This Malaria Operational Plan has been approved by the U.S. Global Malaria Coordinator and reflects collaborative discussions with the national malaria control programs and partners in country. The final funding available to support the plan outlined here is pending final FY 2013 appropriation. If any further changes are made to this plan it will be reflected in a revised posting.

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PRESIDENT'S MALARIA INITIATIVE

PRESIDENT'S MALARIA INITIATIVE

Tanzania

Malaria Operational Plan FY 2013

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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
DFID	Department for International Development (U.K.)
DHMT	District Health Management Team
DHS	Demographic & Health Survey
ELISA	Enzyme-linked immunosorbent assay
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
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
IMCI	Integrated Management of Childhood Illness
IMR	Infant Mortality Rate
IPTp	Intermittent preventive treatment in pregnancy
IRS	Indoor residual spraying
ITN	Insecticide-treated bednet
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
PLWHA	People Living with HIV/AIDS
PMI	President's Malaria Initiative

PMORALG	Prime Minister's Office for Regional Administration and Local Government
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
TDY	Temporary duty
TFDA	Tanzania Food & Drug Authority
THMIS	Tanzania HIV & Malaria Indicator Survey
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
WRAIR	Walter Reed Army Institute of Research
ZTC	Zonal Training Center (renamed Zonal Resource Center)
ZMCP	Zanzibar Malaria Control Program

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

In 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 PMI. Malaria is a major public health problem in Tanzania. Although significant progress in malaria control has been made in recent years with the scale up of malaria prevention and treatment interventions, nearly all 42 million residents on the Mainland and all 1.3 million persons in Zanzibar are still at risk of infection.

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 the 2007-08 Malaria Indicator Survey.

Within the United Republic of Tanzania, the National Malaria Control Program (NMCP) on the Mainland and the Zanzibar Malaria Control Program (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 Rounds 7, 8, and 9). These grants have provided most of the funding for the universal ITN campaign and for scale up of artemisinin-based combination therapies (ACTs), and a nationwide pilot of the distribution of subsidized ACTs in the private sector, which is finishing at the end of 2012.

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

This PMI FY 2013 Malaria Operational Plan was developed with the NMCP on the Mainland and the ZMCP and in collaboration with other malaria control partners. The proposed activities have been reviewed and approved by both malaria control programs. The proposed FY 2013 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 the Mainland's universal ITN coverage strategy. By early October 2011, 26.4 million free long-lasting ITNS (LLINs) had been distributed on the Mainland via the under-five campaign and a universal coverage campaign (UCC). One month after the UCC, volunteers visited every house to ensure that the nets were properly hung, and, if not, to offer assistance to hang them. PMI support for the UCC included logistics management and training of the community volunteers who distributed the LLINs within their villages and conducted follow-up visits to ensure that the nets were appropriately hung and used. In Zanzibar, between January and March 2012 a universal ITN coverage campaign distributed more than 660,000 free LLINs throughout the islands.

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. Since the voucher system provides only about one-half of the 1.3 million ITNs needed each year to cover all newborns, an alternative distribution approach through school-based campaigns is being piloted as another approach to maintain high net coverage rates.

With FY 2013 funding, PMI will support the procurement and distribution of more than 900,000 LLINs through the Tanzania National Voucher Scheme as a means of sustaining universal coverage. PMI will also support about one-half ($8.1 million) of the costs of the school-based ITN keep-up program if the pilot for this program proves successful. On Zanzibar, PMI will procure 150,000 LLINs for free distribution through antenatal clinics to sustain high coverage rates. 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 late 2011 and early 2012, PMI supported spraying of 1,167,998 structures (with 95% coverage) in all 18 districts of Kagera, Mwanza, and Mara Regions of Lake Zone on the Mainland, protecting about 6.5 million people. Because of increasing insecticide resistance, a change to carbamate insecticides was made for Muleba and Karagwe Districts; the remaining districts were sprayed with pyrethroids. To date, Zanzibar has received seven rounds of IRS, with the last round covering about 111,000 structures, and protecting about 530,000 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.

Because universal coverage with ITNs has now been achieved on the Mainland, IRS in Lake Zone will be scaled down, in accordance with the NMCP's strategy. With FY 2013 funding, PMI will support IRS in 11 districts of Mara and Mwanza Regions, spraying 780,000 structures and protecting about four million residents; no spraying will be done in Kagera Region, where all districts have had at least four rounds of spraying previously. To delay development of resistance to pyrethroid insecticides, carbamates will be used for the next rounds of spraying. Although malaria transmission is now at a very low level in Zanzibar,

the islands remain vulnerable to malaria outbreaks. Therefore, PMI will support focused spraying with a carbamate insecticide in about 25,000 structures (about 10% 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 concerted efforts to improve these rates. 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. All 6,900 providers from 3,500 Mainland facilities have been directly trained. 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. With low prevalence of malaria on the islands, PMI and ZMCP are conducting a study of placental parasitemia levels in Zanzibari women to assess the need to continue IPTp in Zanzibar

With FY 2013 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 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: With FY 2012 funding, PMI is procuring about 300,000 RDTs for Zanzibar; all RDT needs on the Mainland are being met by Global Fund. PMI continues 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. In 2010 and 2011, PMI supported the training of more than 100 supervisory 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 7.6 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 also 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 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 FY 2013 funding, PMI will procure an additional 200,000 RDTs for Zanzibar and about 4 million RDTs for the Mainland. PMI will continue roll out of the quality assurance/quality control system for both microscopy and RDTs on the Mainland and Zanzibar. PMI will procure approximately 3 million ACT treatments for the public sector on the Mainland or for

emergency use if stock outs are imminent. PMI will also support the integrated commodity logistics system to ensure ACT and other commodity availability in the health facilities. 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. 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 all 142 government health facilities in Zanzibar. This system already detected several small outbreaks and investigations were launched.

With FY 2013 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 continue to support the MEEDS in all 142 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 PMI's integration with other USG programs. In 2010, 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 FY 2013 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 USAID HIV and other health funds, to support health systems strengthening activities that include financing (insurance schemes), governance, and health workforce recruitment and retention. 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 for improving laboratory diagnosis of malaria.

Monitoring and Evaluation (M&E): 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. The preliminary results for the PMI-PEPFAR co-funded 2011/12 Tanzania HIV/AIDS and Malaria Indicator Survey will be released early August 2012. The Roll Back Malaria/PMI Impact Evaluation was completed in 2011 and a final report released, providing strong evidence that the massive scale-up of malaria prevention and treatment measures in Tanzania over the past 10 years have played a major role in the reduction of under-five mortality.

With FY 2013 funding, PMI will continue support to the NMCP's and ZMCP's strategic information systems, together with funding for supervisory and quality assurance visits to health facilities and continued entomologic and insecticide resistance monitoring. Funding will also be provided for planning of the 2014-15 Demographic and Health Survey.

B. 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 builds 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. PMI was launched in June 2005 as a five-year, $1.2 billion initiative to rapidly scale up malaria prevention and treatment interventions and reduce malaria-related mortality by 50% in 15 high-burden countries in sub-Saharan Africa. With passage of the 2008 Lantos-Hyde Act, funding for PMI was extended through FY2014 and, as part of the GHI, the goal of 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 measures, including artemisinin-based combination therapies (ACTs), insecticide-treated nets (ITNs), intermittent preventive treatment of pregnant women (IPTp), and indoor residual spraying (IRS).

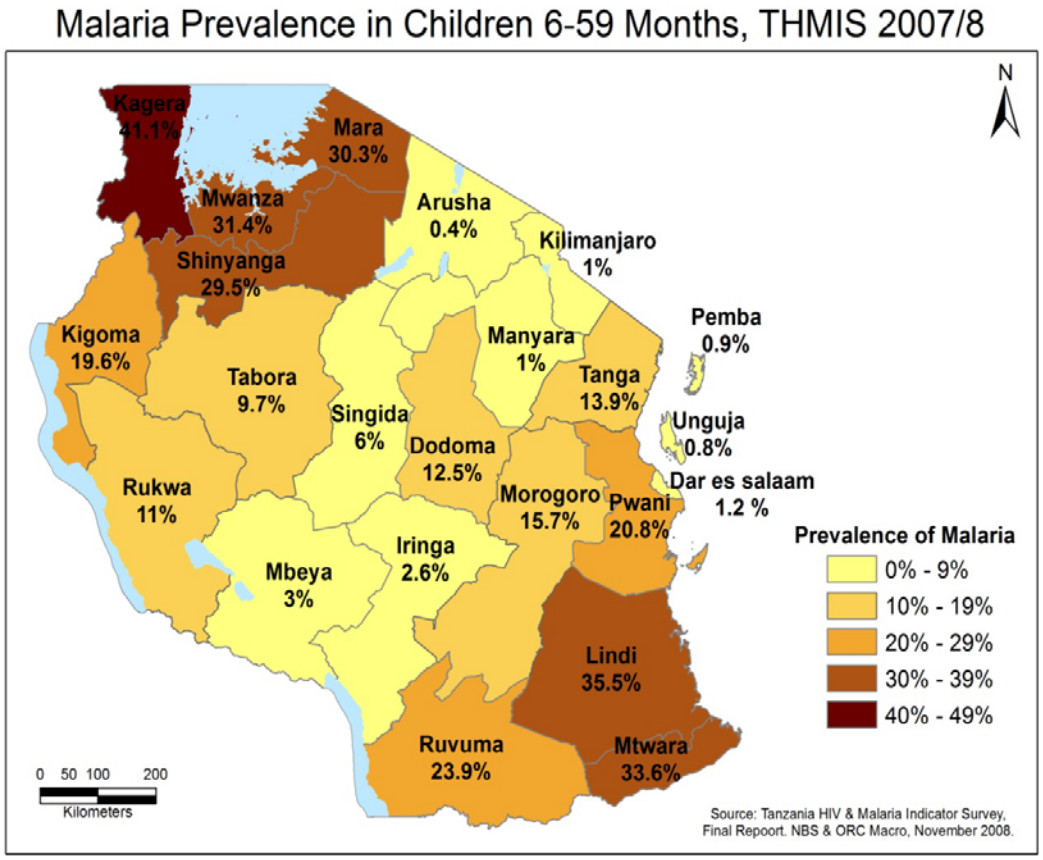
Through GHI and PMI, the USG is committed to working closely with host governments and within existing national malaria control plans. Efforts are coordinated with other national and international partners, including the Global Fund to Fight AIDS, Tuberculosis and Malaria

(Global Fund), Roll Back Malaria (RBM), the World Bank Malaria Booster Program, and the non-governmental and private sectors, to ensure that investments are complementary and that RBM and Millennium Development Goals are achieved.

This document presents a detailed PMI implementation plan for FY 2013 in Tanzania. It briefly describes the current status of malaria control and prevention policies, planned interventions, challenges and unmet needs, and the planned FY 2013 PMI activities. The operational plan was developed in close consultation with the National Malaria Control Program (NMCP) and the Zanzibar Malaria Control Program (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 in FY 2013 is $45 million.

D. MALARIA SITUATION

On the Mainland, 93% of the population lives in areas where malaria is transmitted while the entire population of Zanzibar is prone to malaria infection. 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*.



The principal vectors of malaria on the Mainland are the *Anopheles gambiae* complex (*An. gambiae sensu lato* and *An. arabiensis).* 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, represented almost 90% of the population in 2010, replacing the more efficient malaria vector, *An. gambiae*.

The 2007–2008 Tanzania HIV/AIDS Malaria Indicator Survey (THMIS) showed that 18% of Mainland children under five had tested positive for malaria, with wider regional variation from 0.4% in the highlands of Arusha to 41% along the Lake Victoria shores (Figure 1). The same survey showed a much lower malaria prevalence of 0.8% in Zanzibar. With funding from PMI, PEPFAR, another THMIS is currently going on that will provide updated malaria prevalence in August 2012.

On the Mainland, more than 40% of all outpatient attendances are attributable to malaria, resulting in an estimated 10-12 million clinical malaria cases annually. The NMCP estimates that 60,000-80,000 malaria deaths occur annually in the Mainland among all age groups.

Tanzania registered a 45% reduction in all cause under-five mortality from 146/1000 live births in 1999 to the current level of 81/1000 live births in 2010.

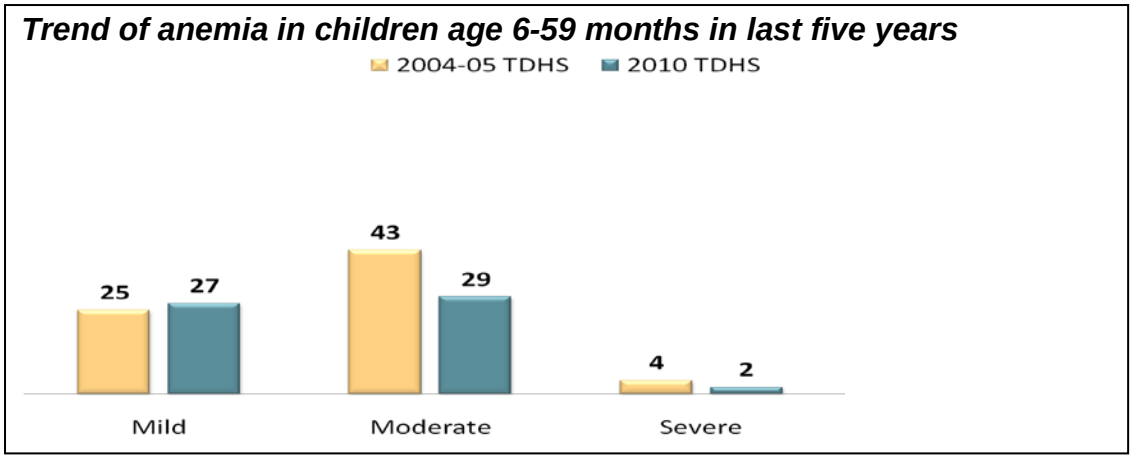
Infant and Under-five Mortality Rates for Five-year Periods Preceding Nationwide Household Surveys, Tanzania

	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)

The trend analysis of 1999 -2010 demographic surveys shows that the decline was greater in rural areas compared to urban areas, and more in medium to high malaria risk areas, indicating that interventions are reaching the poor and the more at risk populations (January 2012 Roll Back Malaria report of *Progress and Impact series: Focus on Mainland Tanzania*)

Malaria contributes significantly to anemia in children under five and anemia prevalence is a proxy indicator for malaria morbidity. Severe childhood anemia (hemoglobin <8g/dl) fell from 4% to 2%. There was a reduction of 54% in rural area compared to 24% in urban areas; and twice the reduction in the poorest households, again indicating equity in delivery of services.

