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Tanzania (Mainland)

Malaria Operational Plan FY 2024

Suggested Citation: U.S. President's Malaria Initiative Tanzania (Mainland) Malaria Operational Plan FY 2024. Retrieved from www.pmi.gov

This Fiscal Year (FY) 2024 Malaria Operational Plan has been approved by the U.S. Global Malaria Coordinator and reflects collaborative discussions with national malaria control programs and other partners. Funding available to support outlined plans relies on the final FY 2024 appropriation from U.S. Congress. Any updates will be reflected in revised postings.

CONTENTS

ABBREVIATIONS

ACT	Artemisinin-based combination therapy
AI	Active ingredient
AL	Artemether-lumefantrine
ANC	Antenatal care
CDC	Centers for Disease Control and Prevention
CHMT	Council health management team
CHW	Community health worker
CORPs	Community-owned resource persons
CY	Calendar year
DHIS2	District Health Information Software 2
DQA	Data quality assessment
eLMIS	Electronic logistics management information system
EPI	Expanded Program on Immunization
FETP	Field Epidemiology Training Program
FY	Fiscal year
Global Fund	Global Fund to Fight AIDS, Tuberculosis and Malaria
HC	Health center
HMIS	Health Management Information System
IMPACT	Information Mobilized for Performance Analysis and Continuous Transformation
IPTp	Intermittent preventive treatment for pregnant women
IRS	Indoor residual spraying
ITN	Insecticide-treated net
MBS	Malaria Behavioral Survey
mCCM	Malaria community case management
MIP	Malaria in Pregnancy
MIS	Malaria Indicator Survey
MOH	Ministry of Health
MOP	Malaria Operational Plan
mRDT	Malaria Rapid Diagnostic Test
MSD	Medical Stores Department
MSDQI	Malaria Services and Data Quality Improvement
NIMR	National Institute for Medical Research
NMCP	National Malaria Control Program
NMSP	National Malaria Strategic Plan
OR	Operational research
PE	Program evaluation
PBO	Piperonyl butoxide
PfPR	Plasmodium falciparum parasite rate

PMI	U.S. President's Malaria Initiative
PO–RALG	President's Office–Regional Administration and Local Government
RHMT	Regional health management team
SBC	Social and behavior change
SM&E	Surveillance, monitoring, and evaluation
SNP	School Net Program
SP	Sulfadoxine-pyrimethamine
TDHS	Tanzania Demographic and Health Survey
TES	Therapeutic efficacy study
USAID	United States Agency for International Development
UCS	Unified Community System
WHO	World Health Organization

EXECUTIVE SUMMARY

To review specific country context for Tanzania, please refer to the country malaria profile located on PMI's country team landing page, which provides an overview of the country's malaria situation, key indicators, the strategic plan of the Division of National Malaria Program (DNMP), and the partner landscape.

U.S. President's Malaria Initiative

Launched in 2005, the U.S. President's Malaria Initiative (PMI) supports implementation of malaria prevention and treatment measures as well as cross-cutting interventions. PMI's 2021–2026 strategy, *End Malaria Faster*, envisions a world free of malaria within our generation with the goal of preventing malaria cases, reducing malaria deaths and illness, and eliminating malaria in PMI partner countries. PMI currently supports 27 countries in Sub-Saharan Africa and 3 programs across the Greater Mekong Subregion (GMS) in Southeast Asia to control and eliminate malaria. Tanzania began implementation as a PMI partner country in fiscal year (FY) 2006.

Rationale for PMI's Approach in Tanzania

The entire population of Mainland Tanzania is considered at risk for malaria, although transmission varies among and within regions. Malaria prevalence in the country is estimated at 8 percent, according to the 2022 Tanzania Demographic and Health Survey (TDHS)/Malaria Indicator Survey (MIS). Malaria prevalence in rural areas is 10 percent, while in urban areas it is reported to be less than 1 percent. Overall malaria prevalence in children ranges from less than 1 percent in Arusha, Kilimanjaro, Manyara, Dodoma, Singida, and Songwe to 20 percent in Mtwara, and 23 percent in Tabora (TDHS/MIS 2022). PMI supports a comprehensive package of malaria control interventions in support of NMCP's National Malaria Strategic Plan (NMSP) 2021–2025. PMI's approach in Tanzania reflects all five PMI strategic focus areas. Notable changes in the FY 2024 Malaria Operational Plan include the transition from piperonyl butoxide to dual active ingredient (AI) insecticide-treated nets (ITNs) as feasible, and initiation of support for community case management of malaria through community-owned resource persons (CORPs).

Overview of Planned Interventions

The proposed FY 2024 PMI funding for Tanzania is $39 million. PMI will support the following intervention areas with these funds.

1. **Vector Monitoring and Control**

- Provide high-quality technical assistance to NMCP for the development of policies, strategies, and implementation plans related to vector control.
- Procure and distribute ITNs for the School Net Program (SNP), and support the distribution of Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund)-procured ITNs.
- Conduct annual rapid assessment surveys to determine ITN coverage across the 26 regions.
- Provide technical support for continuous ITN distribution channels and targeted mass replacement campaigns.
- Support entomological and insecticide resistance monitoring at 22 sentinel sites, which may be adjusted to include areas with dual AI ITNs, if dual AI ITNs are deployed.
- Support enhanced monitoring of *Anopheles stephensi* in selected areas associated with seaports and connectivity to main transport routes in up to three cities.
- Support social and behavior change (SBC) activities to address barriers, and promote facilitators of ITN acquisition, use, care, and sharing with relatives and neighbors before, during, and after the SNP in PMI-supported regions.
- Support and participate in vector control-related technical working groups.

2. **Malaria in Pregnancy**

- Provide high-quality technical assistance to NMCP for the development of policies, strategies, and implementation plans related to malaria in pregnancy (MIP).
- Support regional and council health management teams (CHMTs) to conduct Malaria Services and Data Quality Improvement (MSDQI) supportive supervision and training at health facilities to improve the quality of MIP services in PMI-supported regions.
- Support SBC activities to address barriers and promote facilitators of the uptake of intermittent preventive treatment in pregnancy (IPTp) among pregnant women, their partners, and the community.
- Monitor the provision of ITNs and IPTp at antenatal care clinics across all regions of Tanzania.
- Support and participate in MIP-related technical working groups.

3. **Drug-Based Prevention**

- PMI does not fund seasonal malaria chemoprevention or other drug-based prevention in mainland Tanzania.

4. **Case Management**

- Provide high-quality technical assistance to NMCP for the development of policies, strategies, and implementation plans related to both facility- and community-based case management.
- Support universal, quality-assured parasitological testing of all cases of suspected uncomplicated malaria, prompt and effective treatment with artemisinin-based combination therapy (ACT) of all cases of parasitologically confirmed uncomplicated malaria, and prereferral and/or definitive management of severe febrile illness and severe malaria.
- Provide technical assistance for the national slide bank and quality-assured malaria rapid diagnostic tests for NMCP and the National Public Health Laboratory, including the procurement of microscopy slides for the national slide bank.
- Support microscopy proficiency testing for the national external quality assurance at the National Public Health Laboratory.
- Conduct basic and advanced malaria diagnostic refresher training and external competency assessment malaria microscopy for laboratory technicians.
- Support planning and implementation of MSDQI supportive supervision visits for NMCP and the President's Office–Regional Administration and Local Government (PO–RALG) across all regions and for CHMTs in up to 30 districts.
- Support community case management of malaria through CORPs. Contingent on the Tanzanian government's decision to further expand the CORPs beyond the currently planned 10 districts, PMI will provide training, supervision, and compensation for the government's newly established CORPs program in up to 30 districts.
- Procure ACTs and parenteral artesunate.
- Support SBC activities to address barriers and promote facilitators of prompt and appropriate care seeking for children under five years of age with fever.
- Support and participate in case-management-related technical working groups.

5. **Health Supply Chain and Pharmaceutical Management**

- Support forecasting and supply planning activities, procurement, capacity strengthening, supportive supervision, the electronic logistics management information system (eLMIS), and supply chain monitoring.
- Support a nationally representative data quality assessment (DQA) to identify gaps in supply chain data quality.
- Monitor ITN availability and compare it with the Medical Stores Department (MSD) zonal stocks displayed via the MSD supply chain portal.
- Liaise with NMCP to resolve any commodity stockouts identified.
- Conduct rapid assessment of the MSD warehouse operations, and review the strategic work plan.

6. **Social and Behavior Change**

- Support a package of SBC interventions designed using Malaria Behavior Survey (MBS) data to increase adoption and practice of malaria prevention, diagnosis, and treatment behaviors among individuals, households, and communities in target geographies and among health care providers at all levels of the health system.
- Focus on addressing barriers and promoting facilitators of attending antenatal care (ANC) early and completing more than four ANC visits; taking three or more doses of sulfadoxine-pyrimethamine (SP) for IPTp during ANC visits; sleeping under an ITN every night (as well as acquiring an ITN, caring for ITNs, and sharing ITNs); and seeking prompt and appropriate care for children under five years of age.
- Support advocacy strategies and guidelines that promote high-level political and local government advocacy for planning, budgeting, and coordination of malaria prevention and control interventions.
- Support regular implementation of omnibus and audience insights data collection for adaptive management of malaria SBC activities.
- Strengthen capacity of NMCP and malaria focal persons at regional level in the use of malaria-related data to inform planning, design, and monitoring of SBC activities.
- Support capacity strengthening of the National Coordination Taskforce for Malaria SBC.

7. **Surveillance, Monitoring, and Evaluation (SM&E)**

- Support malaria surveillance systems strengthening, and monitor and evaluate malaria interventions with a focus on high malaria burden regions. PMI will continue providing technical guidance for SM&E of malaria interventions in lower malaria burden regions.
- Support malaria-related data integration and management systems and regular technical working groups to review and discuss SM&E activities.
- Support NMCP in analyses, reviews, and dissemination of malaria-related data.
- Support regional and CHMTs to use microplanning tools and malaria transmission risk maps to develop budgets and plans for malaria interventions at the district level (e.g., PlanRep).
- Support three participants for the Field Epidemiology Training Program (FETP) frontline (basic) course, with an emphasis on selecting participants working in malaria interventions in higher malaria burden regions.

8. **Operational Research and Program Evaluation**

- PMI does not plan to fund operational research or program evaluation activities in FY 2024.

9. Capacity Strengthening

- Support strengthening of leadership and technical capacity of NMCP, PO–RALG, and regional and CHMTs, as well as skills/knowledge of health care workers to ensure quality of services in facilities and the community.
- Assist in the design of national and subnational health strategies and guidelines.
- Strengthen digital health data collection, management, and reporting at community and health facility levels.
- Strengthen national and subnational capacity to plan, design, implement, monitor, and evaluate malaria intervention activities.
- Support NMCP and PO–RALG to conduct MSDQI supportive supervision to improve the quality of malaria services at facilities and the community.
- Improve the quality of health facility data and interoperability across systems.
- Conduct rapid assessment of the MSD warehouse operations, and review the strategic work plan.
- Facilitate linkages between FETP residents, NMCP, and implementing partners.

10. Staffing and Administration

A minimum of five health professionals oversee PMI in Tanzania. The single interagency team led by the United States Agency for International Development (USAID) Mission Director or their designee consists of a Resident Advisor (RA) representing USAID, an RA representing the U.S. Centers for Disease Control and Prevention (CDC), and three locally hired experts known as foreign service nationals. The PMI interagency team works together to oversee all technical and administrative aspects of PMI, including finalizing details of the project design, implementing malaria prevention and treatment activities, monitoring and evaluation of outcomes and impact, reporting of results, and providing guidance and direction to PMI implementing partners.

