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

PRESIDENT'S MALARIA INITIATIVE

FY2011

Malaria Operational Plan (MOP)

TANZANIA

TABLE OF CONTENTS

ACRONYMS

5MR	Under-Five Mortality Rate
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	Centers for Disease Control and Prevention
CCHP	Comprehensive Council Health Plan
COMMIT	Communication and Malaria Initiative in Tanzania
DDT	Dichloro-diphenyl-trichloroethane
DfID	Department for International Development (U.K.)
DHMT	District Health Management Team
DSS	Demographic Surveillance System
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
Global Fund	Global Fund to fight AIDS, Tuberculosis and Malaria
GoT	Government of Tanzania
HIS	Health Information System
HIV	Human Immunodeficiency Virus
HMIS	Health Management Information System
HPO	Health and Population Office
IEC	information, education and communication
IHI	Ifakara Health Institute
IMALDIA	Improving Malaria Diagnosis Project
IMCI	Integrated Management of Childhood Illness
IMR	Infant Mortality Rate
IPTp	Intermittent Preventive Treatment in pregnancy
IRS	Indoor Residual Spraying
ITN	Insecticide-treated Net
JICA	Japan International Cooperation Agency
JSI	John Snow, Inc.
LLIN	Long Lasting Insecticide-treated Nets
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 and Social Welfare
MOP	Malaria Operational Plan
MSD	Medical Stores Department
NATNETS	National Insecticide Treated Nets Programme
NBS	National Bureau of Statistics
NGO	Non-governmental Organization
NIMR	National Institute for Medical Research

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

A. EXECUTIVE SUMMARY

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

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

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

The most recent national-level data for malaria interventions in Tanzania comes from the 2007-08 Tanzania HIV/AIDS and Malaria Indicator Survey In this survey, 38% of Mainland households owned at least one insecticide-treated net (ITN), with 25% of children under five and 26% of pregnant women sleeping under an ITN. The prevalence of malaria parasitemia among children under five years of age on the Mainland was 18%. In Zanzibar, ITN ownership and use have shown dramatic improvement: 72% of households own at least one ITN and estimates of use among children under five and pregnant women were 59% and 51%, respectively. Malaria prevalence in Zanzibar was 0.8% in the 2007-08 survey.

Tanzania has multiple grants from the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund) (Round 1, Rolling Continuation Channel, 4, 7, and 9,). These awards have provided most of the funding for artemisinin-based combination therapies (ACTs) and the ITN distribution on the Mainland. The National Malaria Control Program (NMCP) has recently completed a campaign to provide free long-lasting ITNs (LLINs) distribution to all children under five years of age. The Global Fund Round 8-funded effort to expand LLIN coverage to all remaining sleeping spaces on the Mainland will commence by late 2010. PMI is working with all donors and the NMCP to ensure that funding and activities are aligned with and complement the national strategy.

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

The PMI FY2011 Plan was developed with full participation of the NMCP on the Mainland and the Zanzibar Malaria Control Programme (ZMCP) and other malaria control partners. The proposed FY11 MOP has been reviewed and approved by NMCP and ZMCP. Activities within the PMI Tanzania Malaria Operational Plan for fiscal year 2011 (FY2011) are described separately for Mainland Tanzania and Zanzibar since each of these administrative areas has an independent malaria control program. The proposed FY2011 budget for Tanzania is $48 million. The major activities to be supported by PMI with FY11 funding include the following:

Insecticide-treated Nets: After several delays, considerable progress has been made in the Mainland's universal coverage strategy. The Under Five Coverage Campaign, a free net distribution for all children less than five years of age ended in May 2010 with distribution of more than 8.7 million long-lasting ITNs (LLINs). The PMI contributed 1.8 million of these nets and also provided funding for distribution of 2.5 million additional LLINs procured by other donors. The Universal Coverage Campaign, which will distribute an additional 14.6 million Global Fund LLINs, is scheduled to begin in September 2010.

With FY2011 funding, PMI support for the UCC will include logistics management and training of the community volunteers who distribute the LLINs within the community and a follow-up campaign to ensure the nets are appropriately hung and used. When completed, it is expected at least 85% of all Tanzanians will be sleeping under an LLIN. Zanzibar is also moving towards a universal coverage strategy that PMI will support with procurement of approximately 85,000 LLINs.

The PMI has also been supporting the Tanzania National Voucher Scheme (TNVS), a public-private partnership for pregnant women and caregivers of infants to obtain highly-subsidized ITNs using vouchers at local ITN retailers. Although redemption rates are expected to decline with the large-scale free campaigns, PMI will continue to support the TNVS with FY2011 funding as a way of sustaining universal coverage.

Indoor Residual Spraying: In 2009 and early 2010, all seven districts of Kagera Region, including the districts of Muleba and Karagwe on the Mainland were sprayed, covering 413,125 structures (95% coverage) and protecting nearly 2 million people. This spraying was associated with a 56% reduction in hospital admissions, and a 75% reduction in deaths attributable to malaria, based on data from a sentinel surveillance site in Muleba District. In FY10, PMI is expanding spraying on the Mainland to cover a total of 18 districts in Lake Zone, an area with some of the highest malaria prevalence in Tanzania. The spraying will target one million houses and protect 6.52 million people, approximately 14% of the total Mainland population. To date, Zanzibar has received five rounds of IRS, with the last round covering 183,000 structures, and protecting more than one million people. Together with increasing coverage with ITNs, this has contributed significantly to bringing malaria prevalence under 1% and advancing Zanzibar to a pre-elimination phase in malaria control.

With FY2011 funding, PMI will continue to support the Mainland expansion of IRS in Lake Zone. Although Zanzibar is in the pre-elimination phase, it remains vulnerable to malaria outbreaks because the disease surveillance system is still in its infancy and ITN coverage and use are not yet optimal. Therefore, PMI will continue to support Zanzibar with another round of IRS in eight priority districts, targeting 165,000 structures. IRS will continue in Zanzibar and the two Mainland districts of Muleba and Karagwe until universal coverage with ITNs is

achieved and surveillance systems are functional and able to detect malaria outbreaks for timely action.

Intermittent Preventive Treatment in pregnancy (IPTp): The 2007-2008 THIS/MIS showed that IPTp uptake had improved from 22% in 2004 to 30%. PMI funding for IPTp has focused on health worker training and a facility-level quality improvement program. More than 5,300 providers (89% of all providers) from 2,900 Mainland facilities have been directly trained in Focused Antenatal Care (FANC) and quality improvement with many more reached through cascade training. FY2010 PMI funds will continue FANC rollout to cover nearly 100% of all health facilities and antenatal care providers on the Mainland. The PMI has also supported development of a pre-service malaria in pregnancy training curriculum resulting in approximately 1,600 new graduates with FANC skills each year since 2006. Given the relatively low rate of malaria on the islands, PMI and ZMCP will conduct a study of placental parasitemia levels in Zanzibari women to assess the need to continue IPTp in Zanzibar

With FY2011 funds, PMI will focus on supporting the MoHSW to improve FANC service provision quality and institutionalize a facility-based quality improvement approach through regular supervisory visits by PMI-supported staff together with District Reproductive and Child Health Service Coordinators. Facilities that are performing especially well against FANC standards will be publicly recognized to motivate other facilities to also improve their performance. Efforts will continue to ensure that ANC clients are counseled on the importance of IPTp, supplies of SP for IPTp are consistently available at ANC clinics, and that ANC reporting of IPTp is improved.

Case Management: During the past year PMI has supported procurement of ACTs and RDTs and provided training in case management and malaria diagnostics, and management of severe malaria. The PMI investment in malaria diagnostics has focused on training, equipping, and certifying microscopists for parasitological diagnosis and the refinement and piloting of a quality assurance system for both RDTs and microscopy at the national level. In Zanzibar, PMI procured 375,000 RDTs for public health facilities, a crucial factor in the malaria epidemic and response system. PMI also continued to support training in microscopy and development and implementation of a quality assurance/quality control program for malaria microscopy and RDTs on both the Mainland and Zanzibar.

In FY2011, PMI will procure an additional 300,000 RDTs for Zanzibar; the Mainland's needs for RDTs will be covered by the Global Fund. PMI will procure approximately 4.5 million ACT treatments for the public sector on the Mainland, or for emergency use in refugee camps if other sources of funding are not identified. With the launch of the Affordable Medicines Facility-Malaria (AMFm) support of private sector ACT distribution through Accredited Drug Dispensing Outlets (ADDO) is expected to pass to the AMFm. In FY2011, PMI support for ADDOs will include technical assistance to the Tanzania Food and Drug Authority (TFDA) for ACT quality control, and establishing systems for pharmacovigilance, and regulation of antimalarial drugs. PMI will also support the integrated commodity logistics system to ensure ACT and other commodity availability in the health facilities. The MOHSW on the Mainland and Zanzibar will be supported to review and update the malaria treatment and prevention training curricula for medical training institutions to ensure that new medical professionals fully understand NCMP treatment guidelines and malaria policies. Additionally, to confirm the continued efficacy of first-line

antimalarial drugs in Tanzania, PMI will support antimalarial drug efficacy testing at four sites on the Mainland and one site on Zanzibar.

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 69 health facilities, including five private facilities, or about one-half of all health facilities in Zanzibar.

With FY2010 and 2011 funding, a similar MEEDS system will be established in two areas on the Mainland, where malaria prevalence is falling – the capital, Dar es Salaam, and the Lake Zone. On Zanzibar, PMI will support MEEDS to all remaining public health facilities and approximately 20 additional private facilities.

Health Systems Strengthening and Integration: Consistent with GHI principles, PMI has been working to build capacity in the NMCP and Ministry of Health and to expand our integration with other USG programs. In 2009, USAID launched the Wajibika Project to assist in the transfer of health service delivery responsibilities to the district health teams in support of the GoT'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. During the past year, PMI has supported the NMCP to conduct orientation courses for 21 Regional and 132 District Malaria and Integrated Management of Childhood Illnesses (IMCI) Focal Persons. With PMI support, the NMCP and ZMCP were able to each send one M&E staff member to an advanced M&E training in Ghana. Over the last two years, PMI has contributed to the placement of 20 Tanzania trainees at the Field Epidemiology and Laboratory Training Program (FELTP). These trainees have participated in various malaria control activities at NMCP and ZMCP, including malaria surveillance, outbreak investigation, and participation on the Malaria M&E Technical Working Group. PMI is also working with the Department of Defense (DOD) to train, equip, and certify laboratory technicians for improved performance of both microscopy and RDTs and the refinement and piloting of a quality assurance system for the laboratory diagnosis of malaria.

With FY2011 funding, and in coordination with other USG/GHI programs, PMI will support refresher training and orientation of the 153 Regional and District Health Management Teams and Malaria/IMCI Focal Persons. PMI will also contribute, along with PEPFAR and Maternal and the Child Health Program, to the Wajibika Project to build capacity for program management and accountability in up to 14 districts. PMI will also continue to co-fund with PEPFAR the training of 26 Tanzania epidemiologists through the FELTP and will support the DOD in improving laboratory diagnosis of malaria.

Monitoring and Evaluation: A written National M&E plan has been finalized following a consultative process with many malaria stakeholders in Tanzania. During the past 12 months, PMI has continued its support to the NMCP's and ZMCP's strategic information system and provided funding for supervisory and quality assurance visits to health facilities. In addition, entomologic monitoring of mosquito abundance and insecticide resistance has been established in those districts on the Mainland and Zanzibar where PMI is supporting IRS. Collection of data for the 2009-10 Tanzania Demographic and Health Survey (TDHS) were completed in May 2010. Preliminary results will be available early August 2010 and the final results will be disseminated in early 2011.

With FY2011 funding, PMI will continue support to the NMCP's and ZMCP's strategic information system with software and computers, together with funding for supervisory and quality assurance visits to health facilities and continued entomologic and insecticide-resistance monitoring. With FY2011 funding, PMI will fund a second HIV/AIDS and Malaria Indicator Survey during the high transmission season of 2011. The Roll Back Malaria/PMI Impact Evaluation has been underway in Tanzania since early 2010 and most data collection and analysis is expected to be completed by the last quarter of 2010.

B. INTRODUCTION: THE GLOBAL HEALTH INITIATIVE

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

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

C. PRESIDENT'S MALARIA INITIATIVE

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

The President's Malaria Initiative (PMI) began in three countries in 2006: Angola, Tanzania, and Uganda. In 2007, four countries were added: Malawi, Mozambique, Senegal, and Rwanda. In 2008, eight more countries were added to reach a total of 15 countries covered under the PMI. Funding began with $30 million in fiscal year (FY) 06 for the first three countries; increased to $160 million in FY07 and to $300 million in FY08 and FY09, and is expected to reach $500 million in 15 countries by FY10.

The USG is committed to working closely with host governments and within existing national malaria control plans. Efforts are coordinated with other national and international partners, including the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM), Roll Back Malaria (RBM), the World Bank Malaria Booster Program, and the non-governmental and private sectors, to ensure that investments are complementary and that RBM and Millennium Development Goals are achieved. Malaria operational planning sessions for the PMI, as well as subsequent evaluations, are highly consultative and held in collaboration with the national malaria control program and other partners.

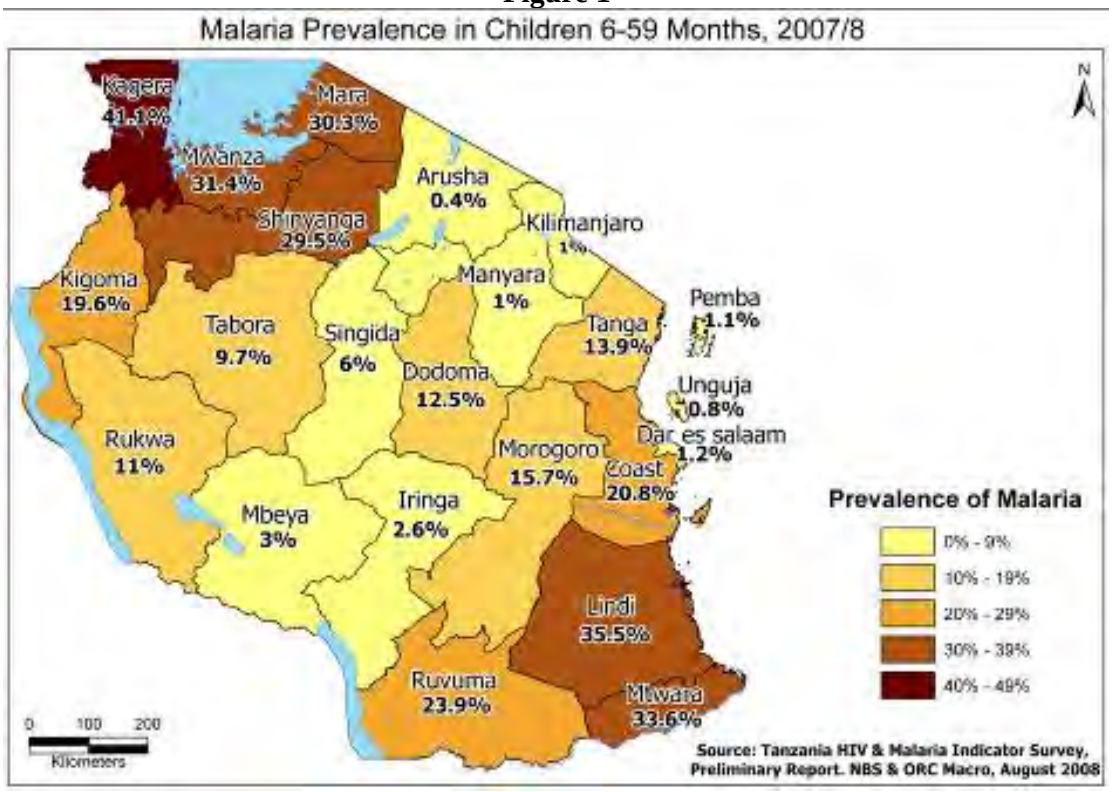
This document presents a detailed PMI implementation plan for FY2011 in Tanzania. It briefly describes the current status of malaria control and prevention policies, planned interventions, challenges and unmet needs, and the planned FY2011 PMI activities. The operational plan was developed in close consultation with the National Malaria Control Programme (NMCP) and the Zanzibar Malaria Control Programme (ZMCP) and the participation of many national and international partners involved in malaria prevention and control in Tanzania. The total amount of PMI funding requested for Tanzania is $48 million for FY2011.

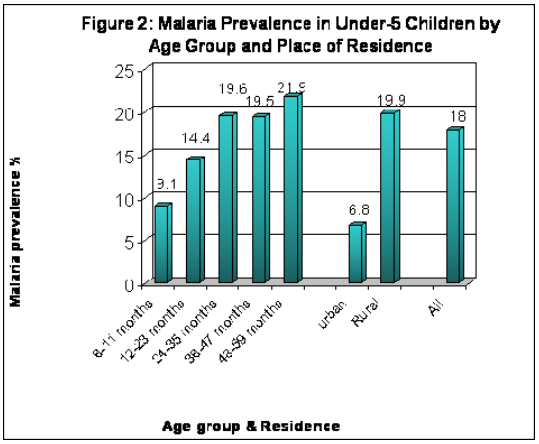
D. MALARIA SITUATION

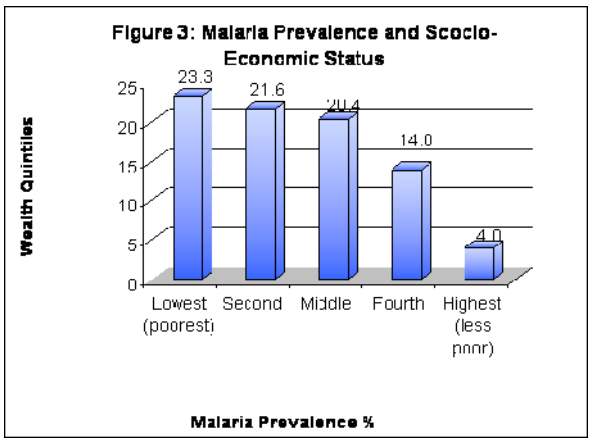
Malaria epidemiology in the United Republic of Tanzania exhibits two very different transmission settings: the Mainland and Zanzibar. On the Mainland, 93% of the population lives in areas where *Plasmodium falciparum* is transmitted. The first national, population-based 2007-08 Tanzania HIV/AIDS Malaria Indicator survey (2007-08 THMIS) showed that 18% of children under five years of age had tested positive for malaria on the Mainland in contrast to only 0.8% in the two islands of Unguja and Pemba in Zanzibar (Figure 1). On the Mainland, the rural areas had a higher prevalence of 20% compared to the urban areas of 8%. There were marked regional variations that ranged from 0.4% in the highland areas around Arusha to 41.1% in the northwestern region of Kagera. In Zanzibar, a cross-sectional survey carried out between May and June 2009 in the two sentinel sites of Micheweni and Kivunge showed a further reduction of malaria prevalence of 0.4%.

The survey also showed an increasing prevalence by age from about 9% in infants (6-11 months) to 22% in children aged 2-4 years (figure 2). Malaria prevalence showed a direct relationship with the socio-economic status and education of the mother of children under-five years of age. Households with lowest wealth quintile were more likely to test positive for malaria than those from households in the highest quintile (figure 3). Those children whose mothers had no formal education had a malaria prevalence that was four times higher than those who had secondary education and above.

Figure 1







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. *P. falciparum* accounts for 96% of malaria infection in Tanzania. The principal malaria vector on the Mainland is *Anopheles funestus*, while in Zanzibar, it is *Anopheles arabiensis*.

The projected 2010 population of Tanzania is 41.9 million – 40.7 million on the Mainland and 1.2 million on Zanzibar. Health facilities report malaria as the leading cause of outpatient and inpatient health care visits and the primary cause of deaths among children. On the Mainland, more than 40% of all outpatient attendances are attributable to malaria, resulting in approximately 12-16 million clinical malaria cases annually (Figure 4; Table 1). The NMCP estimates that 60,000-80,000 malaria deaths occur annually in Tanzania Mainland among all

ages (extrapolated from the under-five mortality rate in 2004-05 TDHS, size of under-five population, and the proportion of deaths attributable to malaria).

Figure 4: Proportions of malaria cases in children under five at outpatient departments, 2007

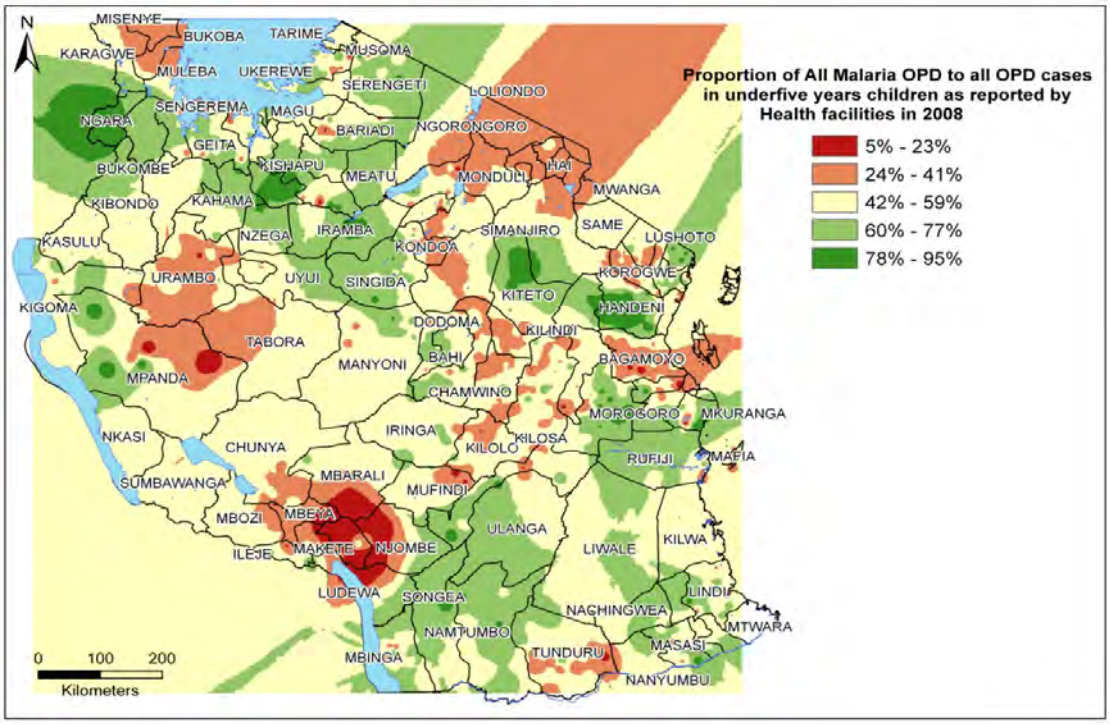
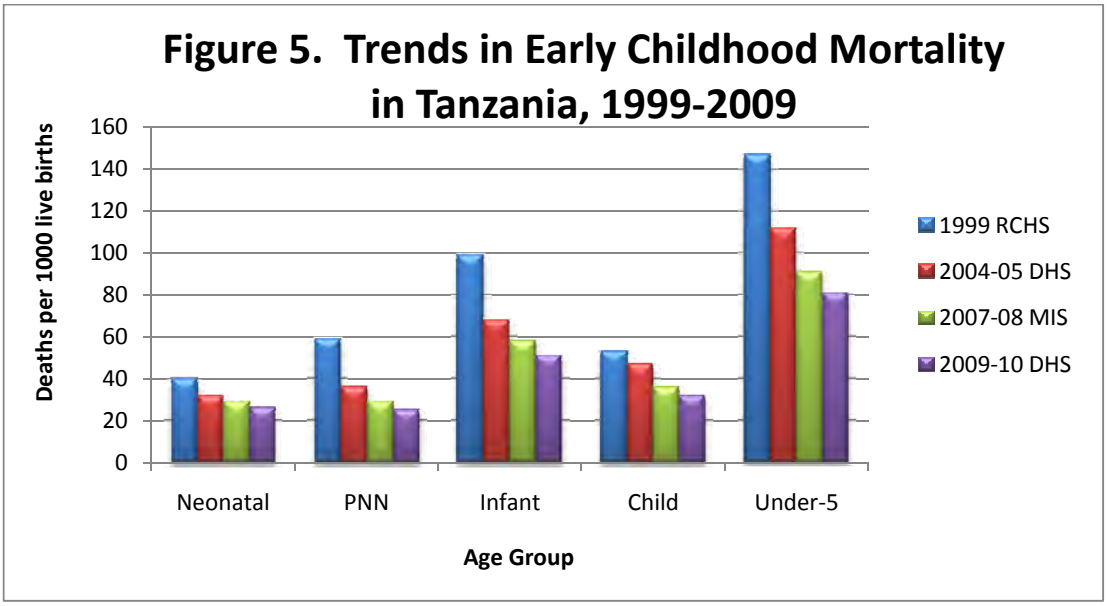


Table 1: Proportion of malaria outpatient cases and malaria cases per 1000 population from 2003-2008

		2003	2004	2005	2006	2007	2008
OPD Cases	Malaria OPD cases	11,021,847	11,464,730	11,090,868	10,393,610	9,255,384	7,485,637
	Other cases	16,419,514	17,191,540	14,879,818	12,930,250	10,291,161	10844435
	Total OPD Cases	27,441,361	28,656,271	25,970,686	23,323,860	19,546,545	18,330,072
	Percent of malaria cases	40.2%	40.0%	42.7 %	44.6%	47.4%	40.8%
Malaria cases per population	Projected population	34,859,582	35,944,015	37,083,346	38,250,927	39,446,061	40,678,536
	Malaria cases per 1000 population	316	319	299	272	235	184

Population-based household surveys carried out in Tanzania during the past 10 years show significant an improvements in both infant and under five mortality rates (Table 2). The gradual decline of OPD cases and the reduction in under-five child mortality is mainly attributable to the effective interventions of childhood immunization, malaria prevention, and vitamin A supplementation (source: NMCP Global Fund Round 9 application).