[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.



E. NATIONAL MALARIA CONTROL PROGRAMS

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: 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 ZMCP has similar organizational units and a comparable staff.

The Mainland's NMCP has established several committees to coordinate and direct national malaria control policies and priorities. The Malaria Control Steering Committee is the body that is expected to provide strategic and policy direction for malaria control on Mainland. It is to be chaired by the Chief Medical Officer, but has never been put in place. The ITN strategies and policies are coordinated through the National Insecticide Treated Nets (NATNETS) Program. A diagnostics and case management working group guides NMCP policies/strategies for strengthening and expanding malaria case management. In early 2009, an M&E technical working group was formed. PMI is represented on each of these working groups.

The NMCP *2008 – 2013 Malaria Medium-Term Strategic Plan's* objective is 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 Global Fund Round 8 and 9 gap analysis, the Government of Tanzania malaria budget on the Mainland has been drastically reduced from a high of $5.2 million in (2006–2007) to just $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; 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, this grant has undergone major reprogramming to finance the AMFm pilot, scheduled to end in November 2012. The Global Fund Round 8 supported nationwide universal coverage of LLINs. The 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).

Major non-PMI External Sources of Funding for Malaria Control Mainland, 2008-present

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 (reprogammed from Global Fund R7)	$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 2008–2012 Strategic Plan targets a 70% reduction in health facility-based morbidity attributable to malaria (from 35% in 2006 to 10% in 2012). This target is expected to be reached by maintaining high coverage with interventions and a well-performing epidemic detection and response system. The ZMCP has no locally-organized, sanctioned committees that provide ongoing expert guidance and advice.

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 between $3 and $6 million per year since 2006, focusing on IRS and surveillance. 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. In 2011, DFID funded the procurement of 500,000 LLINs for Zanzibar (distributed in early 2012) at a cost of $2.0 million.

F. CURRENT STATUS OF MALARIA INDICATORS

Four nationally representative population-based household surveys and other data sources provide intervention coverage estimates for key malaria outcome indicators between 2004 and 2012. The tables below describe current estimates of intervention coverage and impact indicators, respectively, for the Mainland and Zanzibar. The 2004-05 Tanzania DHS provides baseline estimates for the main PMI indicators of interest.

Coverage Indicators

	Mainland				***Zanzibar***			
Coverage Indicator	2004-05 DHS (%)	2007-08 MIS (%)	2009-10 DHS (%)	2011-12 MIS (%)	2004-05 DHS (%)	2007-08 MIS (%)	2009-10 DHS (%)	2011-12 MIS (%)
% 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	

Impact Indicators								
	Mainland				***Zanzibar***			
Impact Indicator	2004-05 DHS	2007-08 MIS	2000-10 DHS	2011-12 MIS	2004-05 DHS	2007-08 MIS	2009-10 DHS	2011-12 MIS
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%	3.8%	

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

The goal of PMI is to reduce malaria-associated mortality by 70% in Tanzania after full implementation of FY 2014 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 12 months.

H. EXPECTED RESULTS – FY 2013 Funding

Prevention:

- Purchase and distribute 1.1 million LLINs through the Tanzania National Voucher Scheme (TNVS) as part of the keep-up strategy.
- Purchase and distribute2.5 million LLINs through the school-based LLIN keep-up program.
- Purchase and distribute 150,000 LLINs to support the completion of the Zanzibar's universal coverage campaign.
- Two rounds of IRS in 11 mainland districts, protecting 2.5 million people.

Treatment:

- Purchase 3 million ACT treatments for emergency stock due to expected delays in disbursement of funds from Global Fund and MOHSW MSD procurement systems.
- Procure 200,000 ACT treatments for UNHCR camps.

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. Beginning in 2007-2008, several important changes in policy and practice occurred, including:

- A reduction of the voucher top-up fee from Tshs 3,250 ($2.50) to Tshs 500 ($0.45 at 2007 exchange rate) to enable more families to afford a LLIN.
- An "Under-Five Catch-up Campaign" (U5CC) to distribute free LLINs to all children under five.
- A "Universal Coverage Campaign" (UCC) to distribute free LLINs for all remaining household sleeping spaces to cover the entire population.

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 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 there is no cost to the retailer. The top-up fee provides an incentive for the retailer to participate in the program.

Before the start of the U5CC in 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. Because of 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. The TNVS has historically been managed by the NGO, Mennonite Economic Development Associates (MEDA), in close coordination with the NMCP's ITN Cell.

To provide an incentive to retailers to continue participating in the TNVS, PMI and the net manufacturer(s) provide a one-time subsidy to participating retailers. When signing on a new retailer via a contract between the retailer and the net manufacturer, the net manufacturer provides the retailer with 15 LLINs. Five are funded by PMI, and another five funded by the net provider (at $5.74 per retail stabilization net) to capitalize the business; the retailer pays for the last five out of pocket, then signs the contract. There are no further costs to the retailer. Together, these 15 LLINs capitalize the private sector market and maintain a strong and sustainable retail network. From that point on, when a beneficiary exchanges a voucher for a net at the retailer, he/she also hands over Tsh 500 (currently $0.30), which the retailer keeps as an incentive to continue participating in the program. In essence, this allows the retailer to earn $0.30 for every net redeemed.

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 achieve universal LLIN coverage (defined as one LLIN per sleeping space). Between September 2010 and early October 2011, the UCC distributed 18.2 million LLINs. The combination of the U5CC and the UCC delivered 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 majority of funding for the UCC was derived from the Global Fund, while PMI contributed to logistics management and training.

Hang-up Campaigns. To increase net use, NMCP introduced a hang-up strategy as part of the U5CC, which was funded by PMI and DFID; PMI also funded a Hang-up Campaign for the UCC. These campaigns were 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***

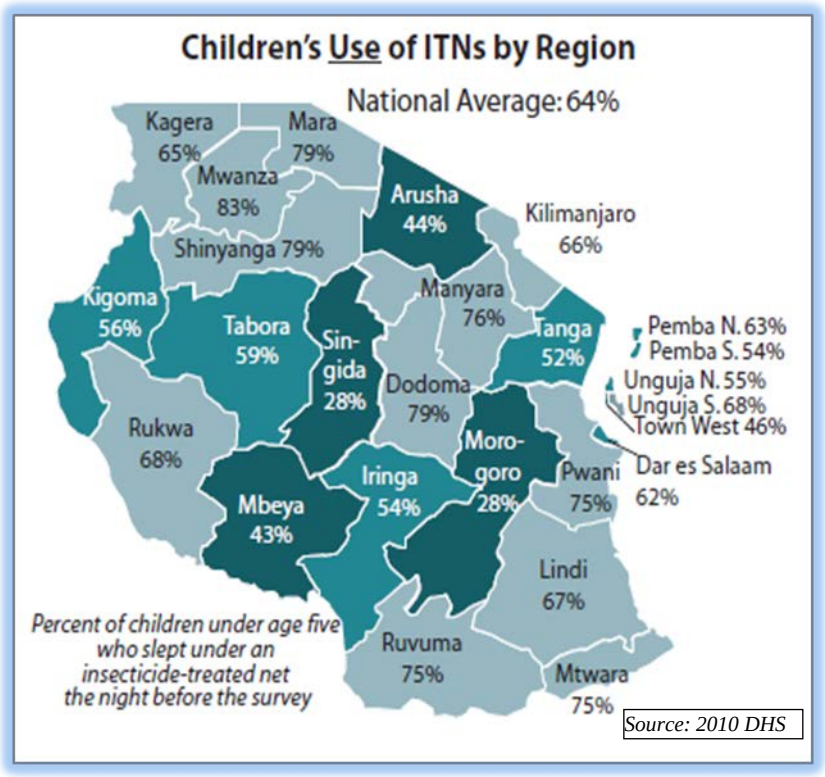
ZMCP has been distributing free LLINs to pregnant women and infants since 2006. In 2008, ZMCP altered its net distribution strategy to provide two free LLINs per household, but the ZMCP now defines universal coverage as up to 3 nets per household. The 2007–2008 THMIS showed household ITN ownership of 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 a slight decline in household ITN ownership to 76%, and in usage with 55% of children under five and 50% of pregnant women sleeping under an ITN.

Progress over Past 12 Months

▪ ***Mainland***

Between September 2010 and September 2011, 18 million LLINs were distributed on the Mainland via the UCC. The hang-up campaign that followed a month after UCC LLIN distribution used volunteers who visited every house to ensure LLINs were properly hung, and, if not, to offer assistance to hang them. PMI provided $2.3 million in FY 2010 funds to support this hang-up campaign.

With the U5CC and the start of the UCC, 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 increased 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 only nine of the 22 regions had received nets through UCC when the 2009–2010 DHS began. The Figure below shows ITN use by region in children under five from the 2010 DHS.



To assess the impact of the UCC, NMCP used Global Fund funding to commission population-based post-campaign surveys in Southern, Lake, and Coastal Zones. Following the UCC, ITN use among women of child-bearing age (15-49) increased from 62% in 2010 to 76% in 2011 in Lake Zone and from 47% in 2010 to 82% in Southern Zone. In both zones, ITN use by children under five was 62% in 2009 and rose to 71% and 79% after the UCC. BCC interventions, including the hang-up campaign, played a major part in these campaigns. Although previous ITN mass campaigns have sometimes led to a small reduction in voucher uptake and redemption, in Tanzania, infant voucher redemptions actually increased during the first quarter of calendar year 2011 to 84%. The UCC did, however, undermine 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 2012, U5CC nets will be at least three years old, and UCC nets distributed to the Southern Zone will be two years old.

Using FY 2010 funds, PMI commissioned an independent review of the TNVS as a viable and cost-effective mechanism to provide continuous LLIN distribution to infants and pregnant women. Historically, on average, 600,000 nets have been distributed annually through the TNVS. This represents about one-half of the 1.1 million LLINs needed per year to cover at least 80% of all children attending immunization clinics. This review recommended continued support to the TNVS for at least one year beyond the 2010-2011 UCC.

As the TNVS alone cannot sustain universal coverage, the Swiss Tropical & Public Health Institute commissioned a "keep-up" strategy evaluation, whereby several alternative stand-alone and combination strategies were considered. The keep-up strategy evaluation team concluded that the most efficient and effective strategy would be to introduce a school-based ITN distribution program, while also continuing the TNVS.

The MOHSW has endorsed this strategy, whereby free nets would be provided to school children in 1st, 3rd, 5th, 7th, 9th and 11th grades. It is expected that this combined keep-up net program would distribute approximately 7 million nets per year, allowing for the Mainland to maintain 90% net coverage in the wake of the U5CC and UCC.

FY 2012 PMI funding is supporting the pilot program of school-based free net distribution in three regions: Lindi, Mtwara, and Ruvuma, where nets were first distributed in both the U5CC and UCC, and therefore now need replacement. The results of this pilot will inform the final design of the Mainland's keep-up strategy. The three regions are relatively small geographically but should be representative of the rest of the country. Distribution is planned to begin in January 2013 and is co-funded by the Swiss Agency for Development & Cooperation. PMI will contribute approximately 500,000 nets using FY 2012 funds. USAID | DELIVER will procure and deliver ITNs to GOT stores at the regional level and the Tanzanian Red Cross Society will be responsible for transportation to individual schools.

FY 2013 funds for this activity are being requested based on the assumption that the pilot will be a success, but those funds would need to be reprogrammed if the pilot is not successful. Details of the pilot evaluation are still under discussion, but it is expected that PMI will help support the evaluation.

Beginning in the second half of 2011, an "eVoucher" was piloted as part of the TNVS. The eVoucher is distributed to facilities offering antenatal and infant health services. The eVoucher is "issued" via cell-phone-based SMS technology and is automatically voided after 60 days if the voucher is not redeemed (at a participating retailer), enabling the implementer to issue more vouchers. Besides cutting operational costs, it is expected that the eVoucher will provide geospatial data on voucher use throughout the Mainland, helping to better target increased BCC efforts.

As historically only 60% to 70% of paper vouchers distributed are redeemed, MEDA sets aside funding in a sort of escrow account, should vouchers be redeemed at some point in the future. This has been termed "voucher liability" and has resulted in an unacceptable pipeline of PMI funding. Roll-out of the eVoucher is expected to result in a higher rate of redeemed vouchers than has been seen in the past.

Tanzania National Voucher Scheme (TNVS) Estimated Costs					
Line item	Unit Cost	Number	Total Costs	DFID Funding	Gap in Funding
LLINs	$5.90	2.2 million	$12.98 million	$6.49 million	$6.49 million
Voucher printing	$0.06	2.8 million	$168,000	$84,000	$84,000
Operational costs	-	-	$2.8 million	$1.4 million	$1.4 million
Total			**$15.948 million**	**$7.974 million**	**$7.974 million**
Notes: Operational costs of the TNVS are fixed at $2.8 million per year, regardless of whether one or both vouchers are supported. This chart also assumes 1.1 million infant voucher and 1.1 pregnant women voucher redemptions per annum, based on the target traditionally set by NMCP.					

On November 15, 2011, DFID signed its own contract with MEDA to support one-half of the total costs of the TNVS (half of operational costs and all pregnant women vouchers/nets). PMI is being asked to fund the other half of operational costs and the full costs of the infant voucher/nets.

▪ ***Zanzibar***
Following a pilot in late 2010, between January and March 2012, the first Zanzibar-wide ITN campaign was carried out with more than 727,000 LLINs (1-3 LLINs per household) distributed. The nets were procured by the Global Fund (220,000) and DFID (507,000) and PMI provided funding for registration, distribution to the issuing sites, and actual issuing of nets. The campaign used more than 2000 trained volunteers to register households and distribute coupons for the subsequent net distribution. The PMI-Funded Tanzania Red Cross Society volunteers made follow-up visits to homes to ensure that all nets had been hung.

Proposed Activities with FY 2013 Funding

▪ ***Mainland***
(I.1.a) TNVS Keep-up Program. The TNVS is viewed as a success by the NMCP and has increased the number of ITNs per household. As the TNVS is implemented in concert with the private sector, it encourages creation of a private-sector market for LLINs. PMI will use FY 2013 funding to continue to support the infant voucher via the TNVS. *($5,500,000)*

(1.1.b) School-based Keep-up Program. Assuming a successful pilot, PMI will cover a large portion of the costs of the school-based ITN program, as the second of two prongs of the Mainland's keep-up strategy. Nets will be distributed to school children using methods still to be determined. *($8,057,800)*

▪ ***Zanzibar***
(I.1.c) Universal Coverage Campaign. PMI will procure and distribute approximately 150,000 LLINs (at a cost of approximately $6 per net) to support Zanzibar's UCC strategy. PMI-procured LLINs will be distributed through antenatal clinics to ensure sustained high net coverage rates on the islands. *($1,000,000)*

I.2 INDOOR RESIDUAL SPRAYING

Background

▪ ***Mainland***

The NMCP's 2008-2013 Medium-Term Strategic Plan targets indoor residual spraying (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 of Kagera Region, which were experiencing malaria outbreaks at that time. To date, Muleba and Karagwe Districts have had six and five 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) are being sprayed.