I. CONTEXT & STRATEGY

1. Introduction

Tanzania began implementation as a U.S. President's Malaria Initiative (PMI) partner country in fiscal year (FY) 2006. This FY 2024 Malaria Operational Plan (MOP) presents a detailed implementation plan for Tanzania based on the strategies of PMI and the National Malaria Control Program (NMCP). It was developed in consultation with NMCP and with the participation of the country's local and international partners. The activities that PMI is proposing will build on partner investments to improve and expand malaria-related services, including investments by the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund). This document provides an overview of the strategies and interventions in mainland Tanzania, describes progress to date, identifies challenges and relevant contextual factors, and provides a description of activities that are planned with FY 2024 funding. For more detailed information on the country context, refer to the Country Malaria Profile, which provides an overview of the country's malaria situation, stratification, key indicators, NMCP's strategic plan, and the partner landscape.

2. U.S. President's Malaria Initiative (PMI)

PMI is led by the United States Agency for International Development (USAID) and implemented with the U.S. Centers for Disease Control and Prevention. Launched in 2005, PMI supports the implementation of malaria prevention and treatment measures such as insecticide-treated mosquito nets (ITNs), indoor residual spraying, accurate diagnosis and prompt treatment with artemisinin-based combination therapies (ACTs), intermittent preventive treatment for pregnant women (IPTp), and drug-based prevention, as well as cross-cutting interventions such as surveillance, monitoring, and evaluation; social and behavior change (SBC); and capacity strengthening. PMI's 2021–2026 strategy, *End Malaria Faster*, envisions a world free of malaria in our generation, with the goal of preventing malaria cases, reducing malaria deaths and illness, and eliminating malaria in PMI partner countries. PMI currently supports 27 countries in Sub-Saharan Africa and 3 programs in the Greater Mekong Subregion (GMS) in Southeast Asia to control and eliminate malaria. Over the next five years, PMI aims to save lives, reduce health inequities, and improve disease surveillance and global health security.

Under the strategy, and building on progress already made in PMI-supported countries, PMI will work with national malaria control programs and partners to accomplish the following objectives by 2026:

1. Reduce malaria mortality by 33 percent from 2015 levels in high-burden PMI partner countries, achieving a greater than 80 percent reduction from 2000.
2. Reduce malaria morbidity by 40 percent from 2015 levels in PMI partner countries with high and moderate malaria burden.

3. Bring at least 10 PMI partner countries toward national or subnational elimination and assist at least one country in the Greater Mekong Subregion to eliminate malaria.

These objectives will be accomplished by emphasizing five core areas of strategic focus:

1. **Reach the unreached:** Achieve, sustain, and tailor deployment and uptake of high-quality, proven interventions with a focus on hard-to-reach populations.
2. **Strengthen community health systems:** Transform and extend community and frontline health systems to end malaria.
3. **Keep malaria services resilient:** Adapt malaria services to increase resilience against shocks, including COVID-19 and emerging biological threats, conflict, and climate change.
4. **Invest locally:** Partner with countries and communities to lead, implement, and fund malaria programs.
5. **Innovate and lead:** Leverage new tools, optimize existing tools, and shape global priorities to end malaria faster.

3. Rationale for PMI's Approach in Tanzania

3.1. Malaria Overview for Tanzania

The entire population of Mainland Tanzania is considered at risk for malaria, although transmission varies among and within regions. Malaria prevalence of the country is an estimated 8 percent, according to the 2022 Tanzania Demographic and Health Survey (TDHS)/Malaria Indicator Survey (MIS). Prevalence of malaria in rural areas is 10 percent, while in urban areas it is reported to be less than 1 percent. Overall malaria prevalence in children ranges from <1 percent in Arusha, Kilimanjaro, Manyara, Dodoma, Singida, and Songwe to 20 percent in Mtwara, and 23 percent in Tabora (TDHS/MIS 2022).

The peak period of malaria transmission in the country varies. The north and east experience two rainy seasons—October–December and March–May, while the central, southern, and western regions have one longer wet season from October to April or May. Rainy seasons correspond to high malaria transmission periods. Around the Lake Zone of mainland Tanzania, *Anopheles funestus s.s* is the most abundant vector, and *An. arabiensis* is the second most abundant vector, followed by *An. gambiae s.s* and *An. parensis* (National Institute for Medical Research [NIMR] 2021).

Tanzania continues to fight malaria and has made progress over the years. According to TDHS/MIS 2022, 74 percent of households own at least one ITN, up from 38 percent as reported in 2007–2008. This percentage is comparable but slightly lower than the 78 percent estimate of ITN ownership in 2015–2016 (TDHS/MIS).

Additionally, 66 percent of pregnant women slept under an ITN the night before the survey (TDHS/MIS 2022). A total of 33 percent of pregnant women received three or more doses of IPTp. This intervention varies widely by zone, with 50 percent of women in the Southern Zone having received three or more doses of IPTp compared with 17 percent in South West Highlands. For more detailed information on malaria indicators, please refer to the Country Malaria Profile.

3.2. Key Challenges and Contextual Factors

Key challenges to achieving malaria objectives include:

- Delays in the deployment of new types of ITNs in high malaria burden regions due to constrained Global Fund and PMI funding.
- Lack of a scalable community health worker (CHW) testing and treatment policy. The current policy relies on employing licensed medical professionals, such as nurses, with major challenges in recruitment and retention.
- Resource constraints in scaling up high-quality case management as well as health systems strengthening (including supply chain, surveillance, and health workforce capacity) across all high malaria burden regions.
- Emergence of partial artemisinin resistance identified in 2022 in the Kagera region.
- Tanzania is a high-risk country for the establishment of *Anopheles stephensi*, an efficient vector that can thrive in urban and rural environments and can drastically alter malaria transmission.

3.3. PMI's Approach for Tanzania

PMI supports a comprehensive package of malaria control interventions in support of NMCP's National Malaria Strategic Plan (NMSP) 2021–2025. The plan outlines a long-term vision of a society free from malaria. The strategy's mission is that all Tanzanians have equitable access to sustainable, quality, effective, safe, and affordable malaria preventive and curative services through efficient collaborative partnership and community ownership. The national goal is to reduce the average malaria prevalence in children under five years of age (*Plasmodium falciparum* parasite rate [$PfPR_{6-59}$]) from 7 percent in 2017 to less than 3.5 percent in 2025. Further, each of the epidemiological strata has targets identified in a nationwide stratification exercise conducted in 2017: (1) reduce the malaria burden in moderate- to high-risk strata from 15 percent PfPR in 2017 to less than 7.5 percent PfPR in 2025; and (2) maintain and further reduce transmission in low and very low prevalence areas targeting elimination from 1 percent PfPR in 2017 to less than 0.5 percent PfPR in 2025.

The strategy to achieve these targets consists of six components. The first three are core strategies, and the last three are support strategies:

- Integrated malaria vector control;
- Malaria diagnosis, treatment, and preventive therapies;
- Surveillance monitoring and evaluation;
- Commodities and logistics management;
- Social and behavior change and advocacy; and
- Program management.

Each strategic component has specific objectives and outcomes, with intervention packages that vary by epidemiologic stratum.

PMI primarily provides technical assistance and support for implementation in 14 of 26 regions located in the Lake/Western, Northern, and Southern zones. The Global Fund provides implementation support for interventions in the remaining regions. Consistent with the FY 2024 PMI technical guidance, PMI's investment strategy focuses on promoting coverage of a set of high-quality, evidence-based malaria control interventions, including:

- Piperonyl butoxide (PBO) and dual active ingredient (AI) ITNs distributed continuously through clinics and schools, as well as through targeted mass replacement campaigns where necessary based on coverage data;
- Malaria in pregnancy (MIP) interventions, including IPTp;
- Case management of malaria, including prompt diagnosis and treatment and pharmaceutical supply chain strengthening;
- Data for decision making gleaned from SM&E and operational research activities; and
- SBC activities to promote the consistent and correct use of malaria prevention, diagnosis, and treatment tools.

According to the stratification of malaria burden and delineation of intervention packages tailored to each epidemiological stratum, regions in the Lake/Western and Southern zones are largely classified in the moderate- and high-burden strata, where NMCP's priority remains burden reduction. PMI support for interventions, as listed above, largely aligns with the intervention packages and approaches that the NMSP recommends for these strata. PMI does not support certain intervention packages in the NMSP, including larval source management as well as chemoprevention approaches, including seasonal malaria chemoprevention, intermittent preventive treatment in school children, and perennial malaria chemoprevention. Global Fund and other resources are currently supporting implementation research to investigate these approaches for their efficacy, effectiveness, and feasibility.

PMI's approach in Tanzania reflects all five PMI strategic focus areas, most notably in reaching the unreached with effective vector control interventions by prioritizing distribution of PBO or dual AI ITNs through all distribution channels, the School Net Program (SNP), targeted mass replacement campaigns, and health facility antenatal care (ANC) and Expanded Program on Immunization (EPI) clinics; strengthening the nascent CHW program to extend the availability of malaria case management; and improving local expertise for entomological, insecticide, and drug resistance surveillance through local and government institutions.

3.4. Key Changes in this MOP

Key changes in the FY 2024 MOP are:

- **Transition from PBO to dual AI ITNs, as feasible:** PMI has withdrawn support for IRS both in Mainland and Zanzibar and will transition from PBO to dual AI ITNs in FY 2024.
- **Support for integrated community case management of malaria through community-owned resource persons (CORPs):** PMI will provide training, supervision, and compensation to the Tanzanian government's newly established CORPs program in up to 30 districts.

II. OPERATIONAL PLAN FOR FY 2024

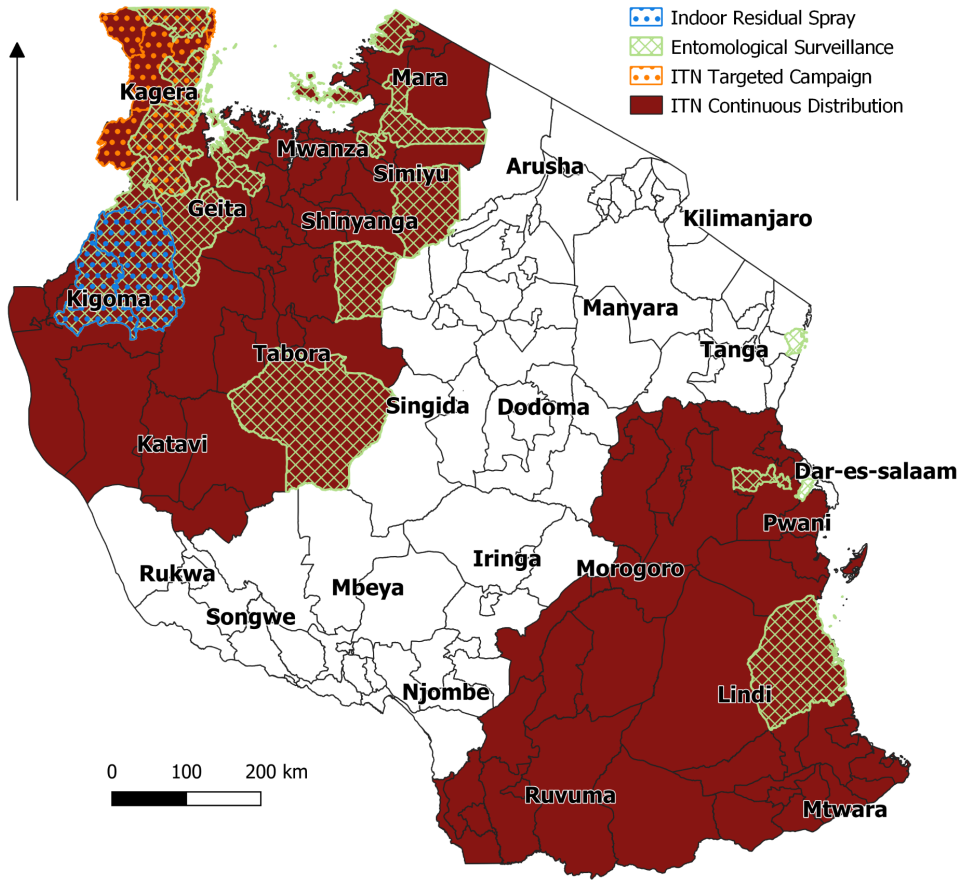
1. Vector Monitoring and Control

1.1. PMI Goal and Strategic Approach

NMCP's strategic objective of integrated malaria vector control as presented in the Tanzania NMSP 2021–2025 is to reduce malaria parasite transmission by maintaining recommended evidence-based vector control interventions according to the targeted malaria risk strata. IRS and ITNs are the core integrated malaria vector control interventions, supplemented by larval source management upon attainment of universal coverage of the two core interventions. The strategy also recommends the monitoring of vector control activities, including insecticide-resistance management.