Table 2: Infant and Under-five Mortality Rates for Five-year Periods Preceding Nationwide Household Surveys, Tanzania				
	1999 DHS	2004-05* DHS	2007-08* MIS/THIS[2]	2009-10* DHS
Infant mortality rate (95% C.I.)	99.1 (84.9-113.3)	68.0 (60.7-75.3)	57.7 (50.4-65.0)	51 (pending)
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 (pending)

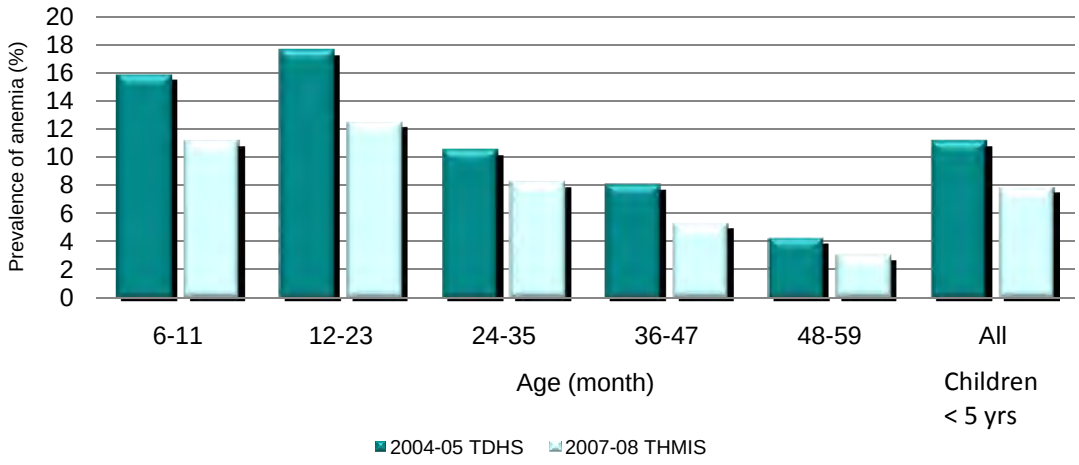


The 2007-08 infant mortality rate estimates vary across socio-demographic strata. The Northern and Western Zones[3] and Eastern Zone in the Mainland experienced the extremes in this mortality: 63 and 103 per 1000 live births, respectively. Cohorts classified in the richest wealth quintile experienced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

[2] The confidence intervals around the THIS/MIS estimates of under-five all-cause mortality are given in the appendix of the final THIS/MIS report.
[3] Mainland Tanzania is divided into 8 zones, 21 regions and 114 districts and 132 government councils. Zanzibar has 5 regions, 10 districts and 10 government councils.

From 2004-05 TDHS, 11% of children under the age of five years had severe anaemia (Figure 6). In 2007, severe anaemia reduced to 8% (2007-08 THMS). Marked improvement is observed in the children below two years of age. The regions in Lake Zone and Southern Zone that had high malaria prevalence in 2007 also had high levels of anaemia. Anaemia is also more prevalent in rural than in urban areas. Anaemia among children decreases with increasing mother's education.

Figure 6: Prevalence of severe anemia (Hb<8.0 g/dl) among Children less than five years of age from two household surveys



Over the last five years, Tanzania Mainland has scaled up a number of vector control and case management interventions that have had a positive impact on malaria indicators. Net ownership and use for both Mainland and Zanzibar showed improvement especially in Zanzibar when net ownership almost tripled and net use increased by two and one-half times (Table 3).

Table 3: ITN Coverage Indicators:

	Mainland			***Zanzibar***		
	2004-05* TDHS (%)	2007-08* MIS (%)	2009-10** TDHS (%)	2004-05* TDHS (%)	2007-08* MIS (%)	2009-10** TDHS (%)
% Households at least one ITN	23	38	63	28	72	76
% Pregnant women sleeping under ITN	15	26	57	20	51	50
% Under fives sleeping under ITN	16	25	64	22	59	55

*TDHS and THMIS field activities both conducted between Oct and Feb of each year.

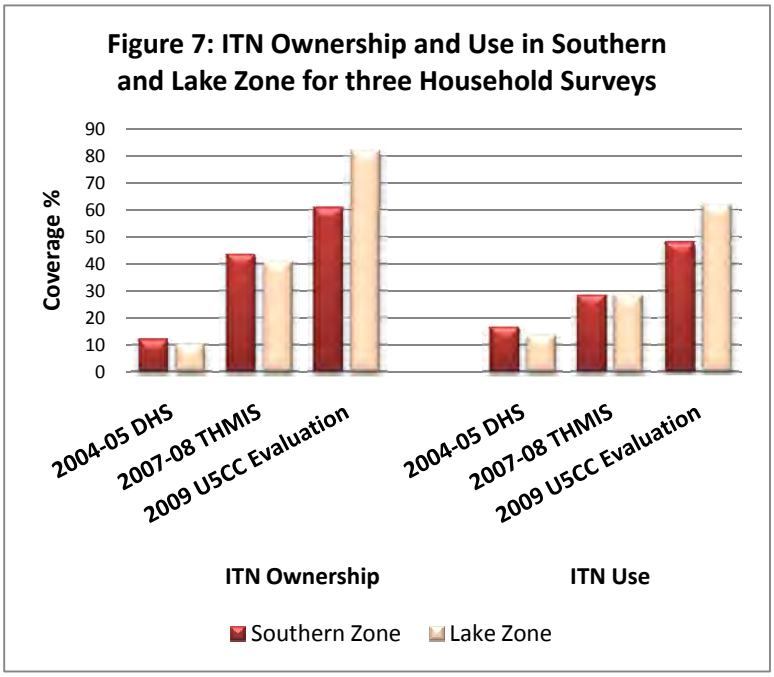
In 2007, the NMCP changed its ITN strategy from a subsidized voucher scheme targeting only pregnant women and infants to a national scale up of free net distribution, starting with a "catch-up" strategy that distributes free nets to every child aged below five years followed by a universal coverage campaign that distributes a LLIN to every sleeping space. The under-five catch-up campaign (U5CC) started in May 2009 and ended in May 2010. To date, 3.9 million and 1.3 million ITNs have been distributed through the voucher scheme to pregnant women and infants, respectively. In addition, a total of 8.6 million LLINs were distributed

during the U5CC that ended in May 2010. An additional 14.6 million LLINs will be distributed during the Universal Coverage campaign that is scheduled to start at the end of 2010.

The assessment for the U5CC conducted by Ifakara Health Institute (IHI) in October 2009 in the Southern and Lake Zones showed a 61% and 82% ITN ownership, respectively. Both percentages were higher than the 2007-08 Tanzania HIV/AIDS and Malaria Survey (THMIS) coverage and the 2004-05 Tanzania Demographic and Health Survey (TDHS) coverage for Southern and Lake Zones. The U5CC assessment also showed an increase in ITN use in children under-five years over this period.

There has also been significant scale up of indoor residual spraying (IRS) and improvement in case management at health facilities. IRS that was initiated in 2007 in Muleba and Karagwe Districts of Kagera Region to contain the malaria epidemics has since been scaled up to cover all the seven districts of Kagera region, protecting over 2 million people. Case management improved due to a national scale up of artemisinin-based combination therapy (ACT) to treat uncomplicated malaria, increased number of Accredited Drug Distributor Outlets (ADDOs) that dispense highly subsidized ACTs to the community, and improved malaria diagnosis with the introduction of the rapid diagnostic tests (RDTs) in select regions at the primary health care level of the health system.

In spite of these achievements, there are still areas of concern. While net ownership has improved significantly, net use has lagged behind. There is also evidence to suggest that the rural poor are facing challenges in accessing the ITNs. In addition, no viable and sustainability keep-up strategy to ensure continued availability and access to ITNs after the free net distribution through the campaigns exists. Although ACTs have been scaled up to cover all the health facilities, malaria is still frequently treated presumptively without any confirmatory laboratory tests. RDT roll-out has only taken place in 4 of the 21 regions on Mainland. Currently, laboratory confirmation is happening in only 20% of the suspected cases and there is no system for laboratory quality assurance and quality control. Furthermore, there is low prescriber compliance to the laboratory test results leading to irrational use of antimalarial drugs. Frequent stock out of antimalarial drugs occurs due to poor logistics management at the health facility level. Low quality antenatal care and frequent stock out of the sulfadoxine-pyrimethamine (SP) used for intermittent preventive treatment for pregnant women (IPTp) are the reasons for the low IPTp



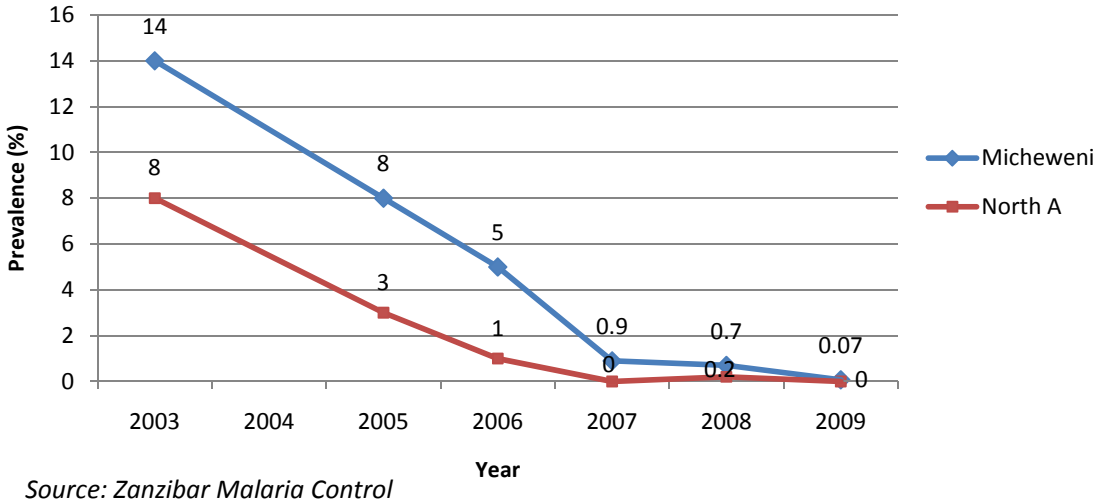
coverage. Although IRS has been scaled up on the Mainland, it is not clear that the NMCP and the districts have the capacity to plan and implement and monitor IRS activities on their own.

In Zanzibar, the current malaria prevalence of 0.8% (2007-08 THMIS) indicates that Zanzibar has controlled malaria on the islands of Unguja and Pemba. Annual household surveys in two sentinel districts (Micheweni in Pemba and North A in Unguja, Figure 5) confirm the results of the 2007-08 THMIS. Zanzibar's control of malaria is attributed to the cumulative implementation of four highly effective interventions. Beginning in 2003, Zanzibar was one of the first locations in Sub-Saharan Africa to implement ACTs (artesunate+amodiaquine) as first-line therapy for malaria. The following year, IPTp was adopted as a strategy for control of malaria in pregnancy. Vector control interventions began to scale-up in 2005 and 2006 when the Global Fund and PMI funding allowed Zanzibar to distribute LLINs to pregnant women and all children under five years of age. IRS coverage with for all households in Pemba and Unguja began in late 2006, with five rounds of lambda-cyhalothrin applied through mid-2010. All four interventions have continued into 2010.

A high level of coverage has been achieved with all four interventions. The 2007-08 THMIS showed IPTp-2 coverage had increased to 55% in Zanzibar, up from 14% in the 2004 DHS and ITN ownership increased from 28% to 72%. Access to an ACT within 24 hours of fever onset among children under five is estimated to be 32%. Each round of IRS has reached more than 95% of the targeted houses, protecting more than one million people each time. Zanzibar has also achieved impressive levels of ITN coverage .
Other recent policy changes have helped control malaria even further. Malaria RDTs were introduced in all government health facilities beginning in 2007. All persons presenting to out-patient clinics with current fever or history of fever in past 48 hours are expected to be screened for malaria using either an RDT or microscopy. This improved diagnostic capacity has not only helped ensure patients are appropriately treated, but has also provided a basis for collecting and disseminating weekly reports of confirmed malaria cases (see below).

Zanzibar's policy for ITN distribution shifted towards universal coverage (defined as two ITNs per household) as of 2009. Over an 18-month period, Zanzibar has distributed LLINs to all households, regardless of age or sex of household occupants. After the original LLIN distribution campaign to pregnant women and children under five, no specific keep-up strategy has been used for these vulnerable groups.

Figure 8. Decline in P. falciparum prevalence at two sentinel districts in Zanzibar (Micheweni District in Pemba and North A District in Unguja) as malaria control interventions were scaled-up, 2003-09.



Source: Zanzibar Malaria Control

Although Zanzibar has reached the pre-elimination phase, the situation is fluid and interventions require continued attention to prevent a rebound of malaria to pre-control levels, including continued investment in the major interventions and heightened epidemiological and entomological monitoring. IRS will be continued beyond 2010 in areas where surveillance data indicate unusually high transmission. Rational use of ACTs must be improved through adherence to diagnostic test results when prescribing.

Finally, it will become increasingly important to mount rapid responses to sudden surges in malaria transmission. A malaria early epidemic detection system (MEEDS) was implemented at ten health facilities in Pemba and Unguja in mid-2008 and expanded to 42 additional facilities in late 2008. Currently the system operates at 69 (>50%) of all health facilities in Zanzibar. Weekly data are reported to Zanzibar Malaria Control Program (ZMCP) and suspected instances of increased malaria transmission are regularly investigated. Continued investment in MEEDS is critical if Zanzibar is to maintain the current low malaria prevalence and achieve lower levels in the future.

E. NATIONAL MALARIA CONTROL PROGRAMMES

Two separate Ministries of Health operate in the United Republic of Tanzania, one each for the Mainland and Zanzibar. Each Ministry has its own national malaria control program and malaria strategic plan. The NMCP serves only the Mainland with a population of 40.6 million while the ZMCP serves Zanzibar with a population of 1.2 million.

▪ *Mainland*

Under the leadership of a Program Manager, the NMCP is organized into five cells (organizational units): case management; vector control; ITNs; information and education;

and monitoring and evaluation (including operations research). Each cell consists of a Team Leader and two to four staff members. Several support staff serve all five cells. The organizational units of ZMCP are similar and have a comparable number of staff.

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

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

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

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

The NMCP has four active Global Fund grants: the Rolling Continuation Channel (RCC), Round 7; Round 9 (grant is yet to be signed); and the Affordable Medicines for Malaria (AMFm) pilot that will be financed from the Round 7 grant. The RCC grant budget and scope of work was reduced to $59 million to finance two years of the pregnant woman 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; and: 3) improved quality of care for severely ill patients; and 4) monitoring and evaluation. However, the Round 7 grant has undergone major reprogramming to finance ACTs for the public sector and the AMFm pilot. The Global Fund Round 8 grant will support a nationwide universal coverage of LLINs. The universal coverage campaign is scheduled to start in end 2010. The AMFm pilot is planned to start in June 2010 and will provide ACTs at a highly subsidized price of $0.105 for both the public (21. 7 million treatments) and private sector. Other supporting interventions under AMFm include, behavior change communication; information systems and operational research, and strengthening

coordination and partnerships. The Global Fund Round 9 is a five-year proposal covering: ACTs for the public sector; strengthening malaria diagnostics and quality control; private sector management of malaria through ADDOs; behavior change communication; surveillance and monitoring and evaluation. Through USAID, the British Department for International Development (DfID) contributed $1,304,000 towards the hang-up campaign for the U5CC.

Table 5: Major External Sources of Funding for Malaria Control Mainland

Source	Amount ($Millions)	Period Covered	What is covered?
GFATM Round 7	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.
GFATM 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.
GFATM Round 8	113.3	July 2009 – June 2014	Attain universal coverage through distribution of 14.6 million LLINs to 8.7 million households through a one-time mass "catch-up" campaign. Strengthen regional malaria IMCI focal persons on monitoring and evaluation.
AMFm	4.6	March 2010-Feb 2012	ACTs for public and the private sector, behavior change communication; information systems and operational research, coordination and partnership development.
GFATM Round 9	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 (EKN)	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 Corporation	2.9	Sep 08 – Aug11	ITN Cell within NMCP and procurement of 171,160 LLINs for the U5CC

- ***Zanzibar***

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

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

According to ZMCP, the MOHSW (Zanzibar) budget is approximately $6.1 million, with approximately $100,000 allocated to malaria control. GFATM Round Six remains an important funding source for Zanzibar malaria activities, with expected contributions of $1.8 million and $1.6 million for 2007 and 2008, primarily for ACTs and LLINs. PMI has provided approximately $3 million per year since 2006, focusing on IRS. The ZMCP also

receives GFATM Round 8 money for ACT procurement for public and private health facilities, training and supervision of health workers in case management, and diagnostic capacity and RDT procurement. The grant also includes support for IPTp and universal LLIN distribution, as well as other system and community strengthening activities. The total budget requested in the ZMCP Round 8 proposal was $19.6 million.

F. CURRENT STATUS OF MALARIA INDICATORS

Two nationally representative population-based surveys and other data sources provide intervention coverage estimates for key malaria outcome indicators. Tables D and E describe what is currently known for the Mainland and Zanzibar. Several Mainland Tanzania coverage targets remain below desired levels as indicated by the 2007-08 MIS (8,500 households). In Zanzibar ITN coverage is high, but below PMI targets, following a 2006 free LLIN distribution campaign for pregnant women and children under five years of age. The 2004-05 Tanzania DHS provides baseline estimates for the main indicators of interest.

Table 6: Coverage Indicators

	Mainland			***Zanzibar***		
Coverage Indicator	2004-05 TDHS (%)	2007-08 MIS (%)	2007-08 DHS (%)	2004-05 TDHS (%)	2007-08 MIS (%)	2007-08 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	26	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†	-	-	94	-

Table 7: Impact Indicators

	Mainland		***Zanzibar***	
Impact Indicator	Mainland 2004-05 TDHS	Mainland 2007-08 MIS	Zanzibar 2004-05 TDHS	Zanzibar 2007-08 MIS
All-cause under 5 mortality rate	133	112	101	79
Parasitemia prevalence (6-59 mo. old)	-	18.1%	-	0.8%
Anemia (Hb<8 g/dL) prevalence (6-59 mo. old)	11.1%	7.8%	6.4%	4.7%

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

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

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

H. EXPECTED RESULTS – Year Five **(FY2011)**

Prevention:

- Through funding for the NMCP's "keep-up" infant voucher mechanism, procure and distribute nearly 1.2 million LLINs to protect newborn babies.
- Support logistics management and volunteer training for the UCC that will distribute 14.6 million Global Fund-procured LLINs.
- Procure and distribute approximately 85,000 LLINs to boarding schools and other institutions to support Zanzibar's universal coverage strategy.
- Maintain the scale up of IRS in three Mainland Lake Zone regions covering 18 rural districts. The spraying will target 1,062,000 houses and will protect approximately 6.5 million people (or 14% of the Mainland's total population), with 85% coverage.
- Based on up-to-date epidemiological information, transition from blanket coverage of IRS in Zanzibar to support a "keep down" strategy targeting only high transmission areas in rural and peri-urban areas. Approximately 165,000 of the 220,000 structures in Zanzibar will be sprayed.
- FY2011 funds will provide support for a national roll out of FANC/ IPTp quality improvement in MIP services

Treatment:

- Finalize a quality assurance plan for malaria diagnostics and assist NMCP with implementation at the national level
- Support training for up to 40 additional Mainland district-level microscopists who can serve as part of a national network of highly skilled staff to assist in the quality assurance program

- Strengthen malaria surveillance by providing diagnostic consultation/support within 72 hours to health facilities that report sudden increases in confirmed malaria cases in Zanzibar
- Procure and distribute a three-month ACT supply for the Mainland to ensure supply through and cover supply gaps until Global Fund funding is mobilized. This will provide nearly 4 million ACT treatments.
- Provide pharmaceutical and supply chain management assistance for RDTs and ACTs supplied by PMI, Global Fund Round 7 and Global Fund Round 9 funding.
- Procure 250,000 RDT kits for Zanzibar and 200 microscopes and spare parts for Mainland.
- Strengthen the system for regulation and quality control of antimalarial drugs.
- Improve service delivery by implementing an integrated management of severe childhood febrile illness project in Lake Zone.
- Support therapeutic drug efficacy monitoring for ACTs for Mainland and Zanzibar.
- Improve the skills of health workers, including updating of the training curricular of the medical professions.

I. INTERVENTIONS – PREVENTION

I.1 INSECTICIDE-TREATED NETS

Background

▪ ***Mainland***

The initial phase of the ITN strategy (2004-2008) provided subsidized nets targeted at children under five and pregnant women though the Tanzania National Voucher Scheme (TNVS) issued at antenatal clinics. Although this was complemented by commercial sales of nets supported by social marketing, these two avenues for net accessibility were not enough to scale up net coverage. The 2007-08 THMIS demonstrated that only 26% of pregnant women and 25% of children under five were sleeping under ITNs on the Mainland.

Consequently, several important changes in policy and practice occurred in 2007-2008. The MOHSW agreed on the following:

- the TNVS will gradually move from using nets bundled with insecticide requiring re-treatment every six months toward long-lasting ITNs following funding commitments from the Global Fund (Rolling Continuation Channel 2007) and PMI;
- the voucher top-up value was reduced from Tshs 3,250 ($2.50) to Tshs 500 ($.45) to enable more families to afford a LLIN;
- The avenues for distributing the infant voucher were increased from one (at 9 months with measles vaccination) to at least five (at every immunization session)
- a national under-five "catch-up" campaign (U5CC) to distribute free LLINs to all children under five years of age;
- a national universal coverage campaign (UCC) to distribute LLINs to all sleeping spaces, covering the entire population; and
- a national hang-up campaign aimed at improving net use after the U5CC and UCC.

Each of these programs is described below:

Tanzania National Voucher Scheme (TNVS). The TNVS started in November 2004 with support from the Global Fund to improve the availability of ITNs to pregnant women and infants through a subsidized voucher scheme. The vouchers are issued at a health facility antenatal clinic and child health clinic and redeemed at a retail shop when the pregnant woman or infant caretaker exchanges the voucher for a net, after paying a top-up fee. PMI supported the expansion of the voucher scheme to infants, beginning in October 2006.

Concerns had been raised about the affordability of the ITNs and equity in net distribution resulting from increases in the top-up payments paid by pregnant women and the caretakers of infants from an average top-up fee of Tshs 968 ($0.80) in 2005 to Tshs 2,300 ($1.80) in 2008, and then to Tshs 3,250 ($2.50) in early 2009. This compelled the NMCP, together with the development and implementing partners, to change the TNVS strategy and revise the voucher scheme to address the accessibility and equity concerns. The revisions included:

- improving the quality of the net from a bundled net that needed retreatment every six months to a LLIN;
- reducing and fixing the top-up fee from Tshs 3,250 ($2.50) to a more affordable Tshs 500 ($0.45);
- improving the appearance of the net to a more attractive and unique blue-white striped net;
- expanding the network of targeted retailers from 6,000 to 12,000, with the additional retailers located in more remote areas; and
- changing the retailer delivery system from the retailer picking the nets from the local manufacture to the manufacturer delivering the nets to the retailers.

The revised voucher scheme was introduced between August and October of 2009 and is now in full implementation in all regions on Mainland.

Before the start of the U5CC, the TNVS was operating through a network of nearly 7,000 retailers and wholesalers operating nationwide, accepting vouchers and top-up payment in exchange for nets. However, because of the fear of losing their net sales after the free LLIN distribution through the U5CC and the UCC, a number of retailers stopped stocking the expensive LLINs and others just gave up the business. As of March 2010, only 3,000 retailers are participating in the voucher scheme, well short of the target of 12,000 retailers.

Tanzania needs a viable "keep-up" strategy that can ensure continuous availability of affordable nets to newly pregnant women, infants, together with a source of replacement nets when existing nets wear out. A gap analysis for infant vouchers (Table 8) shows 1.3 million nets gap, which may be extrapolated to a minimum of 2.6 million nets needed each year to cover new pregnancies and births. Currently, only the TNVS has the necessary infrastructure to function as a keep-up mechanism nationwide.