▪ ***Zanzibar***

From 2006 to 2011, Zanzibar has benefited from six rounds of blanket IRS using pyrethroid insecticides. At each round, household coverage of over 90% has been achieved and more than one million residents have been protected. Because of the changing malaria epidemiology in Zanzibar, coupled with a robust and reliable surveillance and entomological monitoring system, Zanzibar moved from blanket to targeted spraying in 2012. The seventh round of spraying covered eight of the ten districts. A mapping exercise using epidemiological data from 142 health facilities was used to map villages (*shehias*) showing increased malaria transmission. The *shehias* showing malaria incidence of >0.3cases /1000 people were eligible for IRS.

In both Zanzibar and Mainland Tanzania, routine entomological insecticide resistance monitoring in 2010 reported a high level of resistance to pyrethroids, which have been used for IRS since 2006 and which are also used on insecticide-treated nets. A vector control technical committee therefore recommended an insecticide rotation strategy and an immediate change from a pyrethroid to a carbamate insecticide for the seventh round in Zanzibar as well as the 2011/2012 spraying in Muleba and Karagwe. The committee recommended using pyrethroids for the rest of Kagera, Mwanza, and Mara Regions but to proactively rotate the insecticides to prevent resistance from occurring. Based on information provided by the PMI implementing partner for IRS, carbamate insecticide is three times as expensive as pyrethroids and increases the operational costs because of the needed training. With a carbamate, the unit cost per structure sprayed will increase from $10 to $13.

Progress over Past 12 Months

▪ ***Mainland***

From late 2011 to early 2012, all 18 districts of Kagera, Mwanza, and Mara Region in Lake Zone were sprayed covering 1,224,095 structures (93.2% coverage) and protecting over 6.5 million people. Based on WHO guidance, the NMCP has adopted a strategy of insecticide

rotation prior to development of resistance. Discussions on the choice of insecticide for use in Lake Zone for 2014 spraying will commence soon.

IRS Coverage and Number of People Protected							
Region	Number of Districts	Round	Year	Houses sprayed	Coverage	No. protected	Insecticide used
Kagera	1 (Muleba)	1	2006/07	34,745	94.9%	167,871	Pyrethroid
Kagera	2 (Muleba & Karagwe)	2	2007/08	95,548	98.6%	448690	Pyrethroid
Kagera	2 (Muleba & Karagwe)	3	2008/09	185,217	96.3%	872,378	Pyrethroid
Kagera	All 7 districts	4	2009/10	425,118	96.2%	2,138,299	Pyrethroid
Kagera, Mwanza, Mara	All 18 districts	5	2010/11	1,144,621	94.5%	6,343,091	Pyrethroid
Kagera, Mwanza, Mara	All 18 districts	6	2011/12	1,224,095	93.2%	6,518120	Carbamate in Muleba&Karagwe; Pyrethroid in rest of 16 districts

▪ ***Zanzibar***

Zanzibar has had seven rounds of IRS to date, in addition to one round of focal spraying as part of an epidemic response in July 2008. The seventh round of spraying took place in early 2012 and it targeted districts showing increased malaria transmission. The targeted spraying covered 114,858 structures (95% coverage) and protected 586,657 people.

IRS Coverage and Number of People Protected on Zanzibar					
Round	**Year**	**Houses sprayed**	**Coverage**	**No. of people protected**	**Insecticide used**
Round 1	2006	203,754	96%	1,059,521	Pyrethroid
Round 2	2007	196,827	90%	1,023,500	Pyrethroid
Round 3	2007	212,021	97%	1,102,609	Pyrethroid
Focal spraying	2008	3,588	100%	18,658	Pyrethroid
Round 4	2008	200,731	94%	1,067,254	Pyrethroid
Round 5	2010	183,620	89%	1,019,921	Pyrethroid
Round 6	2011	194,808	95%	1,033,742	Pyrethroid
Round 7*	2012	114,858	94.6%	586,657	Carbamate
*(targeted spraying in 8/10 districts)					

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 2013 Funding

▪ ***Mainland***
(I.2.a) Scale down of IRS in Lake Zone (Mwanza and Mara Regions). Because of the achievement of universal coverage with LLINs and the reduction in the number of malaria cases over the past 3-4 years, PMI will scale down IRS in Lake Zone. Prevention will be maintained by LLIN coverage. The team will closely monitor the region via entomologic and epidemiologic surveillance which is already in place, to assess if there is a change in the rates of malaria after withdrawal of IRS. In addition, the NMCP will stock ACT medicines in the region in the event of an increase of malaria cases. The districts of Kagera Region which have received 4-6 rounds of spraying with FY 2006-2011 funds will not benefit from IRS. In FY 2013, PMI will support two rounds of IRS in the 11 districts of Mwanza and Mara Regions, covering 418,900 structures and protecting approximately 2.5 million people. 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. *($10,100,000)*

▪ ***Zanzibar***
(I.2.b) Conduct focal spraying in high malaria transmission areas in Zanzibar. In 2012, Zanzibar achieved universal coverage with long lasting insecticide nets. Zanzibar also has a strong entomological and epidemiologic surveillance system that provides real time data for epidemic detection and response. In FY 2013, PMI will support focal spraying in the villages (*shehias*) that will show malaria incidence of >0.3 cases/1000 population. PMI will support two rounds of spraying, covering 25,000 structures, and protecting 225,000 people.
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). *($550,000)*

(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 MALARIA IN PREGNANCY

Background

▪ ***Mainland***
In Tanzania, since 2004 the WHO has promoted Focused Antenatal Care (FANC) and IPTp as important components of the approach to reduce maternal and newborn mortality and morbidity. The Reproductive and Child Health Services' policy for IPTp is two doses of 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 come early enough and frequently enough to receive two doses of SP, IPTp2 coverage has essentially remained constant at about 27% (30% in the THMIS 2007, 22% in the TDHS 2005). Over the past few years of implementation, in addition to having low numbers of trained service providers with good interpersonal skills and recording practices, a significant bottleneck to successful provision of IPTp has been frequent stock outs of SP at facility level. Data from PMI-supported sites have consistently shown that where stock outs

are less frequent, IPTp rates are almost double that of facilities with frequent stock outs (in FY 2011, IPTp2 rates in facilities with no stocks were 55% compared to the 37% overall IPTp2 rate).

Co-funded with Maternal and Child Health (MCH) funds, PMI has invested approximately $10 million in FANC and malaria in pregnancy in Tanzania over the past five years. Funding from PMI has been critical for the development of the national FANC curriculum; the establishment of district-level trainers throughout the country; the national rollout of in-service trainings in FANC; up-dating the pre-service curriculum in Tanzanian nursing schools; strengthening supervision and quality improvement of ANC services; the introduction of malaria in pregnancy indicators in the national HMIS system; and creating demand for quality ANC services and advocacy for safe motherhood issues.

With the approval of Tanzania's GHI strategy, FY 2012 funds will enable the development of an integrated supervision system as well as expanded support for commodities security. Over five years, PMTCT partners have achieved critical improvements in service provision in the antenatal setting. The 2010 DHS showed that the proportion of pregnant women who have been counseled, tested and received results has increased more than ten-fold since the previous DHS. These gains were achieved through intense facility-based support, including routine supervisory visits to assess quality and availability of services and supplies. The implementation of an integrated supervision checklist and improved national commodities availability using the HIV platform will provide for a similar level of attention to non-HIV services, such as malaria in pregnancy. With the integration of services, oversight and commodities for the entire range of antenatal interventions will be improved in a significant proportion of ANC service provision sites.

For pregnant women, the new National Guidelines for Diagnosis and Treatment of Malaria are expected to be approved by the National Therapeutic Committee by the end of 2012. The guidelines recommend the following:

Treatment of uncomplicated malaria: During the first trimester of pregnancy, oral quinine plus clindamycin or if clindamycin is not available, quinine monotherapy should be used for treatment of uncomplicated malaria. During the second and third trimesters of pregnancy, artemether-lumefantrine should be used as drug of choice for treatment of uncomplicated malaria.

Severe malaria in pregnancy
Parenteral antimalarials are recommended for severe malaria in pregnancy. The drug of choice for treatment of severe malaria is **i**njectable artesunate; the alternative treatments are injectable artemether or injectable quinine. Because of the associated increased risk of hypoglycaemia in late pregnancy, quinine should be used only if effective alternatives are not available. Parenteral antimalarials are given for a minimum of 24 hours, and, thereafter, treatment is completed by giving a complete course of AL or dihydroartemisinin-piperaquine,

▪ ***Zanzibar***
While the endemicity of malaria in Zanzibar has fallen as a result of its successful malaria control efforts, the ZMCP continues its 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 ITN universal coverage campaign, the ZMCP instituted a keep-up campaign to promote the use of LLINs by pregnant women, and acknowledged 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 trimesters of pregnancy and quinine during the first trimester.

The 2010 THMIS found coverage of IPTp2 in Zanzibar at 47%; at the same time, 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. Although SP is provided free of charge, stock outs occur regularly. The MOHSW is implementing a community-level BCC effort 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 December 2011, PMI had provided training to more than 6,900 providers from over 3,500 facilities in all 137 districts in Tanzania (estimated 74% of all facilities providing ANC services). PMI funding for IPTp has focused on health worker training on a package of antenatal services, FANC, and a facility-level quality improvement program. PMI has also supported development of a pre-service malaria in pregnancy training curriculum resulting in approximately 1,600 new graduates from all 53 nurse-midwifery schools in Tanzania with FANC skills each year since 2006. The Mothers and Infants Safe Healthy Alive (MAISHA) program has conducted several studies to track the graduates; the 2010 study found that 95% of nurses tracked were employed one year after graduation, with a fifth of them working in ANC clinics. MAISHA is currently conducting another assessment to learn more about the competencies, including ANC skills, of a cohort of graduates one year after their graduation. With FY 2012 PMI funding, an integrated supervision checklist will be developed and field tested with support and participation from the MOHSW, which is officially responsible for both PMTCT and malaria in pregnancy. Additionally, staff will be trained through funding dedicated by DHMTs and new staff will be recruited with the appropriate skills from their pre-service training program. A revised ANC register which includes a dedicated space for recording SP has been developed; this will be rolled out over the coming year.

PMI has conducted the End-use Verification Survey to assess availability of malaria commodities at 10% of Tanzanian health facilities nationwide; this information together with information on stock levels at zonal and central Medical Stores warehouses is used to provide quarterly reports on SP stock availability. Subsequent to the approval of Tanzania's GHI strategy, commodities tracking were extended to include availability of a range of MCH essential medicines. Findings were made available to the MOHSW/ RCHS and donors supporting MCH activities. These efforts prompted renewed interest in ensuring availability of critical MCH medicines including SP. Additionally, USAID was able to advocate for and receive approximately $4 million per year from DFID to procure essential MCH medicines,

including SP, in order to improve availability of medicines and collect additional stock data at the facility level.

PMI has supported development of district-level supervision skills within an integrated package of ANC and delivery services so that district regional coordinators can oversee service provision and availability of commodities for both areas of care. Facilitative supervision workshops were undertaken for supervisors at regional and district levels. Training in 15 out of the 21 regions is now complete; the remaining six regions will be trained by the end of 2012. The MCH package will be adapted to include key HIV services and rolled out to PMTCT partners who have been encouraged to expand support beyond PMTCT and provide for facility based supervision to all aspects of MCH, including ANC and provision of IPTp2. The PMI/MCH network currently covers 253 sites in all districts in Tanzania, but with FY2013 funding, the effort will include the expanded PMTCT national platform. Other service provision challenges that the supervision efforts will address include confusion on the part of providers regarding the safe timing and interval for the provision of SP; inconsistent record keeping; and lack of data analysis skills among providers and supervisors.

▪ ***Zanzibar***

All ANC providers were trained in FANC in previous years with support from PMI. With FY 2010 and 2011 PMI funds, efforts focused on improving the frequency and quality of supervision of ANC services by district Reproductive and Child Health Coordinators. FY 2011 funds will continue to support ANC supervision efforts in 2012.

Given the relatively low rate of malaria on the islands, PMI and ZMCP are in the process of conducting an operational research study on placental parasitemia levels in Zanzibari women to assess the need to continue IPTp in Zanzibar. This will be completed by late 2012 and will assist in guiding any changes in policy around the continued provision of IPTp.

With MCH funds, USG has developed 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 targets women who do not receive the full complement of ANC services at the facility. Scale up of the approach can be considered by PMI in other areas of Tanzania as funding and needs permit. FY 2011 funds will be used to train an additional 100 CBDs in Zanzibar by the end of 2012.

Proposed Activities with FY 2013 Funding

▪***Mainland***

(I.3.a) IPTp/FANC Implementation. PMI will benefit from health systems support for supervision and commodities availability from GHI. The strategy is intended 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 a mandate and funds to support complementary ANC and safe delivery efforts in the health facilities in which they are working. USG's prime MCH partner is tasked with ensuring the quality of the efforts from the point of view of MCH and malaria in pregnancy interventions. Additionally, the

implementation of a facility-based quality improvement approach initiated with PMI and MCH funds will be accelerated through engagement of District Health Management Team members as well as PMTCT partners who conduct routine supervisory visits in a significant proportion of Tanzanian health facilities. National and zonal commodity forecasting and distribution as well as facility-based requisitions and reporting will also be strengthened to ensure more consistent supplies of the sulfadoxine-pyrimethamine (SP) at ANC clinics. In addition, the MOHSW has agreed to send out a memo to all health facilities laying out simpler language around IPTp dosing.

Specific areas of care critical to the success of malaria in pregnancy interventions that will continue to be integrated include:

- Promotion of a single supervision checklist combined with facility-based mentorship and service improvement efforts.
    - Integrated oversight of commodities logistics at the national, zonal and facility levels, including training in inventory management, and monitoring and management of commodity supplies through Supply Chain Management Advisors placed at the nine zonal MSD warehouses.
- Integration of health promotion activities around maternal health to have maximal impact and coverage in the community.
- Use of a new register book that has been developed and is in the process of being implemented. The book contains a space for recording doses of SP, which was not available in previous registers, and should improve IPTp coverage by serving as a job aid.