PMI supports entomological monitoring at 22 sites; the Global Fund supports 32 sites. The Global Fund and PMI co-support targeted mass campaigns every three years, continuous distribution of ITNs via SNP, ANC, and EPI channels in selected high burden regions, as well as targeted mass replacement campaigns, if needed.

Figure 1. Map of Vector Control Activities in Tanzania, 2022



1.2. Recent Progress (October 2021–September 2022)

- Supported longitudinal entomological monitoring at 10 sites, located in 10 districts in the Lake Zone, six of which were located in IRS districts and four in non-IRS districts. Longitudinal monitoring activities included vector bionomics monitoring (seasonality mosquito species, density, biting behavior, and host preferences) and insecticide residual efficacy monitoring for IRS sites. Supported insecticide resistance monitoring in 22 sentinel sites nationwide, in collaboration with NIMR.
- Provided technical assistance to NIMR (at Mwanza and Amani) for field data and sample collection activities, supportive supervision, and laboratory analysis for entomological and insecticide resistance monitoring.
- Supported the procurement and distribution of 2,945,181 PBO ITNs and 1,103,533 standard ITNs to targeted populations through SNP in 13 regions (1 region had a mass campaign). Also, provided technical assistance to NMCP, President's Office–Regional Administration and Local Government (PO–RALG), and Medical Stores Department (MSD) to conduct school-based ITN distribution activities in six non-PMI supported regions.
- Supported the distribution of 776,320 Global Fund-procured PBO and standard ITNs through ANC and EPI clinics in 14 regions. Subsequently, ITN distribution to health facilities in all 14 PMI-target regions was handed over to MSD.
- Supported a targeted replacement campaign in three districts in the Lindi region and three districts in Mtwara region, distributing 813,827 PBO and standard ITNs. Digital tools were used for electronic registration and issuing.
- Supported prevention of malaria in pregnancy by providing ITNs to women at their first ANC visit (for more details, see the case management and MIP sections).
- Supported national and community-level SBC activities to improve demand for ITNs, increase appropriate use, promote care, encourage appropriate repurposing, and mitigate against misuse. For more information, please refer to the SBC section.
- Supported the planning, implementation, and evaluation of the 2022 IRS campaign in two districts, covering 241,470 structures and protecting 945,879 people during the campaign between October 5–November 4, 2022. For more information about the IRS, please refer to the 2022 End of Spray Report.
- Trained and engaged community members and national and subnational representatives in two districts to support IRS mobilization and spray activities.

- Given that 2022 was the last year of PMI-supported IRS in Mainland Tanzania, as part of an exit strategy, NMCP will conduct targeted replacement ITN campaigns in the areas where IRS had been conducted, and PMI will support SNP, accompanied by SBC promoting consistent net use. PMI will continue to support epidemiological and entomological monitoring, and NMCP will undertake durability monitoring with funding from the Global Fund. Furthermore, PMI and NMCP will ensure full supply of RDT and ACTs. Noting that Tanzania did not experience an upsurge in malaria cases in the four areas that discontinued IRS after 2021, similar trends are anticipated in these two districts.

1.3 Plans and Justification for FY 2024 Funding

The FY 2024 funding tables contain a full list of vector monitoring and control activities that PMI proposes to support in Tanzania.

1.3.1. Entomological Monitoring

PMI will continue to sustain the nationwide insecticide resistance monitoring program at 22 established sentinel sites nationwide, which may be adjusted to include areas where dual AI ITNs are deployed. Tanzania is at high risk for the introduction and establishment of *An. stephensi*, and in 2023, this invasive mosquito was detected in Kenya. In 2023, PMI initiated enhanced *An. stephensi* surveillance in selected areas at two sites that are seaports with major connectivity to the rest of Tanzania, with plans to expand *An. stephensi* surveillance to a third site that is also a major transport route in 2024. With MOP FY 2024 funds, PMI plans to continue its support of *An. stephensi* surveillance at these three sites, which were identified as high risk by modeling and may be adjusted depending on findings over the next two years. PMI will also continue to collaborate with NMCP and local institutions (e.g., NIMR and Ifakara Health Institute to enhance *An. stephensi* surveillance in NMCP national surveillance sites funded by Global Fund and NMCP larval surveillance activities conducted in collaboration with the Swiss Tropical and Public Health Institute. PMI will continue to support in-country laboratory analysis of all vector samples collected from entomological and insecticide resistance monitoring.

Summary of Distribution and Bionomics of Malaria Vectors in Tanzania

Longitudinal entomological monitoring (October 2021–September 2022) was conducted at six sentinel sites and in the six IRS target districts (Biharamulo, Bukombe, Kakonko, Kasulu DC, Kibondo, and Ukerewe) and at four sentinel sites in non-IRS districts (Muleba, Geita DC, Kasulu TC, and Bunda DC). Fludora® Fusion was used for IRS in Kakonko, Kasule, and Kibondo, while Sumishield® was used in Ukerewe, Biharamulo, and Bukombe. *An. gambiae s.l.* was the most abundant vector in sprayed areas except for three sites Bukombe, Kakonko, and Ukerewe, where *An. gambiae s.l.* was more abundant, whereas *An. funestus s.l.* was the predominant species in non-IRS sites.

In general, there was low indoor and outdoor biting at all sprayed sites, pre- and post-IRS. The biting rates of *An. funestus s.l.* in IRS areas ranged from 0–0.5 mean bites per trap night indoors and 0–0.5 mean bites per trap night outdoors at the six sentinel sites. The biting rates of *An. gambiae s.l.* in IRS areas ranged from 0.3–0.8 mean bites per trap night indoors and 0–0.9 mean bites per trap night outdoors. There was a slight increase in indoor biting of *An. gambiae s.l.* in IRS areas between 11.00 p.m. and 3:00 a.m. indoors and 12:00 a.m. and 3:00 a.m. outdoors. In the four unsprayed sentinel sites, biting rates of *An. funestus s.l.* ranged from 1.8–4.2 mean bites per trap night indoors and 1.1–2.5 mean bites per trap night outdoors. *An. gambiae s.l.* biting rates in unsprayed areas ranged from 0.2–0.6 mean bites per trap night indoors and 0.1–0.3 mean bites per trap night outdoors. In unsprayed areas, *An. funestus s.l.* was the main vector species collected, with indoor biting occurring 10:00 p.m. and 3:00 a.m. and outdoor biting between 11:00 p.m–3:00 a.m. In general, there were higher numbers of *An. funestus s.l.* indoors and outdoors in non-IRS areas compared with IRS areas.

Molecular species identification of the mosquito specimens indicates that, overall, *An. funestus s.s.* is the predominant vector, and *An. arabiensis* is the second most abundant vector, followed by *An. gambiae s.s.* and *An. parensis*. Mosquitoes collected at the non-IRS sites were found to have a higher malaria parasite infection rate (0.5–2.6 percent) compared with the IRS sites (0–1.2 percent). The highest sporozoite infections were *An. funestus s.s.* (1.1 percent), followed by *An. gambiae s.s* (0.4 percent) and *An. arabiensis* (0.1 percent). Among blood-fed mosquitoes collected, 65.5 percent were *An. funestus s.s.*, and 17.2 percent were *An. arabiensis.* The blood source of 52.6 percent of the *An. funestus s.s.* blood-fed mosquitoes were human, and 42.1 percent were a human-animal mix. The blood source of all the blood-fed *An. arabiensis* collected were of human-animal mix.

Status of Insecticide Resistance in Tanzania

In 2020–2021, PMI-supported insecticide resistance testing in 22 sentinel districts across 14 regions in mainland Tanzania indicated widespread pyrethroid resistance. *An. gambiae s.l.* was resistant to permethrin in 16 sentinel districts, to deltamethrin in 18 districts, and to alphacypermethrin in 19 districts. *An. funestus s.l.* resistance testing was carried out in 10 districts and was found to be resistant to permethrin in seven districts. *An. funestus s.l.* was resistant to deltamethrin in six of the nine districts and to alpha-cypermethrin in six out of eight districts where testing was carried out. Pirimiphos-methyl resistance was detected in *An. gambiae s.l.* in 10 of the 22 districts. Suspected pirimiphos-methyl resistance was detected in *An. funestus s.l.* in two of the six districts. *An. gambiae s.l.* tested in six districts with clothianidin were susceptible. At seven sites where pyrethroid resistance was detected, intensity resistance testing showed that two of the sites had high intensity resistance to permethrin and deltamethrin at 10x the diagnostic dose. The rest of the sites showed moderate permethrin and deltamethrin at five times the diagnostic dose. PBO restored susceptibility of *An. gambiae s.l.* to permethrin at all four of the sites where testing was carried out and at the five sites where PBO + deltamethrin was tested.

1.3.2. Insecticide-Treated Nets

The country is transitioning from standard to new types of ITNs. There are plans to start deployment of dual AI ITNs in select regions based on resistance data and prioritizing districts where IRS was withdrawn in calendar year (CY) 2024, in collaboration with NMCP. PMI will continue to support the procurement and distribution of ITNs through continuous distribution channels. PMI will provide procurement and distribution support to the country's CY 2023 targeted mass distribution and is coordinating with NMCP, local government authorities, the Global Fund, and other malaria stakeholders through its participation on the national task force. PMI also supports SBC in improving use and care of ITNs and preventing misuse.

ITN Distribution in Tanzania

In mainland Tanzania, ITNs are distributed via targeted replacement campaigns every three years. Continuous distribution channels include ANC and EPI clinics, with distribution to pregnant women and children under one year of age; alternative delivery systems to special population groups (e.g., the elderly and people living with HIV/AIDS); and schools, for ITN provision to grades 1 and 7 every year.

For CY 2023, PMI plans to distribute 3,600,000 ITNs through SNP and 1,829,454 through targeted replacement campaigns. PMI's 2024–2025 contribution ratio accounts for the Tanzanian government's plan to quantify using a two year "decay rate," thus requiring additional nets to achieve 80 percent access. The targeted replacement campaign will use a digital platform for the registration and issuance of ITNs to beneficiaries.

Refer to the ITN gap table in the annex for more detail on planned quantities and distribution channels.

1.3.3. Indoor Residual Spraying

Table 2. PMI-Supported IRS Coverage

Calendar Year	District	Structures Sprayed (Number)	Coverage Rate (Percent)	Population Protected (Number)	Insecticide
2022	Kibondo and Kasulu districts, including their respective refugee camps of Nduta and Nyarugusu	241,470	94.9 percent	945,879	SumiShield 50WG and Fludora Fusion

IRS Insecticide Residual Efficacy in Tanzania

Residual efficacy testing was carried out at two IRS sites sprayed with SumiShield 50WG. World Health Organization (WHO) cone wall bioassays conducted with a susceptible strain of *An. gambiae s.s* on different wall surfaces indicated good quality spraying, and the insecticide was 100 percent effective for at least five months on all wall types at all sites. Monitoring was discontinued after five months when the project ended.