Table 8: Gap analysis for TNVS for the Infant voucher

Fiscal Year	Quarter	Estimated Redemption Rates after UCC	Total quarterly Infant Voucher Redemptions	Cost of Voucher Redemptions at $6.2 per	Operational costs per Quarter	Total Costs	Costs per LLIN
FY2010	April -June 2011 (Qtr3)	40%	131,024	$812,350	$600,000	$1,412,350	**$13.08**
	July-Sept	50%	163,780	$1,015,438	$900,000	$1,915,438	**$11.70**

	2011 (Qtr 4)						
FY2011	Oct-Dec, 2011 (Qtr 1)	60%	196,536	$1,218,526	$900,000	$2,118,526	**$10.78**
	Jan-March 2012 (Qtr 2)	70%	229,292	$1,421,613	$900,000	$2,321,613	**$10.13**
	April-June 2012 (Qtr 3)	80%	262,049	$1,624,701	$900,000	$2,524,701	**$9.63**
	July-Sept 2012 (Qtr 4)	90%	294,805	$1,827,788	$900,000	$2,727,788	**$9.25**
	Total		**1,277,486**	**$7,920,416**	**$5,400,000**	**$13,320,416**	**$10.43**

Notes:

- ***Projected 2011 Population (41,300,000); Estimated Infants (4.7% of total population-1,941,100); Estimated children given a Voucher at Child Health Clinics (90% -1,746,990); Current voucher Redemptions (75%-1,310,243); Current monthly voucher Redemptions (109,187) Cost of one LLIN ($6.2)***
- ***The operational costs can be reduced by half with if there is funding for the pregnant woman voucher.***

A comprehensive assessment of different keep-up strategies will be funded through Global Fund Round 8 towards the end of the UCC. PMI will monitor the ongoing impact of the campaigns on voucher redemption rates and work with NMCP to explore alternative keep-up mechanisms as data become available. In the meantime, PMI has worked out a market stabilization strategy to incentivize retailers to remain within the system whereby PMI and the net manufacturers will provide a one-time subsidy to the participating retailers with 10 LLINs (PMI and net manufacturers contribute 5 each) on condition that the participating retailer also invests in 5 LLINs. Together, these 15 LLINs will capitalize the private sector market and maintain a strong and sustainable retail chain.

Under Five Coverage Campaign (U5CC). PMI supported, along with the Global Fund, the World Bank, and the Government of Tanzania's "Under Five Coverage Campaign," a mass distribution campaign to distribute free LLINs to all children under five years of age. The U5CC began in March 2009 and ended in May 2010. In total, 8.7 million LLINs have been distributed to the under-five children. The U5CC was funded primarily by the Global Fund RCC, PMI, Malaria-No-More through UNICEF, the Swiss Development Corporation, and the Government of Tanzania. PMI procured 1.86 million LLINs for the U5CC and supported NMCP to distribute more than 2.5 million nets.

Universal Coverage Campaign (UCC). Evidence from large ITN field trials suggests that national ITN coverage of over 80% and ITN use of at least 60% for the entire population will reduce overall malaria transmission throughout the community. In May 2008, the Government of Tanzania announced a policy to attain universal LLIN coverage (defined as one LLIN per sleeping space). NMCP expects ITN ownership to rise to 90% after implementation of the UCC, which will distribute approximately 14.6 million additional LLINs to the 8.7 million LLINs distributed through the U5CC and more than 5 million nets distributed to date through the voucher scheme. The combination of the U5CC and the UCC will deliver an average of 2.5 nets to every household in Mainland Tanzania (or one LLIN for every two people). It is estimated that the entire campaign will cost $108 million (including procurement of 14.6 million LLINs, distribution, training, community mobilization, and monitoring and evaluation). The majority of funding for this campaign will come from Global Fund Round 8. PMI will contribute to logistics management and training for the campaign.

Hung-up Campaign. To improve net use, NMCP introduced a hung-up strategy for the U5CC. The hung-up campaign starts a month after the distribution of the nets. The trained volunteers visit every household to assist with the hunging of the nets (if not already hunged), and educate the community to sleep under a net every night. PMI and the British DfID funded the hung-up campaign. PMI will also fund a hung-up campaign following the UCC.

▪ ***Zanzibar***

Since 2006, Zanzibar has been distributing free LLINs to pregnant women and infants. However in 2008, ZMCP changed their net distribution strategy to free LLINs to provide two nets per household in Zanzibar. The 2007-08 THMIS survey showed ITN ownership at household level to be 72%, with 59% of children under five and 51% of pregnant women sleeping under an ITN. Household data collected during the 2009 IRS exercise showed ITN coverage at household level of 84%, with ITN use of 73% for children under five years of age an 86% for the pregnant women. As a keep-up strategy, ZMCP plans to replace approximately 600,000 LLINs in 2013.

Progress over Past 12 Months

▪ ***Mainland***

The Global Fund supported NMCP to introduce the TNVS in November 2004, targeting only pregnant women. PMI supported the expansion of the voucher scheme to infants, beginning in October 2006. Both the pregnant woman and infant voucher scheme have increased the number of nets per household. As of March 2010, more than 5.3 million ITNs (3.9 million for pregnant women and 1.3 million for infants) have been distributed through the voucher scheme. With FY2010 funding, PMI is going to commission an independent cost analysis of the operations of the TNVS. The evaluation will provide recommendations for cost savings for the TNVS.

The U5CC had a late start in May 2009 and ended in May 2010. In total, more than 8.7 million LLINs were distributed nationally of which, 1.8 million (21.6%) were procured by PMI with FY08 and FY09 funds. The Government of Tanzania contributed $2.1 million for the procurement of 337,000 LLINs. Other donors included UNICEF (funding from Malaria No More) who contributed 171,000 LLINs and the Swiss Development Cooperation with 171,000 LLINs.

PMI supported the distribution of 2.5 million LLINs in 7 of the 21 regions nationwide (Tanga, Mpanda, Lindi, Mtwara, Kagera, Ruvuma, and Coast Regions). PMI also provided funds for logistics management and the training of the Ward and Village Executive Officers and the volunteers who distributed the nets during the campaign. The total cost of the U5CC was $69.0 million, out of which $12.4 million (18%) was provided by PMI.

PMI also supported a national hung-up campaign that was co-funded with DfID. PMI contributed $500,000 of FY2009 funds and DfID contributed $1.3 million through USAID/Tanzania. This campaign uses volunteers who visit every house a month after the U5CC to ensure LLINs are hunging and, if not, offer assistance to hung them. PMI will also fund a second hung-up campaign during the free net distribution for the universal coverage campaign in 2011.

With funding from Global Fund RCC, the NMCP contracted the Ifakara Health Institute (IHI) to conduct five population-based post campaign surveys to assess the impact of the U5CC and later the UCC in the three Zones of Southern, Lake, and Coastal. PMI procured nets were distributed in the same three Zones. To date, IHI has completed the evaluation in Southern and Lake Zones following the U5CC. The results showed marked improvement in ITN ownership of 61% in Southern Zone and 82% in Lake Zone. Both were higher than the 2007-08 THMIS coverage (Southern Zone 44% and Lake Zone 41%).

Figure 9: Net Ownership after the U5CC in Southern and Lake Zones in 2009

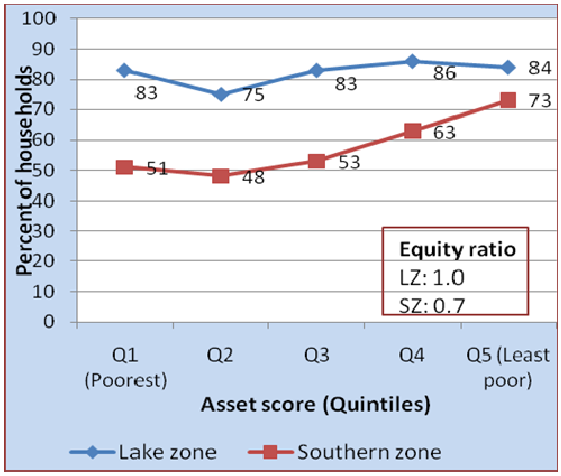
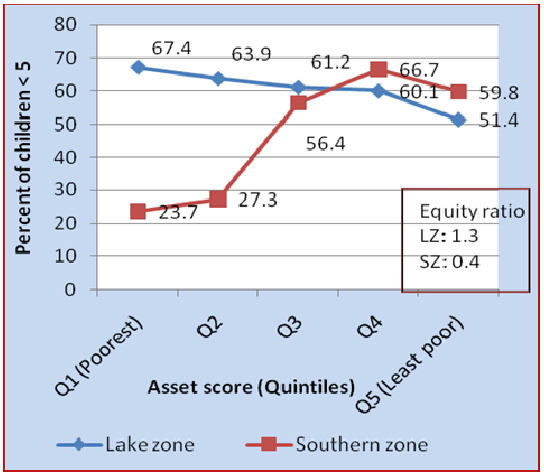


Figure 10: Net Use after the U5CC in Southern and Lake Zones in 2009



Source: Ifakara Health Institute: Monitoring & Evaluation of the Tanzania National Net strategy (U5CC)

Net use for children under five years more than doubled from the 2007 levels, from 29% (THMIS 2007-08) to 62% in 2009. ITN ownership in Southern Zone also improved from 29% in 2007 to 48% in 2009. Approximately 67% and 82% of the households that received at least one LLIN in Southern and Lake Zones, respectively had hung the net by the time of the survey.

The UCC has started. Registration of the sleeping spaces for the Southern Zone (Lindi, Mtwara, and Ruvuma); and training of the village and Ward Executive officers and the volunteers who will issue the nets is already complete. LLINs in Southern Zone will be issued in the first week of October, 2010. The UCC is expected to be completed during the second quarter of 2011.

In spite of these achievements, there are still areas of concern. While net ownership has improved significantly, net use has lagged behind. There are regional and socio-economic disparities in net ownership and use (figure 9 and 10). There is evidence to suggest that the rural poor are underserved. Data from the U5CC rapid evaluation of October 2009 shows equity in net ownership and use in Lake Zone but significant socio-economic disparities in Southern Zone.

▪ *Zanzibar*

Since 2007, PMI has been supporting ZMCP to implement their ITN strategy, initially by providing ITNs to pregnant women and infants and more recently through the UCC. ZMCP definition for UCC is distribution of two LLINs nets per household, which is different for the Mainland definition of one net per sleeping space. . To date, ZMCP has distributed nearly 616,000 LLINs for the UCC, out of which 160,000 were procured by PMI. The Global Fund Round 8 and PMI are the main funders for the ITN activities in Zanzibar. However, with only

two nets per household, ZMCP may not realize the goal of universal net coverage because some household have more than two sleeping spaces. This means that some sleeping spaces will not have an LLIN, leaving a significant part of the population un-protected. ZMCP plans to address this gap in their new ITN strategy.

Proposed Activities

▪ *Mainland*

(I.1.a) Keep-up Programs-TNVS. PMI will continue to support the NMCP's 'keep-up' mechanism through the TNVS infant vouchers. The TNVS has been a success in Tanzania and has increased the number of ITNs per household. Since the TNVS is implemented through the private sector, it encourages creation of a private sector market for of LLINs. It also provides a platform for implementation of other malaria and health interventions.

Although previous ITN mass campaigns have sometimes led to a small reduction in voucher uptake and redemption, the impact has generally been transient and limited to a 6 month period only. The recently completed U5CC may have reduced voucher redemptions but was neutralized by the more significant improvements in the voucher scheme, including reduction of the top-up fee from US 2.5 to $0.45, and improving the appearance and quality of the voucher net. The impact of the Universal Coverage Campaign on voucher redemptions is unknown but expected to be greater than the U5CC. However, it is expected to recover as nets from the U5CC campaign start to wear out and new sleeping spaces are created. By the second half of 2011, most of the U5CC nets will be two years old and 40%-60% of their expected life.

In FY2011, PMI will support the procurement distribution of up to 1.2 million LLINs for infants through support to the infant voucher program. PMI will consider other keep-up strategies as recommendations from the Global Fund consultancy become available. The pregnant women voucher will be supported by other funders. *($7,650,000)*

(I.1.b) *Universal Coverage Campaign*. The UCC that was scheduled to start in March 2010 has now been delayed and net distribution is expected early October 2010. The late start was due to the delay in signing of the Global Fund Round 8 grant and the prolonged negotiations for contracting for the supply of LLINs and other contractors who will implement the UCC. GFATM Round 8 will support the procurement of 14.6 million LLINs. In FY2011, PMI will contribute to the procurement of LLINs for the UCC. *(1,200,000)*

▪ *Zanzibar*

(I.1.c) Universal Coverage Campaign. PMI will procure and distribute approximately 85,000 LLINs to support Zanzibar's UCC strategy. PMI procured LLINs will go to boarding schools and other institutions to ensure coverage of sleeping spaces beyond households. *($650,000)*

I.2 INDOOR RESIDUAL SPRAYING

Background

▪ ***Mainland***

The current NMCP's 2008-2013 Medium-Term Strategic Plan targets 60 (50%) of the Mainland's 123 districts over a five-year period. Currently, PMI is the only donor contributing to the NMCP's IRS program. The Government of Tanzania has not programmed any resources towards IRS.. The NMCP strategy targets IRS in areas of high malaria prevalence and unstable transmission.

IRS on the Mainland was launched in 2007 in Muleba and Karagwe Districts, which were experiencing malaria outbreaks at that time. These districts are located in Kagera Region that has the highest malaria prevalence (41%) in Tanzania. Kagera region is in located in North Western Tanzania, on the shores of Lake Victoria, and is characterized by stable transmission with seasonal variation. To date, Muleba and Karagwe districts have had four and three rounds of IRS, respectively. In 2009, PMI supported the expansion of IRS to cover the remaining five districts of Kagera Region.

In 2010, IRS will be expanded to cover the two remaining regions of Lake Zone, Mwanza and Mara. In total, 18 districts in the Lake Zone (Kagera Region, seven districts; Mwanza Region, six districts; and Mara Region, five districts) will benefit from IRS by the end of 2010. 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 was recently shown to be estimated at 41% in Kagera, 31% in Mwanza, and 30% in Mara (2007-08 THMIS). The planned expansion of IRS will help Tanzania begin to move toward a targeted approach to controlling malaria in the western portion of the Lake Victoria Basin, an area where Uganda and Rwanda have also employed IRS. Spraying in the districts of Muleba and Karagwe will continue until there is sufficient epidemiologic and entomologic data to guide NMCP and PMI to start scaling down IRS in the two districts. An IRS Technical Committee is soon to be established that will develop guidelines for scale down or change of strategy for IRS.

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. Regularly, environmental inspection visits are conducted to assess compliance with US Government and Tanzanian national environmental laws.

▪ ***Zanzibar***

Since 2006, Zanzibar has conducted five rounds of IRS on the islands of Unguja and Pemba with impressive coverage over 90% for all the rounds, protecting over a million people with each round. In 2008, ZMCP changed to a long-lasting version of the insecticide lambda-cyhalothrin and the spraying now takes once a year. In 2009, Zanzibar sprayed all the 10 districts of Zanzibar. PMI will support one more round of full spraying in 2010 and then will scale down to targeted spraying for only high transmission areas and hot spots. This decision has been supported by household and health facility-based epidemiological data, the entomological data, and the achievement of a high ITN coverage because of the universal coverage.

Progress over Past 12 Months

▪ *Mainland*

In 2009 and early 2010, all seven districts of Kagera Region were sprayed, covering 413,125 structures (95% coverage) and protecting more than 2 million people. The spraying of Muleba and Karagwe Districts will continue until universal net coverage and use is achieved and there are epidemiological and entomological data to support a transation to more targeted IRS.

Table 9: IRS Coverage and Number of People Protected

District	Round	Year	Houses sprayed	Coverage	No of people protected
Muleba	Round 1	2007	34,691	85.0%	166,517
	Round 2	2008	36,419	90.5%	174,811
	Round 3	2009	55,991	90.0%	268,757
	Round 4	2010	86163	99.8%	412,804
Karagwe	Round 1	2008	59,177	98.5%	284,050
	Round 2	2009	89,451	97.0%	429,365
	Round 3	2010	111,047	99.8%	510,944

Data from Rubya District Hospital, Muleba District and Nyakahanga hospital, Karagwe District, show a progressive decline in the blood smear positivity rate with each round of IRS (Figure 11 and 12).

Figure 11: Annual malaria cases and malaria blood smear rates in Rubya Hospital (after 4 rounds of IRS)

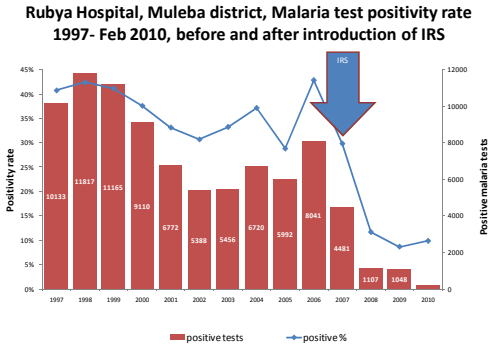
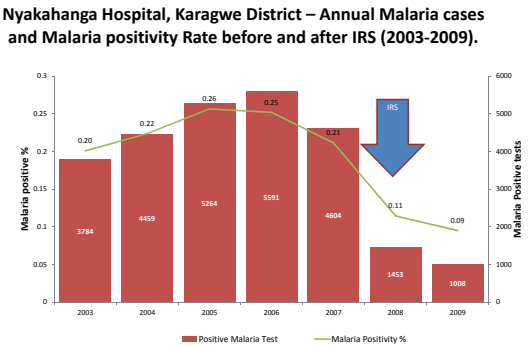
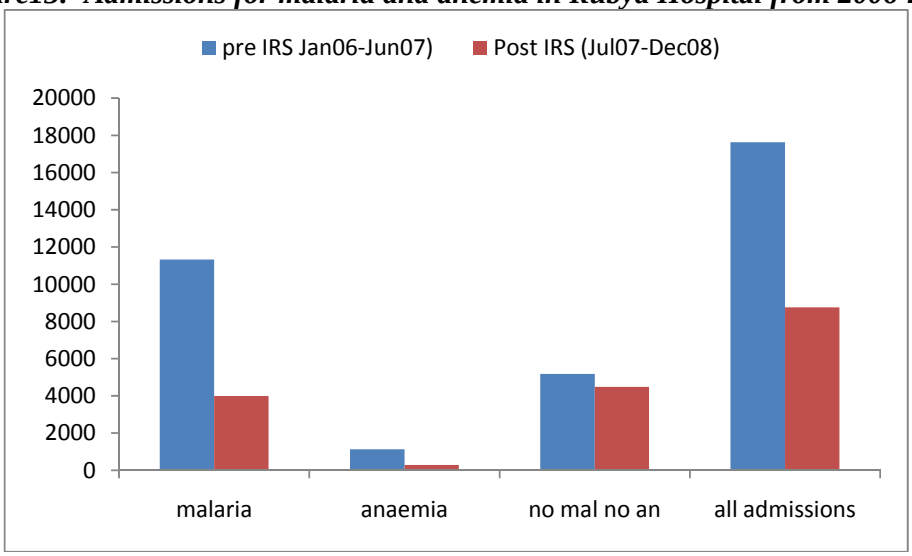


Figure 12: Annual malaria cases and malaria blood smear rates in Nyakahanga Hospital (after 3 rounds of IRS)



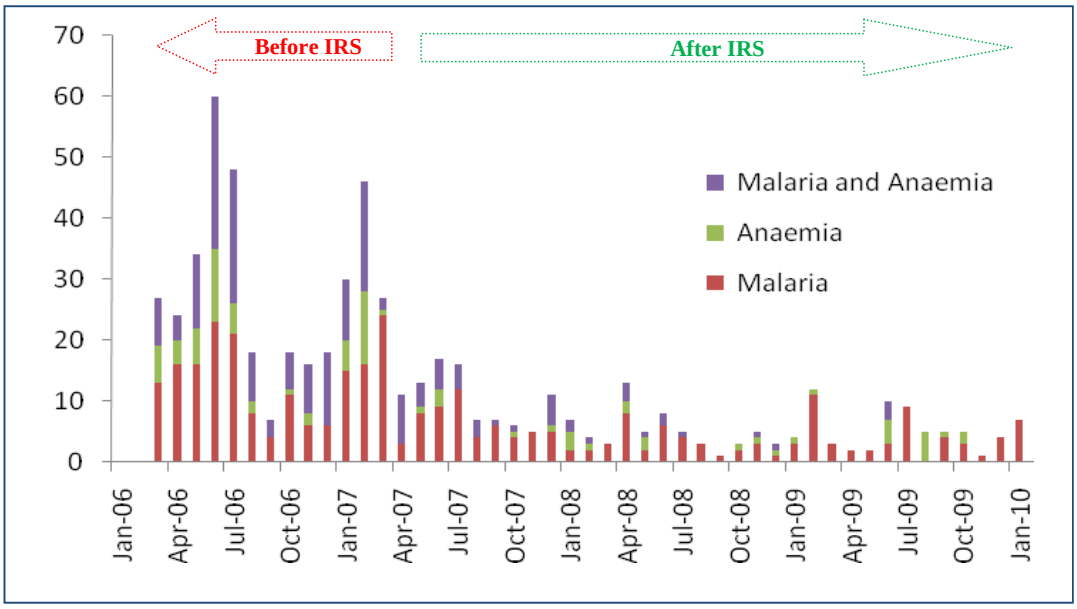
IRS has also had an impact on the prevalence of severe malaria. The number of hospital admissions attributable to malaria fell from about 109,000 in 2006 before the spraying to just 3,200 in 2008 after the second round of spraying. As cases of malaria drop, both Rubya and Nyakahanga Hospitals are observing a corresponding drop in the hospital admissions due to severe anemia and the rate of blood transfusion.

Figure13: Admissions for malaria and anemia in Rubya Hospital from 2006-2008



An even bigger impact is seen on the hospital deaths attributed to malaria and anemia. Deaths attributable to malaria dropped to more than half just one just one year after the introduction of IRS and has continued to fall with each round of spraying. An even bigger impact has been observed in the number of deaths attributable to anemia.

Figure 14: Monthly Deaths Attributed to Malaria and Anemia in Rubya Hospital, Muleba District



▪ ***Zanzibar***

Zanzibar has had five rounds of IRS to date, in addition to one round of focal spraying as part of an epidemic response in July 2008. The fifth round of spraying took place in early 2010 and was done in two phases. Phase 1 covered Pemba Island and phase 2 Ugunja Island. The spraying in Unguja was delayed due to a water crisis that made it difficult to ensure human safety and environmental compliance. The spraying in Unguja is currently going on and will be completed in June 2010. By end of May 2010, eight of the ten districts were sprayed, covering 183,620 structures, and protecting 1,019,921 people. Epidemiological data is being collected through the weekly Malaria Early Epidemic Detection System (MEEDS) that is now operational in 69 health facilities. Entomologic data are also received from six sites in Zanzibar and the entomologic laboratory is now performing insecticide wall bioassays.

Table 10: IRS Coverage and Number of People Protected

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

* Round 5 is completed in 8 of the 10 districts. The remaining urban districts will be covered by end June 2010

Proposed Activities

▪ ***Mainland***

(I.2.a) Maintain high IRS coverage in the three Regions of Lake Zone (Kagera, Mwanza, and Mara Regions). PMI will maintain the scale up of IRS in Kagera, Mwanza, and Mara Regions located in the Lake Zone of the Mainland. Spraying will be continued in the districts of Muleba and Karagwe in Kagera Region until there is universal use of LLINs and a reliable epidemiological and entomologic surveillance system to guide a scale down plan. For these three regions, spraying will take place in the 18 rural districts. The urban areas (Bukoba Urban for Kagera Region, Nyamagana and Ilemela for Mwanza Region, and Musoma Urban for Mara Region) will be covered by universal LLINs. The spraying will target 1,062,000 houses in the Lake Zone and will protect approximately 6.52 million people (approximately 14% of Mainland total population), assuming 85% coverage. During FY10 the 18 districts in Kagera, Mwanza, and Mara Regions will contribute to and take a leadership role in planning, execution, and monitoring of IRS in their districts. Districts which have completed several rounds of IRS will provide training support to new IRS districts. PMI will also support the final disposal of the empty insecticide sachets, in accordance with US Government and Tanzanian national environmental laws. *($16,000,000).*

▪ ***Zanzibar***

(I.2.b) Conduct targeted spraying in high malaria transmission areas in Zanzibar. Zanzibar is now at the pre-elimination stage. To date, Zanzibar has had five rounds of IRS. The sixth and seventh round will be supported with FY2010 funds. The current epidemiologic data (household and health facility-based), complemented by ongoing entomologic data and high coverage levels of ITN coverage have provided enough evidence to ZMCP and PMI to scale down IRS in Zanzibar and move from blanket spraying to a "keep-down" strategy that targets spraying to areas showing increased transmission of malaria. In FY2011, PMI will support

targeted spraying to only high transmission areas in the rural and peri-urban areas. Approximately 165,000 of the 220,000 structures in Zanzibar will be sprayed. PMI will also support the final disposal of empty insecticide sachets, in accordance with US Government and Zanzibar environmental laws (22 CFR 216). *($1,500,000)*

I.3 INTERMITTENT PREVENTIVE TREATMENT FOR PREGNANT WOMEN

Background

▪ ***Mainland***

Focused Antenatal Care (FANC) is the WHO-supported strategy into which IPTp has been integrated in Tanzania. The Mainland MOHSW began implementing FANC in all public health facilities in 2004. The Reproductive and Child Health Services' policy for IPTp is two doses of sulfadoxine-pyrimethamine (SP), given as directly observed therapy initiated at first visit after quickening (from 20 weeks) and second dose within the third trimester, no less than four weeks following the first dose. The 2007-2008 MIS showed that IPTp2 had increased to 30%, up from 22% in the TDHS 2004. The 2006 Tanzania Service Provision Assessment found that fewer than 1 out of 10 first visit ANC clients are counseled regarding the second dose of IPTp – a missed opportunity to increase uptake of IPTp. Recent data collected from USAID maternal health program sentinel sites indicate that higher IPTp2 rates correlate well with sites reporting no SP stockouts during the reporting period. Efforts to improve the quality of services, including timely procurement of SP, as well as to improve facility-level data recording must be strengthened.

