables at selected sites
d. Procurement of entomology reagents	*CDC*	10,000	Mainland/ Zanzibar	
O.3 Nationwide Surveys				
a. Tanzania health facility survey	*ICF MACRO*	450,000	Mainland & Zanzibar	Nationwide health facility survey (Service Provision Assessment)
O.4 USAID/Tanzania M&E				
a. Mission-wide M&E contract	*TMEMS*	200,000	Mainland	PMI contribution to

				USAID program M&E and reporting
SUBTOTAL: MONITORING AND EVALUATION		***$1,547,000***		
P. MANAGEMENT AND ADMINISTRATION				
1. USAID Technical Advisor	*USAID*	400,000	Both	Administration
2. USAID Program Specialist FSN	*USAID*	120,000	Both	Administration
3. USAID M & E Officer FSN	*USAID*	100,000	Both	Administration
4. USAID Acquisition and Assistance Specialist FSN	*USAID*	100,000	Both	Administration
5. USAID Administration & Technical Support	*USAID*	545,800	Both	Administration
6. CDC Technical Advisor	*CDC*	550,000	Both	Administration
7. CDC Program Specialist FSN	*CDC*	110,000	Both	Administration
8. CDC Admin & Technical and TDY Support	*CDC*	84,700	Both	Administration
SUBTOTAL: Management and Administration		2,010,500		
GRAND TOTAL		*$45,000,000*		