2. Malaria in Pregnancy

2.1. PMI Goal and Strategic Approach

PMI supports Tanzania's NMSP and WHO's recommended approach to reducing the burden of malaria infection among pregnant women through the provision of IPTp using sulfadoxine-pyrimethamine (SP), ITNs, and prompt and effective case management of malaria illness and anemia. The national targets are 95 percent coverage of IPTp2 (two doses of SP) and 85 percent coverage of IPTp3+ (three or more doses of SP), 85 percent use of ITNs by pregnant women, and 100 percent prompt case management of malaria infections in pregnancy.

The Ministry of Health (MOH) has adopted the WHO 2016 guidelines and the updated WHO policy of IPTp3+, the provision of three or more doses of SP monthly until the day of delivery, administered as directly observed therapy during ANC visits. The 2016 guidelines support early initiation of IPTp between 13–16 weeks. Following the national guidelines, NMCP plans to withdraw IPTp in the very low epidemiological strata where case-based surveillance and risk mitigation have been established (see PMI Tanzania Country Malaria Profile stratification maps). New national policy requires all health facilities to procure SP using facility resources.

In 2014, MOH started implementing a policy to test all women for malaria infection using a malaria rapid diagnostic test (mRDT) at their first ANC visit, regardless of symptoms, and to treat those who test positive according to national guidelines. The national guidelines recommend artemether-lumefantrine (AL) as the treatment of choice for uncomplicated malaria for all age groups and all trimesters during pregnancy, and injectable artesunate as the treatment of choice for severe malaria in the first trimester, as recommended by WHO. According to the national policy for preventing and treating anemia, an iron/folate combination (ferrous sulfate 200 mg + folic acid 0.25 mg) is provided at ANC visits. High-dose folic acid is procured and supplied for pediatric indications only and is not offered at ANC visits.

NMCP's PO–RALG uses the Malaria Services and Data Quality Improvement (MSDQI) supportive supervision to monitor and evaluate prevention, diagnostic, and treatment practices at ANC visits and the availability and provision of SP for ITPp. Facilities with low performance are targeted for supportive supervision and mentorship on the appropriate assessment of danger signs, conducting a sufficient clinical history and physical examination, providing adequate counseling and communication, and ensuring data quality in the Health Management

Information System (HMIS) register, tally, and summary that are entered into the District Health Information System 2 (DHIS2).

2.2. Recent Progress (October 2021–September 2022)

- PMI and Global Fund support has resulted in the distribution of 4,071,863 ITNs (standard and PBO) free of charge to pregnant women at their first ANC visit and children at their first measles vaccination visit in 14 high malaria endemic areas of mainland Tanzania. Further details can be found in the **ITN** section.
- PMI supported Council Health Management Teams (CHMTs) to conduct MSDQI supportive supervision visits and training to improve the quality of MIP services at 541 facilities (92 percent) across three regions (Katavi, Lindi, and Mtwara).
- PMI partners printed and distributed 1,500 copies of the updated 2020 National Guidelines for Malaria Diagnosis, Treatment, and Preventive Therapies; 2018 ANC guidelines; and 2016 WHO guidelines on eight contacts. PMI supported guideline orientation to 541 health facilities on IPTp and use of ACTs in the first trimester.
- PMI supported meetings of the MIP Task Force, a group composed of members from NMCP, the Reproductive and Child Health group, and other relevant stakeholders working to address challenges in SP availability and IPTp uptake.
- PMI supported SBC to reinforce the importance of IPTp among pregnant women, their partners, and the community, and to address barriers to ANC attendance, IPTp uptake, and ITN use.
- In collaboration with the health system strengthening team, PMI supported supply chain management to address challenges in prioritizing, quantifying, budgeting, ordering, and procuring SP.

2.3. Plans and Justification for FY 2023 Funding

- Support facility and community level activities to improve the demand for and the quality of ANC, including malaria prevention, uptake of IPTp3+, and treatment of acute infections.
- Support MSDQI supportive supervision and mentorship to ANC health care providers across PMI-supported districts (see the case management section).
- Support SBC to increase ITN use, ANC attendance, and IPTp uptake (see the SBC section).
- Monitor the provision of ITNs to pregnant women through continuous distribution at ANC/EPI clinics (see the **ITN** section).
- Strengthen supply chain management to address challenges in prioritizing, forecasting, quantifying, budgeting, and procuring SP.

The FY 2024 funding tables contain a full list of malaria in pregnancy activities that PMI proposes to support in Tanzania.

3. Drug-Based Prevention

PMI does not support seasonal malaria chemoprevention or other drug-based prevention in mainland Tanzania. NMCP is currently drafting a proposed national policy and implementation plan for drug-based prevention approaches, including seasonal malaria chemoprevention, intermittent preventive treatment in school children, and perennial malaria chemoprevention. The Global Fund and other sources supported implementation research conducted between 2019–2021 to investigate these approaches for their efficacy, effectiveness, and feasibility. Results from these studies are currently being disseminated.

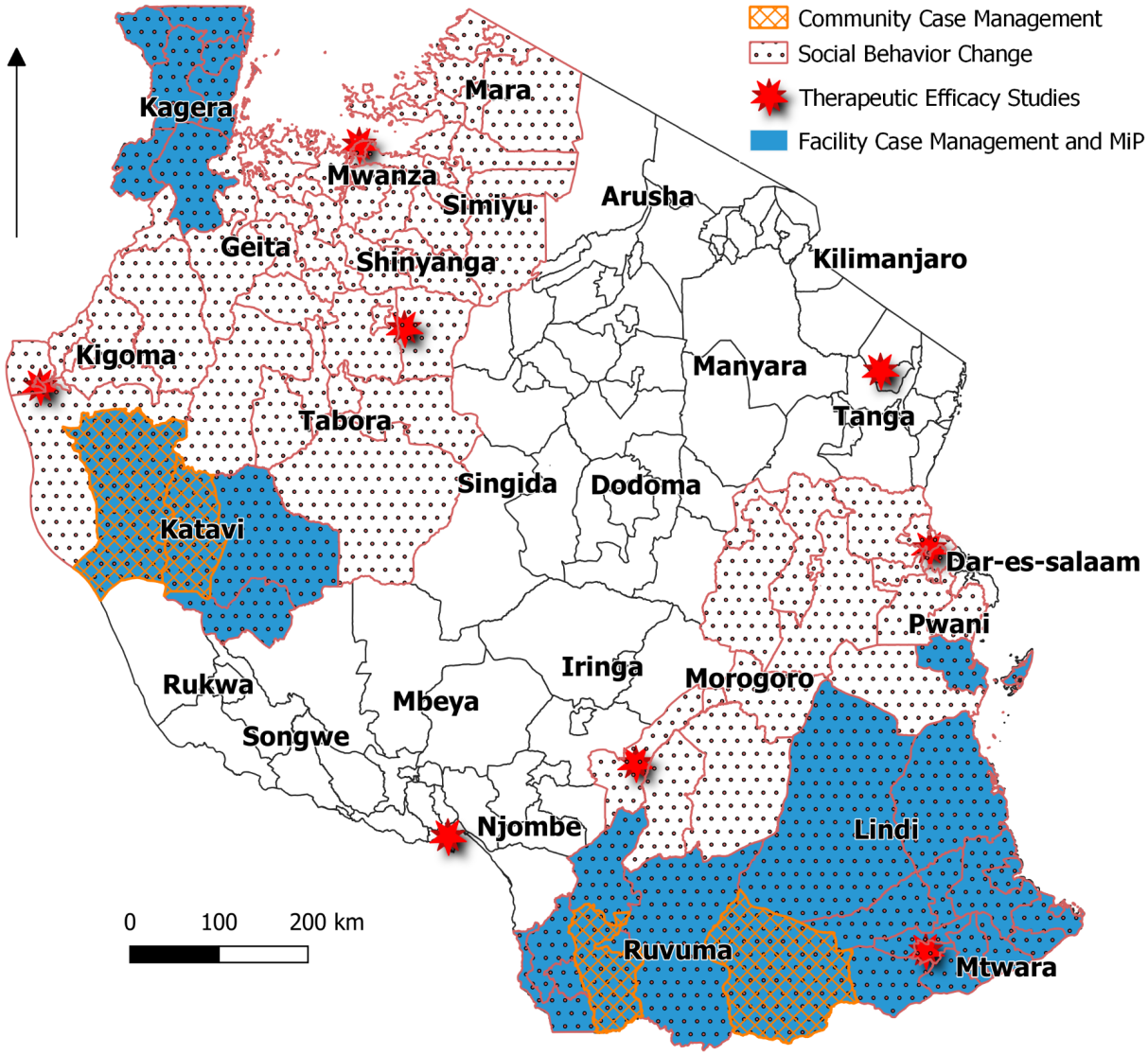
4. Case Management

4.1. PMI Goal and Strategic Approach

The NMSP 2021–2025 promotes a comprehensive case management strategy, including universal, quality-assured parasitological testing of all cases of suspected uncomplicated malaria, prompt and effective treatment with ACTs of all cases of parasitologically confirmed uncomplicated malaria, and prereferral and/or definitive management of severe febrile illness and severe malaria. PMI supports all aspects of this approach through support to national-level policy and programmatic activities, commodity procurement, and improvement of facility and community-level health worker performance. PMI funds the nationwide procurement of ACTs and injectable artesunate, accounting for approximately 30 percent of the procurement of these items; the Global Fund funding the remaining 70 percent. PMI also supports outreach training and supportive supervision activities in five regions; the Global Fund supports 21 regions.

Through equipment, training, and supervision, PMI supports CORPs to deliver community-based case management services that include malaria community case management (mCCM) to all ages in four districts. Within the community health strategy, the expansion of mCCM to 10 districts is planned, and within that planned expansion, PMI will support up to five districts. PMI does not currently provide direct routine payment to CORPs but is working with the Ministry of Health to set up systems to do so effectively in the future. The greatest current challenge of the community health system is the retention of CORPs, who are required by national policy to be licensed health providers. PMI continues to advocate for the adoption of an integrated community case management system rather than a malaria-specific system, i.e., mCCM, and that such a system be implemented by community health workers, who do not require medical licensure, rather than CORPs, who do require licensure and who frequently are not members of the villages they serve.

Figure 2. Map of Social Behavior Change, Therapeutic Efficacy Study Sites, Case Management, Community Health, and Malaria in Pregnancy Service Delivery Activities in Tanzania, 2023



4.2. Recent Progress (October 2021–December 2022)

From October 2021 through December 2022, PMI provided technical assistance to NMCP to develop case management policies and strategies, strengthen mRDT and microscopy diagnostic capacity, and plan for the implementation of malaria case management using data generated from the MSDQI process. PMI procured approximately $2.5 million in ACTs and parenteral artesunate, and supported drug efficacy monitoring following the standard WHO protocol at four sentinel sites in mainland Tanzania, including molecular testing of antimalarial resistance markers for first- and second-line ACTs.

National-Level Case Management Activities

- Provided technical assistance to NMCP for the development of policies, strategies, and implementation plans related to case management and malaria in pregnancy (see MIP section).
- Supported the development, printing, and dissemination of the National Guidelines for Malaria Diagnosis, Treatment, and Preventive Therapies, 2020.
- Provided diagnostic technical assistance for the slide bank, malaria microscopy, and mRDT to NMCP.
- Supported NMCP PO–RALG in planning for MSDQI supportive supervision visits and data analysis of MSDQI across all regions of mainland Tanzania.
- Provided information technology support to maintain and update the national MSDQI electronic data system.
- Conducted a diagnostic capacity assessment for microscopy equipment in universities training laboratorians for mainland Tanzania and the National Public Health Laboratory.
- Provided technical guidance to NMCP for the ongoing program evaluation (PE) of MSDQI as a tool for outreach training and supportive supervision (see the operational research section).
- PMI supported drug efficacy monitoring following the standard WHO protocol at four sentinel sites in mainland Tanzania, including the molecular testing of antimalarial resistance markers for first- and second-line ACT's.