This approach will ensure that, as opportunities and funding mechanisms allow, responsibility for these key health system activities will shift from USG partners and rest on the MOHSW. Approaches to enable strengthening of host country ownership will be explored over the next year with increases in direct funding of host country institutions.

The Tanzania PMI team plans to commission a comprehensive assessment to identify the major bottlenecks to effective IPTp implementation in Mainland Tanzania and propose solutions.

PMI will continue to support participation of mainland and Zanzibar representatives in Roll Back Malaria's Malaria in Pregnancy East and Southern Africa coalition, with a maximum of one regional trip for each country's malaria in pregnancy working group. *($900,000)*

▪ ***Zanzibar***

(1.3.b) MIP Activities in Zanzibar. In FY 2013, PMI funding for Zanzibar will continue to support the quality improvement and recognition system for antenatal care. PMI provide support to ensure proper recording and logistics support for SP at health facilities. 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 Reproductive and Child Health Service clinics and, based on the results of the placental parasitemia study, assist in making policy recommendations with respect to the MIP strategy for Zanzibar.

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. 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.

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 Communication for Malaria Initiative in Tanzania (COMMIT) Project, PMI/Tanzania uses an integrated BCC platform to reach the Tanzania population with messages and activities to encourage consistent bed net use, to go for testing and treatment early, and to prevent malaria in pregnancy. Over the last four years a total of more than 12 million people have been reached through small group talks, house to house visits, school campaigns, and road shows through mobile video units. Data from ongoing monitoring, household surveys, and qualitative assessments show that more than nearly 90% of people had heard about Malaria Haikubaliki (malaria is not acceptable), the malaria tag line used on all malaria campaigns. The Community Change Agent mobilizers have reached close to 30% of all men and women in the survey areas and up to 60% have seen and/or participated in community malaria activities; and 54% of people had seen/read malaria messages in brochures/posters.

▪***Zanzibar***

Zanzibar has good acceptance and use of all malaria interventions. IRS coverage has remained high at over 90% and ITN coverage increased slightly from 72% in 2007 to 76% (2010 TDHS). However, other indicators – ITN use for children and pregnant women, IPTp2 coverage, use of anti-malarial to treat fever, and early treatment-seeking behavior – showed a decline between the 2007-08 THMIS and the 2010 TDHS. PMI/Tanzania is taking action to address these issues. On net use for example, since most of the nets distributed for free during 2006/07 have worn out, PMI/Tanzania and DFID have worked with the ZMCP to implement a universal free net distribution during last six months. Also, the MEEDS system has been strengthened to include district based response teams that follow up on any positive case detected and act accordingly. Finally, supply chain management of antimalarial drugs is being strengthened to eliminate stock outs of SP and ACTs. These efforts are expected to help as PMI/Tanzania and ZMCP, with technical assistance from the COMMIT Project, design a communication strategy for messaging on low transmission areas like Zanzibar.

Progress over Past 12 Months

▪ ***Mainland***

At the national level, PMI supported the NMCP to harmonize BCC activities through developing an action plan for mobilization with all malaria implementing partners. Though the COMMIT Project, a weekly children's radio program is working to get children to become agents of change and malaria advocates in their households. Post-test results showed that children reported talking with their parents after listening to the radio program, convincing their parents to get more nets, and others helped repair nets, and through the Community Change Agents, listening groups have been created. Some of these groups are also mobilizing communities around malaria prevention.

At the district level PMI supported work with six District LGAs to include malaria BCC activities in their comprehensive council health plans and to fund those activities through allocated district funds.

COMMIT completed training on interpersonal skill strengthening for more than 280 providers in health facilities in the COMMIT districts, as well as training for district level supervision of the health facilities. At the community level, more than 1.5 million people will be reached this year through the CCA network through home visits, community initiated action plans, and group talks, mobile video units, etc. Through these visits people are being motivated to take actions around malaria prevention, treatment and control. In a qualitative assessment of CCAs and the communities where they work, participants reported the CCAs were well respected by the communities, and their role is seen as important to eradicating malaria. Participants reported that CCAs have been effective in showing people how to properly hand, repair, wash, and treat a net.

Other BCC innovations to improve use of malaria services include: distribution of 2,000 solar- and crank-powered radios to CCAs to facilitate listening groups for the Saturday Childrens' Radio Program as well as a distance learning course for CCAs; and airing of a children's radio show named "*PataPata*" (get it right) that informs and encourages children in Tanzania aged 6-12 to become involved in the fight against malaria; and supporting a 'net norm cards' for to promote net use.

A relationship between the number of communication channels used to transmit a message and the impact of those messages was found in surveys by the implementing partner. There was little difference in the percentage of households with universal bed net coverage when the household respondent had been exposed to two or fewer of the Project's communication channels. In all of these groups, approximately 80% of households reported that every member had slept under a net the previous night. However, among households exposed to all three of the COMMIT channels, universal bed-net coverage increased seven percentage points to 87%.

▪***Zanzibar***

Zanzibar has a malaria communication strategy and 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.

Proposed Activities with FY 2013 Funding

▪ ***Mainland***
(I.4.a) IEC/BCC across all intervention areas. In FY 2013, PMI will design a new mechanism for implementing BCC activities, that will incorporate best practices and recommendations of the 2012 JHU/COMMIT evaluation. Activities will include interventions targeting improving ITN use rates and will include BCC messaging and hang-up campaigns, especially in regions showing low coverage from 2011/2 THMIS. *($1,500,000)*

(I.4.b) IEC/BCC across all intervention areas by Peace Corps Volunteers
In FY 2013, 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. ($35,000)

▪***Zanzibar***
(I.4.c) IEC/BCC across all intervention areas. In FY 2013, PMI will support Zanzibar to implement its BCC strategy to improve the use of ITNs, IPTp, IRS and early seeking behavior. 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***

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.

In 2011 and 2012, PMI developed a partnership with Ngeita District Local Authority and Ngeita Gold Mine to spray houses of the Gold Mine workers and the surrounding community. Ngeita Gold Mine provided funding for the planning and operational costs for the spray exercise, the district local authority planned and executed the spraying, and RTI, the IRS PMI partner, provided funds for procuring the insecticide, and technical assistance for micro-planning, human safety, and environmental compliance.

▪ ***Zanzibar***
Since 2008, PMI has supported a partnership between ZMCP and a private company, Selcom Wireless Ltd., to establish a short message service (SMS)-based Malaria Early Epidemic Detection System (MEEDS) in Zanzibar. MEEDS is now operating in 142 public health facilities and is used to monitor the number and rate at which new malaria cases are being seen at health facilities and enable 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.

Progress over Past 12 Months

▪ ***Mainland***
PMI supported the provision of LLINs to infants through the TNVS. Cumulatively, over 2.4 million LLINs have been distributed to infants since 2006 when the public private partnership started, with an average redemption rate of 73%. There are currently 5,515 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 has a direct contract with the service provider-Selcom Wireless Ltd.

Proposed Activities with FY 2013 Funding

▪***Mainland***
On the Mainland, PMI will continue support for the TNVS, as part of the ITN keep-up strategy, with a focus on the vulnerable infant population. DFID is continuing funding for the woman pregnant voucher. The activities and budget for this public-private partnership are described in the ITN section. PMI will also continue support for a MEEDS-like activity for monitoring malaria testing and positivity rates for Lake Zone and in Dar-es-salaam.

▪***Zanzibar***
PMI will also continue support for MEEDS in Zanzibar under the public private partnership of the Ministry of Health and a private telecom service provider.

J. INTERVENTIONS – CASE MANAGEMENT

J.1 DIAGNOSTICS

Background

▪ ***Mainland***
Microscopic examination of Giemsa-strained blood films remains a cornerstone of malaria diagnosis throughout Tanzania, but is only available at hospitals and some health centers. Historically, the more than 5,000 of the lowest-level facilities (dispensaries and some health centers) had no laboratory diagnostic capacity, leaving health care workers at more than 90% of facilities to diagnose malaria on the basis of clinical signs and symptoms alone.

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 support the

scale-up of RDTs at the national level. The Global Fund Round 7 allocated $15.5 million for RDT procurement, and quality assurance of both RDTs and microscopy. Part of this grant will support purchase of 26 million RDTs for national deployment during 2009-2011, but a large gap in RDT needs will still exist.

According to the recent WHO guidelines, all suspected malaria cases should be parasitologically confirmed prior to treatment, including children under five. NMCP's policy has changed from presumptive treatment to confirmatory parasitological diagnosis. 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. Phased rollout of RDTs began in April 2009, starting in areas of low/moderate transmission and expanded to areas of stable/high transmission. Currently, laboratory confirmation is happening in only 20% of the suspected cases and there is no system for laboratory quality assurance and quality control. At present, there are no plans to extend the use of RDTs to the private sector ADDOs.

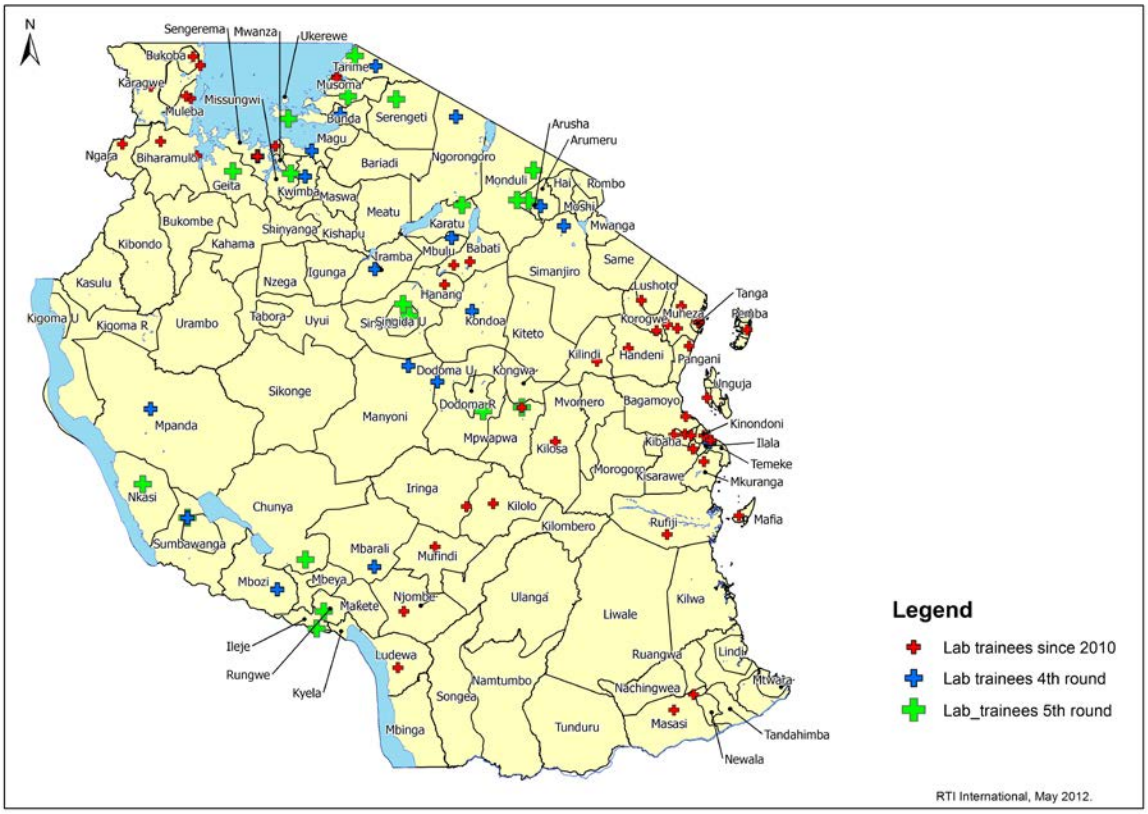
▪ ***Zanzibar***
Through PMI support in previous years, ZMCP has been able to provide RDTs to all 142 government health facilities and enhance microscopy at hospitals and larger facilities. Moreover, the program has adapted its treatment algorithm to permit parasitological confirmation for all patients with fever. This step has enabled the program to operate the Malaria Epidemic Early Detection System (MEEDS).

Progress over Past 12 Months

▪ ***Mainland***
By June 2012, 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 scale-up of RDTs to the remaining regions is scheduled to be completed by the end of 2012. Working with the Walter Reed Army Institute of Research (WRAIR), PMI has assisted the MOHSW's Diagnostic Services Section to conduct five comprehensive malaria diagnostics training sessions at the National Health Laboratory and Quality Assurance Training Center since November 2009. More than 100 supervisory-level laboratory technicians from 72 (60%) districts have participated in these trainings (Figure 9). These districts were drawn from the 11 regions where NMCP has already rolled out RDTs. The National Health Laboratory and Quality Assurance Training Center was constructed and equipped through PEPFAR funding. PMI has made consistent use of this training facility since it became operational in 2009.

Since June 2011, WRAIR has been working to develop a Malaria Reference Laboratory within NHLQATC and identify additional regional training facilities; one training laboratory has already been developed in Mwanza. WRAIR is also using some of its Congressional Special Interest funding to refine a shortened five-day microscopy training course that will allow greater numbers of trainees at lower costs.

Health facilities with staff who attended malaria diagnostics workshops at the National Health Laboratory and Quality Assurance Training Center, 2009-12.



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. A quality assurance/quality control (QA/QC) program for RDTs is nearing the final stages of development. Scale-up of this system will commence in the existing RDT regions in 2012.

To estimate the RDT needs for FY 2013, the quantification team began with the number of suspected cases of malaria, as calculated as a percent of outpatient attendance. It was assumed that 98% of the suspected malaria cases would be tested using RDTs, while the other 2% would be tested by microscopy. An additional 5% was added in order to account for quality control:

(Number of suspected malaria cases x 98%) + 5% = **15,975,783 tests.**

As the number of suspected malaria cases decreases each year, the quantities of RDTs required is expected to fall at about the same rate. The Global Fund shipment of RDTs that was to arrive in April has not yet been received. The table below indicates the gap:

Product	Desired Delivery Date	Quantity K/25	Status	Product Costs (USD)	Freight Costs (USD)	Total Costs (USD)
Malaria RDT (K/25)	31-Oct-12	327,326 (equivalent to 8,183,150 kits)	Planned, no funding yet	8,510,476	1,276,571	9,787,047

▪ ***Zanzibar***

PMI supported the procurement of 292,000 RDTs for Zanzibar in 2010. The 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 a RDT baseline site assessment at twenty health clinics in all 10 districts in Zanzibar (Unguja and Pemba). 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 with FY 2013 Funding

▪ ***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, with microscopy 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. In line with WHO guidance, 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 establishment of a national reference laboratory that can validate microscopy results at the district-level and a system of supportive supervision at the district level for microscopy. A mechanism for supportive supervision will also be implemented at the peripheral health facility level to ensure proper use of RDTs, including testing, treatment, and storage.