PMI has been supporting the Government of Tanzania to provide quality FANC services nationally. PMI has scaled up FANC/malaria in pregnancy services nationwide through:

- development and dissemination of a standardized training package;
- training district-level trainers and health providers via in-service and pre-service programs;
- strengthening supervision and quality improvement of ANC services (focusing on various aspects of care including availability of SP at ANC clinics);
- creating demand for quality ANC services and advocating safe motherhood issues through the White Ribbon Alliance and PMI-supported BCC interventions.

As the majority of trainings of service providers will have been completed by the end of FY2011, the key issues that remain relate to enhancing the quality of services (including recording and reporting) and ensuring availability of SP at facility level. For example, the policy regarding free distribution of SP for IPTp appears not to have been fully understood throughout the national distribution system and continued attention and communication between the national and district levels is required to ensure availability of SP throughout the supply chain and into the ANC facility.

▪ ***Zanzibar***

Although in the 2007-2008 THMIS, coverage of IPTp2 was 52% on Zanzibar, facility-based data collected by the ZMCP over the past year indicates that it has gone up to 80% after training and the institution of quarterly, facility based supervision visits. Although the endemicity of malaria in Zanzibar has fallen as a result of its successful malaria control program, the ZMCP has opted to continue the current ANC malaria in pregnancy program pending the results of a PMI-funded placental parasitemia study slated for FY2010. After the

UCC, the ZMCP has instituted a keep-up campaign to promote the use of LLINs by pregnant women, and acknowledges the need for prompt and appropriate diagnosis and treatment of malaria in pregnancy to ensure the safety of pregnant mothers. Although SP is provided free of charge, stockouts do occur. Community-level BCC is being implemented by the MOHSW to increase understanding and use of malaria preventive measures in pregnancy. National malaria treatment policies for Zanzibar recommend ACT during the second and third trimester of pregnancy and quinine during the first trimester.

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 85% of women making at least one antenatal visit to a public health facility during their pregnancy (TDHS 2004-2005). Nevertheless, attendance often occurs late in pregnancy (median months pregnant at first visit is 5.6).

Progress over Past 12 Months

▪ *Mainland*

PMI has built the capacity of national- as well as district-level FANC trainers in every district of Mainland Tanzania and additional trainings and refreshers are being conducted with funds set aside by the District Health Councils. By March 2010 PMI had provided training to more than 5,300 providers (89% of providers) from over 2,900 facilities (61%) of all 137 districts in Tanzania. With remaining FY09 and expected FY10 PMI funding, it is anticipated that an additional 1,625 providers from approximately 1,200 health facilities will be trained, covering approximately 100% of all ANC providers and 85% of all ANC facilities. The pre-service curriculum, as well as tutors and clinical preceptors from all 53 nurse-midwifery schools in Tanzania, have been up-dated leading to approximately 1,600 new graduates with FANC skills each year since 2006.

Over the past year, the program continued to collect malaria in pregnancy data from its sentinel site surveillance system (37 facilities nationwide) in order to provide insights into national service provision. During the 2007 calendar year, the sentinel sites reported IPTp2 uptake at 25% (and 40% for sites with no SP stock outs during this time). During 2008 this figure increased to 52% (and 60% for sites with no SP stock outs during this time). During 2009 IPTp2 uptake seemed to have dropped to 38% (and 61% for sites with no SP stock outs). After various consultations with providers and supervisors at these sites, the following issues were identified to be adversely affecting IPTp2 uptake:

- SP stockouts in facilities
- Inconsistent recordkeeping
  - High client loads in ANC and chronic staff shortages makes documentation more likely to be incomplete
  - Lack of designated space for IPTp documentation in the routine health information system
  - Lack of data analysis skills among providers and supervisors
- Routine supervision is neither routine nor supportive
- Levels of community awareness regarding malaria in pregnancy are still inadequate to prompt proactive care seeking

In collaboration with the MOHSW, facilitative supervision workshops were undertaken for Reproductive and Child Health Service coordinators supervising ANC services to ensure provision of quality services and to establish on-going facility-based quality improvement cycles in FANC. The FANC performance standards serve as the basis of the quality improvement tools and, in collaboration with the MOHSW and its Health Services Inspectorate Unit, have been integrated into the national supervision system. Integration of the standards into the supervision process reinforces the effectiveness of supervision visits by regional and district Reproductive and Child Health Service Coordinators as it provides them with a standardized tool with which to conduct the supervision process. All regional Coordinators were trained in facilitative supervision skills in 2009. With FY2009 funds district Coordinators from six regions (Lindi, Mtwara, Iringa, Arusha, Kilimanjaro and Kigoma) and with FY2010 funds district Reproductive and Child Health Service Coordinators from an additional ten regions will have been trained (Morogoro, Pwani, Tabora, Ruvuma, Manyara, Dar es Salaam, Tanga, Dodoma, Kagera and Mara) and supported to conduct quarterly visits to MAISHA supported facilities (the regional hospital plus two health centers/ dispensaries per district). In this way, the facility-based quality improvement will be established in these sites and the district supervisors can document progress in improving achieving standards of care.

Additionally, to create demand for quality services, USG's maternal health funds continue to: (1) support the integration of key antenatal messages into a national reproductive health radio show; (2) partner with faith based institutions to sensitize religious leaders to integrate ANC and MIP messages into their sermons; and (3) support the White Ribbon Alliance of Tanzania which has brought high profile attention to Safe Motherhood issues.

▪ ***Zanzibar***

In FY09, PMI supported technical assistance to ZMCP and Zanzibar Reproductive and Child Health Services to conduct a FANC/malaria in pregnancy advocacy meeting with key stakeholders and to train trainers in both the FANC and ANC quality improvement approach. FY08 and FY09 funds were used to train 100% of ANC providers in FANC and the quality improvement approach. Given the relatively low rate of malaria on the islands, PMI and ZMCP will conduct an operational research on placental parasitemia levels in Zanzibari women to assess the need to continue IPTp in Zanzibar. If indicated, the strategy may be revised to focus on case management rather than continued IPTp.

In 2010 ZMCP transferred responsibility and support for achieving the malaria in pregnancy targets to the Reproductive and Child Health Services. With FY2010 PMI support, MOHSW will solidify the quality improvement and health facility recognition systems for antenatal care and empower District and Regional Reproductive and Child Health Service Coordinators to provide routine facilitative supervision in the ANC.

Proposed Activities

▪***Mainland***

(I.3.a) IPTp/FANC Implementation. With FY2011 funds, PMI will focus on supporting the MoHSW to improve FANC service provision quality and institutionalize the facility-based quality improvement approach at those facilities throughout the country that have been targeted for intensive support. (one regional hospital plus two health centers/dispensaries per district – in every region of the country). District Reproductive and Child Health Service Coordinators in the remaining five regions (Mbeya, Mwanza, Rukwa, Shinyanga and

Singida) will be trained in facilitative supervision skills and use of the FANC standards to monitor quality, and will be supported to conduct supervision visits to each of the targeted sites on a quarterly basis, working with staff at the site to document progress in achieving standards, and organizing for recognition of health facilities once 80% of criteria are achieved. The program will work with the Reproductive and Child Health Service Coordinators in each region to schedule, conduct and document these visits, tracking progress against FANC standards over time. It is anticipated that district Reproductive and Child Health Service Coordinators will apply these same skills at other facilities under their supervisory purview that are not being specifically targeted, thus expanding the reach of the program. The program will support external verifications for these sites as well once the district Reproductive and Child Health Service Coordinator feels that they are ready for an assessment.

In addition to this focused approach to supervision, the program will continue to collect key ANC service delivery data (including availability of SP) through the established maternal health sentinel site system so that real time data can be used to address inefficiencies in service provision. Once the revised supervision support is fully rolled out in all regions, service delivery data will be available and routinely collected from the targeted sites, thus obviating the need for additional "sentinel surveillance". *($1,800,000)*

- ***Zanzibar***

(1.3.b) MIP Activities in Zanzibar. In FY2011 PMI support to Zanzibar will solidify within the Reproductive and Child Health Service the quality improvement and recognition system for antenatal care. In order to institutionalize the nationally agreed upon recognition system, at least ten high caseload facilities will be selected for external assessment of ANC performance standards (including standards on malaria in pregnancy and anemia) in the first half of the fiscal year. The external assessment will be conducted by the national ANC supervision team along with District Reproductive and Child Health Service coordinators. Those facilities achieving greater than 80% of standards will be officially recognized, and the opportunity for recognition will be publicized to all other facilities providing ANC services. The external assessment team will conduct another round of verification assessments and recognition for all facilities claiming to have reached 80% of standards in the second half of the year. ($50,000)

In order to ensure quality ANC services, action must be taken to avert stock outs of key MIP commodities such as SP, hemoglobin tests, iron/folic acid supplementation, and RDTs. To address this issue, the MAISHA program will support the MOHSW of Zanzibar to conduct a situational analysis of ANC supplies in Zanzibar in order to determine where the breakdowns are within the system and offer recommendations for addressing them. ($10,000)

To complement the improved quality of ANC services, the MAISHA program will also target those women not returning to the facility for full ANC services through its community-based program. PMI support, in conjunction with maternal and child health funds, will allow for the distribution of key ANC interventions for MIP and anemia through community-based distributors (CBDs). CBDs will distribute commodities such as SP and iron/folic acid to pregnant women as well as counsel them on the dangers of malaria and anemia in pregnancy, the dangers of self treatment, and the need to return to the facility for full ANC services. In FY11, the MAISHA program will train an additional 100 CBDs to provide these services as well as support those CBDs previously trained in FY09 and FY10. ($30,000)

Dissemination of Results of Operations Research—Placental Parasitemia in Absence of IPTp. A lack of clear guidance on IPTp in the current epidemiologic setting in Zanzibar has left ZMCP with difficult decisions regarding whether or not to continue this intervention. FY2010 funds will be used to support an operational research that will estimate the risk of placental parasitemia among women unexposed to IPTp in the current low malaria transmission setting. FY2011 funds will be used to support the dissemination of the results. The results will help inform ZMCP's decisions regarding the continuation of IPTp in Zanzibar. *($10,000)*

I.4 BEHAVIOR CHANGE & COMMUNICATION

Background

▪ ***Mainland***

Historically, the Government of Tanzania's capacity to implement BCC has been weak. The Health Promotion Unit of the Ministry of Health is understaffed and has been limited to reviewing BCC messages/materials, to ensure accuracy and coordination. The NMCP's information, education, communication (IEC) cell has developed a National Communications Strategy, but has been unable to disseminate this critical document to the field.

In October 2007, PMI funded Tanzania's first comprehensive behavior change and communication initiative, the "Communication and Malaria Initiative in Tanzania" (COMMIT) Project. PMI, through the COMMIT Project, supports national and community interventions aimed at promoting positive household behaviors for ITNs use, proper case management, ACT use, and IPTp in an integrated fashion. IRS is also included in targeted regions where it is taking place. PMI/Tanzania uses three surveys to monitor the impact of the IEC/BCC interventions. They are (1) the Omnibus marketing nationally representative household survey, (2) the bi-annual national PSI TRaC survey, and (3) the 2009 COMMIT Community Survey done in 2 regions of Lindi and Mtwara.

The Global Fund TNVS survey and the PSI TRAC household surveys conducted in 2008 provided baseline data for the COMMIT Project on knowledge, awareness, access, and attitudinal variables through household surveys. While knowledge and awareness about malaria appear to be high, access is much lower. COMMIT conducted a follow-on rapid community assessment in May 2009 in Lindi and Mtwara. The key findings for the baseline and the follow-on rapid community assessment survey, are as follows[4]:

- ITNs: While 95% of people surveyed were aware that ITN use prevents malaria transmission[5], only 23% believed that they could save enough money to obtain bed nets for all their children (see H.1, ITN section) and only 30% believed they could ensure their children sleep under a bed net every night.[6] According to a COMMIT community assessment survey conducted several months after COMMIT interventions began, these figures improved. More than 43% of respondents believed that they could save enough money to obtain bed nets for all their children and 52% believed they could ensure their children sleep under a bed net every night. The

[4] Baseline data presented are for two, Lindi and Mtwara, to allow direct comparison with the two COMMIT community assessments conducted in May 2009 in the same two regions.
[5] PSI TRAC Survey 2008
[6] PSI TRAC Survey, 2009

Omnibus survey showed an improved coverage of populations exposed to: (1) mass media messages from 37.8% in 2008 to 86% in 2010; and, (2) the campaign logo/tag line *Malaria Haikubaliki* (malaria is unacceptable) from 8.8% in 2008 to 91% in 2010. The COMMIT 2009 survey showed that attitudes towards ITN and ACT use were associated by amount of exposure to IEC/BCC messages. Approximately 88% of respondents with high exposure to IEC/BCC messages agreed that it is important to sleep under a net every single night, compared to 62% with low exposure.

- ACTs: While 86% of respondents were aware that ACTs are a treatment for malaria[10] and 93% believed a child should visit a health provider on the first day that they have a fever, only 77% believed that they *could* take their child to a health facility on the first day that they develop a fever.[11] Approximately 85% of the population with high exposure to messaging agreed that ACTs are the most effective treatment of malaria, as opposed to 62% with no exposure. Approximately 86% of the population with high exposure to messaging agreed that it is important to finish the dose of ACTs, compared to 66% with no exposure..
- IPTp: Nearly 80% of Tanzanians surveyed believe that malaria is dangerous for pregnant women;[7] however, exit interviews showed that only 48% of ANC clients reported receiving malaria counseling, and only 23% of first-visit ANC clients were told to return for a second dose of SP. The COMMIT community assessment survey conducted in 2009 did not track this variable.

BCC has contributed to the improved coverage of ITN use among children under-five years of age and pregnant women. The preliminary 2009/10 Tanzania DHS results showed a significant improvement in ITN use for children under-five at 64.1%, from 26% in the 2007/8 THMIS. ITN use for pregnant women improved from 27% in the 2007/8 THMIS to 57.1% in 2009/10 DHS. According to the 2009 COMMIT Community Survey, of the households that reported that all children under-five slept under a bed-net previous night, 76.6% were exposed to messaging through a COMMIT mobile video unit or road show, as opposed to only 34.6% that had no exposure.

▪ *Zanzibar*

Zanzibar has good acceptance and use of all malaria interventions. ITN use for children under five is 59% and IRS coverage of targeted houses is consistently above 90%. IPTp use, while still below the target, is improving with 52% of women receiving IPTp2. Despite these positive trends, BCC efforts have been fragmented and applied in an ad-hoc manner, focusing on selective interventions, and these efforts have not been evaluated to determine which methods are most effective. PMI has been working with the Health Promotion Unit of the Zanzibar MOHSW, the lead department for the development, coordination and implementation of BCC activities.

Progress over Past 12 Months

▪ *Mainland*

In FY2009, through the COMMIT Project, PMI supported the roll-out of rural communication activities in 11 regions in the country – two more than originally planned. Local Community Change Agents are now operating in all 11 regions. PSI with GFATM

[10] Tanzania National Voucher Scheme Survey, 2008
[11] PSI TRAC Survey 2008
[7] PSI TRAC Survey 2008

RCC funds is covering another nine regions. The PSI follow-up TRAC survey is currently underway to monitor the impact of the BCC interventions at house hold level.

Specific BCC/IEC activities undertaken to date or ongoing include the following:

- With good radio coverage and increasing television access nationwide, PMI is supporting broadcasting mass media campaigns on national and local radio stations:
  - Key messages stress the importance of obtaining an ITN and sleeping under an ITNs every night.
  - Additional spots promoting ACT use began in June 2009, stressing early care-seeking for fever at health facilities, and promotion of purchasing ACTs at ADDOs in two regions.
  - Malaria messages are being designed for a Saturday morning children's radio program.
  - IPTp promotion and early ANC spots began in June 2009.
- In partnership with community-based organizations that active in BCC related to HIV/AIDS, PMI supported the training of approximately 1,200 Communication Change Agents (CCAs) in 11 regions in ITN use, ACT and case management, and IPTp. Another nine regions are being covered by PSI with Global Fund RCC funds. By the end of 2010, it is estimated the entire country will be covered with a target of 2,900 CCAs. The CCAs, who must be able to read and write, are selected with the help of the local authorities; currently most are men, but an effort is being made to enroll more women. Community-based organizations have primary responsibility for supervision of the CCAs. They are provided with bicycles and 10,000 shillings (~$7 per month) to cover transport and lunch costs. Their training is conducted at the district level and lasts five days. Efforts are also being made to link them more closely to the local MOHSW health facility.
- PMI funds are supporting dissemination of malaria messages through road shows in 11 regions of Tanzania. Global Fund RCC support will cover the remaining nine regions.
- PMI supported NMCP to reactivate bi-monthly BCC Working Group Meetings under the leadership of the NMCP IEC cell. The BCC Working Group is responsible for development of the BCC Master Plan, coordination of BCC implementing partners, and ensuring the s quality of the IEC materials. The BCC Working Group and the MOHSW IEC Working Group approve IEC materials before they are disseminated. Efforts are also being made to forge links between the NMCP and the media; this resulted in very good media coverage leading up to the 2010 World Malaria Day.

▪ *Zanzibar*

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

Proposed FY2011 Activities

▪ ***Mainland***

(I.4.a) IEC/BCC Across All Intervention Areas—ITNs, IRS, IPTp, and Case Management. As ITN coverage rates increase in the Mainland through the Hung Up campaign (see section H1), more funding will be directed to promoting early case management and appropriate use of ACTs. PMI will use 20% of the BCC funds for ITN promotion ($510,000), and increase support for case management to 50% ($1,275,000). Support for IPTp will remain at 20% ($510,000) and support for IRS will be 10% ($255,000) as IRS scales up rapidly in Year 5 (see section H.3). Work with community change agents, road shows and mobile vehicle units, and mass media activities will continue at a national level, closely coordinated with the Global Fund BCC partner. Activities will also focus on work with health facilities to improve interpersonal skills of health providers and their links to the CCAs and on building capacity within the NMCP IEC/BCC cell. *($2,550,000)*

▪ ***Zanzibar***

(I.4.b) IEC/BCC Across All Intervention Areas—ITNs, IRS, IPTp, and Case Management. Fiscal Year 2011 BCC activities in Zanzibar will focus on consolidating and maintaining successful malaria prevention and control behaviors. This includes proper use of ITNs, ACTs, and IPTp, as well as continued acceptance of IRS. BCC support will be provided in an integrated fashion. Sustainability will be emphasized, as further support will be provided to strengthen the MOHSW's Health Unit's capacity to implement malaria BCC. Community-based approaches to BCC which include directly working with Shehia health committees and selected community-based organizations will continue. *($200,000)*

J. INTERVENTIONS – CASE MANAGEMENT

J.1 DIAGNOSTICS

Background

▪ ***Mainland***

Malaria diagnostics are a key programmatic area in urgent need of strengthening if Tanzania is to improve overall case management and ongoing surveillance. Microscopic examination of Giemsa-strained blood films remains a cornerstone of malaria diagnosis throughout the country, but is only available at higher-level facilities (hospitals and some health centers). Historically, the more than 5000 lowest-level facilities (dispensaries and some health centers) had no laboratory diagnostic capacity for malaria, leaving health care workers at more than 90% of facilities to diagnose malaria strictly on the basis of clinical signs and symptoms.

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

The Global Fund Round 7 award allocates $15.5 million for RDT procurement, and quality assurance of both RDTs and microscopy. Part of the Global Fund grant will support

purchase of 26 million RDTs for national deployment during 2009-2011. The NMCP objective is to increase the percentage of laboratory-confirmed malaria cases in public health facilities from a baseline of 20% to 80%. It is clear from numerous assessments that the quality of malaria microscopy is very poor at almost all levels of the health system and this is likely to be a key barrier to developing a functional quality control/quality assurance system for RDTs.

According to the new WHO guidelines, all suspected malaria cases should be parasitologically confirmed prior to treatment, including children under five. However the treatment protocol does allow clinicians to base treatment on clinical symptoms alone if they feel the patient and/or family would be unable to return if symptoms failed to improve. However to implement this policy, NMCP has to change from presumptive treatment to confirmatory parasitological diagnosis. Currently, laboratory confirmation is happening in only 20% of the suspected cases and there is no system for laboratory quality assurance and quality control. There is low prescriber compliance to the laboratory test results leading to irrational use of antimalarial drugs. Phased rollout of RDTs began in April 2009, starting in areas of low/moderate transmission and expanding to areas of stable/high transmission. Regions prioritized for the first phase of implementation included Iringa, Kagera, Coastal, Manyara, and Arusha.

- ***Zanzibar***

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

Progress over Past 12 Months

- ***Mainland***

Implementation of RDTs at all government health facilities has been completed in five regions, but had to be postponed until additional RDTs could be procured. An international tending process to procure RDTs was completed in May 2010. Upon receipt of the first shipment of RTDs the national scale-up will continue.

Working with the Walter Reed Army Institute of Research (WRAIR), PMI has assisted the MOHSW's Diagnostic Services Section to conduct three comprehensive malaria diagnostics training sessions at the National Health Laboratory and Quality Assurance Training Center since November 2009. More than 40 laboratory technicians from 21 districts have participated in these trainings (Figure 16). The intention is to use these highly skilled microscopists as part of a larger cadre that will support a quality assurance program for RDTs currently being developed by NMCP, WRAIR, and CDC. The National Health Laboratory and Quality Assurance Training Center is a facility constructed and equipped through PEPFAR funding. Completed in 2008, PMI has made excellent use of this facility since it became operational in 2009.

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 QA/QC

program for RDTs is nearing the final stages of development and will be ready for piloting in late 2010.

Figure 16. Locations of health facilities with staff who attended 2009-10 malaria diagnostics training workshops conducted at the MOHSW's National Health Laboratory and Quality Assurance Training Center, Dar es Salaam.

▪ *Zanzibar*

PMI supported the procurement of 375,000 RDTs for Zanzibar between January 2009 and June 2010. This universal availability of RDTs at government health facilities has provided the basis for the MEEDS, which has allowed the ZMCP to identify and respond to unusual or unexpected increases in reported cases. The ZMCP still reports overtreatment of malaria at health facilities in spite of negative results. In February 2010 WRAIR completed a full evaluation of the ZMCP QA/QC program for malaria microscopy and provided a prioritized series of recommendations. Under this program the ZMCP laboratory re-examines every positive blood film and 10% of negative films obtained from health facilities across Pemba and Unguja Islands. There is no parallel QA system for ensuring consistent, high quality RDT results at the health facility level. However, ZMCP has been making progress with periodic comparisons of microscopy and RDT results at health facilities that report sudden increases in RDT confirmed malaria cases.

Proposed Activities

▪ *Mainland*

(J.1.a) RDT and Microscopy Quality Assurance and Quality Control. The new diagnostic policy emphasizes parasitological confirmation for all suspect malaria cases among children

under five. This will mainly be accomplished through national implementation of RDTs at peripheral levels, but microscopy will remain at higher-level facilities. Reliance upon these methods for clinical decision making will requires a robust QA system to monitor performance of microscopy and RDTs. PMI will continue to support the development and implementation of a QA program for microscopy or RDTs. The strategy will rely upon continued expansion of a network of highly skilled microscopists and the establishment of regional reference laboratories that can validate microscopy results at the district-level and RDT results at the peripheral health facility level.