Commodities

- Tanzania uses combination (multispecies) mRDTs procured by the Global Fund. It did not procure any mRDTs for Tanzania.
- Procured approximately 2.5 million ACT treatments.
- Procured approximately 210,000 vials of parenteral artesunate.
- Under the new National Guidelines for Malaria Diagnosis, Treatment, and Preventive Therapies, 2020, rectal artesunate can be administered as a prereferral medication of severe malaria in children under six years of age in places where parenteral artemisinin administration is not possible. However, guidelines and training for health care workers on the use of rectal artesunate suppositories has not been implemented in Tanzania. A quantification for rectal artesunate suppositories was not conducted by NMCP for the Global Fund grant period 2021–2023. Currently, rectal artesunate is not procured by either the Tanzanian government or its partners, including PMI.

Facility Level

- Supported MSDQI implementation in 608 health facilities (98 percent) in three regions (Katavi, Lindi, and Mtwara), 373 health facilities (38 percent) in Ruvuma region, and all facilities in Kibiti and Mafia districts (Pwani region). Implementation of MSDQI in other regions of mainland Tanzania was funded by the Global Fund with partial support from PMI via funds allotted to NMCP and PO–RALG for integrated supportive supervision and technical oversight.
- Conducted a baseline assessment of facility performance to determine readiness of 17 new facilities in Katavi region for the provision of malaria case management, MIP services, and data management.
- Trained 111 supervisors on MSDQI supportive supervision for Katavi, Ruvuma, and Pwani regions.
- Supported proficiency testing for the microscopy external quality assurance program for 99 facilities in four regions (Mtwara: 20, Lindi: 20, Pwani: 18, and Ruvuma: 41).
- Trained 93 laboratorians who support malaria microscopy training, supportive supervision, and mentorship across all regions of mainland Tanzania.
- Trained 66 mentors on malaria case management, including severe and uncomplicated malaria, in Katavi, Lindi, and Mtwara regions.
- Conducted skills training for health care workers improving systematic dilution and administration of injectable artesunate for severe malaria management from 78 percent to 92 percent and in managing MIP from 74 percent to 85 percent in Katavi, Mtwara, and Lindi regions.

Community Level

- Supported the implementation of SBC interventions targeting pregnant women and caregivers of children under five years of age to generate awareness and uptake of malaria-related health interventions, such as early care seeking for febrile illness and ANC services, IPTp, and ITN ownership and use (see SBC section).
- Completed software development of the CORPs/CHW management information system used to recruit and manage the CORPs/CHW workforce for community case management.
- Added functionality to the Unified Community System (UCS) platform used by CORPs/CHWs to register patients, document and classify confirmed malaria cases, and refer patients from the community to the facility level.
- Trained 12 mCCM trainers in the Katavi region with the anticipation of expanding mCCM coverage in the region.
- Trained 37 CORPs to implement mCCM in Nsimbo and Tanganyika districts in Katavi region.

- Procured and issued mCCM equipment (e.g., smartphones, bicycles, thermometers, toolkits, equipment bags, and weighing scales) to the Katavi regional authority to support 26 CORPs in Nsimbo and Tanganyika districts.

Recent progress in monitoring antimalarial efficacy and the therapeutic efficacy study (TES) approach is presented in the plans and justification for FY 2024 funding section below.

4.3. Plans and Justification for FY 2024 Funding

The FY 2024 funding tables contain a full list of case management activities that PMI proposes to support in Tanzania.

National-Level Case Management Activities

PMI will continue to provide high-quality technical assistance to NMCP for the development of policies, strategies, and implementation plans related to case management and malaria in pregnancy for health facilities and the community, including:

- Diagnostic technical assistance for the slide bank, malaria microscopy, and mRDT for NMCP and the National Public Health Laboratory.
- Procurement of microscopy slides for the national slide bank.
- Support for the implementation and monitoring of microscopy proficiency testing for the national external quality assurance at the National Public Health Laboratory.
- Conducting basic and advanced malaria diagnostic refresher training, and external competency assessment malaria microscopy training for laboratory technicians.
- Planning and support for MSDQI supportive supervision visits for NMCP and PO–RALG, and data analysis of MSDQI across all regions of mainland Tanzania.
- Support for and participation in case management-related technical working groups.

Commodities

- Procure approximately 2.3 million treatments of ACTs and approximately 210,000 vials of parenteral artesunate.

Please refer to the ACT, mRDT, injectable artesunate, and artesunate suppository gap tables in the annex for more detail on planned quantities and distribution channels.

Facility Level

PMI currently supports implementation of MSDQI, including the electronic tablet-based system, for monitoring and improving malaria case management in public health facilities in six regions with a high malaria burden: Kagera, Katavi, Ruvuma, Mtwara, Lindi, and Pwani. PMI will continue to support implementation of MSDQI in up to 30 districts in high malaria burden regions prioritized by routine and survey data, and provide technical guidance on the use of MSDQI data to target interventions in non-PMI-supported regions. With support from the

Global Fund, NMCP supports the implementation of MSDQI at public health facilities in non-PMI-supported regions, with partial support from PMI via funds allotted to NMCP and PO–RALG for integrated supportive supervision and technical oversight (see national-level case management activities above).

Community Level

PMI will continue to support following activities in PMI-supported districts:

- Onsite training and supportive supervision or mentorship visits for supervisors and CORPs who implement community case management and SBC.
- Provision of monetary and/or nonmonetary compensation to CORPs in alignment with national policy and depending on resource availability.
- Development of additional modules within MSDQI to assess, monitor, and improve the quality of malaria services during the provision of mCCM implemented by CORPs.
- Enhancement of the UCS, an electronic health record designed to collect and transmit data on community health services for referral to health facilities, to adapt the system to expand its usefulness for malaria surveillance.

Monitoring Antimalarial Efficacy

PMI provides technical and financial support for TES conducted through collaborating institutions in Tanzania: NIMR, Catholic University of Health and Allied Sciences, Kilimanjaro Christian Medical Centre, Muhimbili University of Health and Allied Sciences, Ifakara Health Institute, and NMCP. PMI will continue to support drug efficacy monitoring following the standard WHO protocol at four sentinel sites in mainland Tanzania and will include molecular testing of antimalarial resistance markers for first- and second-line ACTs.

Table 3. Ongoing Therapeutic Efficacy Studies

Year	Site Name	Treatment Arm(s)	Plan for Laboratory Testing of Samples
2023	Mbeya (Ipinda HC), Mtwara (Nagaga HC), Tabora (Simbo HC), Mwanza (Karume HC), Kagera	AL, artesunate–amodiaquine, dihydroartemisinin-piperaquine	TBD (Ifakara Health Institute)

AL: artemether-lumefantrine; HC = health center

See the SBC section for details on challenges and opportunities to improve intervention uptake and maintenance.

5. Health Supply Chain and Pharmaceutical Management

5.1. PMI Goal and Strategic Approach

PMI supports Tanzania's national objective to achieve 100 percent timely availability of safe and quality-assured malaria commodities and supplies at all service delivery points by 2025.

5.2. Recent Progress (October 2021–September 2022)

- Provided technical assistance for commodity quantification by analyzing, triangulating, and monitoring data from supply systems (e.g., DHIS2, eLMIS, and MSD). Overall stockout rates decreased from 11 percent in the first quarter to 8 percent in the fourth quarter.
- Supported a nationwide data quality assessment (DQA) to identify gaps in logistics data quality. Findings were discussed with key stakeholders across all supply chain levels for corrective actions. The key recommendation was to integrate eLMIS and DHIS2 supply data to improve the accuracy of ACT quantities in reporting.
- Provided technical guidance to malaria focal persons on regional and CHMTs on data use for making program decisions using the Information Mobilized for Performance Analysis and Continuous Transformation (IMPACT) approach.
- Developed and disseminated scorecards with information on the availability of malaria commodities and supply chain performance to guide periodic review meetings with MOH and PO–RALG to identify gaps and make corrective plans.
- Improved the logistics system by moving from quarterly ordering and reporting to bimonthly ordering and monthly reporting of stock on hand, automating the bottom-up quantification of essential health commodities, and supporting the implementation of the supply chain e-learning platform, which has been integrated into the MOH's e-learning platform.
- Conducted a rapid assessment of the MSD warehouse operations and reviewed the strategic work plan.

5.3. Plans and Justification with FY 2024 Funding

- Support NMCP to quantify and monitor the availability (i.e., pipeline) of malaria commodities through regular reviews of commodity data and updating supply plans.
- Support quarterly data analyses and performance reviews with stakeholders.
- Continue the IMPACT approach to improve data quality and use by regional and council health management teams.
- Support data systems integration (eLMIS and DHIS2) to improve triangulation and integrity of data used for decision making.
- Review and update existing e-Learning modules to reflect new changes.

- Support MSD to improve business processes for processing and distributing health commodities and support the continued automation of the bottom-up quantification initiative.

The FY 2024 funding tables contain a full list of health supply chain and pharmaceutical management activities that PMI proposes to support in Tanzania.

6. Social and Behavior Change

6.1. PMI Goal and Strategic Approach

PMI supports activities aligned with the Tanzania NMCP's SBC and Advocacy Strategy to increase the adoption and practice of malaria prevention, diagnosis, and treatment behaviors among individuals, households, and communities in target geographies and among health care providers at all levels of the health system. PMI uses an evidence-based approach to prioritize target behaviors, identify influential determinants, and develop activities using data from the Malaria Behavior Survey (MBS), DHIS2, omnibus surveys, and audience insights.

PMI supports NMCP's efforts to increase correct and consistent ITN use and care, prompt care seeking for fever, trust of mRDT results, dose completion, ANC attendance, uptake of three or more doses of IPTp3+, and provider behavior change to support uptake of malaria services through mass media, multimedia, and community-level interpersonal communication activities. At the national and regional/district levels, PMI supports technical assistance and capacity strengthening, including for coordination, for the development of SBC activities, materials, and relevant guidelines, as well as the monitoring of SBC activities. At the district level, PMI supports technical assistance and capacity strengthening for the adaptation of the national social and behavior change advocacy guide to local contexts, including the development of SBC work plans, tailoring and implementation of SBC activities and materials, and coordination of partner efforts. PMI also supports the generation, analysis, and translation of malaria SBC evidence through ongoing omnibus surveys in selected geographies, which inform near real-time adaptations of SBC activities.