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 will be finalized in accordance with WHO guidelines 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 FY 2010-2011 funding will be used to inform the PMI and NMCP strategy for diagnostics strengthening at all levels. Finally, a mechanism for supportive supervision for health care providers and lab technicians as well as a follow-up of trained technicians serving the QA/QC plan at district and regional levels will be built into the program.

In FY 2013, PMI will support the NMCP in improving laboratory-based diagnosis of malaria at government health facilities throughout the country, including developing strategies for integration of malaria diagnostics with other health programs, establishing a monitoring and supervision system, and supporting implementation of the QA/QC system. The support will include updating of the policy and malaria diagnostic strategic plans and documents to ensure accordance with WHO guidelines, 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. *($800,000)*

(J.1.b) RDT Procurement. The national scale-up of RDTs (final 10 regions) is scheduled to be completed by the end of 2012 funded by the Global Fund Round 9 grant. In order to avoid stock-outs, RDTs will be procured by PMI and distributed to health facilities via Medical Stores Department. *($4,000,000)*

(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 laboratory diagnosis in MOHSW health facilities. With FY 2013 funding, PMI will procure and distribute 50,000 RDT kits for UNHCR. *($140,000)*

▪ ***Zanzibar***

(J.1.d) RDT and Microscopy Quality Assurance and Quality Control. Continued progress in reducing malaria transmission 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. *($175,000)*

(J.1.e) RDT Procurement. PMI will procure 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. (*$400,000)*

J.2 TREATMENT

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 with injectable artesunate. Funding for ACTs in the public sector has been supported primarily by Global Fund (Round 4 and Round 7) and PMI. Based on Tanzania's successful Global Fund Round 7 grant PMI provides only gap funding support for Malaria commodities.

The following are USG key Supply Chain Logistics System strengthening activities, for which USG Tanzania (PMI and PEPFAR) have invested over $30 million since 2006: 1) Provide management support, ordering and receipt training of malaria commodities, in the monitoring and management of commodity supplies through field based Supply Chain Management Advisors (SCMA). 2) Support site level use of the logistics management system for support of Malaria commodities and essential medicines. 3) Support the GOT with

technical assistance in conducting quantifications, forecasts and procurement planning all major Family Planning, Malaria, HIV/AIDS related commodities, including laboratory supplies. 4) Carry out monthly stock counts at Medical Stores Department (MSD) zonal stores and conduct quarterly end-use verification surveys to monitor the stock levels of malaria commodities like ACTs, SP, and RDTs at selected sites. 5) Strengthen the Ministry of Health and Social Welfare (MOHSW) Procurement Management Unit (PMU) by conducting an assessment with recommendations, and providing supportive technical assistance through procurement experts contracted by JSI. 6) Provide technical consultants to assist the (MSD) to evaluate the current business units' administrative operations requirements. Evaluate and select an Enterprise Resource Program (ERP) and assist in the design and implementation of the system at all 9 MSD zonal warehouse center. 7) Improve warehouse function through redesigned floor lay out, installing new racking and packing lines and assisting warehouse managers with improving standard operating procedures and provide modern security system design and implementation. 8) Support the strengthening of warehouse storage capacity and commodities management through selected use of prefabricated storage products. 9) Support and contribute to the coordination of donor commodity procurements in Tanzania.

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 for FY2013 are: to maintain and improve antimalarial drug supplies in the public sector; improve access, quality, and affordable ACTs in the private sector; 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. 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 parenteral artesunate is not available. Rectal artesunate is also being considered as a pre-referral drug for severe malaria.

The National Malaria Control Program has estimated an annual requirement of 11,340,000 million ACT treatments for FY 2013. This estimate assumes 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.

Current ACT Requirement		Projected Country ACT Needs			
2010	**2011**	**2012**	**2013**	**2014**	**2015**
15,834,582	16,080,280	13,870,477	11,340,483	7,926,437	4,874,548

Management of Febrile Illness. PMI supports an integrated case management of child health services project in the Lake Zone with co-funding from the USAID Maternal and Child Health and HIV/AIDS programs. The Tibu Homa project aims to improve child health by strengthening the capacity of facility-based health teams to provide diagnostic and treatment services for malaria and other major causes of severe febrile illness and death in children under five. In the Lake Zone, the facility based child case management program will expand to all districts in the three regions ensuring that providers are managing malaria appropriately and able to diagnose and treat non-malarial causes of fever. A baseline assessment of care seeking behavior at the community level will inform the community component co-funded with OVC funds. The program will map other USG funded community programs in seven selected learning districts (Musoma Rural and Tarime in Mara, Muleba abd Misenyi in Kagera, and Nyamagana, Geita and Sengerema in Mwanza). Within the learning districts the project will improve understanding of malaria and febrile illness at the community level and develop community networks to ensure that children under five years of age are seen in the clinic within 24 hours of fever on-set.

▪ ***Zanzibar***

Pharmaceutical Management and Logistics. 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.

Treatment. Zanzibar first-line malaria treatment is amodiaquine-artesunate. 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 less than 50,000 ACT treatments per year. The change of policy from presumptive treatment of malaria to confirmatory diagnosis has increased mRDT monthly consumption to 30,500 kits per month. The total annual mRDT requirement is 366,000 kits. With the reduction in malaria case load in health facilities, there is now an increased focus on differential diagnosis of severe febrile illnesses and attention to non-malarial causes of fever and death in children under five.

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 policies. 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 programs 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 $\geq 3\%$ but $< 10\%$ of cases have parasites detectable on day 3 after treatment with an ACT.

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 PSU). 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 management of the monthly stock count and quarterly end use verification surveys.

In April of 2012 the end use verification report was reviewed. PMI /Tanzania plans to adopt two major recommendations from the review, namely: 1) Change the number and selection criteria for sites to improve the statistical reliability of the report, and, 2) Reduce the length of the quarterly report form 29 pages to a 2-3 page dash board format report.

PMI provides technical assistance through Implementing Partner JSI Deliver 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 Section (PSS) 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 Round 7 was expected to increase and stabilize with Single Stream Funding, in mid-2011. However, there have been significant delays in release of these funds to Tanzania. These delays have resulted in stock shortages and stock outs of ACT and RDT's within the supply chain. PMI expects unreliable stock availability through 2013 due to funding delays from Global Fund.

Treatment. In FY 2011, PMI provided technical assistance and funding to NMCP to review the 2006 National Diagnostic and Treatment Guidelines that will be finalized end 2012. PMI has supported several interventions to improve access to ACTs and case management at the health facility level. Through the three Zonal Resource centers of Arusha, Iringa, and Tabora, PMI has supported the training of health workers in comprehensive malaria case management, including management of severe malaria and malaria in pregnancy.

Management of febrile illnesses. Over seven hundred providers in a little over two hundred health facilities (including 29 hospitals) in Kagera, Mwanza and Mara Regions will have been trained in the national curriculum for case management of febrile illness with FY 2012 funds. The approach includes the establishment of quality improvement teams at each facility, the revitalization of the hospital therapeutics committee, the improvement of patient and work flow to reduce patient wait-times in order to improve adherence to use of malaria diagnostics before treatment. To-date the project has provided support to the MOHSW to up-date the national case management training curriculum which now incorporates the use of confirmatory malaria diagnostics before treatment of children under five; the appropriate use of injectable and rectal artesunate; and algorithms to manage sick children who test negative for malaria.

Therapeutic drug efficacy monitoring. PMI funding has permitted Ifakara Health Institute (IHI), an implementation partner, to work in close collaboration with NMCP and WHO staff on this activity. Data for Coartem (Mlimba and Mkuzi districts) or amodiaquine-artesunate (ASAQ) susceptibility (Kibaha and Ujiji districts) were collected from patients at four of the eight historical sentinel sites from June- August, 2011. A total of 1056 patients were screened, 603 at the sites where Coartem was administered, and 453 at the sites where ASAQ was administered. Of these, only 37 patients were enrolled into the Coartem group (only 5 patients were enrolled at the Mlimba site), and 104 into the ASAQ group. There was an overall cure rate of 97% with Coartem and 86% with ASAQ; PCR correction to differentiate recrudescent infection from reinfection is still pending. The other four sites will implement this activity in 2012.

▪ ***Zanzibar***

Pharmaceutical Management and Logistics. USG, through PEPFAR program, has partnered with Danida to construct a new central commodities store for Central Medical Stores (CMS) Zanzibar. The new warehouse will triple commodities storage capacity reducing the potential for stock outs due to storage limitations. PMI and PEPFAR have partnered to jointly fund a Supply Chain Field Advisor to support the CMS. Additionally, USG through JSI Deliver is providing CMS training support in the role out of the new Zanzibar specific logistic supply system. USG is supporting 4 senior CMS staff to attend warehouse management training in South Africa.

Treatment. 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.

Proposed Activities with FY 2013 Funding

▪ ***Mainland***

(J.2.a) Diagnosis and Management of Febrile Illness. PMI will continue to work with the integrated childhood illness service delivery project (Tibu Homa) in Lake Zone. In addition to working with the Regional and District Health Management Teams, the project will continue to improve hospital, health center as well as dispensary level care for children. At the same time, efforts at the community level, co-funded with Maternal and Child Health and HIV/AIDS support, is expected to contribute to reductions in under-five mortality by establishing strong referral networks for sick children identified in the community. The networks are intended to ensure that children access quality services in a timely manner thereby mitigating severity of illness. By the third year the program is expected to expand to at least two other adjacent regions (e.g. Shinyanga).

With FY 2013 funds, PMI will support the training of over 400 new health care workers (HCW) in 132 health facilities (including 26 additional hospitals) in case management; this will bring to a total of almost 1200 HCW trained in over 340 facilities in the extended Lake Zone. Tibu Homa will also train laboratory workers on RDT, strengthen the quality of malaria microscopy, and develop a system to check accuracy and reduce patient wait times to receipt of study results. The team will train the RHMTs and CHMTs in supportive supervision and onsite mentoring of facility-based quality improvement teams, and will arrange for monthly visits from coaches. With FY 2013 funds an additional 76 mentors will be trained bringing to 190 the number of those who will be deployed to facilities to provide on-site support in case management of childhood illness. Hospital Therapeutics Committees will be established in hospitals and together with supply chain management trainings of key

individuals in facilities will ensure consistent supplies of antimalarials and other essential pediatric medicines. The program will ensure availability of updated guidelines and algorithms for providers to identify and manage the differential diagnosis for febrile illness in children under five.

In order to enhance sustainability, PMI will encourage public-private partnerships with local firms interested in supporting pediatric care as part of their corporate social responsibility. Efforts will be made to improve the capacity of R/CHMT members to plan for and expend funds on pediatric care as well as to supervise services in the facilities. Support for NMCP's malaria/ IMCI focal persons will be provided so that periodic data collection and supervision of sites can be conducted. Additionally, the project will facilitate linkages between primary health facilities and the community by engaging community leaders and organizing networks to address obstacles to accessing services and promote health-seeking behaviors. These partnerships and networks will strengthen referral systems and improve access for the most vulnerable children. *($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 (average cost of $1 per treatment) with FY 2013 funds. In the event that these funds are not needed, they will be reallocated to fill the other priority gaps for the ITN keep-up strategy. (*$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. With FY 2013 funds, 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 distribution of ACTs and RDTs from Medical Store departments to health facilities. PMI support will address medical waste management and final disposal, as per U.S. Government and local environmental laws. (*$750,000, of which $280,000 is for end-use verification)*

(J.2.e) Rollout of the National Guidelines for Diagnostic and Treatment (NGDT). The revision of the NGDT will be finalized end 2012. With FY 2013 funds, PMI will support NMCP and the Zonal Resource Centers to roll out of the revised NGDT. ($200,000)

▪ ***Zanzibar***

(J.2.f) Strengthen Pharmaceutical Management and Supply Chain System. With FY 2013 funds, 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. *($250,000)*

(J.2.g) Updating Integrated Management of Childhood Illness (IMCI) Guidelines. To improve differential diagnosis of severe febrile illnesses, PMI will support the review and update of the IMCI guidelines and algorithm with FY 2013 funding. *($50,000)*

(J.2.h) Therapeutic Drug Efficacy Monitoring. With FY 2013 funding, PMI will continue to support therapeutic efficacy monitoring for artemether-lumefantrine on the Mainland. 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 sites on the Mainland. In light of the poor recruitment rates in the past year at several of the historical sites, PMI will work with the NMCP and IHI to identify appropriate sites where sufficient numbers of patients can be enrolled. At each site, 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 will then be re-assessed 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. *($250,000*)

K. INTERVENTIONS – EPIDEMIC SURVEILLANCE & RESPONSE

K.1 EPIDEMIC SURVEILLANCE & RESPONSE

Background

▪ ***Mainland***

True malaria epidemics are uncommon on the Tanzania Mainland, but seasonal increases in transmission do occur. Ongoing intervention scale-up warrants 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***

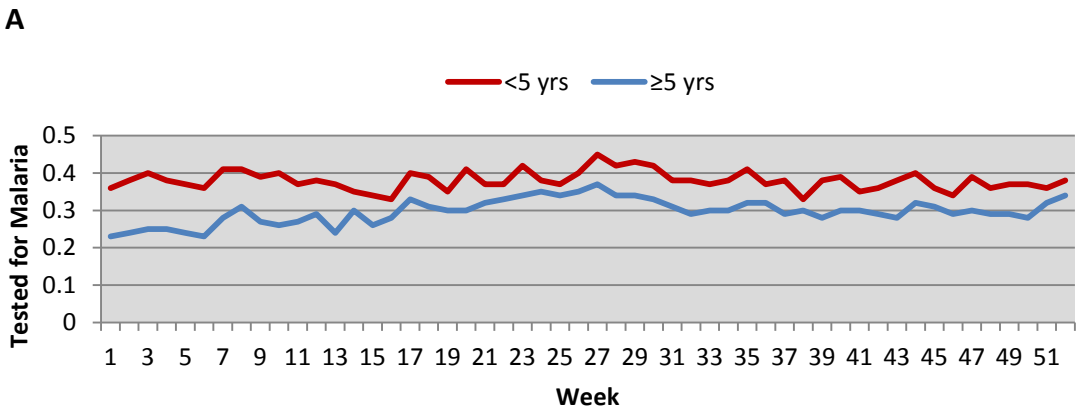
PMI continues to focus epidemic surveillance and response activities in Zanzibar where malaria has become an uncommon occurrence. In FY 2008, PMI provided technical and financial support to ZMCP to develop and implement a Malaria Early Epidemic Detection System (MEEDS) in Unguja and Pemba. The system 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 gradually over four years. 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

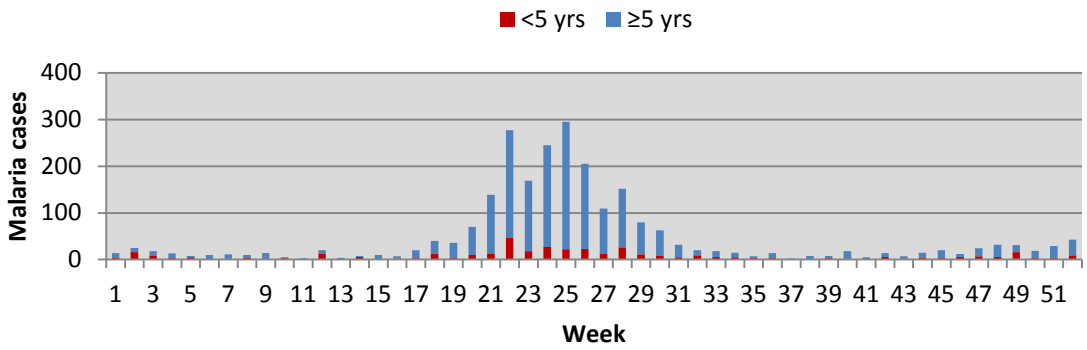
▪ ***Zanzibar***

In late 2011 the MEEDS was expanded to 52 additional facilities, bringing the total to 142 reporting sites, or all government health facilities in Zanzibar. In mid-2009 and again in early 2011, data quality assessments showed that the system captured 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-2012, all MEEDS data have been summarized and disseminated in the form of a Biannual Report.