PMI will continue to support the National Health Laboratory and Quality Assurance Training Center's national and regional training workshops and expand the number of certified microscopists available to serve in a nationwide QA/QC network for malaria diagnostics. In addition, three key activities will be undertaken to improve malaria diagnostic capacity throughout Tanzania. First, the QA/QC system piloted with FY10 funds will be finalized and developed into a scalable package for national implementation (described above). However, no approach has been developed to monitor and evaluate such a QA/QC program at the national level. PMI's diagnostics partner will work with the necessary MOHSW units to develop an appropriate M&E strategy (including indicators) for the QA/QC program. Second, results of baseline site/personnel assessments completed with FY10 funding will be used to inform PMI and NMCP's strategy for diagnostics strengthening at all levels. This will allow simultaneous improvement of existing microscopy while the NMCP and partners implement new approaches to ensure consistent, high-quality diagnostics. Finally, a mechanism for supportive supervision and follow-up of trained technicians serving the QA/QC plan at district and regional levels will be built into the program. (*$400,000)*

(J.1.b) Strengthening Malaria Diagnostics. In FY2011, PMI will support NMCP to expedite the roll out of RDTs and improve laboratory-based diagnosis of malaria at government health facilities. This activity is to provide technical assistance to NMCP to: roll out RDTs, ensure availability of RDTs at health facilities, develop strategies of malaria diagnostics integration with other health programs, establish a monitoring and supervision system, and support the implementation of the QA/QC system being developed by WRAIR. The support will increase understanding, acceptance, and correct use of microscopy and RDTs by laboratory staff and health care workers providing direct care to patients. The support will include updating of the policy and malaria diagnostic strategic plans and documents, development of training materials, training of health workers in malaria diagnostics and compliance to malaria test results, updating of the training curricula of health professions to include malaria diagnostics, follow up support to ensure improve diagnostic practices, and promotion of malaria diagnostics in health facilities and the community. Where possible, PMI will support the integration of malaria diagnostics with HIV/AIDS and Tuberculosis diagnosis through integrated planning, training, and encouragement of use of the same laboratory services and human resources. Improved malaria diagnosis at health facilities will improve case management and reduce on the irrational use of ACTs. *($732,191)*

- ***Zanzibar***

(J.1.c) RDT and Blood Slide Microscopy Quality Assurance and Quality Control. Continued progress in Zanzibar is highly dependent upon reliable, accessible diagnostics. PMI will support the finalization and implementation of a flexible system to confirm RDT and microscopy results from every health facility in Pemba and Unguja at least once per year. It is expected the insights gained from Zanzibar regarding diagnostic QA/QC approaches will provide valuable lessons for other PMI countries as they too begin to expand RDT accessibility. ($200,000)

(J.1.d) RDT Procurement. PMI will procure an additional 300,000 RDTs for health facilities in Zanzibar and scale-up RDT coverage to private sector hospitals and health facilities and avoid future stock-outs of this key diagnostic approach. In addition, these supplies may be used for active case detection and response in the event of an unusual increase in reported cases identified through the MEEDS. (*$224,000)*

J.2 CASE MANAGEMENT

Background

- ***Mainland***

Pharmaceutical Management and Logistics. ACTs were officially launched in Mainland Tanzania on December 15th, 2006. The NMCP adopted artemether-lumefantrine (AL) as the first-line drug and artesunate-amodiaquine as the second line drug for the treatment of uncomplicated malaria on the Mainland. Quinine is used for treatment of severe malaria. Funding for ACTs in the public sector has been supported primarily by Global Fund (Round 4 and Round 7) and PMI. PMI also provides limited support for procurement of RDTs for the public sector. The roll-out of RDTs to all public health facilities nationwide will be funded by the Global Fund Round 7 grant but has not been implemented beyond three regions.

PMI provides technical assistance for the annual quantification and procurement planning for ACTs and RDTs. The technical assistance includes the procurement planning for the commodities funded by the Global Fund. Bi-annual reviews are done to update stock tables and procurement plans. This exercise has assisted the MOHSW, NMCP, Medical Stores Department (MSD), and the Pharmaceutical Supply Unit to manage the commodity pipeline for the country. The MOHSW has set minimum and maximum standards for stock availability at 6 and 9 months, respectively. The goal of NMCP is to have ACT stocks maintained between those minimum and maximum standards; however, the biannual reviews done in September 2009 and again in March 2010 showed that the stock of ACTs was below the required minimum. In the last six months, the MOHSW has placed three emergency orders of ACTs, two financed by PMI (FY2009 and FY2010 funding), and a third funded by the reprogrammed $5 million of the Global Fund Round 7 grant.

The Global Fund Round 4 grant that was financing ACTs for the public sector expired in January 2009. Other Global Fund grants that have budget lines for ACTs for the public sector are AMFm and Round 9. The AMFm proposal budgeted for 21 million ACT treatments for the public sector for two years at approximately $1 million ($0.05 per treatment). The Global Fund Round 9 grant has a budget for 54 million ACT treatments over five years, starting in January 2011. Although both proposals were approved, it is not known when funding will become available. The Round 7 grant that is intended to finance the AMFm pilot has many performance issues and it may take a year after the Round 9 grant was approved for funds to start flowing.

As of May 2010, the stock of ACTs on hand plus the ACTs on order will only last until the end of September 2011. PMI has an additional $4.6 million of FY2010 funds to procure approximately 4 million ACT treatments, which will last until December 2010. Thereafter, there is no assured funding for ACTs for the public sector. ACT needs for the Mainland for 2011 is estimated at 16,080,280 treatments (Table 11), assuming an average monthly

consumption of 1,383,840 treatments. An order will need to be placed by September to avoid a national stock out of ACTs in January 2011.

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

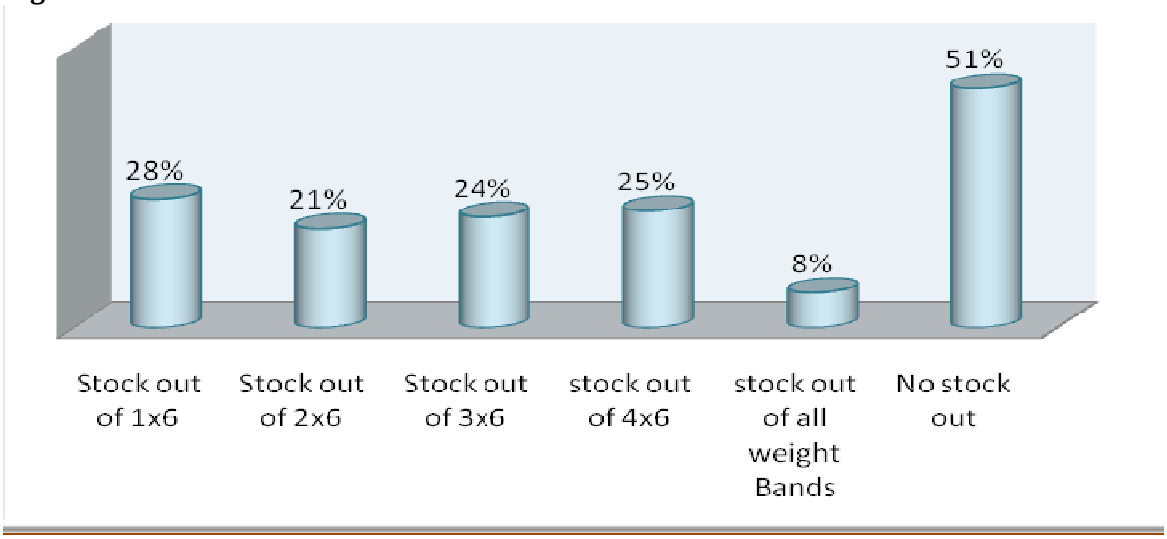
	Historical		Current		Projected Country Needs			
	2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**
Annual ACT requirements	16,227,818	15,387,302	15,834,582	16,080,280	13,870,477	11,340,483	7,926,437	4,874,548

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

Medical Stores Department (MSD) is the central drug procurement and distribution organization tasked with the forecasting, procurement, consignment and delivery of AL to health facilities. A rapid assessment using the pharmaceutical management systems strengthening tool was carried out January-February 2010 in the four regions of Lindi, Mtwara, Arusha, and Moshi; and the three MSD Zonal stores of Mtwara, Arusha and Tabora. This assessment revealed that while many areas performed adequately, key weaknesses remain in inventory management and information systems required to track medicine availability at different levels of the system. Delivery schedules were not being followed and the reporting and request forms were not being completed nor tracked by the Council Health Management Teams. Although these Teams were carrying out supervisory visits to health facilities, there was no indication that the supervision was having any effect on logistics management at health facility level.

In 2009, PMI supported the NMCP and MSD to carry out four end-use verification surveys. Every quarter, the end-use verification survey covers three regions and approximately 20 health facilities and one MSD Zonal Store. The survey covered all hospitals in the three regions plus a sample of health centers and dispensaries. The purpose of the end-use verification survey is to monitor the stock levels of antimalarial drugs and other antimalarial commodities like RDTs. It also assesses the skill levels for logistics management. The stock levels of the various weight bands of ACTs in the 80 health facilities visited in 2009 are shown below

Figure 17: ACT Stock levels for 80 Health Facilities visited in 2009



This exercise, while not nationally representative, identified several key pharmaceutical management issues including:

- Most health facilities were able to correctly calculate quantities of ACTs needed based on consumption data.
- Use of SP and quinine to treat uncomplicated malaria was extremely low.
- Only about half of the 80 health facilities visited did not have any stock out of ACTs.
- About 8% (6 health facilities) of the 80 health facilities visited did not have any ACTs at all.
- Ordering of drugs using the reporting and request forms is still problematic.
- No system exists for following up the health facilities that do not place orders on time.
- Malaria is still being treated presumptively and there is over use of ACTs.

Treatment. NMCP changed the malaria treatment policy from SP monotherapy to ACTs in July 2006. Artemether-lumefantrine is the recommended first-line drug for treatment of uncomplicated malaria while quinine is the recommended second-line drug. Quinine is also the drug of choice for the management of severe malaria and treatment of malaria in pregnant women during the first trimester. 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 has now rolled out ACTs to all the regions and has achieved access and use of ACTs in the public sector, including the private not-for-profit health facilities that receive their ACT supplies from the MSD. The current priorities for the NMCP are to: maintain and improve antimalarial drug supplies in the public sector; improve access, quality and affordable ACTs in the private sector through the roll out of ADDOs and access to subsidise ACTs; strengthen the pharmacovigilance system; and strengthen therapeutic drug efficacy monitoring.

Availability of a trained workforce is essential for the rational use of antimalarial drugs. Since 2006, PMI has been funding the Zonal Training Centers of Arusha, Iringa, and Kigoma to conduct the training of the health workers (clinicians, pharmacists, nursing staff). The first training of clinicians and pharmacists in 2006 focused on the new treatment guidelines, while that of nursing and clinical staff that was initiated in 2007 focused on comprehensive case management, including management of severe malaria and malaria in pregnancy.

Despite comprehensive in-service training, critical weaknesses remain in the quality of case management at the health facility level. There is irrational use of ACTs due to presumptive treatment, a lack of supervision, and evidence suggests that treatment guidelines are not followed at the facility level. For example, the end use verification exercise carried out in April 2010, revealed that only 79% of children under five with uncomplicated malaria received an ACT; the remainder were given SP and oral or injectable quinine. The 2007-08 THMIS household survey revealed that only 20% of children under five with fever had received an ACT and only 13% of children under five with fever had received an ACT within 24 hours of onset of fever. Referral for severe malaria treatment also is weak. The PMI-funded severe malaria project conducted by IHI in 2008-2009 documented that only 31% of children classified with severe febrile illness at peripheral health facilities were referred to a higher level facility. This was due to the lack of skills of the health workers to do proper assessment of children with severe illness, and the refusal of patients due to lack of funds for transport.

Additionally, the curricula for pre-service training for Clinical Officers, Nurses and Midwives, and Health Officers is out-dated and does not reflect current practices. The April 2010 end use verification survey showed that only 59% of health workers providing case management services had received appropriate training. This gap justifies continued in-service training to improve quality in malaria case management at facility level.

Management of malaria services at district level is also weak due to inadequate planning and supervision of the health facilities by the Council Health Management Teams and the designated District IMCI/Malaria focal persons. Some districts lack District IMCI/Malaria focal persons due to high attrition rate and lack of a sustained system for replacement.

Demographic data shows that the majority of Tanzanians (80%) live in rural areas where access of quality health services including pharmaceutical services and essential medicines is limited. Rural communities often visit retail drug shops known as *duka la dawa baridi* to seek essential medicines for common illnesses before visiting a formal health facility. According to reports from NMCP, approximately 35% of fevers in children under five are treated in the private sector, primarily through the informal drug shops. ACTs and conventional antimalarial monotherapies of variable quality are found in private sector outlets, but the ACTs constitute less than 7% of antimalarial drug sales at this time. The most common

antimalarial drug sold in private sector outlets is SP while unsubsidized ACTs are virtually unaffordable for the average rural Tanzanian.

The 2003 National Health Policy and the National Malaria Medium-Term Strategic Plan (2008-2013) recognize the importance of collaborating with the private sector to improve access to anti-malarial drugs. The NMCP, in collaboration with the Tanzania Food and Drug Authority (TFDA) has been proactive in addressing challenges of malaria treatment in the private sector. The TFDA permitted the sale of subsidized ACTs through the accreditation and regulation of the ADDO Program in 2007. This program, supported by PMI in collaboration with TFDA, NMCP, and local government authorities, transforms unlicensed drug vendors into outlets licensed to dispense ACTs along with other specified prescription drugs. The ADDO program addresses the problem of availability of quality essential medicines and pharmaceutical services to people living in rural and peri-urban areas. The ADDO program is currently being supported through PMI, Global Fund Round 7, the Bill and Melinda Gates Foundation; DANIDA, and local governments.

Despite improving access of ACTs through the ADDO program, ACT uptake is low because of: inadequate and inconsistent supply of ACTs for the private sector; the co-existence of SP and monotherapies in the market which are much cheaper and convenient for the patient; and shortage of approved wholesalers of ACTs at district and lower levels.

The NMCP and TFDA are taking steps to improve the quality of antimalarial drugs and remove artemisinin monotherapies from the market. The TFDA issued instructions that all artemisinin monotherapies be withdrawn by January of 2008 and enforced the ban on wholesalers for artemisinin monotherapy in August of 2008. The TFDA issued a nationwide recall of Metakelfin, a branded SP product, in April 2009 due to widespread prevalence of counterfeits.

Therapeutic drug efficacy monitoring. Antimalarial drug resistance is an ongoing threat to malaria control. Zanzibar and the Mainland introduced artemisinin-based combination therapies as first-line treatment of malaria in 2003 and 2007, respectively. While it is hoped that development of resistance will be delayed through use of combination therapy, the higher cost of these therapies may encourage people to use them incorrectly (e.g., using only a fraction of the recommended dose). This behavior may accelerate development of resistance. As resistance emerges, malaria control programs need to be able to evaluate current drug efficacy in a way that provides timely, relevant, reliable, and understandable information. Data derived from these evaluations are essential to maintain confidence in current treatment recommendations, or to generate convincing evidence that current treatment recommendations must change. Completing such evaluations consistently over time and with a representative selection of sites, NMCP can strategically minimize the impact of a failing treatment regimen.

▪ *Zanzibar*

ACTs were deployed for the first time in Zanzibar in 2003 and the current first-line malaria treatment is amodiaquine-artesunate. ACTs are widely available in health facilities and health worker compliance with appropriate use of ACTs has been documented at approximately 70%. With the decrease in malaria case load in health facilities, there is now an increased focus on diagnosis and attention to non-malarial causes of fever and death in children under five. The effective malaria interventions have reduced the monthly consumption of ACTs to 6,000 ACT treatments per month. The change of policy from

presumptive treatment of malaria to confirmatory diagnosis has doubled RDT consumption from 12,000 to 25,000 RDTs per month. Because of the rapidly changing epidemiology of malaria in Zanzibar, ZMCP is now facing a challenge in terms of quantification and procurement planning for malaria commodities, including ACTs, RDTs, and other laboratory commodities. Other challenges include continued use of monotherapy; inadequate differential diagnosis of severe febrile illnesses (e.g. septicaemia, pneumonia etc.) from severe malaria; and lack of a mechanism to supervise private health facilities on management of malaria.

Progress over Past 12 Months

▪ *Mainland*

Pharmaceutical Management and Logistics. PMI has continued to provide technical assistance for strengthening the logistics system of the MOHSW NMCP, MSD, and the Pharmaceutical Supply Unit. Support has focused on integrating AL into the new integrated logistics system, which is a transition from a push to a pull system. The Mainland completed its conversion to the integrated logistics system in December 2009 and all the health facilities are now ordering drugs using the this system. Specific activities include support to the NMCP ACT Working Group related to quantification and procurement planning for malaria drugs and new inventory control procedures. In addition, the end use verification tool that was piloted in Tanzania in January 2009 has now been institutionalized and adopted as an important tool for providing data on availability and use of malaria commodities at the Zonal Medical Stores and the health facilities. in the country. The end use verification survey is the only source of information for providing facility-based data on the logistics system for malaria.

In 2009 and early 2010, the Mainland experienced shortages in the supply of ACTs for the public sector. As a result, three emergency orders of ACTs were placed, funded by PMI (December and April 2010) and Global Fund Round 7 reprogrammed funds ($5 million). In December 2009, PMI procured 3.4 million ACT treatments and another 3.4 million in April 2010. From 2006 to date, the NMCP has procured more than 50 million ACT treatments for the public sector, of which 6.89 million were procured by PMI (FY2009 and FY2010) . PMI has also procured 624,717 ACT treatments for UNHCR, and another 815,160 ACT treatments for the ADDOs. An additional 4 million ACTs will be procured using the remaining FY2010 $4.6 million.

Treatment. PMI has supported several interventions to improve access to ACTs and case management at the health facility level. Since FY2007, PMI has been funding the training of nurses for comprehensive malaria case management, including management of severe malaria and malaria in pregnancy. To date, the three Zonal Resource Centers of Arusha, Iringa, and Dodoma have trained 8,013 health workers (with 1,018 in 2009) from all 21 regions of the Mainland.

The management of severe malaria continues to be of concern. Current NMCP treatment guidelines call for the use of quinine for management of severe malaria and permit the use of intramuscular artemether for hospitalized cases. In FY2007 and FY2008, PMI funded IHI to pilot a severe disease in children package that aimed at improving health workers assessment, classification, treatment, and medical referral of severely ill children under five years old. The pilot was implemented in 76 health facilities (4 hospitals and 72 lower health facilities) across six districts, with more than 453 health workers trained in an adapted IMCI algorithm. Preliminary findings from 17,000 clinical encounters for children 2-59 months showed that

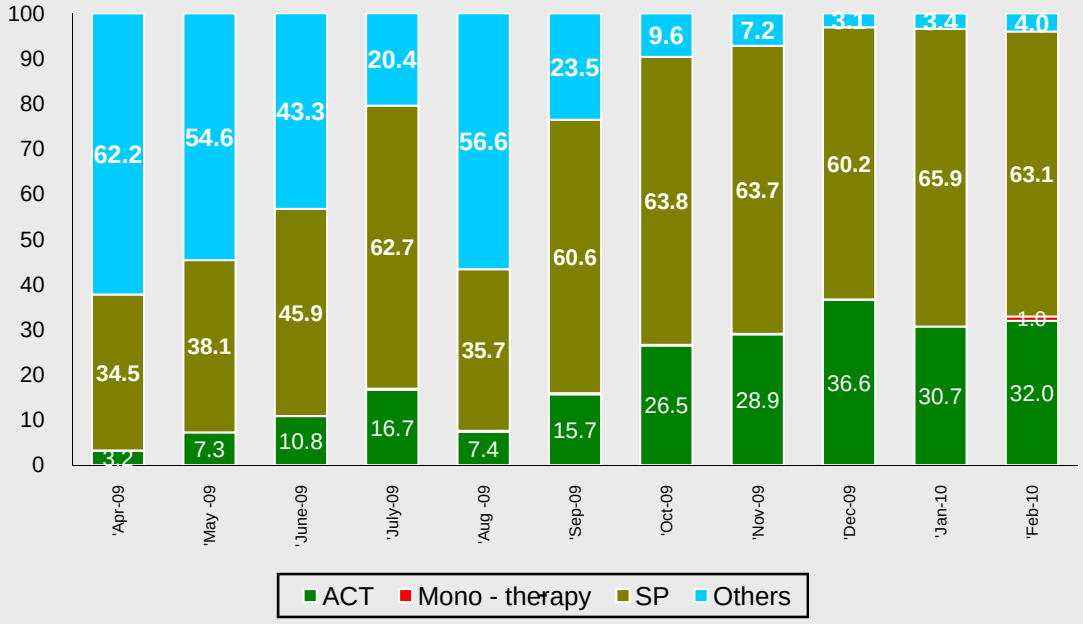
6% of the cases had severe febrile disease. More than 75% of these received a pre-referral or initial treatment with artemether or artesunate, but only 31% were referred for definitive care. Pre-referral treatment was an acceptable practice among peripheral health workers. In FY 2010, PMI funded IHI to assist the NMCP in disseminating the findings of the pilot and generate a consensus around the necessary next steps for developing new policies and practice guidelines for safe and effective pre-referral treatment of severe childhood illness. This activity is scheduled to take place in late 2010. The major outcome of this activity will be training materials, curriculum, and job aids adapted from the pilot exercise and developing a costed plan for rolling out a pre-referral treatment nationwide.

In 2010, USAID Tanzania issued an RFA for partners to assist the MOHSW to improve facility-based management of severe febrile childhood illness in Kagera, Mwanza, Mara, and—potentially--Shinyanga Regions. This announcement will close in July 2010 and be awarded by the end of the calendar year. The award is intended to assist with the pediatric hospital initiative established in the Global Fund Round 7 proposal in the Lake Zone regions, where PMI will also be supporting widespread reduction of malaria transmission through near-universal coverage of ITNs and indoor residual spraying. This integrated child health initiative is described in more detail in the proposed activities section below.

To improve malaria case management of newly qualified clinical, dispensing, and nursing health professionals, PMI will begin in late 2010 supporting the updating of the curricula of the training institutions. The updated curricula will include the all the major interventional areas of malaria control including case management, malaria diagnostics, IRS, malaria in pregnancy, and ITNs. This activity will cover the training institutions on both Mainland and Zanzibar. To address continuous medical education for the District Health Management Teams (DHMTs) and the District IMCI/Malaria Focal Persons, with FY2010 funding, PMI will support the training of the DHMTs and the replacement of District IMCI/Malaria focal persons.

PMI has also funded activities to promote awareness and demand for ACTs in the private sector and to reinforce TFDA's ban on artemisinin monotherapies. Since 2007, PMI has supported retail audits of Tanzanian private drug sellers in five regions (Figure 16). General trends over the past years show that after the TFDA declaration and later enforcement of the ban on monotherapy (January and August 2008 respectively) there was an initial increase in sales of monotherapy to approximately 10% in July 2008 as stock was being sold out but since then, sales of monotherapies have gradually dropped to less than 4%. Since April 2009, ACT stocks and sales in ADDOs have significantly increased, displacing the monotherapies and other not recommended antimalarial drugs.

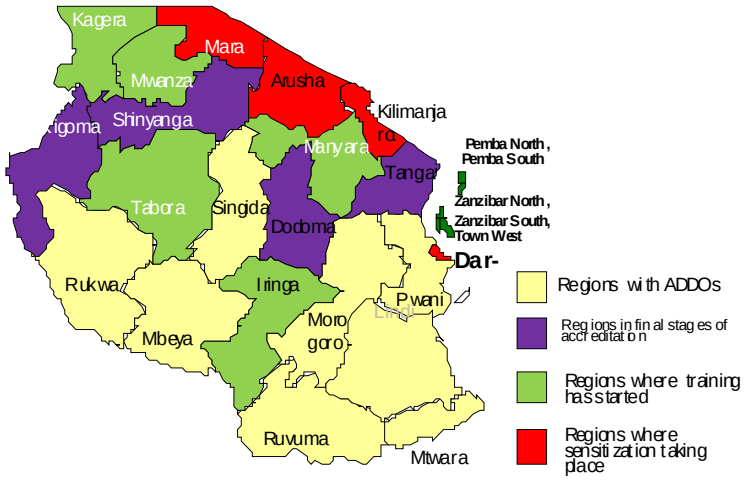
Figure 19: Sales of antimalarial drugs in Accredited Drug Dispensing Outlets in five regions



Because the costs of unsubsidized ACTs are out of the average client's financial ability to purchase. SP, an ineffective drug for treating malaria with high levels of resistance, still accounts for approximately 63% of sales. Compared to unaccredited outlets, ADDOs have higher sales of ACTs and very low levels of monotherapies. With FY 2009 funds, PMI supported the development of materials to make clients and drug sellers aware of the importance of ACTs as first-line therapy for malaria and to highlight the dangers of monotherapies and inefficacy of SP.

The ADDO roll out on the Mainland is ongoing. The accreditation is completed in 8 of the 21 regions (Ruvuma, Morogoro, Singida, Mbeya, Lindi, Mtwara, Rukwa and Coast). To date, there are 1,444 ADDOs and 3,702 Dispensors, an average of 2-3 Dispensors per ADDO. Four regions (Tanga, Kigoma, Dodoma and Shinyanga) are in the final stages of accreditation.

Figure 18: Status of implementation of ADDO Program in Tanzania as of April 2010



Training has started in the five regions of Tabora,

Mwanza, Manyara Kagera and Iringa and sensitization in the remaining 4 regions of Arusha, Mara, Dar-es-Salaam, and Kilimanjaro is underway, with support from the District Local Governments. ADDO roll out is expected to be finalized by December 2010. ADDOs have become an avenue for a variety of public health initiatives, such as:

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

Since 2006, PMI has also been providing ACTs for ADDOs in Ruvuma and Morogoro Regions. The Average monthly consumption of ACTs for ADDOs is 37 ACT treatments per ADDO per month. To date, PMI has procured and distributed 815,160 ACTs for the ADDOs since August 2007. PMI support for ADDOs is expected to decline significantly in FY2011 with the launch of the AMFm pilot in 2010. Subsidized ACTs are being sold at a reduced price of $0.90 and $0.46 for adults and children respectively. ACT uptake has been slower than expected in the private sector due to a variety of reasons including poor demand for ACTs, weaknesses in the distribution system, and the current cost structure of ACTs that reduce the likelihood of ADDOs dispensing ACTs. To address these challenges, supportive supervision visits to outlets and refresher trainings for dispensers were conducted; routine consumption reporting of ACTs from ADDOs were encouraged; and BCC efforts were devised to promote demand for ACTs. The TFDA has also authorized district-level distribution points to be set up by relaxing the need for stock being distributed by a facility operated by a trained pharmacist.