6.2 Recent Progress (October 2021–September 2022)

PMI supported the implementation of a comprehensive set of SBC activities under the umbrella of the integrated NAWEZA ("I CAN") platform. NAWEZA, which focuses on pregnant women and their partners as well as parents and caregivers of children under five years of age, is designed to promote and address barriers associated with correct and consistent ITN use and care, prompt care seeking for fever, provider and community member trust of mRDT results, dose completion, ANC attendance, and uptake of three or more doses of IPTp3+. NAWEZA activities include national-level mass and social media as well as regional-level mass media in 12 regions and community-level SBC activities in 19 districts in PMI focus areas. Key outputs in FY 2022 included:

- Implementation of mass media activities including: radio spots about care seeking for fever aired 212 times, reaching 13.4 million people; spots on ITN use aired 267 times via national radio, reaching 14.4 million people across 14 PMI regions; spots on ITN use aired 116 times, reaching 7.4 million people, which were intensified during the rainy season; and 1,569 radio spots promoting ITN registration, use, and care were aired via regional radio stations, reaching 2.2 million people.
- As a part of the mass replacement campaign in Lindi and Mtwara, PMI supported the printing and distribution of 10,000 ITN use cards, 18,000 ITN use posters, 8,000 care seeking posters, 87 counseling cards, and 99 community-level guides (ITN use and care seeking) distributed across 29 districts. Additionally, 49,000 ITN use and care fliers and 7,000 brochures for teachers and school heads were distributed in schools across 14 PMI regions in support of the SNP.
- Implementation of mid media/community mobilization activities included community mobilization activities across priority districts reaching 198,752 people in FY 2022 with messages about ITN use, early care seeking for fever, ANC attendance, and uptake of IPTp3+.
- Implementation of interpersonal communication activities by CHWs and CORPs that included 34,342 pregnant women and their partners were reached through NAWEZA's pregnancy and childbirth small group dialogue sessions that promoted ANC attendance, uptake of IPTp3+, and ITN use during pregnancy; 41,619 mothers and caregivers of infants were reached through timed household visits promoting ITN use and prompt care seeking for fever as part of the NAWEZA caregiving package. Kijiwe Cha Kahawa sessions engaged 22,791 men in ITN use and IPTp3+ during pregnancy.
- Routine implementation of omnibus surveys track the performance of behavioral determinants across all interventions on a quarterly basis. Its outcome informs messaging adjustments for each behavioral determinant. The audience for these surveys are parents and caregivers of children under five years of age, men, and women of reproductive age.

Key outcomes from FY 2022 support included:

- **ANC attendance and IPTp uptake:** According to PMI-supported behavioral sentinel surveys, from FY 2018 (baseline) to FY 2022 (endline) in PMI supported areas, the percentage of women with a live birth over the last 12 months who attended four or more ANC visits increased from approximately 55 percent to approximately 84 percent. According to the same survey data, the percentage of women who know where and when to obtain ANC services (knowledge of ANC) increased from 86 percent (FY 2018, baseline) to 91 percent (FY 2022, endline); the percentage of women who feel confident in their ability to attend ANC early and more than four times (self-efficacy to attend ANC) increased from 61 percent (FY 2018, baseline) to 87 percent (FY 2022, endline); and the percentage of women who believe going to ANC early and more than four times benefits them and their baby, regardless of parity (response efficacy of ANC) increased

from 40 percent (FY 2018, baseline) to 88 percent (FY 2022, endline). Additionally, the percentage of pregnant women who feel confident in their ability to prevent malaria during pregnancy, including IPTp (self-efficacy to accept and take IPTp) increased from 64 percent (FY 2018, baseline) to 90 percent (FY 2022, endline), and the percentage of pregnant women and their partners who believe there is a heightened risk of malaria in pregnancy (perceived susceptibility) increased from 36 percent (FY 2018, baseline) to 84 percent (FY 2022, endline)

- **ITN use:** According to PMI-supported behavioral sentinel surveys, from FY 2018 (baseline) to FY 2022 (endline) in PMI-supported areas, the percentage of pregnant women who slept under an ITN the night before the survey increased from approximately 74 percent to 98 percent. Similarly, the percentage of children under five years of age who slept under an ITN the night before the survey increased from approximately 73 percent to 86 percent. According to the same survey, the percentage of pregnant women who believe an ITN is safe and effective to use (response efficacy of ITN) increased from 43 percent (FY 2018, baseline) to 91 percent (FY 2022, endline).
- **Care seeking for fever:** According to PMI-supported behavioral sentinel surveys, from FY 2018 (baseline) to FY 2022 (endline), in PMI-supported areas, the percentage of parents/caregivers of children under five years of age who sought prompt care for a sick child at a health facility increased from approximately 72 percent to 88 percent.

Despite great progress, challenges remain. In 2021, PMI supported the implementation of the MBS in 19 regions, including 14 PMI regions that provide greater insight for such challenges. A summary of the results are presented below, which will help inform comprehensive SBC implementation, including those areas where IRS will be withdrawn.

1. Malaria in Pregnancy

According to the MBS, the proportion of women with a live birth in the previous two years who attended ANC at least eight times was 10 percent, approximately 78 percent of women with a live birth in the previous two years attended ANC at least four times, and 94 percent of women with a live birth in the previous two years attended ANC at least once. Regression analysis indicated that discussion about ANC attendance with a spouse/partner increases the likelihood of ANC attendance by 1.85 times and perceived equitable gender norms regarding ANC increases the likelihood of ANC attendance by 1.62 times. Favorable attitudes toward IPTp3+ increases the likelihood of IPTp3+ uptake by 1.65 times and favorable perceptions of health providers providing MIP services increases likelihood of attending ANC and taking 3+ doses of IPTp by 1.45 times.

2. ITN Use and Care

According to the MBS, 73 percent of respondents reported using an ITN every night, and 91 percent of the respondents indicated favorable attitudes toward ITNs. Conversely, 30 percent of the respondents think that sleeping under an ITN reduces sex drive in men; 36 percent think that treated ITNs attract nuisance bugs; and 30 percent find it difficult to unfold a net and cover a sleeping area every night. Furthermore, regression analysis indicated the perceived self-efficacy to use an ITN increases the likelihood of ITN use by five times, favorable attitudes toward ITN use increases the likelihood of ITN use by almost three times, and perceived supportive community norms increases the likelihood of ITN use more than twofold.

3. Case management

According to the MBS, among caregivers who had a child with fever in the two-week period prior to the survey, 85 percent sought care for the fever, 91 percent of whom did so within the same day or the day after the onset of fever. While perceived susceptibility to malaria was high, perceived severity of malaria was low among respondents, with only 30 percent of the respondents indicating they believe acquiring malaria would be severe. Perceived susceptibility to malaria was associated with a 2.5 times increased odds of prompt and appropriate care seeking for fever in children under five years of age. Regression analysis indicated that favorable perceptions toward CHWs increases the likelihood of practicing early care seeking behavior by 7.3 times.

The Mainland Tanzania MBS report is available here.

6.3. Plans and Justification with FY 2024 Funding

The FY 2024 funding tables contain a full list of SBC activities that PMI proposes to support in Tanzania.

In FY 2024, PMI will continue to support SBC interventions addressing the following key behaviors:

- Attend ANC early and complete more than four ANC visits (eight contacts are desired) (pregnant women).
- Take three or more doses of SP for IPTp during ANC visits (pregnant women).
- Sleep under an ITN every night (everyone in malaria endemic regions, especially pregnant women and children under five years of age).
    - Acquire an ITN (everyone in malaria endemic regions, especially pregnant women and caregivers of children under five years of age).
    - Care for ITNs (everyone in malaria endemic regions, especially pregnant women and caregivers of children under five years of age).
    - Share ITNs (everyone in malaria endemic regions with extra ITNs).

    - Avoid misuse of ITNs (everyone in malaria endemic regions).
    - Repurpose old ITNs (everyone in malaria endemic regions with old ITNs).
- Seek prompt and appropriate care for children under five years of age with fever (caregivers of children under five years of age).

In priority regions, PMI will support the use of multiple channels to reach target audiences to address influential barriers and support influential facilitators of the key behaviors stated above including:

- **Mass media:** Interactive radio programs, stories, and testimonies, airing of radio spots, DJ presenter mentions, and expert interviews across national and regional radio stations, with airing intensified prior and during the rainy season;
- **Mid-media:** Brochures and posters; and
- **Interpersonal communication:** Cultural theaters, group discussions, etc.

PMI-supported SBC activities will be evidence-based and will utilize a range of innovative approaches, including behavioral science, behavioral economics, artificial intelligence, and human-centered design.

PMI will continue to support SBC activities during the SNP in 14 PMI regions. Key behavioral determinants to be addressed include:

- Awareness of SNP, including which classes are eligible and why they were selected (targeting parents and caregivers with school-age children);
- Belief that it is important to sleep under an ITN every night (targeting the general population);
- Belief that an ITN is safe and effective to use (targeting general population);
- Belief that ITNs prevent nuisance bugs that can disturb sleep (targeting the general population);
- Confidence in ability to adopt correct ITN use and care practice (targeting the general population);
- Belief that malaria is a serious and life-threatening disease (targeting general population); and
- Positive attitudes toward sharing ITNs with their friends and neighbors (targeting the general population).

Table 4. Priority Behaviors to Address

Behavior	Target Population	Geographic Focus	Programming to Address Behavior
Sleep under an ITN every night	Primary: Pregnant women and caregivers of children under five years of age Secondary: Heads of household	Across 14 PMI regions	● Communication campaigns focused on debunking common misconceptions, such as ITNs causing low sex drive in men and attracting bed bugs and other insects, to increase people's favorable attitudes toward using ITNs. ● Emphasize positive community norms around ITN use in SBC communication and community-based activities to improve the overall community perception of the prevalence of ITN use and also reinforce the household use of ITNs. ● SBC campaigns to highlight susceptibility to malaria and effectiveness of ITNs to improve ITN behaviors.
Seek prompt and appropriate care for children under five years of age with fever	Caregivers of children under five years of age	Across 14 PMI regions	● To improve care seeking for fever/malaria, bringing malaria-related health care resources and interventions directly to communities could serve as an alternative to health facilities. ● Improve people's understanding of their susceptibility to and severe consequences of malaria. ● Build trust in the effectiveness of malaria tests and treatment to support improvements in care-seeking behavior for fever in children. ● Highlight descriptive norms in communities by engaging people in community-based activities designed to increase malaria care seeking for children under five years of age as well as designing of messages that reinforce this as the norm.
Attend ANC early and complete more than four ANC visits	Pregnant women	Highly intensive intervention across lake zone regions	● Increase knowledge about malaria care during pregnancy. ● Increase understanding of the higher risks that malaria poses to pregnant women. ● Model community norms around pregnant women taking ACTs. ● Eight ANC visits are recommended in Tanzania, yet only 10 percent of pregnant women follow this. Close the loop by communicating this recommendation through community and facility-based interactions. ● Address the facility-side factors through provider behavior change interventions focused on improving adherence to protocols and strengthening the quality of client-centered counseling. ● Engage mass media activities to increase knowledge of malaria care for pregnancy (which is reportedly a very low 6 percent)

Additional Support Activities

PMI will support NMCP's response to *An. stephensi*, including the identification of opportunities to influence individual, community, and household behaviors associated with *An. stephensi* identification and control. PMI will support the development of activities aligned with the PMI-supported SBC Guidance for *Anopheles stephensi* in Africa.

PMI will continue to support evidence-based malaria SBC activities using data from the MBS. PMI will support monitoring of malaria SBC activities through regular implementation of omnibus surveys. PMI will also support collection and analysis of qualitative audience insights in priority geographies where uptake of key behaviors is low to better understand barriers to uptake. Results from omnibus surveys and qualitative audience insights will be used to make near real time adjustments to PMI-supported malaria SBC activities.

Through national-level support to NMCP, as outlined below, PMI will continue to support and strengthen the capacity of the National Coordination Taskforce for Malaria SBC to plan, design, implement, monitor, and evaluate malaria SBC, including the use of data (e.g., MBS survey result and omnibus survey results) to inform SBC program priorities and strategies.

PMI will also continue to support SBC capacity strengthening at both the national and subnational levels, with an increased level of effort at the national level. To bolster NMCP's capacity to plan, design, implement, monitor, and evaluate malaria SBC activities, PMI will continue to support:

- Coordination at the national level through targeted support to improve the effectiveness of the SBC national coordination task force;
- Regional and district-specific SBC focal persons to increase coordination and ensure the impact of SBC investments, specifically;
    - Strengthening capacity of key players and stakeholders for effective SBC planning, design, implementation, monitoring, and evaluation; and
    - Strengthening capacity for NMCP and implementing partners on data synthesis and use for decision making (e.g., from the expanded SBC module in the MIS) to inform SBC program priorities and strategies.