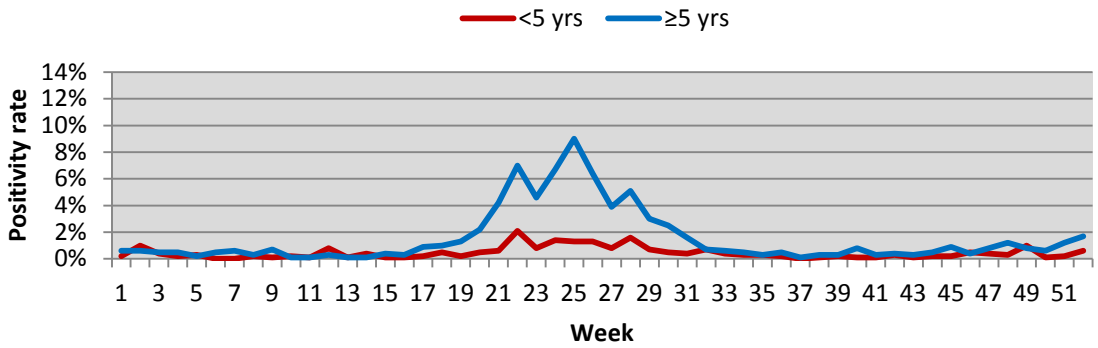
Figures 10A, B, and C: Proportion of out-patients tested for malaria (A), laboratory-confirmed malaria cases (B), and malaria test positivity rate (C) according to age group and surveillance week number — 90 Zanzibar MEEDS sites, 2011.



B



C



Proposed Activities with FY 2013 Funding

▪ ***Mainland***

(K.a) IDSR Reporting in Lake Zone and Dar es Salaam. Mainland has scaled up both IRS and ITNs in Lake Zone, and this zone is expected to experience dramatic declines in malaria transmission. 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. The MEEDS-IDSR scale up in the Lake Zone will include both malaria and non-malaria indicators. A successful pilot of this cellphone-based IDSR system was recently completed in two districts. Initially, the reporting frequency will be monthly. *($400,000)*

(K.b) Outbreak Investigation and Mapping. Efforts will be made to begin to produce maps useful for planning and executing malaria outbreak investigations. PMI will support the development of a mapping system with sufficient resolution to provide NMCP and district-level health teams the ability to focus response efforts. *($75,000)*

▪ ***Zanzibar***

(K.c) Maintain MEEDS and Outbreak Preparedness/Response Throughout Zanzibar. PMI will support maintenance of MEEDS at all 142 government health facilities and at least 25% (approximately 20) of private health facilities that have the highest patient volume. Supportive supervision visits for diagnostics and surveillance will be increased to once per

quarter. 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. *($550,000)*

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%. PMI works in collaboration with PEPFAR on many cross-cutting programmatic issues related HIV/AIDS and malaria interventions. Early collaborative efforts were made to include ITNs as part of a basic care package provided to people living with HIV/AIDS (PLHA) enrolled in PEPFAR-funded home-based care. However, with the Mainland's achievement of universal bed-net coverage in October 2011, inclusion of ITNs in home-based care packages became less important. In the future, a specific LLIN keep-up strategy may be considered for PLHA.

Care and treatment center clients in need of a malaria diagnostic test typically have reported 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 serves on a PEPFAR 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***
PMI and PEPFAR funding is currently being used to fund another *Tanzania HIV/AIDS and Malaria Indicator Survey* (THMIS), with preliminary results expected in August 2012 (the last THMIS covered 2007–2008). PMI support for the THMIS was included in the FY 2010 MOP and additional PEPFAR support was included via FY 2010 or FY 2011 funds. The PMI and PEPFAR teams have also funded a combined two-year surveillance officer position in Zanzibar, who is assigned to both ZMCP and Zanzibar AIDS Control Program to strengthen surveillance activities and help coordinate disease cluster investigations. PMI's support for strengthening malaria diagnostics has done so using infrastructure and equipment supplied by PEPFAR. PMI and PEPFAR funds continued to co-fund the Tanzania Field Epidemiology & Laboratory Training Program.

Proposed Activities with FY 2013 Funding

▪ ***Mainland and Zanzibar***
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 2013 PMI funds are requested for these activities*).

M. CAPACITY BUILDING AND HEALTH SYSTEMS STRENGTHENING

M.1 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 and strengthen 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 FY 2008. 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.

Progress over Past 12 Months

▪ ***Mainland and Zanzibar***
Out of the second class of 10 Tanzania FELTP trainees, seven graduated with their Master's Degrees in December 2011. All but one graduate retuned to positions within the MOHSW. The fifth consecutive cohort will commence training in September/October 2012. 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 participate 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 third cohort of 12 trainees will graduate in December 2012.

Proposed Activities with FY 2013 Funding

▪ ***Mainland and Zanzibar***
(M.1.a) Continue Support to Tanzania FELTP Program. PMI will continue support to the FELTP program and contribute to the advanced training of 20 Tanzanian epidemiologists for a 12-month period. 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.2 STRENGTHENING SYSTEMS FOR DELIVERY AND MANAGEMENT OF QUALITY HEALTH SERVICES

Background

▪ ***Mainland***
In 1994, Tanzania introduced "Decentralization by Devolution", an approach that is designed to shift responsibility for budgeting and management of government services from the central government to Local Government Authorities (LGAs). In 2001, District Health Services became part of the LGAs, separating them from most operational oversight from the MOHSW. In this context, LGAs face demands to improve health sector infrastructure together with significant challenges in financing, prioritizing, and planning health services and addressing the severe human resource crisis. Health financing falls short of the 15% pledged by the Heads of State in the Abuja Declaration in 2001, and rising costs and a rapidly growing population make it difficult to cover critical components of all health services. The health workforce is also a critical problem, as only 35% of 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 frameworks; 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 at the district level, including supervision at 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, efforts at

health workforce recruitment and retention, and working with the national government to identify ways to expand financing for health services.

USAID currently manages an innovative program to stimulate programmatic and fiscal accountability called "*Wajibika*" (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 and Regional 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 a program to strengthen local authorities to better plan and budget for the required number of health workers, recruit for appropriate cadres, and retain them. Presently, nearly 25% of health workers either do not report to post or leave their posts within the first year due to a variety of factors, including poor management and working conditions and untenable living conditions.

Financing remains a challenge, with 55% of funding for health services provided through donor support. In late 2012, it is expected that an interministerial GoT committee will take the lead in drafting and finalizing 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 funding 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* is operating in all 27 districts of the regions of Dodoma, Iringa, Morogoro and Pwani, where focus is being placed on strengthening district and regional governments to prioritize, implement, and monitor programs, catalyzing synergy between and among health programs, demonstrating results, ensuring fiscal accountability, and coordinating health resources from myriad sources. 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. In its final year (ending December 15, 2013), *Wajibika* will scale up support to regional governments and finalize its approach to hand over to PMORALG, enabling it to roll out the "*Wajibika* approach" to all other regions and districts on the Mainland.

The Tanzania Human Resources Capacity project has scaled up its activities to recruit and retain health workers to 65 districts, representing almost half of the Mainland.

Proposed Activities with FY 2013 Funding

▪ ***Mainland***

(M.2.a) Support the Strengthening of Health Systems. Under the umbrella of the Global Health Initiative, PMI will partner with all other USG health programs 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—including malaria; (2) strengthening districts' and regions' ability to plan for, recruit, retain, and better manage the health workers that are essential for quality service delivery and, (3) modeling and supporting elements defined in the Mainland's first health financing strategy. PMI will support the first two of these three prongs. All health funding streams, including PMI, will be used to support PMORALG to strengthen programmatic and fiscal accountability in all districts and regions, linking with other donor funding to strengthen them to ensure effective decentralization of health services by clarifying roles and responsibilities with MOHSW and PMORALG at the central level. Focusing on all Mainland districts, PMORALG will strengthen a small set of critical skills at the district and regional council level, using mentors embedded at the workplace. The expertise provided will result in better managed, integrated and sustainable health services.

PMORALG will roll out the *Wajibika* approach to build local capacity for program management and accountability through mentoring and supervision throughout the Mainland, effecting policy changes that will impact how health programs are planned and managed. 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 expected result is for at least 80% of districts receiving support to obtain clean results through the LGA basket funds audit. In the 2006/2007 audit conducted 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.

MOHSW and PMORALG will participate in the intervention 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. As a result of this support, over 80% of districts will demonstrate the ability to prioritize and plan appropriate finances for needed health services and take responsibility for effective program implementation. *($340,000)*

This investment is a critical part of PMI's efforts to strengthen Tanzania's capacity to care for its own citizens. It furthers efforts to improve the accessibility and quality of health services—including malaria, while building regional-, district-, and community-level capacity to plan, budget, forecast, and reimburse in line with results.

This health systems strengthening activity directly impacts decisions regarding allocation of funds, in accordance with PMI Operating Principle 2: "Health System Strengthening and Integration." USAID/Tanzania contracted a team to conduct a mid-term evaluation of the current *Wajibika* project, and that team noted that the *Wajibika* project has strengthened the

capacity of district councils in planning and financial management through training and its district mentoring program. More specifically, the project has established greater transparency and collaborative planning and monitoring of budgets.

Under the Government of Tanzania's "Decentralization by Devolution" clause, district officials and elected councilors increasingly determine how funds will be allocated, based on what they consider to be priority health issues for their constituencies. The 2011 PMI External Evaluation (Page 23) states:

"It is increasingly recognized that poorly functioning health systems are a major obstacle to scaling up interventions aimed at improving health outcomes. The need to address weak health systems has become critically important and PMI investments must be seen as strengthening broader health systems by improving the accessibility and quality of primary healthcare, diagnosis, and treatment in addition to malaria-specific services. PMI designated its health systems strengthening approach to upgrade the capacity of national-level systems for malaria prevention and control, while extending activities out of provincial, district, and community levels."

Continued PMI funding for health systems strengthening activities will enable PMI to address PMI External Evaluation Recommendation three: "Applying the country ownership principle thoughtfully to improve program effectiveness."

(M.2.b) Support the Recruitment and Retention of Health Workers. PMI will assist the GOT in addressing the dramatic shortage of health workers who are so essential for effective service delivery. Emphasis will be both on strengthening recruitment and retention to address the estimated 25% attrition rate within the first year after being posted and the inequitable distribution of skilled health workers. As 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 and the Japan International Cooperation Agency, all districts will be supported in methods to strengthen recruitment, improve performance management and work climate, and identify non-financial incentives to ensure retention. District interventions will also help to optimize the existing work force by improving performance management and productivity. *($300,000)*

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, with an emphasis 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, the ZMCP and other 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 coordination was 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 resources to support the

national implementation plan. Implementation of the Tanzania National Voucher Scheme has exhibited a similar arrangement, with funds formerly provided by Global Fund, PMI, and the Government of the Netherlands, and as of November 2011, is funded by PMI and DFID. Other examples are the procurement of ACTs and roll-out of RDTs, where both activities are co-funded by PMI and Global Fund, 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—while representing PMI at global malaria fora—routinely communicate and share information with the PMI/Tanzania team. The USAID and CDC Resident Advisors maintain offices at the National Malaria Control Program office to optimize communication. Additionally, the PMI team meets regularly with NMCP and ZMCP personnel to discuss and prioritize issues and problems. The PMI Resident Advisors enjoy open communications with the country coordinators for the WB, WHO, Global Fund, Government of the Netherlands, and DFID.

Local coordination of PMI activities begins at the planning stage and is followed through to implementation and monitoring. 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. To date, PMI has held eight such consultative meetings with the growing number of malaria stakeholders and increasing NMCP and ZMCP ownership and leadership. These meetings have also attracted the participation of other USG agencies and donors.

Efforts toward local coordination of PMI activities is furthered in multiple existing fora, including 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. All NMCP coordination structures are linked to the MOHSW and the SWAp process through the National Malaria Advisory Committee. In addition, the NMCP holds monthly 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 faced.

Progress over Past 12 Months

In 2011, PMI/Tanzania expanded its team by filling the jointly-funded (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 2013 MOP in April 2012.

In September 2011, DFID agreed to directly procure 650,000 LLINs to enable Zanzibar to achieve universal bed-net coverage, beyond the 210,000 LLINs funded by the Global Fund; PMI funded the Tanzania Red Cross Society to distribute these LLINs. In November 2011, DFID signed its own agreement with MEDA to split its operations costs for the Tanzania

National Voucher Scheme with PMI, and to fully fund the pregnant women voucher, as Global Fund support for it ended June 30, 2011. In December 2011, the Government of the Netherlands provided $367,206 in "gift" funds to USAID to purchase SP and RDTs for the Mainland. And, in April 2012, after an official request from NMCP, PMI, DFID and the Swiss Agency for Development & Cooperation worked together to co-fund the school LLIN distribution pilot, which is planned to take place in the Southern Zone in late 2012/early 2013.