PMI has also been filling in ACT procurement gaps for UNHCR not covered by Global Fund Round 4 funding. These camps serve a population of approximately 276,000 refugees and people in surrounding communities that would not otherwise have access to ACT treatments. Since 2006, PMI has supported the procurement and distribution of 730,410 ACT treatments for refugee camps and surrounding communities. As a result of a declining refugee population and a pipeline from 2007 and 2008, UNHCR is not anticipated to need significant support in 2010 and will procure ACTs through the AMFm in 2010.

Therapeutic drug efficacy monitoring. An implementation partner has been selected and the WHO protocol for Tanzania sites has been completed. Staff from the WHO-Tanzania office are providing technical assistance to the implementation partner and will provide oversight once the field activities begin.

▪ *Zanzibar*

The first-line ACT for Zanzibar is amodiaquine-artesunate. Since all drug needs have been funded by the Global Fund, PMI involvement in Zanzibar has been limited to procurement of RDTs. Since 2006, PMI has procured 450,000 RDTs for Zanzibar. Currently, ZMCP has been doing the forecasting and quantification for both ACTs and RDTs. However, more recently, the ZMCP has experienced stockouts of both ACTs and RDTs, due in part to the rapidly changing epidemiological and environmental situation as a result of the effective malaria control interventions, and the deficit created by the expired ACTs. The ZMCP also lacks a mechanism for the final disposal of medical waste, including expired/unusable ACTs

and RDTs. The ZMCP has requested support in logistics management, including quantification and procurement planning, quality control of RDT kits, and medical waste handling and final disposal.

Proposed Activities

▪ *Mainland*

(J.2.a) Service delivery strengthening. In FY2011, PMI will continue to contribute to the new integrated service delivery project aimed at improving child health through strengthening the capacity of health workers to provide fundamental diagnostic and treatment services for malaria and other major causes of severe febrile illness and death in children under five. The program will be implemented in three or four regions within the Lake Zone (Kagera, Mwanza, Shinyanga, and Mara), that have some of the highest rates of malaria and child mortality in Tanzania. These regions cover a population of over 11.7 million people and will be targeted for the UCC and IRS. The geographic scope of the project may expand pending project performance and available funding. This is an integrated activity with Maternal and Child Health and HIV/AIDS and is expected to contribute to reductions in under-five mortality as part of the PMI and through joint USAID programming in child health. Malaria case management and IMCI will account for 70% of this activity

The program will:

- increase availability of and accessibility to facility-based curative and preventive child health services, including availability of trained child health providers, availability and use of malaria RDTs and other diagnostic services, availability of uninterrupted supply of essential drugs, and establishment of functional referral systems;
- ensure sustainability of critical child health activities by: integrating the MOHSW Pediatric Health Initiative and IMCI activities, improving planning and budgeting of child health interventions at district level, establishing regular supportive supervision and mentoring aligned with a simple but effective monitoring plan, and engaging local NGOs/ FBOs/civil society in order to enhance their participation in malaria control interventions;
- increase linkages within the community to promote healthy behaviors that increase knowledge and use of malaria services, e.g. developing strong synergies with existing behavior change and care-seeking mechanisms funded through the Government of Tanzania, USG or other donors to ensure that health promotion and behavior change messages are standard and consistence across regions; and
- forging strong partnerships with local community programs with mandates to identify and refer sick children or that serve orphans and vulnerable children e.g. the ADDOs and Community Change Agents. (*$3,000,000)*

(J.2.b) ACT Procurement for Public Sector and Possible Emergency Needs (UNHCR and/or ADDOs). In FY2011, PMI will procure and distribute a three-month supply of ACTs for the Mainland public sector to ensure ACT supply through March 2011 when funding from Global Fund (AMFm or Round 9) is expected to come through. Since it is not known when the AMFm pilot will start, PMI will use some of these ACTs to supply the refugee population until other alternative sources of support are found. Once the AMFm pilot starts, it is expected that ADDOs will access ACTs through that mechanism.
($4,500,000)

(J.2.c) Strengthen Pharmaceutical Management and Supply Chain System. In FY2011, support for malaria commodity logistics will continue to focus on monitoring the Integrated Logistics System to ensure continued availability of ACTs and other antimalarial medicines at the facility level. The supply chain work will focus on ensuring the availability and analysis of accurate consumption data through the this database and supervision tools. 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. Support will also be provided in managing and monitoring PMI-funded ALu procurement. This activity will also provide supply chain support for the large scale roll out of Global Fund Round 7 RDTs through the public sector and ACT quantification and procurement planning for GFATM Round 9. This will necessitate maintaining "cool chain" transport and warehousing, quality control, and integration into the ILS.

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 at the facility level; visits to health facilities and regional warehouses to detect and respond to critical issues such as ACT (or other drug) stock outs; expired ACTs at health facilities, drug leakage, anomalies in ACT use, and to verify quantification/consumption assumptions; support to MSD and the MOHSW Pharmaceutical Supply Unit to institutionalize supply chain management functions by establishing a quarterly stock monitoring forum for antimalarial drugs, regular updating of the database with actual consumption data, and bi-annual review of quantification to update previous quantification parameters. In FY2011, support will address medical waste management and final disposal, as per U.S. Government and local environmental laws. (*$750,000)*

(J.2.d) Provide Technical Assistance and/or purchase and delivery of malaria commodities. In FY2011, PMI will strengthen the Ministry of Health and Social Welfare capacity for procurement, ordering, and delivery of malaria commodities. The support will include providing technical assistance to the Medicines Supply Department (MSD) to establish a system for monitoring and reporting logistics data at health facilities and MSD, including timely ordering of malaria commodities from health facilities to MSD zonal warehouses. Other PMI support may be procurement of malaria commodities affected by frequent stock-outs, and distribution of malaria commodities from MSD to the health facilities. (*$500,000)*

(J.2.e) Social marketing of ACTs. In FY2011, PMI will indirectly support the distribution of ACTs through ADDOs and other private sector facilities, including regulation and commodity detailing, in coordination with TFDA and complementary to potential GFATM round 7 and AMFm activities. TFDA has a prominent role in ensuring the safe rollout of ACTs in the private sector; it is responsible for developing systems to accredit and supervise the ADDOs, and for ensuring the safety, quality and efficacy of antimalarial medicines in Tanzania. Since the Global Fund Round 7 grant does not cover this activity, PMI will work through the Tanzania Social Marketing Program to provide technical assistance to TFDA to support the following activities: capacity building of the drug inspectors at all levels; developing and implementing tools for preparing, reporting, storage and management of data generated from inspection activities; supporting regional and district health authorities to develop ADDO infrastructure; providing technical support to national drug distributors; orienting drug dispensers on proper dispensing and documentation of ACTs; and supporting monitoring and evaluation (M&E) of the ADDO program and ACT distribution. *($500,000)*

(J.2.f) Therapeutic Drug Efficacy Monitoring. In FY10, PMI will support implementation of therapeutic efficacy monitoring for artemether-lumefantrine and amodiaquine-artesunate on the Mainland and Zanzibar. The primary goal is to provide NMCP and ZMCP with essential information regarding clinical and parasitological responses to these first-line antimalarials. The results will be used for developing an evidence-based antimalarial treatment policy as Tanzania continues to scale-up the availability and use of ACTs nationwide. The simplest and most universally accepted measure of testing for antimalarial drug treatment efficacy follows a standardized World Health Organization protocol.

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

(J.2.g) Training and Follow-up for Malaria Case Management. The NMCP will be supported to conduct a rapid assessment of the effectiveness of the training conducted by the three Zonal Resource Centers of Arusha, Iringa, and Kigoma. The results of the assessment will be used to improve the design and technical content of the course. The Zonal Resource Centers will also be supported to conduct training of health workers in the districts where the need is greatest. The Zonal training centers will also participate in the roll out of the RDTs. *($500,000)*

(J.2.h) Updating Pre-service Training Curricula for Medical Training Institutions. The MOHSW on the Mainland and Zanzibar will be supported to review and update the malaria treatment and prevention training curricula for medical training institutions in Tanzania to ensure new medical professionals fully understand NCMP treatment guidelines and malaria policies. This will include review of the curricula for key professions including physicians, Assistant Medical Officers, clinical oOfficers, Enrolled and Registered Nurses, laboratory assistants and technicians, and Pharmacy Assistants and Technicians. Activities will include review of the training curricula, pretesting, production and dissemination of the updated curricula, and development of training materials. Updates will include current practices in malaria prevention and case management, including malaria diagnostics and malaria in pregnancy. *($200,000)*

▪ *Zanzibar*

(J.2.i) Strengthen Pharmaceutical Management and Supply Chain System. Pharmaceutical and supply chain strengthening activities will include: support to the ZMCP to collect consumption and logistics data needed for annual quantification and procurement planning; technical assistance for the annual quantification exercise and bi-annual reviews; procurement planning; procurement and distribution of RDTs; and support for medical waste handling and final disposal of un-usable ACTs and RDTs. Because of the frequent stock out of ACTs and RDTs in the recent past, ZMCP will be supported to initiate end use verification surveys to provide data on availability and use of malaria commodities at the health facilities. *(250,000)*

K. INTEVENTIONS – EPIDEMIC SURVEILLANCE & RESPONSE

K.1 EPIDEMIC SURVEILLANCE & RESPONSE

Background

▪ ***Mainland***

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

Similar to Zanzibar, Kagera Region in the Lake Zone should expect dramatic declines in malaria prevalence following the multiple rounds of IRS conducted since 2008, plus distribution of free LLINs to children under five in 2010. In addition, universal LLIN coverage is expected to be achieved following the provision of LLINs for all remaining sleeping spaces in late 2010. IRS will be extended into Mwanza and Mara Regions in late 2010, followed shortly thereafter with the universal LLIN coverage campaign. Combined, these interventions should have a profound impact on malaria morbidity and mortality. At a minimum, Kagera Region should begin to develop surveillance systems that are capable of detecting sudden increases in transmission. The system must then trigger a response from malaria control staff to avert possible high case-fatality rates in the community.

▪ ***Zanzibar***

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

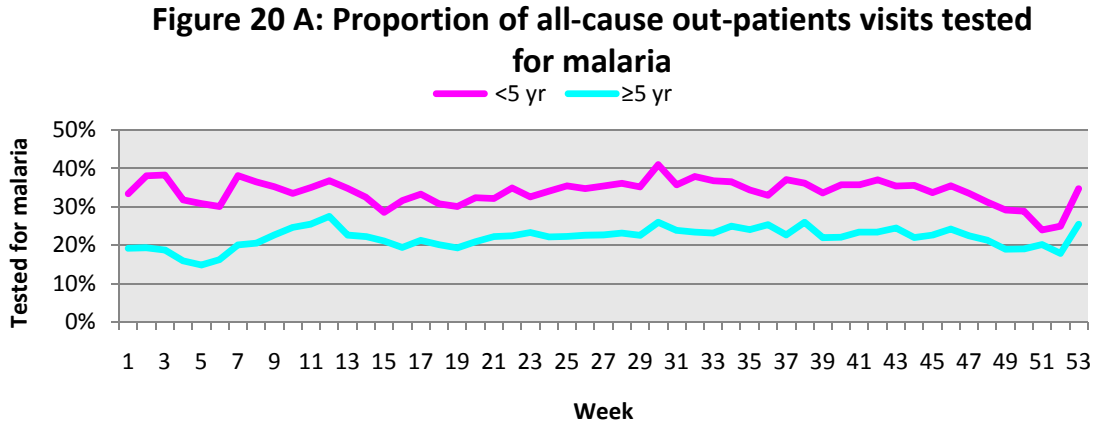
In FY08, PMI provided technical and financial support to ZMCP to develop and implement a Malaria Early Epidemic Detection System (MEEDS) in Unguja and Pemba. The system includes a strategy to collect daily data for three key indicators among outpatients visiting peripheral health facilities (total visits, confirmed malaria positive, confirmed malaria negative). The system was inaugurated in ten facilities in April 2008 and expanded to 42 additional facilities in late 2008. 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) cumulative weekly data made available for viewing over a secure web site.

Progress over Past 12 Months

- ***Zanzibar***

In early 2010 the MEEDS was expanded to 17 new facilities, bringing the total number enrolled to 69, including five private facilities. This represents approximately half of all health facilities in Zanzibar. In mid-2009, a data quality assessment of the MEEDS was conducted. The system was found to capture over 90% of all malaria cases diagnosed and recorded at the enrolled facilities. Multiple outbreaks have been detected by the system and four separate field investigations initiated. All MEEDS data have been summarized and presented in a Biannual Report that is widely disseminated to MOHSW staff and other malaria control stakeholders in Tanzania and abroad. Two reports were prepared and disseminated since mid-2009. Quantitative epidemic thresholds are being refined to determine when an epidemic response should be elicited from ZMPC and district-level health officials. Finally, additional studies in Zanzibar indicate that transmission foci exist across both islands. Leaving 50% of health facilities out of the MEEDS may be compromising our ability to detect important transmission foci that would benefit from earlier detection and response.

Figures 20 A, B, and C: Proportion of all-cause out-patients visits tested for malaria (figure A), confirmed malaria cases (B), and malaria positivity rate (C) according to age group and surveillance week number — 52 Zanzibar MEEDS sites, 2009.



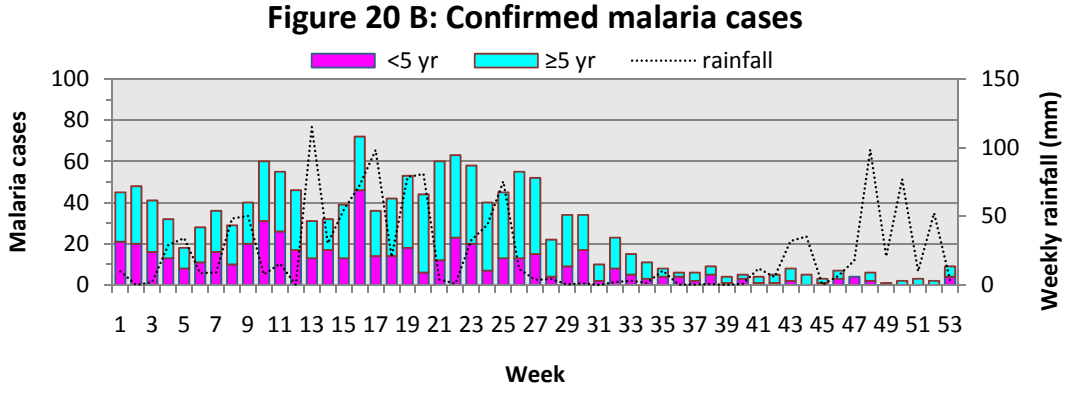
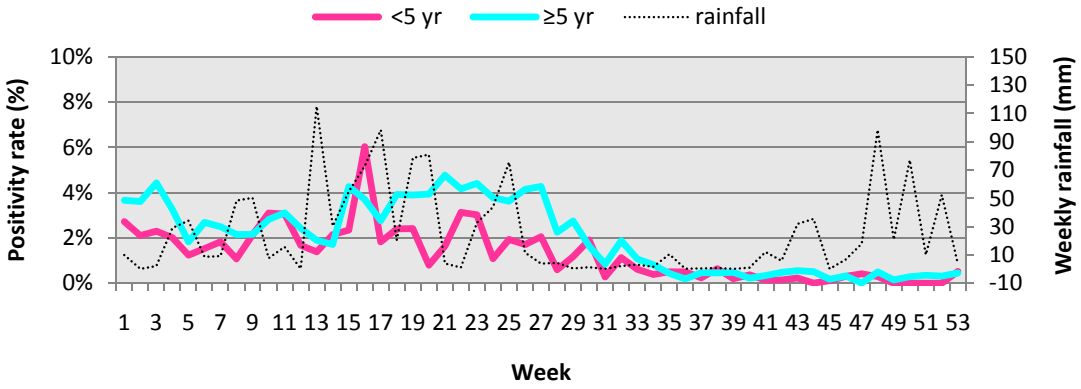


Figure 20C: Malaria Positivity Rate



Proposed Activities

▪ ***Mainland***

(K.a) Implement New MEEDS Reporting in Lake Zone and Dar es Salaam. Mainland has scaled up a number of vector control interventions in the Lake Zone. They include IRS, the recently concluded U5CC with high net use above 60%, and the ongoing UCC. With these effective interventions, the Lake Zone will experience dramatic declines in malaria transmission. This required mainland to implement a surveillance system reporting in the Lake Zone for timely detection of increased malaria transmission. A MEEDS will be implemented in at least 20 peripheral health facilities each of Kagera, Mwanza, and Mara Regions and at 20 facilities in Dar es Salaam by the end of 2011. Initially, the reporting will be every fortnight or monthly. The system will be modeled after the Zanzibar MEEDS and provide real-time surveillance data through a web based system. *($550,000)*

▪ ***Zanzibar***

(K.b) Scale-up MEEDS to 100% of All Health Facilities by the End of 2011. Data from recent field investigations indicate instances of increased malaria transmission in areas surrounding non-MEEDS health facilities. Unless these other health facilities become enrolled in MEEDS, timely detection of malaria outbreaks and response cannot be assured. PMI will support scale-up of MEEDS to all remaining 60 government health facilities and at least 25% (approximately 20) of private health facilities. Epidemic confirmation procedures will be strengthened and prearranged systems will be further developed to allow ZMCP to deploy a small cadre of trained staff to investigate all suspected epidemics. Readiness for malaria epidemic investigation and response (e.g., active case detection using RDTs, mass treatment of fever cases in the affected community, focal IRS, and supplies for management of severe malaria) will require adequate stocks and periodic rotation of commodities. *($300,000)*

L. INTEGRATION WITH OTHER GLOBAL HEALTH INITIATIVE PROGRAMS

L.1 MALARIA AND HIV/AIDS INTEGRATION

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

The PMI Tanzania team is currently working with a PEPFAR partner to implement malaria RDTs in several HIV/AIDS Care and Treatment Centers. Currently, Care and Treatment Center clients in need of a malaria diagnostic test typically report to a separate laboratory at the health facility where the Center is located. Due to long waiting periods, many clients decline to wait for this diagnostic service and subsequently fail to receive ACT for treatment of 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,a 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. Preliminary results of this work are expected in late 2010.

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

Progress over Past 12 Months

- ***Mainland and Zanzibar***

The PMI and PEPFAR teams, along with the National Bureau of Statistics and other stakeholders have begun discussions around another combined Tanzania HIV/AIDS and Malaria Indicator Survey (THMIS). PMI support for the THMIS is included in the FY10 MOP and additional PEPFAR support will likely be included with FY10 or FY11 funds. The in-country PMI and PEPFAR teams have also successfully leveraged their resources and obtained Embassy approval to develop a combined 2-year surveillance officer position in Zanzibar. This Malaria and HIV/AIDS Surveillance Officer will be assigned to both ZMCP and Zanzibar AIDS Control Program to strengthen surveillance activities and help coordinate disease cluster investigations. Perhaps most importantly, PMI's support for strengthening malaria diagnostics has done so using infrastructure and equipment supplied by PEPFAR. Three malaria diagnostics training have been conducted in the recently completed National Health Laboratory and Quality Assurance Training Center in Dar es Salaam.

Proposed Activities

▪ ***Mainland and Zanzibar***

During 2011-12, the PMI and PEPFAR teams will work together with the MOHSW and National Bureau of Statistics to implement, analyze, and disseminate the THMIS. The PMI-PEPFAR funded Malaria and HIV/AIDS Surveillance Officer will assist ZMCP and Zanzibar AIDS Control Program with urgently needed surveillance strengthening efforts over the next two years. During this time, PMI will continue to request MOHSW investment in more personnel for malaria outbreak detection and response, a severely under-staffed and under-resourced section within ZMCP. PMI's implementation partner for diagnostics strengthening will be requested to collaborate with the existing PEPFAR laboratory system strengthening working group. Our 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 FY11 PMI funds are requested for these various activities.

L.2 MALARIA AND NEGLECTED TROPICAL DISEASES INTEGRATION

Background

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

Progress over Past 12 Months

Discussions and planning sessions will continue. On several occasions, PMI-Tanzania staff and USAID staff from the Africa Bureau's NTD program have met to discuss ways to monitor the impact of malaria vector control activities (IRS and ITNs) on NTD prevalence.

Planned Activities

PMI will work with implementation partners in entomologic monitoring to request screening of mosquito specimens for evidence of filariasis infection. A PCR-based approach is available to detect either ingested microfilariae in the mosquito gut or infective filariform larvae in the thoracic muscles of the vector. This may ultimately serve as a reasonable approach to monitoring the indirect impact PMI activities on filariasis transmission. While no funding is being sought for this activity at the present time, the PMI team may reprogram FY10 or FY10 entomologic monitoring funds if this activity becomes more viable.

M. CAPACITY BUILDING AND HEALTH SYSTEMS STRENGTHENING

M.1 CAPACITY BUILDING WITHIN NMCP AND ZMCP

Background

▪ ***Mainland and Zanzibar***

Since 2007, PMI has used USAID-Tanzania Implementation Letters to provide funding directly to NMCP and ZMCP. The funds are generally targeted to field supervision activities, data collection and dissemination projects, and in-country transport. The two malaria programs submit quarterly reports outlining their successes and challenges and undergo periodic financial and programmatic audits to review the use of these funds.

Progress over Past 12 Months

▪ ***Mainland and Zanzibar***

In 2010, the NMCP and ZMCP were able to each send one M&E staff member to an advanced M&E training in Ghana. The funds permitted the staff to participate in this important training for which no other means of support were available within the timeframe constraints. The two staff members who attended the training received updates on some of the very latest developments/trends in malaria M&E strategies. They increased their confidence and improved their core competency in M&E. They serve as valuable M&E resources to their fellow NMCP/ZMCP staff and to staff from all other in-country implementation partners.

Proposed Activities

▪ ***Mainland***

(M.1.a) Strengthening capacity of NMCP for health service delivery and management. In FY2011, PMI will support NMCP to strengthen their capacity for planning, implementing, and management of malaria activities. Activities will include training and strengthening NMCP capacity for coordination of malaria activities, development of plans and implementation guidelines, and monitoring of vector control and case management activities. Part of the funds ($65,000) will be used to l support a person to sit in NMCP to provide program oversight, administration, and management of PMI funds within NMCP for an approximate period of three years. *(145,000)*

▪ ***Zanzibar***

(M.1.b) Strengthening capacity of ZMCP for health service delivery and management. In FY2011, PMI will support ZMCP to strengthen their capacity for planning, implementing, and management of malaria activities. Activities will include training ZMCP staff, coordination of malaria activities, development of plans and implementation guidelines, and monitoring of vector control and case management activities. *(90,000)*

M.2 FIELD EPIDEMIOLOGY & LABORATORY TRAINING PROGRAM

Background

▪ ***Mainland and Zanzibar***

Two PMI resident technical advisors each spend approximately 50% of their 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 assure sustainability of malaria control programs.

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

During the two-year program, FELTP trainees are embedded within the MOHSW where they work daily with the staff of specific disease control programs (e.g., NMCP and ZMCP). Implementation of the program began in early 2008 and was formally launched in September 2008. The FELTP office is strategically located within the NMCP/NIMR/CDC/WHO compound. The PMI CDC resident advisor has participated in the ongoing development plan for the Tanzania FELTP, including curriculum planning, field placement options, thesis project development, and implementation of a monitoring and evaluation plan.

Progress over Past 12 Months

▪ ***Mainland and Zanzibar***

The inaugural class of 11 Tanzania FELTP trainees began studying in October 2008 and completed their Master's Degrees in August 2010. Field placement assignments for the trainees have included numerous malaria-related activities with NMCP and ZMCP: evaluation of a malaria surveillance system in Mpwapwa, collection of recent travel history from malaria patients diagnosed in Zanzibar, IPTp policy in Zanzibar, and participation on the malaria M&E technical working group. All trainees participated in the investigation of an H1N1 outbreak in Tanzania, thereby developing their skills for future malaria outbreak investigations. Three of the 11 initial trainees selected master's thesis topics that focused on malaria (two Mainland, one Zanzibar). The CDC resident advisor assists with mentoring these trainees and participates in classroom teaching (surveillance, study design, outbreak investigation, data analysis). A second cohort of approximately 15 trainees commenced FELTP training in September 2009, bringing the total number of trainees to 26.

Proposed Activities

▪ ***Mainland and Zanzibar***

(M.2) Continue Support to Tanzania FELTP Program. PMI will continue support to the FELTP program and contribute to the advanced training of Tanzanian epidemiologists. The third class will initiate training in August 2010. The trainees will receive assistance from Resident Advisors and participate in malaria field assignments and investigations throughout Mainland and Zanzibar. PMI will begin to track the placement of FELTP graduates into post-training assignments with the MOHSW that directly influence malaria control policies and practices. *($175,000)*

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

Background

▪ ***Mainland***

In 1994 the Local Government Reforms Program introduced Decentralization by Devolution, a concept designed to shift responsibility for budgeting and management of government services from the central government to Local Government Authorities. When Health Sector Reforms applied devolution to the health sector in 2001, District Health Services became part of the Local Government Authorities, separating them from most operational oversight from the MOHSW. In this context, Local Government Authorities face demands to improve the health sector infrastructure together with significant challenges. The global economy has led some donors to reduce foreign assistance, at the same time that there are increasing needs to expand investments in maternal-child health, family planning, malaria, and HIV/AIDS. Compounded by a severe health sector human resource crisis (only 35% of government recommended staffing levels are filled with qualified workers), building local health infrastructure requires District Health Service capacity to plan, budget, manage, monitor and bear fiscal accountability for integrated health services.