7. Surveillance, Monitoring, and Evaluation

7.1. PMI Goal and Strategic Approach

PMI provides technical assistance and resources to strengthen malaria surveillance systems and monitor and evaluate malaria interventions, with a focus on high malaria burden regions. PMI also provides technical guidance, but not direct implementation, for SM&E of malaria interventions in lower malaria burden regions.

The goal of NMCP is to provide timely and reliable information for assessing progress toward global and national malaria targets, ensure cost-effective use of resources, and account for investments in malaria control in the country. The Malaria SM&E Plan 2021–2025 emphasizes strengthening comprehensive malaria programmatic and surveillance systems for collecting, processing, and storing essential data generated from periodic service delivery activities and programmatic surveys and routinely reported from health facilities and the community.

For a description of NMCP's approach for entomological surveillance and insecticide resistance monitoring, see the vector control section. For a description of the malaria commodities supply management tracking (e.g., eLMIS), see the supply chain section. For a description of the TES, see the case management section.

7.2. Recent Progress (October 2021–September 2022)

- Supported data management and strengthening of databases and systems for malaria. In addition, PMI partners continued to support data reviews to monitor malaria-related morbidity and mortality trends, malaria commodities, and quality checks of the data reported in DHIS2.
- Provided technical and logistical support for the development and dissemination of the biannual malaria bulletins.
- Supported NMCP and PO–RALG to conduct supportive supervision visits in high malaria burden regions to monitor the implementation of malaria activities.
- In collaboration with PO–RALG, supported NMCP to conduct data review meetings for regional health management teams (RHMTs)/CHMTs in 10 regions (Kagera, Geita, Kigoma, Katavi, Shinyanga, Simiyu, Morogoro, Tanga, Mtwara, and Ruvuma) and provide technical guidance on routinely analyzing data from health facilities, update their respective district malaria profiles, and ensure all relevant district and regional personnel have access to DHIS2. Access to DHIS2 allowed the council (district) teams to continuously monitor malaria indicators, improve data use for analysis and interpretation, and monitor timeliness and completeness of facility reports.
- Provided technical assistance for data cleaning, review, analysis, and interpretation of baseline data collected by NMCP in low strata regions where case-based surveillance is implemented.
- Supported three participants in the Field Epidemiology Training Program (FETP) frontline (basic) and provided technical assistance to a resident in the advanced course for cleaning, analyzing, and developing reports for the malaria death data verification analysis.

7.3. Plans and Justification with FY 2024 Funding

- Support improving data quality in HMIS through the continued implementation of MSDQI (see case management section) and DQAs in the selected health facilities that are within PMI-supported regions using the established national DQA tools (see capacity strengthening section).
- Support efforts to strengthen malaria-related databases and reporting systems, including upgrading, maintenance, digitalization, and integration (e.g., DHIS2 malaria dashboard and malaria vector entomological surveillance, electronic integrated disease surveillance and response, and MSDQI).
- Provide technical guidance but not direct implementation for malaria surveillance system strengthening and data interpretation in lower malaria burden regions.
- Support NMCP to analyze, interpret, and disseminate malaria information and findings for decision making by supporting: (1) manuscript and report writing workshops that include publications in peer-reviewed journals; and (2) technical meetings (e.g., technical working groups) to review and discuss malaria surveillance activities.
- Support the inclusion of malaria indicators in periodic nationally representative household and school-based surveys. PMI will support NMCP with data management, analysis, and report writing for the 2023 School Malaria Parasitemia Survey. Data collection was conducted in May and June of 2023 before schools closed for the end of the term, while data cleaning and analysis was conducted in July and August 2023. This exercise is expected to be completed by the last quarter of 2023. The next MIS is planned for 2025.
- Support NMCP in conducting periodic data reviewing meetings with RHMTs/CHMTs in the PMI-supported districts to perform quality checks and monitor malaria indicators in DHIS2. PMI will continue to support the preparation, printing, and dissemination of the semiannual and annual malaria bulletins using HMIS data. For a description of the PMI focus districts, see the case management section.
- Provide technical guidance to RHMTs/CHMTs in the use of microstratification results and PlanRep (microplanning tool) to develop implementation plans and budgets for targeted interventions at the ward (subdistrict) level. For a description of PMI support for PlanRep, see the capacity strengthening section.
- Support up to three participants for the FETP frontline (basic) course with an emphasis on selecting participants working in malaria, such as surveillance officers, malaria focal persons, and data quality improvement liaisons, in higher burden regions. For a description of FETP activities, see the capacity strengthening section.
- For a description of PMI support for entomological surveillance and insecticide resistance monitoring, see the vector control section. For a description of PMI support for TES, see the case management section. For a description of PMI support for operational research (OR) and PE, see the operational research section.

The FY 2024 funding tables contain a full list of SM&E activities that PMI proposes to support in Tanzania.

Table 5. Available Malaria Surveillance Sources

Source	Data Collection Activity	2020	2021	2022	2023	2024	2025
Household Surveys	Demographic Health Survey			X			
Household Surveys	Malaria Indicator Survey (MIS)			X			
Household Surveys	Multiple Indicator Cluster Survey (MICS)						
Household Surveys	EPI survey						
Health Facility Surveys	Service Provision Assessment (SPA)						
Health Facility Surveys	Service Availability Readiness Assessment (SARA) survey						
Health Facility Surveys	Other Health Facility Survey (DQA)				P	P	P
Malaria Surveillance and Routine System Support	Therapeutic Efficacy Studies (TES)	X	X	X	P	P	p
Malaria Surveillance and Routine System Support	Support to Parallel Malaria Surveillance System						
Malaria Surveillance and Routine System Support	Support to HMIS	X	X	X	P	P	p
Malaria Surveillance and Routine System Support	Support to Electronic Integrated Disease Surveillance and Response (eIDSR)						
Malaria Surveillance and Routine System Support	Electronic Logistics Management Information System (eLMIS)	X	X	X	P	P	P
Malaria Surveillance and Routine System Support	Malaria Rapid Reporting System						
Other	End-user verification						
Other	School-based Malaria Survey		X		P		
Other	Knowledge, Attitudes and Practices Survey, Malaria Behavior Survey		X				
Other	Malaria Impact Evaluation						
Other	Entomologic Monitoring Surveys	X	X	X	P	P	P

X denotes completed activities and P denotes planned activities.

8. Operational Research and Program Evaluation

8.1. PMI Goal and Strategic Approach

The National Malaria Strategic Plan 2021–2025 indicates that NMCP and research partners will develop a national malaria OR agenda to guide the implementation of the strategic plan and provide evidence for innovative initiatives. NMCP addresses potential OR and PE topics during the program and data reviews conducted during the various thematic technical working groups (e.g., vector control, case management, SM&E, and SBC) and coordinates OR through a focal point. PMI works with NMCP, implementing partners, and other donors and research institutions to support relevant OR and PE.

8.2. Recent Progress (October 2021–September 2022)

No recent MOP-funded OR or PE studies have been completed. The core-funded PE of Tanzania's supportive supervision program (MSDQI) was initiated in 2021, with data collection and analysis underway as of April 2023. The non-PMI-funded field durability monitoring of PBO ITNs to estimate the bioefficacy and physical damage of PBO ITNs compared with pyrethroid ITNs is ongoing, however, initial results show that PBO ITNs meet WHO bioefficacy thresholds for up to 24 months, but durability under operational conditions is less than 24 months. This may indicate a need for more frequent replacement of PBO ITNs than of pyrethroid ITNs; upon completion of this study, NMCP, PMI, and other stakeholders will discuss the findings together.

Table 6. PMI-Funded Operational Research/Program Evaluation Studies in Tanzania

Recently Completed	**Status of Dissemination**	**Start Date**	**End Date**
No PMI-supported OR or PE has recently been completed			
Ongoing or Planned	**Status**	**Start Date**	**End Date**
Supportive supervision (MSDQI) PE	Ongoing field data collection and analysis	October 2021	December 2023

MSDQI: Malaria Services and Data Quality Improvement; OR: operational research; PE: program evaluation.

Table 7. Non-PMI funded Operational Research/Program Evaluation Studies Planned or Ongoing in Tanzania

Source of Funding	Implementing institution	Research Question/Topic	Current Status/ Timeline
Social Care, UK Foreign, Commonwealth and Development Office, the Medical Research Council, and Wellcome Trust	London School of Hygiene and Tropical Medicine, Kilimanjaro Christian Medical University College (KCMUCo), NIMR-Mwanza, and University of Ottawa	Effectiveness and cost-effectiveness against malaria of three types of dual-active-ingredient long-lasting insecticidal nets compared with pyrethroid-only nets	April 2018–June 2022 Study has been published[1] and is ongoing but no longer recruiting

[1]Mosha, J.F., et al. (2022). "Effectiveness and Cost-Effectiveness Against Malaria of Three Types of Dual-Active-Ingredient Long-Lasting Insecticidal Nets (LLINs) Compared with Pyrethroid-Only LLINs in Tanzania: A Four-Arm, Cluster-Randomised Trial." *Lancet,* Mar 26, 399 (10331):1227–1241. doi: 10.1016/S0140-6736(21)02499-5. PMID: 35339225; PMCID: PMC8971961.

8.3. Plans and Justification with FY 2024 Funding

PMI does not plan to support OR or PE activities in FY 2024.

9. Capacity Strengthening

9.1. PMI Goal and Strategic Approach

PMI continues to strengthen health systems through its support of activities to achieve USAID's development objectives in Tanzania. PMI support enables countries and communities to lead, manage, and implement their own programs with effective supply chain management training and supervision for health care workers; development of health financing systems, including engagement with national health insurance schemes; and strengthening monitoring and disease surveillance systems.

The Health, Social Welfare, and Nutrition Services in the PO–RALG is responsible for interpreting policies and coordinating policy implementation at the regional and local government authority levels. A decentralized structure of health services management at the regional level via the RHMTs is responsible for conducting supportive supervision and mentorship for the district councils. The district-level CHMTs are responsible for ensuring that health programs are implemented according to the design. CHMTs are also responsible for providing technical assistance to primary health care facilities. PMI supports strategies to strengthen malaria programing, planning, implementation, and monitoring within this health system.

9.2. Recent Progress (October 2021–September 2022)

- Participated in international, regional, and national-level training, including meetings, such as the annual American Society of Tropical Medicine and Hygiene conference, RBM Partnership to End Malaria technical working group meetings (vector control, SBC, and MIP), and regional medical and vector-borne diseases conferences.

- Supported PlanRep development, supportive supervision visits, and training on supportive supervision for mentors and supervisors.
- Provided supply chain management training and MSD review sessions at the national, subnational, and local government authority levels.
- Provided technical support for UCS development, MSDQI functionality, and IRS application training.
- Supported the enhancement of UCS, focused on updating the mCCM module and gathering additional system requirements for customization.
- Supported interoperability between data systems (DHIS2, the government's health operations management information system, and AFYA Care) to improve the quality and availability of health-facility-generated data for NMCP and PO–RALG decision making.
- Increased the case-based surveillance system reporting coverage at health facilities by improving the electronic reporting system and its visualization in the DHIS2 dashboard database.
- Provided technical support to conduct baseline data cleaning and analysis collected from Njombe and Kilimanjaro regions. Data were widely disseminated and shared with malaria stakeholders.
- Facilitated the integration of the financial accounting and reporting system with PlanRep, enabling PO–RALG and NMCP to track expenditures related to malaria interventions at the local level.
- In collaboration with NMCP and PO–RALG, conducted data review meetings attended by implementing partners, RHMTs/CHMTs, and health facility staff. These meetings informed NMCP about the current malaria situation and addressed bottlenecks identified through the review of malaria indicators.
- No technical support was provided by Peace Corps volunteers due to the COVID-19 pandemic.