Proposed Activities with FY 2013 Funding

In the coming year, PMI plans to enjoy its continued close relationship with both NMCP and ZMCP in coordinating and executing activities. PMI will continue to work with DFID to maintain the Tanzania National Voucher Scheme, and other donors in support of the school-based LLIN distribution program, effectively comprising the Mainland's "keep-up strategy." PMI will also continue its work with NMCP and ZMCP to pursue other avenues of support, including GoT funds in its annual budget. PMI will also work with both ZMCP and NMCP to implement the insecticide management plan for IRS.

O. MONITORING & EVALUATION PLAN

Background

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 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 for a 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. According to NMCP's M&E Plan for 2008-13, the next Tanzania DHS is scheduled for 2014-15.

Malaria Indicator Survey (MIS). The MIS survey assesses core household coverage and morbidity indicators used in Tanzania. The most recent MIS (combined with an AIDS Indicator Survey) was conducted in 2011-12 with funding from both PMI and PEPFAR. Parasitemia and anemia data are included in these surveys. 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.

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. Tanzania carried out a SPA in 2006 that included a malaria case management module that provided baseline information for PMI. A SPA is planned with FY 2012 PMI funding.

Health Management Information System (HMIS). 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 more than $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. The national resistance monitoring, initiated by the Gates Foundation/WHO in 2008, is currently supported by PMI through its implementing partners at NIMR and WHO. Insecticide resistance surveillance in 14 sentinel sites, including the PMI IRS district of Muleba, showed variations in reduced susceptibility to the insecticides tested (permethrin, lambda-cyhalothrin, deltamethrin and DDT) among the districts. Increasing insecticide resistance in Tanzania, expansion of the LLIN program to universal coverage, continuation of IRS, changes in IRS pyrethroid use to carbamates and future strategies for combined IRS and LLIN, indicate the importance of continued monitoring of insecticide performance is essential

The NIMR-Mwanza entomology and insectary facility now serves as a regional entomology center for the Lake Victoria basin. With PMI support, NIMR-Mwanza together with the Regional/District Health authorities implemented routine entomologic monitoring of IRS activities in three sentinel districts, Chato, Karagwe and Muleba. These were selected to represent different geographical setting of Kagera Region. Monthly mosquito collections, carried out at one village (with two sub-villages) in each of the sentinel districts by village collectors, are sent to NIMR-Mwanza for processing and analysis. Cone wall bioassays are conducted to monitor residual insecticide activity for IRS at Kagera, Mwanza and the new IRS region of Mara. In addition PMI funded a NIMR/IHI collaboration to pilot an evaluation of community based adult mosquito surveillance systems for scalable entomological monitoring of transmission intensity and key vector behaviours.

Through a partnership between NIMR, IHI, London School of Hygiene and Tropical Medicine (LSHTM) and the Kilimanjaro Christian Medical College (KCMC), PMI is supporting an assessment in Muleba of whether LLINs can sustain the transmission reduction

gains made by IRS following the withdrawal of IRS in an area with high ITN coverage using a two-arm cluster-randomized design. Two districts were selected. In year one, both arms received both IRS and LLIN. In the second year, one arm will continue to receive IRS and LLIN while the other arm would receive LLIN alone.

In Zanzibar, routine entomological monitoring continues at seven sentinel sites, four sites on Unguja and three on Pemba. This is complemented with spot-check investigations from randomly selected sites based on weekly MEEDs reporting. This provides information on vector species and density, human blood feeding index and malaria infection rates in the various vector species.

With LLIN universal coverage in Zanzibar and high levels of pyrethroid resistance, Zanzibar has adopted an insecticide rotation strategy, using a carbamate (bendiocarb) for the seventh spray round and a shift from blanket IRS to targeted spraying. The ZMCP, with support from IHI, has intensified efforts for insecticide resistance monitoring in both islands. 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" (two sites in Unguja and one in Pemba) identified from the MEEDS data.

Progress over Past 12 Months

▪ **Mainland**

Strengthening NMCP's supportive supervision. NMCP's strategic information database includes 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, earlier surveys will serve as a source of comparison data. 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. These three data sources are used to generate informative maps widely used by many stakeholders, including PMI.

Tanzania Demographic and Health Survey. The 2009-10 DHS field work was completed in May 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.

Service Provision Assessment (SPA). The Tanzania SPA is currently still in the planning stages. Stakeholder meetings were recently conducted on Mainland and Zanzibar, and included key stakeholders such as MOHSW, NMCP, ZMCP, NBS, NACP, and NTLP. Implementation of the SPA is scheduled for May 2013.

Entomologic Monitoring. The 14 national sentinel sites are producing national data for insecticide resistance in Tanzania. Of these sites Muleba and, more recently, Magu are in PMI IRS areas. 2011 resistance testing in Muleba District using the WHO assay indicated emerging insecticide resistance to lambda-cyhalothrin (85% mortality), but no resistance to permethrin, deltamethrin and DDT. Magu reported resistance to DDT and permethrin with 95% and 96.3% mortality respectively. Three other sentinel sites, Muheza, Arumeru and

Moshi showed increasing *An. gambiae* resistance to pyrethroids. Reduced susceptibility was also observed in Kilombero, DSM, Handeni, Babati and Magu. All sites showed *An. gambiae* susceptibility to propoxur (a carbamate) and fenitrothion (an organophosphate).

In the Lake Zone, NIMR-Mwanza is now routinely conducting morphologic as well as molecular Anopheles species identification (PCR) and ELISA testing vector infection rates. In addition to the Chato, Karagwe and Muleba sentinel sites in the Kagera Region, entomologic monitoring in 2011 was expanded to two sites in Mwanza and Mara Regions. A combination of light traps, pyrethrum spray catches (PSC) and pit traps are used. In Chato, Karagwe and Muleba mosquitoes were collected from June –September 2011 and February 2012 (post-IRS). The highest numbers of *An. gambiae s.l.* were collected in Karagwe (59.8%), followed by Chato (37.4%) and Muleba (2.7%). During post-IRS, 176 *An. gambiae s.l* were collected, of which 82.5% was from Karagwe and 22.5% from Chato. No *An. gambiae s.l* was collected from Muleba. In Mwanza and Mara Regions, entomologic monitoring was carried in February 2012 (post-IRS). Of the 296 Anopheles mosquitoes collected from these two regions, 94.3% were from Mwanza and 5.7% from Mara. The vector species composition varied between regions. 792 mosquitoes from Chato, Karagwe and Muleba had a total infection of 1% positive for *P. falciparum* malaria parasites and 0.6% positive for *P. vivax.* Karagwe had the highest sporozoite rates for both *P. falciparum* and *P. vivax* at 2.3% and 1.1%respectively and Muleba had the least with 0.4% *P. vivax*. 58 mosquitoes tested from the post-IRS collections from the three sentinel sites showed no *P. falciparum* infections and *3.45% P. vivax* infections. In Mwanza, 1.8% of 279 mosquitoes were positive for *P. falciparum* and 12.9% for *P. vivax*. In Mara none of the11 mosquitoes tested were infected with malaria parasites.

From June 2011 – March 2012, a total of 7 rounds of WHO cone bioassays were conducted at the three sentinel sites. In Muleba and Karawge the cone bioassays were tested on walls sprayed with bendiocarb (a carbamate). In Chato, Mara and Mwanza the IRS was carried out with lamba-cyhalothrin (a pyrethroid). The cone bioassays were tested on different wall surfaces (mud, cement, painted/whitewash and wood). In Muleba and Karawge there was 100% mortality (24 hrs) with susceptible *An. gambiae s.s.* mosquitoes for all the surfaces for up to 8 weeks. Testing at 12 weeks-post spray in Muleba showed that the effect of the insecticide on mud surfaces had declined to 55%. This indicates that the residual effect of the insecticide may decline faster on mud surfaces than the other surfaces. A similar effect was seen in Chato and Mara where the residual effect of lamba-cyhalothrin, tested at 7 weeks and 8 weeks post –IRS, declined to 80% and 75% respectively.

IHI/NIMR implemented surveillance in 11 national sites using the Ifakara tent traps. Some of sites are located in PMI IRS areas. *An . gambiae s.l.* was found to be the predominant mosquito collected in 3 of the 4 PMI IRS sites. In sites with 80% LLIN use, there was an increase contribution of *An. arabiensis* over *An. gambiae s.s* in human biting intensity and transmission rates (entomologic inoculation rates) compared to areas with no LLIN use. In addition, there was an increasing proportion of human exposure to biting and transmission intensity occurring outdoors (compared to indoors) in areas of 80% LLIN use compared to areas of no LLIN.

Year 1 activities in the Muleba two-arm cluster-randomized evaluation of whether LLINs can sustain the transmission reduction made by IRS following the withdrawal of IRS in an area with high ITN coverage included a pilot and baseline epidemiologic, demographic and entomologic assessment of the selected sampling clusters. Insecticide resistance testing

showed high resistance to lamba-cyhalothrin (0-38.5% mortality), permethrin (11.2%) and DDT (12.5-40%). Bendiocarb was used for the IRS in the study area, however insecticide resistance testing also shown resistance (72.2-90.5%) mortality. The high resistance to pyrethroids and the reduced susceptibility to bendiocarb may reduce the effectiveness of LLIN and IRS respectively. Year 2 evaluations of post-intervention surveys and entomologic assessments are continuing.

In November 2011, a 2-week insecticide resistance workshop was conducted at NIMR-Mwanza for 23 participants. Participants were entomologists and field personnel from various NIMR centers, the ZMCP, IHI, KCMC, RTI and included two Mozambican entomologists from the National Malaria Control Program and the National Institute of Health. The training funded by PMU and carried out by the CDC. The workshop provided hands-on training in the bottle bioassay for insecticide resistance, microplate plate assay techniques to look at insecticide resistance mechanisms, PCR assays to test for genetic basis of insecticide resistance and interpretation of results in the context of insecticide resistance management and mitigation.

Ifakara Health Institute will be contracted under the Global Fund RCC grant to conduct (a) qualitative investigations into various attitudinal and behavioral issues in Year 5 of grant implementation; and (b) a retail audit of commercial outlets selling LLINs and ITNs in Year 5 of grant implementation. The total cost of the two studies is $251,000. Round 8, Phase 2 has been approved but will not be signed until the Ministry of Finance repays to NMCP $2 million that was lost due to exchange rate conversions. It is unclear whether and when this repayment will happen. R8 Phase II will cover BCC and NMCP capacity strengthening.

▪ **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).

Entomologic Monitoring. Routine entomologic monitoring is continuing at four sentinel sites in Unguja and three in Pemba. Mosquito collections from pit traps, pyrethrum spray catches, light traps and man landing collections are morphologically identified 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. arabiensis* is now the predominant vector in Pemba (99%) and Unguja (92%). Man landing collections at the sentinel sites show that 94% of transmission is occurring mainly through outdoor biting, a pattern consistent with the predominance of the more exophilic and exophagic *An. arabiensis*. 2010 resistance testing using the WHO assay indicated that in Unguja there continues to be no resistance to bendiocarb, deltamethrin and permethrin with mortality of 100-99%. In Pemba however, mosquitoes tested were resistant to deltamethrin (80%), permethrin (50%) and lambda-cyhalothrin (49%). The mosquitoes remain susceptible to bendiocarb. Based on these results, the resistance technical group recommended that the bendiocarb be used instead of lambda-cyhalothrin for 2012 IRS. Health facility data was used to stratify areas of malaria risk and the IRS program shifted from blanket spraying to a targeted spray strategy. With rapid emergence of insecticide

resistance in Pemba, insecticide resistance monitoring was intensified. In April 2012, WHO resistance testing was carried out using larvae and pupae reared from mosquitoes collected in Pemba. The mosquitoes were fully susceptible to DDT, malathion and bendiocarb but high levels of resistance were found for the pyrethroids lambda-cyhalothrin, permethrin and deltamethrin. In response to an increase in malaria cases in Tumbe, Pemba Island in December 2011, IRS was applied used bendiocarb WP. WHO wall bioassays conducted 53 and 93 days post-spray indicated a rapid decrease in of effectiveness of the bendiocarb on un-plastered stone block, lime-wash and mud walls. The rapid emergence of insecticide resistance is a critical factor for malaria control in Zanzibar and points to the need for increased entomologic monitoring of IRS and LLIN interventions.

Proposed Activities with FY 2013 Funding

▪ ***Mainland***

(O.1.a) Integrated Supportive Supervision. 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, analyze, display, and disseminate information for decision making. 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. *($300,000)*

(O.1.b) Evaluation of Malaria Focal Person. District malaria focal persons were introduced in Tanzania in 2005. These 121 staff are responsible for ensuring malaria control policies are adhered to at health facilities throughout their districts. They also assist with RDT training, data collection, and support supervision. To date there has been no systematic evaluation of the capacity or performance of these 121 staff. PMI will support NMCP's effort to evaluate the malaria focal persons throughout the country. *($50,000).*

(O.1.c) External Evaluation of Tibu Homa Project. Evaluation of IRS project supported by PMI in Mainland and Zanzibar. *($200,000)*

(O.1.d) External Evaluation of MAISHA project. Evaluation of malaria in pregnancy activities supported by PMI in Mainland and Zanzibar. *($200,000)*

(O.1.e) Technical Support for Mission monitoring and evaluation. To provide technical assistance and guidance to Mission health programs and to facilitate regular reporting on USAID and other performance indicators for monitoring and evaluation, including PMI indicators. *($200,000)*

(O.2.a) Entomologic monitoring. Because of universal LLIN coverage and in accordance with the recommendations of the 2011 PMI external evaluation, IRS will scaled down in the Lake Victoria Basin. There will be continued monitoring in three established sentinel districts for LLIN and IRS, as well entomologic monitoring sites in the two new IRS areas of Mwanza and Mara. The entomologic monitoring in the Lake Victoria Basin 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, assisted by personnel from NIMR-Mwanza. RTI/PMI will provide logistical support, with CDC providing technical assistance. The NIMR-Mwanza insectary will provide the material for WHO bioassays to monitor both IRS and LLINs. PMI will continue to support insecticide resistance and bioassays at 14 national sites to monitor national LLIN and IRS interventions . This will provide a database of insecticide resistance and efficacy for the NMCP and other partners. *($500,000)*

▪ ***Zanzibar***

(O.1.a) Integrated Supportive Supervision. Laboratory support supervision visits will be combined with surveillance (MEEDS) support supervision visits on a quarterly basis at all government health facilities throughout Pemba and Unguja, an increase in numbers of facilities visited over previous years. This type of integrated visit to the health facilities will help ensure diagnostics and surveillance systems are more harmonized. Check lists have been developed for both areas of supervision and results will be entered on an ongoing basis by ZMCP. Analysis of the support supervision visits data will be performed on a semi-annual basis and used for further refining and strengthening Zanzibar diagnostics and MEEDS systems. *($150,000)*

(O.2.a) Entomologic monitoring. PMI will continue support to ZMCP in entomologic monitoring in view emerging pyrethroid resistance in Zanzibar, changes in insecticide class for IRS activities, shift from blanket spraying to targeted and focal IRS strategies and scale-up to universal LLIN coverage. The program will continue to review and re-focus the current entomology surveillance strategies in line with the changes in vector control strategies. Investigation into malaria "hot-spot" areas is crucial to Zanzibar's strategy for malaria elimination. PMI will continue to assist the ZMCP in developing vector control guidelines for the malaria early warning system. *($160,000)*

(O.2.b) 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) Demographic and Health Survey. Support for preliminary planning of the 2014-15 DHS will provided. This DHS, which is expected to cost $2 million, will be co-funded with other USG health funds. Critical outcome and impact data are provided by the DHS. These data allow PMI to perform impact evaluation of all malaria control efforts being supported by all stakeholders in Tanzania. Any additional PMI funds will be included in the FY 2014 MOP *($500,000)*

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. Four other US PSC and FSNs are managing PMI funded activities that are integrated in other heath and HIV programs but their salaries are covered by non-PMI funds. 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. One U.S. Direct Hire, two U.S. PSC, and one FSN are AORs or Activity Managers for PMI funded activities that are integrated in other heath and HIV programs but their salaries are covered by non-PMI funds.