The Government of Tanzania and USG priorities for health systems strengthening align with the WHO Health System Building Blocks, including the management capacity of national, regional and district health teams. In 2009 USAID issued a three-year Task Order through AIDSTAR II, launching the Wajibika Project to support transfer of health service delivery responsibilities to the district level. Meaning "be accountable" in Kiswahili, Wajibika works directly with District Health Services to boost transparent planning, 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 to advance policies that support unambiguous decentralization, including role clarification and allowing local decision making.

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

In 2003, the MOHSW directed all District Medical Officers to appoint a Malaria and IMCI Focal Person to be responsible for coordinating malaria control and IMCI activities in their respective districts. In 2009, the NMCP introduced a new cadre of Regional Malaria and IMCI Focal Persons to implement similar activities at regional level. In 2004, the MOHSW started training of the District Focal Persons in order to equip them with the necessary knowledge and skills for malaria control and IMCI implementation. Their training was completed in 2009. It is about 5 years since the first group was trained and there have been changes in policies and guidelines with regard to malaria control. In 2006, the first-line treatment of uncomplicated malaria was changed from SP to AL. In 2007, IRS was introduced as a malaria control intervention on Mainland. The second National Malaria Medium Term Strategic Plan (2008-2013) became operational in 2009 and NMCP introduced RDTs in 2008 in the public health facilities.

To date, there has been limited investment in support to the Regional and District Health Management Teams or their Focal Persons to improve the delivery and management of malaria interventions. A number of District Focal Persons have left the districts and there is no mechanism to replace them. The quality of reports for malaria commodities and supplies has reportedly been insufficient and there is irregular supportive supervision. These are significant gaps that affect the implementation of malaria prevention and case management interventions at all levels of the public sector health system.

In 2006,the NMCP developed the 2006 National Guidelines for Malaria Case Management. However, since then, these guidelines have not been reviewed or updated to incorporate the newly developed diagnostic guidelines, the new guidelines for the management of severe disease, management of malaria in pregnancy, and rational use of ACTs. The IMCI algorithm is outdated and provides no guidance to the prescriber on how to deal with a negative malaria test.

Progress over Past 12 Months

In FY2010, PMI supported the NMCP to conduct orientation courses for the 21 Regional and 132 District Focal Persons and train 20 new District Focal Persons to replace those that left the districts. The preparations have started but the training is scheduled to start in August 2010. The orientation will cover: new policy areas in case management, malaria diagnostics, IRS, and malaria in pregnancy; progress in implementation of malaria activities; logistics management; monitoring and reporting; and BCC/IEC activities. The refresher course will also update the Regional and District Focal Persons on the new malaria control initiatives in the National Malaria Medium Term Strategic Plan (2008-2013).

The Wajibika activity was awarded at the end of the first quarter of FY 2010 and receives funding starting in FY2010 from a variety of USAID health funding streams, including the President's Emergency Plan for AIDS Relief (PEPFAR), Family Planning and Maternal and Child Health. Because of the importance of integrated planning, budgeting, and monitoring, it is critical that the focus also include malaria. To date, the intersectional support has been applied both at the national and district levels. Initial Wajibika interventions are underway in all seven districts of Iringa, where focus is being placed on strengthening districts to prioritize, implement, and monitor programs, catalyzing synergy between and among health programs, demonstrating results, ensuring fiscal accountability, and coordinating health resources such as faith-based, private, Global Fund, basket funds, and USG funding. Efforts have begun to provide expertise to the MOHSW and Prime Minister's Office for Regional Administration and Local Government to reduce ambiguity that precludes effective health system decentralization.

Proposed Activities

- ***Mainland***

(M.3. a) Support to Conduct Refresher Training and Orientation for Regional and District Health Management Team and Malaria/IMCI Focal Persons. During FY2011, PMI will support NMCP to conduct orientation and performance review meetings for the 21 RHMTs and RMIFPs and the 132 DHMTs and DMIFPs. These meetings will be organized at Zonal levels in the eight Zones of Mainland and will cover policy updates; progress in implementation of malaria interventions; logistics management; monitoring and reporting;

and dissemination of results from large-scale health surveys, end-use verification surveys, and evaluation of the U5CC. The expected outcome of this activity is improved coordination among the Regional and District Health Management Teams and the NMCP, and improved implementation and management of malaria activities at regional and district levels. *($50,000)*

(M.3. b) Support the review and update of the 2006 National Guidelines for Malaria Diagnosis and Treatment and IMCI algorithm. During FY2011, PMI funds will be used to review and update the 2006 National Guidelines for Malaria Diagnosis and Treatment. The guidelines will incorporate the new guidelines for management for severe malaria, the management of malaria in pregnancy, and the RDTs. The IMCI algorithm will be updated to provide guidance to prescriber on how to deal with a negative malaria test and to perform a differential diagnosis for malaria. The support will include the dissemination of the new National Guidelines for Malaria Diagnosis and Treatment and the new algorithm. *($75,000)*

(M.3.c) Support the Strengthening of Health Systems

Based on observed needs and health system gaps, Wajibika will strengthen programmatic and fiscal accountability in districts, linking with other donor funding to strengthen regions, and ensuring effective decentralization of health services by clarifying roles and responsibilities with MOHSW and the Prime Minister's Office for Regional Administration and Local Government. Focusing on a limited number of districts, Wajibika will strengthen a small set of critical skills at the district council level. These districts must demonstrate success in their ability to prioritize and monitor programs and manage funding. The expertise provided will result in better managed, integrated and sustainable health services. Two specific objectives will be accomplished with FY 2011 PMI support.

First, Wajibika will build local capacity for program management and accountability through mentoring and supervision in up to 14 districts in Lake Zone, Iringa, Tanga, and Lindi and Mtwara Regions (districts are subject to approval by the MOHSW. Using a collaborative process, the program will develop a menu of results-oriented interventions for promoting local government authority capacity to manage their districts' health services in an accountable way. Wajibika has recently completed a rapid assessment to inform the intervention development menu, and will soon identify the most effective interventions to achieve the desired results appropriate in a variety of settings in Tanzania. Over the course of the three-year program, 20 districts will demonstrate improved management and accounting practices. Since the Prime Minister's Office for Regional Administration and Local Government will be an active partner in the district interventions, they will be working to effect policy change that will impact how health programs are planned and managed in all districts. In addition, each district will consider some form of performance-based financing in the health sector, and, if appropriate given the upcoming MOHSW health financing strategy, some may launch performance-based approaches and document results. A critical result that is expected is for at least 80% of districts receiving support will receive clean results through the LGA basket funds audit. In the 2006/2007 audit done by Price Waterhouse Coopers, only 2 (1.6%) of 121 Local Government Authorities received clean audits. The reasons for receiving qualified audit reports include; poor/inadequate record keeping; poor financial management skills; and/or corruption. Some Local Governments were found not to be following the procurement regulations, some had unsupported payments and discrepancies in records, and some expenditures were higher than the prevailing market prices. ,The last audit of the health basket done early 2010 by the

Government of Tanzania Controller's Auditor General showed improvement with 58% of the Local Governments receiving unqualified audits.

Second, the MOHSW and Prime Minister's Office for Regional Administration and Local Government will participate in the intervention in order to facilitate their appropriate roles under decentralized management. While the Government of Tanzania 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. While the ramifications are not clearly understood, government must reinforce concepts such as pay dependent on performance, the need to expect and achieve results and data use for program decision making. Wajibika will work closely with government to identify central and regional barriers that undermine district performance in terms of providing seamless, integrated health services such as maternal and child care, malaria prevention and control, family planning, prevention of mother-to-child transmission and HIV/AIDS care and support. As a result of this support, more than 80% targeted districts will demonstrate the ability to prioritize and plan appropriate costs for needed health services and take responsibility for effective program implementation. Districts will reflect ability to include external resources such as private, faith-based and other donor funds in budgets and the Government of Tanzania will promote and accelerate national adoption of programs judged effective in a joint evaluation with Wajibika. ($340,000)

N. COMMUNICATION AND COORDINATION WITH OTHER PARTNERS

The overall success of PMI in Tanzania is largely attributable to the complementary design of the PMI operational plan to the national malaria control strategy and the emphasis placed on effective participation of PMI in the on-going program coordination, led by the Government of Tanzania. PMI-funded malaria activities have been undertaken in close coordination with the NMCP and ZMCP and other national and international partners, including WHO, UNICEF, the Global Fund, World Bank, DfID, Embassy of the Kingdom of Netherlands, Swiss Development Corporation, and the private sector. PMI and the development partners subscribe to one planning and monitoring framework, within in the Health Sector-wide approach. A prime example of this type of coordination is the planning and execution of the U5CC for ITNs whereby PMI, Global Fund and the World Bank strategically realigned their roles and resources to support the national implementation plan. The upcoming UCC for ITNs will follow a similar arrangement. Other examples are the procurement of ACTs and roll out of RDTs on both Mainland and Zanzibar where both activities are co-funded with PMI and Global Fund support, 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 the goal of malaria control. PMI headquarters in Washington and Atlanta, while representing PMI at global malaria forums, routinely communicate and share information with the PMI- Tanzania team in using available communication technology (email, conference call, fax, extranet). In Tanzania, the USAID and CDC in-country technical advisors maintain offices at the NMCP office in order to optimize communication.

Additionally, the PMI team, which includes the two technical advisors, also meets regularly with NMCP personnel to discuss and prioritize issues and problems. The two PMI technical advisors have an open communications with the country coordinators for the World Bank, WHO, Global Fund, Embassy of the Kingdom of Netherlands, and DfID. The PMI and PEFPAR funded CDC Surveillance officer that is being recruited will sit in ZMCP offices and will facilitate communication with ZMCP and other malaria and HIV/AIDS partners. The recruitment has commenced and the person will be on board end 2010.

Local coordination of PMI activities begins at the planning stage and is followed through to the implementation and monitoring phases. Since the first year of PMI, the Tanzania PMI team adopted a transparent consultative process centered around an annual consultative meeting with all malaria stakeholders on Mainland and Zanzibar. This annual meeting serves as the initiation point for the following year's PMI Malaria Operational Plan. To date, PMI has held six such consultative meeting, with a growing number of malaria stakeholders and increasing NMCP and ZMCP ownership and leadership. The Consultative meetings have also attracted the participation from other USG agencies, including the Walter Reed Army Institute of Research and Peace Corps, and other development partners.

Efforts toward local coordination of PMI activities is furthered in multiple existing forums, which include the various NMCP technical sub-committees: ACT and Medicine Access Steering Committee for case management; NATNETs Coordination Committee and NATNETs Steering Committee for ITN implementation; BCC Working Group for standardization of IEC materials and BCC activities; Vector Control Working Group for IRS and environment management activities; and Monitoring and Evaluation Working group for harmonizing monitoring, evaluation, and studies for malaria control. All NMCP coordination structures are linked to the MOHSW and the SWAp process through the National Malaria Advisory Committee. In addition, the NMCP also holds monthly PMI meetings with all PMI implementing partners to coordinate implementation and share best practices. These monthly meetings also allow implementing partners to provide activity updates and discuss challenges that they face. A similar arrangement is planned for Zanzibar beginning in 2010. Being a smaller program, communication with ZMCP is much easier and less bureaucratic. Communication on funding and policy issues is directly with ZMCP Manager and the Permanent Secretary of the Zanzibar MOHSW; while communication on programmatic issues is with the heads of the ZMCP units (ITN, laboratory services, IRS, Case Management, IEC/BCC, etc.,).

O. MONITORING & EVALUATION PLAN

Background

Monitoring is used within PMI-Tanzania to verify incremental progress of malaria control program outputs. This allows stakeholders to see whether activities have been implemented as planned, ensure accountability, detect problems and constraints related to particular interventions, and promote evidence-based decision making. Evaluation uses social, epidemiological, and statistical methods to assess and improve the implementation of interventions and determine overall impact. 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.

Many partners are engaged in malaria control within Tanzania. Consequently, a successful M&E framework must accommodate more than just a single donor's or implementer's interests. 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) to promote coordinated M&E efforts. PMI and other stakeholders have assisted NMCP and ZMCP to finalize written M&E plans extending into 2013.

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

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

▪ *Mainland and Zanzibar*

Demographic and Health Surveys (DHS). Every four to five years, the DHS collects nationally representative, population-based data for a wide variety of demographic and health indicators, including core malaria intervention coverage indicators, anemia, and all-cause, under-five child mortality. The DHS is designed to produce estimates that are comparable over time and across countries. The sample is designed to produce separate estimates on key indicators at the national level, for urban and rural areas. It is conducted by National Bureau of Statistics with technical assistance from Macro International. The last DHS was conducted during October 2004 – February 2005. Data collection for the 2009-10 DHS was completed in May 2010 and preliminary results are provided in this MOP (see Section D, table 3).

Malaria Indicator Survey (MIS). The MIS survey assesses core household coverage and morbidity indicators used in Tanzania. The survey package includes a core questionnaire, data tabulation plan, and materials for organizing and conducting fieldwork. This stand-alone survey is designed to be implemented in a similar manner to the DHS, producing nationally representative, population-based estimates of core RBM indicators. The MIS also produces a range of data for in-depth assessment of the malaria situation within Tanzania. The first MIS was conducted in Tanzania in 2007-08 (as part of the larger Tanzania HIV/AIDS and Malaria Indicator Survey). The 2007/08 was the first time that the Malaria Indicator Survey (MIS) was conducted together with the AIDS Indicator Survey (AIS). The bulk of the cost of the survey was provided by the national HIV program through the Tanzania Commission for AIDS (TACAIDS). PMI provided technical assistance for testing blood for parasitemia. The follow-on MIS surveys are planned for 2011 and 2013 as a key data source for impact evaluation following scale-up of LLIN coverage for the entire population during 2009-11. Parasitemia and anemia data will be included in these surveys. The 2011 Tanzania MIS will be performed during the peak malaria transmission season (May to July) and will likely be combined again with an HIV/AIDS Indicator Survey. The main benefit to malaria is that with the larger AIS funding, regional level data are obtained for parasitemia (as with HIV prevalence) without an added cost. Preliminary discussions on a second joint AIS/MIS have started with the PEPFAR team, TACAIDS, and ICF Macro. The anticipated challenges will

be mobilizing funds in time for the time sensitive MIS, and the significant time needed for the IRB approvals. PMI has FY2010 funding for the MIS whereas the PEPFAR and the not plan for it in its FY2010 COP. The 2011/12 THMIS is listed in the FY2011 COP with a zero budget.

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

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

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

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

Demographic Surveillance Sites (DSS). PMI supported two DSS projects on Mainland Tanzania from FY06-08. These sites monitor births, deaths, and other health indicators in geographically defined populations over time. While PMI has not supported these sites beyond FY08, data are available from the DSS through continued support from other donors.

Health Management Information System (HMIS). The HMIS has been used to collect routine data from all health facilities for over a decade. The objectives of the HMIS are to provide data for monitoring key impact indicators over time: 1) standardized laboratory-confirmed malaria cumulative incidence per year, among patients under five years old, patients older than five years, and pregnant women; 2) IPTp uptake among pregnant women; and 3) standardized crude laboratory-confirmed malaria death rate among patients under five years, patients older than five years, and pregnant women. Currently, the majority of malaria cases reported to this system represent clinical diagnosis, which is usually non-specific fever. However, this is all changing in the immediate future as Tanzania continues to scale-up the use of mRDTs 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 initiative is underway to reform the existing HMIS system. Multiple donors have committed over $5 million to strengthen the system and an operational

plan has been developed. PMI continues to ensure malaria is well represented in the ongoing plans for HMIS reform,

Health facility-based sentinel surveillance. The time-lag and costs associated with obtaining impact data from large, complex household surveys necessitates other approaches for monitoring malaria control program achievements or failures. Out-patient and in-patient data on malaria morbidity and mortality collected prospectively from selected sentinel health facilities with laboratory diagnostic capacity throughout Tanzania will provide a basis for this strategy. To date, Tanzania has implemented health facility-based sentinel surveillance at four district hospitals, but will phase-out this strategy before the end of 2010 due to poor quality data.

Entomologic monitoring. Systems to provide the necessary information to guide long-term vector control programs include insecticide resistance monitoring, bioassays to monitor sprayed walls and ITNs to establish residual efficacy of insecticides, mosquito abundance and species distribution data. Establishing an entomologic program for timely assessments of these vector control activities will be critical in monitoring the impact and efficacy of these of both LLIN and IRS programs.

In 2008 the Gates Foundation, through WHO and in collaboration with the NMCP and NIMR implemented a malaria vector control project to strengthen the national capacity for effective delivery of vector control interventions, to safeguard the efficacy of current tools and for the introduction of new methods/interventions for malaria control. Insecticide resistance surveillance activities were set up in 13 sentinel districts and have been completed in 11 districts. Results indicate that there is reduced susceptibility of *An. gambiae* lambda-cyhalothrin (0.05%), the mortality ranging from 71.3-94.7%. There appears to be high susceptibility to DDT (4%) except in Kyela and Ilala were there mortality rate was 90% and 66% respectively. Similar reduction in susceptiblity to permethrin and deltamethrin was indicated in Handeni and Ilala districts. The reduced susceptibility to insecticide observed in some districts indicates the presence of low level resistance in Tanzania and the need to continued monitoring.

PMI , through an agreement with NIMR-Mwanza, has funded a baseline entomologic survey in Muleba and Karagwe to monitor IRS activities. An entomological and parasitological baseline survey was carried out in Muleba between April-June 2007 and in Karagwe between January-February 2008..

In Muleba 15% of the mosquitos were identified as *An. gambiae* and 85% were *An. funestus*. Two follow up surveys were subsequently carried out in Muleba (Dec 2007 - Jan 2008 and Aug – Sept 2008) and one in Karagwe in Aug-Sept 2008.. During the follow-up monitoring visits, only 4.5% (2/44) and 2.7% (1/37) of *An. gambiae* and *An. Funestus* were collected, showing a significant reduction in the vector due to IRS.

With funding from PMI, NIMR carried out wall bioassays in three villages of Nyamileme, Chato district (8 months after spraying), Mulela in Muleba district (4 months after spraying) , and Kitwenchekula in Karagwe district. The bioassays were done in April 2010. The objective of the bioassays was to: estimate the effectiveness of the insecticide applied against the targeted malaria vectors; and estimate the residual effectiveness of the insecticide sprayed on different surfaces against *An. gambiae s.s.* Four houses were randomly selected at each site. They included mud, cement, white wash & wooden wall surfaces. Two- to three-days

old 20 laboratory-bred pyrethroid-susceptible *An. gambiae s.s.* were exposed on treated surface for 30 minutes by cone bioassay. Knockdown and mortality were scored after one hour and 24 hours, respectively. The results showed that mortality after 24 hours in all the three sites ranged between 85% and 100%, indicating that the insecticide residue was still very effective. However a wooden material at Muleba showed a reduced insecticidal efficacy of 25% after 24h mortality. NIMR is investigating the probable cause of this finding.

Routine and systematic entomological monitoring continues in Zanzibar (Unguja and Pemba) at seven sentinel sites. The ZMCP has been performing wall contact bioassays to monitor the efficacy of the insecticide on sprayed surfaces, using their colony of susceptible *Anopheles gambiae s.s.* Insecticide resistance testing using the standard WHO assay was carried out in 2008, in collaboration with the Liverpool School of Tropical Medicine, at three sites in Unguja and one site in Pemba. In Unguja, mortality to lambda-cyhalothrin (0.05%) ranged from 96-98%, bendiocarb(0.05%) was 100% and deltamethrin (0.05%) was 97-100%. DDT (4%) was tested at one Unguja site and there was 100% mortality. In Pemba, mortality to lambda-cyhalothrin was 98%, bendiocarb was 99-100%, deltamethrin was 100% and DDT ranged between 83-97%. In Zanzibar, cone wall bioassays were conducted December 2007 to June 2008 in Kijito Upele Shehia in Unguja after the fourth round of spaying. Results showed that the insecticide sprayed on different walls was still effective and able to cause an average of over 80% mortality over six months post-spraying.

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

Progress over Past 12 Months

▪ Mainland

Strengthening NMCP's strategic information system and support supervision. NMCP's strategic information database has become more comprehensive. It now includes longitudinal data from the NMCP household surveys conducted in 2001, 2003, 2005, and 2008 (plus biomarker data for 2005 and 2008) across 21 Districts. While these surveys will *not* continue in the future, the earlier surveys will serve as a source of comparison data for many years ahead. These data are supplemented each year by HMIS data contributed by district malaria focal persons during NMCP's annual malaria/IMCI conference. The HMIS dataset includes information from 21 regions, 128 districts, and over 5,000 health facilities. NMCP had also incorporated 2008 MIS data into their strategic information system. They regularly use these three data sources to generate informative maps widely used by many stakeholders, including PMI. In response to NMCP's concern about not being sufficiently informed regarding specific activities of PMI-funded partners, as of mid-2008 all quarterly reports from PMI partners are systematically submitted to NMCP. While these reports complement their strategic information system, management and storage of these documents places additional burden on the M&E unit.

Support to strengthen NMCP's field supervision and quality assurance The PMI funded activities to improve supervision and quality assurance have allowed NMCP staff to visit health facilities and households to interview staff, view supplies of drugs and vouchers, review registers, observe case management and provide immediate oral and written feedback. In 2008-09, PMI funds allowed NMCP to conduct the first of multiple rounds of systematic support supervision visits. The first round included visits to nine regions (three districts per region) where a check-list of activities was undertaken at over 100 facilities. NMCP staff will be summarizing findings from these supervisory visits and will address critical issues during regular meetings with program managers.

Health facility-based sentinel surveillance. The sentinel site surveillance system was launched on the Mainland in mid-2008. Six facilities have been selected and implementation has occurred at four sites (Rubya, Utete, Mpwapwa, Dareda District Hospitals). Following a recent assessment of data from these sites, a decision has been made to terminate funding for these sentinel sites.

Entomologic Monitoring. PMI is currently supporting the Regional/District Health authorities and NIMR-Mwanza to achieve the necessary routine entomologic monitoring of post-spray activities. A laboratory has been identified at NIMR-Mwanza facility and will be refurbished as central entomology laboratory for the Lake Victoria basin. In March 2010, a one-week training of trainers entomology course was conducted at the NIMR-Mwanza facility for 9 District Vector Control Officers from Karagwe Region and Chato, Kagera and Muleba districts were selected as entomology sentinel districts. Subsequently the training of trainers' course was followed by a week basic entomology course for a 12 collectors, residents of villages in Chato, Kagera and Muleba districts selected as sentinel villages. The NIMR-Mwanza and RTI will work with the Provincial and District Vector Control officers to implement a longitudinal vector monitoring program. Village collectors will carry out monthly mosquito collections, supervised by the District Vector Control Officers and NIMR-Mwanza. Other activities will include WHO insecticide resistance and wall bioassays. IRS is expanded to Mwanza and Mara Region, the vector monitoring program will expanded, based on the experiences from the Karagwe Region. PMI is also supporting the refurbishment of the NIMR-Mwanza laboratory and insectary to support contact bioassays. NIMR-Mwanza together with NIMR-Amani, CDC, and NMCP are harmonizing their protocols for sentinel sites and entomologic monitoring. PMI is currently supporting NIMR-Amani in conducting insecticide resistance monitoring in one site in Muleba District. This is an area where PMI supported IRS is being carried out and will be an addition to the 13 WHO sentinel sites for resistance monitoring in Tanzania.

Tanzania Demographic and Health Survey. Field activities for the 2009-10 TDHS were completed in May 2010. Preliminary data for malaria intervention coverage and under-5 and infant mortality were made available in August 2010. Final TDHS report and dissemination are expected in early 2011.

▪ 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). ZMCP published a frequently quoted document in January 2008 (Roll Back Malaria Indicator Survey Main Report) that summarizes these previous surveys. Funds from FY08 have also been used to finalize a written M&E plan for ZMCP.

Health facility-based sentinel surveillance. Seven sentinel surveillance sites in Zanzibar were established with PMI support in 2008. However, the benefit of these sites has been questioned since PMI also supports the MEEDS. Sentinel surveillance activities at these sites will be phased out before the end of 2010.

Entomologic monitoring. The ZMCP is currently performing Enzyme-Linked Immunosorbent Assays (ELISA), to detect malaria sporozoites in mosquitoes, at the Unguja Entomology Laboratory. In 2009, two ZMCP entomology personnel worked with the Ifakara Health Institute to analyze mosquito samples for species identification and conducted blood meal analysis. Data from 2007-2008 indicates that the man-biting rate has been reduced by 75% in Unguja and 83.8% in Pemba after three rounds of IRS. However, the proportion of *An. gambiae s.l.* exhibiting outdoor biting behavior in Unguja appears to have increased from 67.2 % pre-spray to 74.9 % post-spray. A similar increase was noted in Pemba from 35 % to 46.3 %. The vector species composition of the 2005 baseline samples was 94.7 *An. gambiae s.s.*, 3.9% *An. arabiensis* and 1.3% *An. quadriannulatus*. Similar analyses of the 707 samples collected from 2007-2009 indicated a decrease in *An. gambiae s.s.* (21.3%), an increase in *An. arabiensis* (73.5%) and *An. merus* at 5.1%. While no sporozoite positive mosquitoes were found in the 2007-2009 Unguja samples, the entomological inoculation rate for Pemba was 14%. The human feeding preference in Unguja and Pemba in 2005 was found to be 80% and 100% respectively. This has decreased to 4.8% and 18.4% for Unguja and Pemba respectively and may reflect the vector population shift from *An. gambiae s.s to An. arabiensis*, which is a more zoophilic vector.