Capacity for the Field Epidemiology Training Program

The African Field Epidemiology Network, USAID Tanzania, and CDC (with PMI, PEPFAR, and Global Health Security funding) have worked together since 2008 to develop and strengthen the Tanzania FETP. FETP is a public health training program to build competencies in applied epidemiology; implementation, evaluation, and management of disease interventions; surveillance strengthening; epidemic preparedness and response; and leadership skills. The MOH manages the program and collaborates with Muhimbili University of Health and Allied Sciences and NIMR for the advanced course. PMI facilitates linkages between FETP residents, NMCP, the Zanzibar Malaria Elimination Program, and implementing partners to ensure residents have opportunities to learn through professional experiences with the malaria programs in Tanzania.

- To date, there have been 13 graduating FETP advanced course cohorts, for a total of 186 graduates, 155 of whom (83 percent) have returned to government institutions, and 31 of whom are employed in the private sector. There are currently four advanced course residents per year funded by PMI.
- Advanced residents began field placement assignments, conducted their data set analysis, developed their dissertation proposals, and defended their dissertation final reports focused on various malaria and fever-related topics.
- Advanced residents attended training in scientific writing and product preparation. A total of three malaria and related products were accepted and presented in local and international scientific conferences. One manuscript is currently under review for peer-reviewed journal publication (Plos GPH). Two manuscripts are being finalized and will be shared for PMI/CDC review and clearance for journal submission.
- PMI supported three regional malaria focal persons in the FETP frontline (basic) course.

9.3. Plans and Justification with FY 2024 Funding

PMI funding will support local capacity development and health systems strengthening to enhance responsive programming and sustainable investments.

- Support NMCP to participate in international, regional, and national-level training, conferences, and workshops.
- Support PO–RALG and NMCP to conduct supportive supervision, prioritizing high malaria burden regions to establish performance standards, build health worker skills, examine facility and council administrative and financial systems performance, and enforce existing rules to promote accountability.
- Support PO–RALG and NMCP to strengthen the quality and availability of health-facility-generated data to increase efficiency and eliminate collection and reporting errors.
- Support the deployment of the UCS and CORPs/CHW management information system for community health implementation. The rollout will include training for NMCP and service delivery partners in PMI-supported districts.
- Support the completion of accountability tools within DHIS2 (matching data from HMIS and LMIS).
- Strengthen utilization of DQA modules by improving CHMT ownership and proactive implementation.
- Facilitate PlanRep, enabling PO–RALG and NMCP to track expenditures related to malaria interventions at the local level.
- PMI will also support Peace Corps volunteers who work with local counterparts to implement malaria activities at their workplaces.They will work in collaboration with PO–RALG, NMCP, and PMI implementing partners.

Capacity for the Field Epidemiology Training Program

PMI will continue financial and technical support for FETP frontline (basic) and advanced course participants. Trainees will receive technical assistance from PMI resident advisors and participate in malaria field assignments and investigations throughout mainland Tanzania and Zanzibar. PMI will continue to improve the training and assistance needed to achieve the goal of incorporating epidemiology specialization in the scheme of service. PMI will track the placement of the graduates of the advanced FETP course in post-training MOH assignments that directly influence malaria control policies and practices. PMI will advocate for and collaborate with additional donors to support FETP.

The FY 2024 funding tables contain a full list of capacity strengthening activities that PMI proposes to support in Tanzania.

10. Staffing and Administration

A minimum of five health professionals oversee PMI in Tanzania. The single interagency team led by the USAID Mission Director or their designee consists of a Resident Advisor (RA) representing USAID, an RA representing CDC, and three locally hired experts known as foreign service nationals. The PMI interagency team works together to oversee all technical and administrative aspects of PMI, including finalizing details of the project design, implementing malaria prevention and treatment activities, monitoring and evaluation of outcomes and impact, reporting of results, and providing guidance and direction to PMI implementing partners.

ANNEX: GAP ANALYSIS TABLES

Table A-1. ITN Gap Analysis Table

Calendar Year	2023	2024	2025
Total country population	61,766,590	63,743,121	65,782,901
Total population at risk for malaria	58,060,595	59,918,534	61,835,927
PMI-targeted population at risk for malaria	29,030,297	29,959,267	30,917,963
Population targeted for ITNs	29,030,297	29,959,267	30,917,963
Continuous distribution needs			
Channel 1: ANC	2,496,469	2,549,725	2,631,316
Channel 1: ANC type of ITN	PBO and Single Pyrethroid	PBO	PBO
Channel 2: EPI	2,496,469	2,549,725	2,631,316
Channel 2: EPI type of ITN	PBO and Single Pyrethroid	PBO	PBO
Channel 3: School	4,972,199	8,083,694	7,076,560
Channel 3: School type of ITN	PBO and Single Pyrethroid	PBO	PBO
Channel 4: Community			
Channel 4: Community type of ITN			
Channel 5: Alternative channel	1,228,755	168,855	1,440,070
Channel 5: Type of ITN	PBO and Single Pyrethroid	PBO	PBO
Estimated total need for continuous channels	11,193,892	13,351,999	13,779,262
Mass campaign distribution needs			
Mass distribution campaigns	3,765,268	1,335,200	1,377,926
Mass distribution ITN type	PBO and Single Pyrethroid	PBO	PBO
Estimated total need for campaigns	3,765,268	1,335,200	1,377,926
Total ITN need: Continuous and campaign	14,959,160	14,687,199	15,157,188
Partner contributions			
ITNs carried over from previous year	1,326,183	260	49,678
ITNs from government	0	0	0
Type of ITNs from government	PBO and Single Pyrethroid	PBO	PBO
ITNs from Global Fund	8,203,523	10,170,617	10,652,172

Type of ITNs from Global Fund	PBO and Single Pyrethroid	PBO	PBO
ITNs from other donors	0	0	0
Type of ITNs from other donors	PBO and Single Pyrethroid	PBO	PBO
ITNs planned with PMI funding	5,429,714	4,566,000	4,566,000
Type of ITNs with PMI funding	PBO	PBO	PBO
Total ITNs contribution per calendar year	14,959,420	14,736,877	15,267,850
Total ITN surplus (gap)	260	49,678	110,662

Table A-2. RDT Gap Analysis Table

Calendar Year	2023	2024	2025
Total country population	61,766,590	63,743,121	65,782,901
Population at risk for malaria	58,060,595	59,918,534	61,835,927
PMI-targeted population at risk for malaria	29,030,297	29,959,267	30,917,963
RDT needs			
Total number of projected suspected malaria cases	22,954,051	22,981,846	23,374,727
Percent of suspected malaria cases tested with an RDT	95%	95%	95%
RDT needs (tests)	**21,806,348**	**21,832,754**	**22,205,991**
Needs estimated based on consumption data			
Partner contributions (tests)			
RDTs from government	0	0	0
RDTs from Global Fund	20,921,900	24,051,550	16,831,350
RDTs from other donors	0	0	0
RDTs planned with PMI funding	0	0	0
Total RDT contributions per calendar year	**20,921,900**	**24,051,550**	**16,831,350**
Stock balance (tests)			
Beginning balance	12,183,350	11,298,902	13,517,698
- Product need	21,806,348	21,832,754	22,205,991
+ Total contributions (received/expected)	20,921,900	24,051,550	16,831,350
Ending balance	**11,298,902**	**13,517,698**	**8,143,057**
Desired end-of-year stock (months of stock)	6	6	6
Desired end-of-year stock (quantities)	10,903,174	10,916,377	11,102,995
Total surplus (gap)	**395,727**	**2,601,321**	**(2,959,938)**

Table A-3. ACT Gap Analysis Table

Calendar Year	2023	2024	2025
Total country population	61,766,590	63,743,121	65,782,901
Population at risk for malaria	58,060,595	59,918,534	61,835,927
PMI-targeted population at risk for malaria	29,030,297	29,959,267	30,917,963
ACT Needs			
Total projected number of malaria cases	7,638,390	7,168,234	6,753,334
Total ACT Needs (treatments)	**7,638,390**	**7,168,234**	**6,753,334**
Needs Estimated based on HMIS data			
Partner Contributions (treatments)			
ACTs from government	0	0	0
ACTs from Global Fund	0	2,220,948	3,422,016
ACTs from other donors	0	0	0
ACTs planned with PMI funding	0	2,352,941	2,352,941
Total ACTs contributions per calendar year	**0**	**4,573,889**	**5,774,957**
Stock balance (treatments)			
Beginning balance	15,691,590	8,053,200	5,458,855
- Product need	7,638,390	7,168,234	6,753,334
+ Total contributions (received/expected)	0	4,573,889	5,774,957
Ending balance	**8,053,200**	**5,458,855**	**4,480,478**
Desired end-of-year stock (months of stock)	6	6	6
Desired end-of-year stock (quantities)	3,819,195	3,584,117	3,376,667
Total surplus (gap)	**4,234,005**	**1,874,738**	**1,103,811**

Table A-4. Inj. Artesunate Gap Analysis Table

Calendar Year	2023	2024	2025
Injectable artesunate needs			
Projected number of severe cases	471,379	446,417	420,651
Projected number of severe cases among children	189,966	179,906	169,522
Average number of vials required for severe cases among children	6	6	6
Projected number of severe cases among adults	281,413	266,511	251,129
Average number of vials required for severe cases among adults	6	6	6
Total injectable artesunate needs (vials)	**2,828,272**	**2,678,502**	**2,523,905**
Needs estimated based on consumption data			
Partner contributions (vials)			
Injectable artesunate from government	0	0	0
Injectable artesunate from Global Fund	3,555,629	2,985,934	1,854,631
Injectable artesunate from other donors	0	0	0
Injectable artesunate planned with PMI funding	1,410,000	179,212	179,212
Total injectable artesunate contributions per calendar year	**4,965,629**	**3,165,146**	**2,033,843**
Stock balance (vials)			
Beginning balance	325,637	2,462,994	2,949,638
- Product need	2,828,272	2,678,502	2,523,905
+ Total contributions (received/expected)	4,965,629	3,165,146	2,033,843
Ending balance	**2,462,994**	**2,949,638**	**2,459,576**
Desired end-of-year stock (months of stock)	6	6	6
Desired end-of-year stock (quantities)	1,414,136	1,339,251	1,261,952
Total surplus (gap)	**1,048,858**	**1,610,387**	**1,197,624**

Table A-5. Primaquine Gap Analysis Table

Calendar Year	2023	2024	2025
Total country population	61,766,590	63,743,121	65,782,901
Total population at risk for malaria	58,060,595	59,918,534	61,835,927
PMI-targeted population at risk for malaria	29,030,297	29,959,267	30,917,963
SP needs			
Total number of pregnant women	2470664	2549725	2631316
Percent of pregnant women expected to receive IPTp1	100%	100%	100%
Percent of pregnant women expected to receive IPTp2	82%	84%	86%
Percent of pregnant women expected to receive IPTp3	64%	66%	68%
Percent of pregnant women expected to receive IPTp4	59%	61%	63%
Total SP needs (doses)	**7,535,524**	**7,929,644**	**8,341,272**
Select data source			
Partner contributions (doses)			
SP from government	7,535,524	7,929,644	8,341,272
SP from Global Fund			
SP from other donors			
SP planned with PMI funding			
Total SP contributions per calendar year	**7,535,524**	**7,929,644**	**8,341,272**
Stock balance (doses)			
Beginning balance	1,112,854	1,112,854	1,112,854
- Product need	7,535,524	7,929,644	8,341,272
+ Total contributions (received/expected)	7,535,524	7,929,644	8,341,272
Ending balance	**1,112,854**	**1,112,854**	**1,112,854**
Desired end-of-year stock (months of stock)	6	6	6
Desired end-of-year stock (quantities)	3,767,762	3,964,822	4,170,636
Total surplus (gap)	**(2,654,908)**	**(2,851,968)**	**(3,057,782)**