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 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, the Swiss Agency for Development and Cooperation, and the private sector.

Locally-hired staff to support PMI activities—either in ministries or at 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 2013 Funding

With FY 2013 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	$110,000
Salary and benefits of FSN A&A Specialist	$100,000
	$730,000

In addition to the USAID PMI Resident Advisor and support staff, $ $572,500 is retained by USAID to fund managerial and administrative costs:

50% Salary and Benefits of USPSC	$267,500
IT Cost Recovery (estimate)	$30,000
Wider Mission Staff Allocation Tax	$125,000
Program Development & Cross-Cutting Support	$150,000
	$572,500

$744,700 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

Table 1
President's Malaria Initiative - Tanzania Mainland and Zanzibar
Budget Breakdown by Implementing Partner for FY 2013 ($45,000,000)

Partner Organization	Geographic Area	Activity	Budget
CDC	National	M.2.a Capacity Building FELTP	$ 175,000
	National	O.2.b CDC Reagents Procurement	$ 10,000
	National	P.6 CDC Resident Advisor	$ 550,000
	National	P.7 CDC Program Specialist	$ 110,000
	National	P.8 CDC Admin & Technical Support	$ 84,700
GEMS	National	I.2.c Environmental Monitoring for IRS	$ 35,000
ICF MACRO	National	O.3.a Tanzania "DHS"	$ 500,000
NMCP	Mainland	J.1.a RDT and Microscopy QA/QC	$ 100,000
	Mainland	O.1.b Evaluation of Malaria Focal Person	$ 50,000
	Mainland	J.2.e Roll-out of new NGDT	$ 200,000
	Mainland	O.1.a Integrated Supportive Supervision	$ 300,000
Peace Corps	National	I.4.b. BCC across all intervention areas by Peace Corps Volunteers	$ 35,000
RTI	Mainland	I.2.a Indoor Residual Spraying	$ 10,100,000
	Zanzibar	I.2.b Indoor Residual Spraying	$ 550,000
	Zanzibar	K.c MEEDS	$ 300,000
	Mainland	K.a IDSR Reporting	$ 400,000
	Mainland	K.b Outbreak Investigation & mapping	$ 75,000
	Mainland	O.2.a Entomologic Monitoring	$ 500,000
TBD	Mainland	J.2.h Therapeutic Drug Efficacy Monitoring	$ 250,000
	Mainland	M.2.b Recruitment and retention of health workers	$ 300,000
	Mainland	I.3.a Malaria in Pregnancy	$ 900,000
	Mainland	I.4.a Behavior Change Communication	$ 1,500,000
	Mainland	I.1.a Keep up Program - School-base	$ 8,057,800
	Mainland	M.2a Support the Health Systems Strengthening	$ 340,000
	Mainland	I.1.a Keep up Program - TNVS	$ 5,500,000
	Mainland	O.1.c External Evaluation of Tibu Homa Project	$ 200,000
	Mainland	O.1.d External Evaluation of MAISHA Project	$ 200,000
	Mainland	J.1.a RDT and Microscopy QA/QC	$ 700,000
	Zanzibar	J.1.a RDT and Microscopy QA/QC	$ 100,000
TMEMS	National	O.1.e Mission-wide M & E Contracts	$ 200,000
URC	Mainland	J.2.a Service Delivery Strengthening	$ 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	$ 110,000

	National	P.4 USAID Acquisition & Assistance Specialist FSN	$ 100,000
	National	P.5 USAID Admin & Technical Support	$ 572,500
USAID | DELIVER	Zanzibar	J.1.e RDT Procurement	$ 400,000
	Mainland	J.1.c RDT Procurement for UNHCR	$ 140,000
	Mainland	J.1.b RDT Procurement	$ 4,000,000
	Mainland	J.2.b ACT Procurement	$ 3,000,000
	Mainland	J.2.c ACT Procurement for UNHCR	$ 200,000
	Mainland	J.2.d Malaria Commodity Logistics	$ 750,000
	Zanzibar	J.2.f Malaria Commodity Logistics	$ 250,000
ZMCP	Zanzibar	I.1.b Keep up Program	$ 1,000,000
	Zanzibar	I.4.c Behavior Change Communication	$ 200,000
	Zanzibar	J.1.d RDT and Microscopy QA/QC	$ 75,000
	Zanzibar	J.2.g Updating IMCI Guideline	$ 50,000
	Zanzibar	O.1.a Integrated Supportive Supervision	$ 150,000
	Zanzibar	K.c MEEDS reporting and outbreak response	$ 250,000
	Zanzibar	O.2.a Entomological Monitoring	$ 160,000
GRAND TOTAL			**$ 45,000,000**

Table 2 President's Malaria Initiative - Tanzania Mainland and Zanzibar Planned Obligations for FY 2013 ($45,000,000)				
Proposed Activity	**Mechanism**	**Planned Amount**	**Geographic Area**	**Brief Description of Activity**
I. PREVENTIVE ACTIVITIES				
I.1 Insecticide Treated Nets				
a. Keep-up Program: TNVS	*TBD*	5,500,000	Mainland	Support to TNVS for vouchers covering the procurement and distribution of approximately 1.1 million LLINs for infants and pregnant women.
b. Keep-up Program: School Base Distribution	*TBD*	8,057,800	Mainland	Procurement of 2.5 million nets for school-based distribution assuming the pilot is successful.
c. Keep-up Program	*ZMCP*	1,000,000	Zanzibar	Procure 150,000 LLINs to support Zanzibar's UCC strategy.
I.2 Indoor Residual Spraying				
a. Mainland IRS	*RTI*	10,100,000	Mainland	IRS for Mara and Mwanza Regions; two rounds.
b. Zanzibar IRS	*RTI*	550,000	Zanzibar	Targeted spraying in persistent high malaria areas.
c. Environmental Monitoring for IRS	*GEMS*	35,000	Nationwide	Monitoring of compliance of PMI-supported IRS with USG and national environmental regulations and guidelines.
I.3 Management of Malaria in Pregnancy				
a. Health systems strengthening for IPTp implementation and Supportive Supervision by DHMTs	*TBD*	900,000	Mainland	Integration of activities with other MCH activities and partners. Support participation of Mainland and Zanzibar's representation in RBM malaria in pregnancy working group.
I.4 Behavior Change & Communication				
a. BCC across all intervention areas	*TBD*	1,500,000	Mainland	BCC to increase demand for and correct use of ITNs, IPTp and RDTs.
b. BCC across all intervention areas by Peace Corps Volunteers	*Peace Corps Tanzania*	35,000	Nationwide	BCC conducted by Peace Corps Volunteers.
c. BCC across all intervention areas including hang-up campaign	*ZMCP*	200,000	Zanzibar	BCC to increase and improve use of ITNs, IPTp, and IRS.
SUBTOTAL: Preventive Activities		***$ 27,877,800***		
J. CASE MANAGEMENT ACTIVITIES				
J.1 Diagnostics				
a. RDT and Microscopy QA/QC system	*TBD*	700,000	Mainland	Implementation of quality assurance system for malaria microscopy and RDTs.
	NMCP	100,000	Mainland	

b. RDT Procurement	*USAID /DELIVER*	4,000,000	Mainland	Procure 4million RDTs for national scale-up.
c. RDT Procurement	*USAID /DELIVER*	140,000	Mainland (Kigoma)	Procure 50,000 kits for UNHCR refugee camps in Kasulu.
d. RDT and Microscopy QA/QC system	*TBD*	100,000	Zanzibar	Implementation of quality assurance system for malaria microscopy and RDTs.
	ZMCP	75,000	Zanzibar	
e. RDT Procurement	*USAID /DELIVER*	400,000	Zanzibar	Procure 300,000 RDTs for national scale-up.
J.2 Malaria Treatment				
a. Management of febrile illness	*URC*	750,000	Mainland	Contribute to integrated service delivery at health facilities and community level.
b. ACT procurement	*USAID /DELIVER*	3,000,000	Mainland	Procure approximately 3 million treatments of ACT for the public sector.
c. ACT procurement	*USAID /DELIVER*	200,000	Mainland (Kigoma)	ACT procurement and distribution to UNHCR refugee camps in Kasulu.
d. Malaria commodity logistics	*USAID /DELIVER*	750,000	Mainland	Support forecasting and procurement planning for PMI and Global Fund ACTs, RDTs; implement quarterly end use verification surveys.
e. Roll-out of new National Guidelines for Diagnostic and Treatment	*NMCP*	200,000	Mainland	Support NMCP and Zonal Recourse Centers to roll out revised National Guidelines for Diagnostic and Treatment.
f. Malaria commodity logistics	*USAID /DELIVER*	250,000	Zanzibar	Support forecasting and procurement planning for PMI and Global Fund ACTs, RDTs; implement quarterly end-use verification surveys.
g. Updating IMCI guidelines	*ZMCP*	50,000	Zanzibar	Support review and update of IMCI guidelines and algorithm.
h. Therapeutic drug efficacy monitoring	*TBD*	250,000	Mainland	Monitor efficacy of AL and AS-AQ at select sites.
SUBTOTAL: Case Management		***$ 10,965,000***		
K. EPIDEMIC SURVEILLANCE AND RESPONSE				
a. IDSR reporting in mainland	*RTI*	400,000	Mainland	Implementation and scale-up of epidemic reporting system in 40 new facilities.
b. Outbreak investigation & mapping	*TBD*	75,000	Mainland	Support development of mapping system for planning and executing malaria outbreak investigations.
c. MEEDS reporting and outbreak response	*RTI*	300,000	Zanzibar	Continued support of epidemic detection and reporting system for public and private facilities.
	ZMCP	250,000	Zanzibar	
SUBTOTAL: Epidemic Surveillance		***$1,025,000***		
M. CAPACITY BUILDING AND HEALTH SYSTEMS STRENGTHENING				

M.1 Field Epidemiology & Laboratory Training Program				
a. Support to Field Epidemiology and Laboratory Training Program	*CDC*	175,000	Mainland	Training of Tanzanian staff as part of CDC Field Epidemiology and Laboratory training program.
M.2 Health System Strengthening				
a. Support to strengthening of health systems	*TBD*	340,000	Mainland	Build capacity for program management and accountability at district level.
b. Recruitment and retention of health workers	*TBD*	300,000	Mainland	Contribution of strengthening recruitment/retention of MOHSW workers.
SUBTOTAL: Capacity Building		***$ 815,000***		
O. MONITORING AND EVALUATION				
O.1 M&E Support				
a. Integrated supportive supervison	*NMCP*	300,000	Mainland	Support NMCP to collect, store, analyze, display and disseminate information and to do supervisory visits.
	ZMCP	150,000	Zanzibar	
b. Evaluation of Malaria Focal Person	*NMCP*	50,000	Mainland	Evaluation of 121 malaria focal persons.
c. External Evaluation of Tibu Homa Project	*TBD*	200,000	Mainland	External Evaluation for PMI supported IRS.
d. External Evaluation of MAISHA Project	*TBD*	200,000	Mainland	External Evaluation for PMI supported IRS.
e. Mission-wide M&E contract	*TMEMS*	200,000	Nationwide	Provide technical assistance and guidance to Mission health programs and to facilitate regular reporting on USAID and other performance indicators.
O.2 Entomological Monitoring				
a. Entomological monitoring	*RTI – NIMR*	500,000	Mainland	Routine monitoring of entomologic variables at selected sites.
	ZMCP	160,000	Zanzibar	
b. Reagent procurement	*CDC*	10,000	Zanzibar	Support procurement of entomology supplies and lab reagents.
O.3 Nationwide Surveys				
a. DHS	*ICF Macro*	500,000	Nationwide	Preliminary planning for the 2014-2015 DHS evaluation.
SUBTOTAL: MONITORING & EVALUATION		***$ 2,270,000***		
P. MANAGEMENT AND ADMINISTRATION				
1. USAID PMI Advisor	*USAID*	400,000	Nationwide	Administration.
2. USAID Program Specialist FSN	*USAID*	120,000	Nationwide	Administration.

3. USAID M & E Officer FSN	*USAID*	110,000	Nationwide	Administration.
4. USAID Acquistion and Assistance Specialist FSN	*USAID*	100,000	Nationwide	Administration.
5. USAID Administration & Technical Support	*USAID*	572,500	Nationwide	Administration.
6. CDC PMI Advisor	*CDC*	550,000	Nationwide	Administration.
7. CDC Program Specialist FSN	*CDC*	110,000	Nationwide	Administration.
8. CDC Admin & Technical and TDY Support	*CDC*	84,700	Nationwide	Administration.
SUBTOTAL: Mgmt. & Administration		**$2,047,200**		
GRAND TOTAL		***$45,000,000***		