Currently, PMI is supporting insecticide resistance testing at Unguja and Pemba, with technical assistance from Ifakara Health Institute. The ZMCP will continue to work with the Institute for analysis of the mosquito species since there is no capability to conduct these analyses in Zanzibar. The CDC will continue to provide technical assistance to increase ELISA capability to include blood meal analysis for vector biting preferences and assays for mosquito enzyme activity related to insecticide resistance.

▪ *USAID Monitoring and Evaluation*

USAID/Tanzania awarded a Mission wide contract which assists in developing required Program Monitoring Plans, Data Quality Assessments, collecting and compiling data for quarterly and annual reports, develops scopes of work for evaluations, and other monitoring functions required by USAID regulations. The contractor has established a web-based reporting system that is being used by USAID and PMI implementing partners to report data and upload quarterly reports. The Contractor has provided training to all implementing partners in UG reporting for results. The Contractor also conduced data quality audits on all indicators that the Mission reports to AID/W and PMI. By the contractor assisting PMI to collect indicators and other information for the Annual Report and other required documentation, PMI staff have been freed to carry out more technical duties.

Proposed Activities

▪ *Monitoring and Evaluation Support*

(O.1.a) Strengthening NMCP's strategic information system. The NMCP receives reports and data from a wide array of their own M&E activities, plus ongoing activities in other parts of the MOHSW, sentinel surveillance sites, and from all PMI-funded partners. These diverse, complex data are often overlooked and not sufficiently used to guide programmatic decision making. PMI support will enable the small data management unit within NMCP to purchase updated data management and analysis software, improve mechanisms for data back-up and virus protection, and improved hardware. These upgrades will assist NMCP and other stakeholders, including PMI, to improve overall planning based on trends in malaria cases and delivery of interventions. These funds will also support the management of ongoing data that will become available through the new, PMI-supported end-user verification surveys. 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 according to criteria such as accessibility, geography, and levels of endemicity and areas indicating previous management or implementation problems. Supervisors will use checklists to record their findings, and incorporate data into quarterly HMIS reports and presentations for NMCP and partners. *($100,000)*

(O.1.b) Strengthening ZMCP Strategic Information System. Similar to the Mainland, the challenges of data management, analysis, and interpretation continue to increase for ZMCP as more stakeholders generate data and reports. ZMCP faces ongoing challenges in providing adequate support supervision in Pemba due to difficulty in traveling to a separate island. PMI will continue to assist ZMCP's efforts to strengthen their strategic information capacity and create malaria intervention and case monitoring systems. PMI funds will also support ZMCP staff to complete supervision visits every other month, including per diem and vehicle expenses to help ensure district staff are regularly briefed on the evolving progress of malaria control and changing epidemiology of malaria in Zanzibar. (*$50,000)*

(O.1.c) Support to WHO. PMI will provide assistance to the WHO local office to enable the WHO National Program Officer (NPO) for malaria to provide technical assistance for the implementation of NMCP and ZMCP PMI funded monitoring and evaluation activities. The WHO NPO for malaria will provide valuable monitoring and supervision support when PMI activities are expanded in FY10 and FY11 particularly as surveillance and IRS are expanded in the Lake Zone Region. The WHO Officer will also provide technical oversight for the insecticide resistance monitoring and therapeutic efficacy monitoring programs. ($40,000)

▪ *Entomologic Monitoring*

(O.2.a) Mainland. The emphasis will be to continue to strengthen activities and development of entomology capacity for the Lake Victoria Basin. This will be a collaborative management effort from NMCP, NIMR and CDC, with RTI providing logistical and supervisory support. IHI, with support from RTI/PMI willprovide NIMR-Mwanza technical assistance with resistance testing and data management/analysis/interpretation and report writing. PMI funds will used to improve the capability of Regional and District levels to implement a routine long-term entomologic monitoring system. The capacity of NIMR-Mwanza will be continue to be strengthened for entomologic monitoring and to provide technical assistance to Regional and District personnel. Laboratory capacity will be improved for mosquito identification, sporozoite rate testing, and insecticide resistance monitoring. This capacity will be essential as IRS activities are expanded within Kagera Region and to Mwanza and

Mara Region. Entomological monitoring on Mainland will include IRS and non-IRS areas so as to monitor the entomological effects of the U5CC and the UCC. Mainland is also going to strengthen insecticide resistance monitoring and bioassays. *($400,000)*

(O.2.b) Zanzibar. PMI will continue support to ZMCP to consolidate and maintain successes in the entomological monitoring. This will be crucial to assess the impact both the high coverage IRS activities and scale-up to universal LLIN coverage. Continued monitoring of vector biting behavior will be essential since LLINS are of the same insecticide class as the insecticide used in IRS. The program will review and re-focus the current entomology surveillance strategies in view of the decrease in malaria cases. PMI will continue to assist the ZMCP in developing entomological guidelines for the malaria early warning system. *($100,000)*

(O.2.c) Procurement of Entomological Reagents. CDC will continue to support procurement of entomology supplies and laboratory reagents for 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)*

(O.2.d) LLIN Durability Monitoring. In order to measure the effectiveness of Olyset nets distributed through the U5, UC and Hati Punguzo LLIN distribution campaigns nets will be collected during routine surveys of the Ifakara Health Institute Demographic Surveillance system (4 districts) and the Sentinel Panel of Districts (18 districts). The efficacy, longevity and fabric integrity as well as the community acceptance of Olyset will be studied for a sample of 120 nets per district, or 2,640 nets nationwide. *($0)*

- **Physical evaluation.** Recovered bednets were examined to identify the batch number. To examine the fabric integrity, nets will be hung over a black plastic cube designed for the purpose. The fabric panels will be systematically examined for holes. All holes over 0.5cm will be recorded in addition to repairs and seam condition.

- **Biological Efficacy.** Recovered bednets will be hung from a frame in the IHI semi field tunnel and a volunteer will sleep under the net. Laboratory reared (disease free) mosquitoes will be released into the system and in the morning mosquitoes will be recovered using a back-pack aspirator. Proportion that fed and 24 hour mortality will be recorded. Standard WHO ball tests (*3*) will be used for a further sub-sample to calibrate the biological efficacy of the nets by standard methods.

- **Insecticidal content.** Labelled samples of each net will be sent to A to Z Textile Mill in Tanzania for sampling with High Performance Liquid Chromatography to measure the permethrin content at the net surface. In order to assure objectivity, since A to Z Textile Mill manufactures the nets, a subsample of nets will be sent to London School of Hygiene and Tropical Medicine for independent quality assurance evaluation.

- **Community Acceptance.** Data gathered from questionnaire will be used to assess community acceptance of nets and features of the nets that are regarded as positive and negative. Data on washing frequency, use the previous night and recalled fever will also be collected, along with standard socioeconomic indicator variables.

▪ ***Household Survey***

(O.3.a) Malaria Indicator Survey. Timing of the 2009-10 DHS was beyond the control of NMCP or PMI and consequently the data collection period began when the under five LLIN campaign was mid-way completed and before the universal coverage campaign. PMI will fund (FY09) the implementation of the Tanzania HIV/AIDS and Malaria Indicator Survey in 2011 to provide coverage and impact data following five years of PMI funding. *($0)*

▪ ***Sentinel Populations***

(O.4.a) Monitoring Parasitemia Prevalence among Pregnant Women and Infants. This operations research (OR) activity will explore the operational feasibility of screening two groups attending reproductive and child health clinics (RCH) for malaria using RDTs. The two RCH groups will include 1) all pregnant women at time of first antenatal care visit and 2) all infants at time of measles immunization (approximately 9 months of age). Based on experience gained with the Zanzibar MEEDS, data will be captured on a simple pre-printed form that allows for one month of data to be quickly summarized. Data transfer from participating RCH sites to NMCP will occur at monthly intervals using a simple text message system that will not require special phones or cost to the health facility. This approach will be implemented at 60 RCH sites (20 each) in Kagera, Mwanza, and Mara Regions over six months. ($180,000)

▪ ***USAID-Tanzania M&E***

(O.5.a) Mission-wide Monitoring and Evaluation Contract. PMI will continue support for the USAID Mission-wide Monitoring and Evaluation Contract. This contract will assist the PMI team to assemble and track the USAID PMP indicators, perform data quality assessments, and contribute to reporting PMI indicators for the annual report, and consolidating malaria specific indicators from PMI partners. *($300,000)*

P. MANAGEMENT & ADMINISTRATION

Background

Two expatriate health professionals have been hired as Resident Advisors to oversee the PMI in Tanzania, one representing CDC and one representing USAID. In addition, two Foreign Service National (FSN) program managers were hired to support the PMI team, one located in USAID and one in CDC. The USAID Health and Population Office Chief and Deputy are part of the PMI team, but are paid by USAID Operating Expenses. A US Personal Services Contractor assists the PMI team part time as Cognizant Technical Officer or Activity Manager and is partially supported by PMI funding. All PMI staff members are part of a single inter-agency 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 professional staff work together to oversee all technical and administrative aspects of the PMI in Tanzania, including finalizing details of the project design, implementing malaria prevention and treatment activities, monitoring and evaluation of outcomes and impact, and reporting of results. Both Resident Advisors report to the USAID/Tanzania

Mission Director. The CDC Resident Advisor is supervised by CDC both technically and administratively. All technical activities are undertaken in close coordination with the NMCP and ZMCP of their respective MOHSW and other national and international partners, including the WHO, UNICEF, the Global Fund,, World Bank and the private sector. Locally-hired staff to support PMI activities either in Ministries or in USAID/Tanzania are approved by the USAID/Tanzania Mission Director. Because of the need to adhere to specific country policies and US Government accounting regulations, any transfer of PMI funds directly to Ministries or host governments require approval by the USAID/Tanzania Mission Director and the USAID Controller.

Proposed Activities

With FY10 funds, PMI will hire a third FSN to be housed in the PMI office currently being shared part time by the technical advisors at the NMCP (desk space being a severely limiting factor at USAID.) This will be a professional-level technical advisor who will assist in managing the public sector PMI activities in the Mainland. Additionally, PMI pays 66% (the percentage of the Health and Population Office's overall budget provided by PMI) for a financial analyst and a contracting specialist. 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.

In addition to the USAID PMI Technical Advisor and the support staff, $516,000 is retained by USAID to fund the management and administration costs:

Salary and Benefits of the USAID PMI Technical Advisor	$402,357
Salary and Benefits of FSN Program Specialist	$116,852
Salary and Benefits of FSN Technical Specialist	$132,000
Other USAID Management and Administrative Costs:	
50% Salary and Benefits of USPSC	$211,200
66% Salary and Benefits of HPO Financial Analyst	$77,000
66% Salary and Benefits of HPO Contracting Specialist	$69,300
66% Salary and Benefits of HPO Administrative Assistant	$49,300
IT Cost Recovery (estimate)	$20,000
PMI Program Development and Support	$140,800
	$567,600

$730,000 is provided to the CDC Inter-Agency Agreement (CDC IAA) for the following technical support, TDY and administrative purposes:

Salary and Benefits of the CDC PMI Technical Advisor	$550,000
FSN Program Specialist	$110,000
CDC-Atlanta Technical/Admin support via TDY	$110,000
	$770,000

The CDC-Atlanta technical assistance is broken down as follows:

- Three visits for Entomological monitoring in Zanzibar and Mainland;
- Two visits for roll-out of the RDT quality assurance and quality control system;
- One visit for start up of Lake Zone Child survival project; and
- One visit for the epidemiological monitoring support IETA Fellow.

ANNEX A

President's Malaria Initiative - *Tanzania Mainland and Zanzibar*
Planned Obligations for FY11 ($48M)

Proposed Activity	Mechanism	Budget (commodities)	Geographic Area	Description of Activity	Page Ref.
I. PREVENTIVE ACTIVITIES					
I.1 Insecticide Treated Nets					
a. Keep-up Program: TNVS	*MEDA*	7,650 (6,240)	Mainland	PMI support to Tanzania National Voucher Scheme focusing on Infant vouchers.	27
b. Universal Coverage Campaign	*MEDA*	1,200 (1,200)	Mainland	PMI will contribute to the procurement of LLINs for the Universal Coverage Campaign	27
c. Universal Coverage Campaign	*ZMCP*	650 (470)	Zanzibar	PMI will procure and distribute the LLINs for boarding schools and other institutions to ensure coverage of sleeping spaces beyond households	27
I.2 Indoor Residual Spraying					
a. Mainland IRS	*RTI*	16,000 (7,200)	Mainland	These funds will maintain the scale-up of IRS in Lake Zone	31
b. Zanzibar IRS	*RTI*	1,500 (675)	Zanzibar	These funds will conduct targeted spraying in high malaria transmission areas in Zanzibar	32
I.3 Control of Malaria in Pregnancy					
a. IPTp/FANC implementation	*JHPIEGO*	1,800	Mainland	These funds will focus on supporting the MOHSW to improve FANC service provision quality and institutionalize the facility-based quality improvement approach	35
b. MIP activities in Zanzibar	*JHPIEGO*	100	Zanzibar	These funds will support Zanzibar to solidify within the Reproductive and Child Health Service the quality improvement and recognition system for antenatal care.	35
I.4 Behavior Change & Communication					
a. IEC/BCC across all intervention areas	*JHU*	2,550	Mainland	These funds will continue support the IEC/BCC across all areas, and continue improving the interpersonal skills for health providers	39

b. IEC/BCC across all intervention areas	*ZMCP*	200	Zanzibar	PMI will support the IEC/BCC in an integrated fashion. Sustainability will be emphasized	39
SUBTOTAL: Preventive Activities		**31,650 (15,785)**			
J. CASE MANAGEMENT ACTIVITIES					
J.1 Diagnostics					
a. RDT and Microscopy QA/QC	*TBD*	400	Mainland	PMI will continue to support the development and implementation of a QA program for microscopy or RDTs	42
b. Strengthening Malaria Diagnostics	*TBD*	732	Mainland	PMI will support NMCP to expedite the roll out of RDTs and improve laboratory-based diagnosis of malaria at government health facilities	42
c. RDT and Blood Slide Microscopy QA/QC	*TBD*	200	Zanzibar	PMI will support the finalization and implementation of a flexible, accessible diagnostics	42
d. RDT Procurement	*DELIVER*	224 (224)	Zanzibar	PMI will procure additional 300,000 RDTs for public health facilities in Zanzibar	42
J.2 Case Management					
a. Service Delivery Strengthening	*New Child Survival RFA*	3,000	Mainland	This activity will increase availability of and accessibility to facility-based curative and preventive child health services; and ensure sustainability of critical child health activities; and increase linkages within the community to promote healthy behaviors that increase knowledge and use of malaria services	52
b. ACT Procurement	*DELIVER*	4,000 (4,000)	Mainland	PMI will procure and distribute a three-month supply of ACTs for the mainland public sector to ensure ACT supply through March 2011 when AMFm or GF R9 is expected to come through	52
c. Strengthen Pharmaceutical Management and Supply Chain System	*DELIVER*	750	Mainland	PMI will continue to support the monitoring of the provision of logistics support to ensure continued availability of malaria commodities at the facility level	53

d. Social Marketing of ACTs	*PSI*	500	Mainland	PMI will support the distribution of ACTs through ADDOs and other private sector facilities including regulation and commodity detailing	53
e. Therapeutic Drug Efficacy Monitoring	*IHI*	200	Both	PMI will support implementaion of theurapeutic efficacy monitoring for artemether-lumefantrine and amodiaquine-artesunate	53
f. Training and Follow Up for Malaria Case Management	*ZTCs*	500	Mainland	PMI will support NMCP to conduct a rapid assessment of the effectiveness on the ZTCs training and improve the design and techinical content of the course	54
g. Updating Pre-service Training Curricula for Medical Training Institutions	*JHPIEGO*	200	Both	This activity will continue to support MOHSW to review and update the malaria treatment and prevention training curricula for medical training institutions	54
h. Strengthen Pharmaceutical Management and Supply Chain System	*DELIVER*	250	Zanzibar	This support will help ZMCP to collect consumption and logistics data needed for annual quantification and procurement planning	54
Technical Assistance for Commodity Logistics	*TBD*	500	Mainland	Provide Technical Assistance for strengthening logistics support at Medical Store Department	54
SUBTOTAL: Case Management		**11,456 (4,224)**			
K. EPIDEMIC SURVEILLANCE AND RESPONSE					
a. Implement new MEEDS reporting in Lake Zone and Dar es Salaam	*TBD*	550	Mainland	This activity will be modeled after the Zanzibar MEEDS and provide real-time surveillance data through a web-based system	57
b. Scale-up MEEDS reporting to 100% of all Health Facilities	*TBD*	300	Zanzibar	PMI will support the scale-up of the MEEDS to all remaining 60 government health facilities by end of 2011	57
SUBTOTAL: Epidemic Surveillance		***850***			
M. CAPACITY BUILDING AND HEALTH SYSTEMS STRENGTHENING					
M.1 Capacity Building within NMCP and ZMCP					

a. Strengthening capacity of NMCP for health service delivery and management	*TBD*	145	Mainland	PMI will support NMCP capacity of coordination of malaria activities, development of plans and implementation of guidelines and monitoring of vector control and case management activities.	60
b. Strengthening capacity of ZMCP for health service delivery and management	*ZMCP*	90	Zanzibar	PMI will support ZMCP to strengthen their capacity for planning, implementing and management of malaria activities	60
M.2 Field Epidemiology & Laboratory Training Program					
a. Continue Support to Tanzania FELTP Program	*CDC*	175	Mainland	PMI will continue to support the FELTP program and contribute to the advanced training of Tanzanian epidemiologists	61
M.3 Strengthening Systems for Delivery and Management of Quality Health Services					
a. Support to conduct refresher training and orientation to RHMT and DHMT and Malaria IMCI Focal Persons	*JHU*	50	Mainland	This activity will continue to improve coordination, management and implementation of malaria activities among the RHMT & DHMT and the NMCP	64
b. Support the review and update of 2006 National Guidelines for malaria diagnosis and treatment and IMCI algorithm	*JHU*	75	Mainland	This support will be used to review and update the 2006 National Guidelines for malaria diagnosis and treatment	64
c. Support the Strengthening of Health Systems	*Wajibika*	340	Zanzibar	These funds will help to build local capacity for program management and accountability through mentoring and supervision	65
SUBTOTAL: Capacity Building		***875***			
O. MONITORING AND EVALUATION					
O.1 M&E Support					
a. Strengthening NMCP's Strategic Information System	*NMCP*	100	Mainland	PMI support will improve data collection, data management and supervisory visits to health facility	73
a. Strengthening ZMCP's Strategic Information System	*ZMCP*	50	Zanzibar	PMI support will improve data collection, data management and supervisory visits to health facility	73
c. Support to WHO	*WHO*	40	Both	WHO Tanzania will provide technical assistance to NMCP& ZMCP PMI funded M & E activities	73
O.2 Entomological Monitoring					

a. Entomological Monitoring for mainland	*RTI IHI*	400 (100)	Mainland	These funds will be used to improve the capability of Regional and District levels to implement routine long-term entomologic monitoring system	74
b. Entomological Monitoring for Zanzibar	*ZMCP*	100 (50)	Zanzibar	PMI will continue to support ZMCP to consolidate and maintain successes in the entomological monitoring	74
c. Reagent Procurement	*CDC*	10 (10)	Both	Procurement or Reagents for entomology monitoring activities	74
d. LLIN Durability Monitoring	*TBD*	-	Both	PMI will support the study on LLINs efficacy, longevity and fabric integrity as well as the community acceptance of Olyset nets.	74
O.4 Sentinel Populations					
a. Monitoring Parasitemia Prevalence among Pregnant Women and Infants	*TBD*	180	Mainland	This activity will explore the operational feasibility of screening two groups attending reproductive and child health clinics for malaria using RDTs	75
O.5 USAID/Tanzania M&E					
a. Mission wide M&E contract	*TMEMS*	300	Mainland	This activity will assist the PMI team to essemble and track the PMP indicators, perform data quality assessments and contirbute to reporting PMI indicators for the annual report	75
SUBTOTAL: MONITORING AND EVALUATION		**1,180 (160)**			
P. MANAGEMENT AND ADMINISTRATION					
1. USAID Technical Advisor	*USAID*	402	Both	Administration	76
2. USAID Program Specialist FSN	*USAID*	117	Both	Administration	76
3. USAID Program Specialist FSN	*USAID*	132	Both	Administration	76
4. USAID Administration & Technical Support	*USAID*	568	Both	Administration	76
5. CDC Technical Advisor	*CDC*	550	Both	Administration	76
6. CDC Program Specialist FSN	*CDC*	110	Both	Administration	76

7. CDC Admin, Technical and TDY Support	*CDC*	110	Both	Administration	76
SUBTOTAL: Management and Administration		**$1,989**			
GRAND TOTAL		**$48,000 (20,169)**			

President's Malaria Initiative - Mainland Tanzania and Zanzibar
Year 6 (FY11) Budget Breakdown by Partner ($000)

Partner Organization	Geographic Area	Activity	Budget
CDC	Mainland	M.2.a Continue Support to Tanzania FELTP Program	175
	National	O.2.c CDC Reagents Procurement	10
	National	P.5 CDC Technical Advisor	550
	National	P.6 CDC Program Specialist	110
	National	P.7 CDC Admin, Technical and TDY Support	110
IHI	Mainland	J.2.e Therapeutic Drug Efficacy Monitoring	200
	Both	O.2.a Entomologic Monitoring for mainland & Zanzibar	110
JHPIEGO MAISHA	Mainland	I.3.a IPTp/FANC implementation	1,800
	Zanzibar	I.3.b Malaria in Pregnancy activities in Zanzibar	100
	National	J.2.g Updating Pre-Service Training Curricula for Medical Training	200
JHU COMMIT	Mainland	I.4.a IEC/ BCC across all intervention areas	2,550
	Mainland	M.3.a Support to conduct refresher training and orientation to RHMT and DHMT and Malaria IMCI Focal Persons	50
	Mainland	M.3.b Support the update of 2006 National Guidelines for malaria diagnosis and treatment and IMCI algorithm	75
MEDA	Mainland	I.1.a Keep up Program TNVS	7,650
	Mainland	I.1.c Universal Coverage Campaign	1,200
NMCP	Mainland	O.1.a Strengthening NMCP's Strategic Information System	100
PSI	Mainland	J.2.d Social Marketing of ACTs	500
RTI	Mainland	I.2.a Mainland Indoor Residual Spraying	16,000
	Zanzibar	I.2.b Zanzibar Indoor Residual Spraying	1,500
	Mainland	O.2.a Entomologic Monitoring for mainland	290
TBD	Mainland	J.1.a RDT and Microscopy QA/QC	400
	Mainland	J.1.b Strengthening Malaria Diagnostics	732
	Zanzibar	J.1.c RDT and Blood Slide Microscopy QA/QC	200
	Mainland	J.2.a Service Delivery Strengthening	3,000
	Mainland	J.2.d Technical Assistance and/or purchase of malaria commodities	500
	Mainland	K.a Implement new MEEDS reporting in Lake Zone and Dar es Salaam	550

	Zanzibar	K.b Scale-up MEEDS reporting to 100% of all Health Facilities	300
	Mainland	M.1.a Strengthening capacity of NMCP for health service delivery and management	145
	National	O.2.d LLIN Durability Monitoring	-
	Mainland	O.4.a Monitoring Parasitemia Prevalence among Pregnant Women and Infants	180
The Mitchel Group	National	O.5.a Mission wide Monitoring and Evaluation contract	300
USAID	National	P.1 USAID Technical Advisor	403
	National	P.2 USAID Program Specialist FSN	117
	National	P.3 USAID Program Specialist FSN	132
	National	P.4 USAID Admin & Technical Support	567
USAID | DELIVER	Zanzibar	J.1.d RDT Procurement	224
	Mainland	J.2.b ACT Procurement	4,000
	Mainland	J.2.c Strengthen Pharmaceutical Management and Supply Chain System for mainland	750
	Zanzibar	J.2.h Strengthen Pharmaceutical Management and Supply Chain System for Zanzibar	250
WAJIBIKA	National	M.3.c Support the Strengthening of Health Systems	340
WHO	National	O.1.c Support to WHO	40
ZMCP	Zanzibar	I.1.d Universal Coverage Campaign	650
	Zanzibar	I.4.b IEC/ BCC across all intervention areas	200
	Zanzibar	M.1.b Strengthening capacity of ZMCP for health service delivery and management	90
	Zanzibar	O.1.b Strengthening ZMCP's Strategic Information System	50
	Zanzibar	O.2.b Entomological Monitoring for Zanzibar	100
ZTCs	Mainland	J.2.f Training and Follow Up for Malaria Case Management	500
GRAND TOTAL			**48,000**

Mainland	42,896.50	89%
Zanzibar	5,104	11%
Total	48,000	100%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