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Malawi

Malaria Operational Plan FY 2023

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This FY 2023 Malaria Operational Plan has been approved by the Acting 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 2023 appropriation from U.S. Congress. Any updates will be reflected in revised postings.

This document was prepared in the early months of 2022 as the COVID-19 pandemic continued to evolve worldwide, including in PMI-partner countries. The effects of the pandemic on malaria control and elimination work in 2023 are difficult to predict. However, because U.S. Congressional appropriations for PMI are specific to work against malaria and any appropriations for work against COVID-19 are specific for that purpose and planned through separate future U.S. government planning processes, this FY 2023 MOP will not specifically address the malaria–COVID-19 interface and will reassess any complementary work through timely reprogramming in countries.

CONTENTS

ABBREVIATIONS

ACT	Artemisinin-based Combination Therapy
AI	Active Ingredient
ANC	Antenatal Care
CCM	Community Case Management
CHAG	Community Health Action Group
CHW	Community Health Worker
CMED	Central Monitoring and Evaluation Division
CY	Calendar Year
DHIS2	District Health Information Software 2
DOT	Directly Observed Therapy
FY	Fiscal Year
Global Fund	Global Fund to Fight AIDS, Tuberculosis and Malaria
GOM	Government of Malawi
HES	Health Education Services
HMIS	Health Management Information System
HSA	Health Surveillance Assistant
iCCM	Integrated Community Case Management
IG2	Interceptor G2
IPTp	Intermittent Preventive Treatment for Pregnant Women
IRS	Indoor Residual Spraying
ITN	Insecticide-treated Mosquito Net
MBS	Malaria Behavior Survey
MIP	Malaria in Pregnancy
MIS	Malaria Indicator Survey
MOH	Ministry of Health
MOP	Malaria Operational Plan
mRDT	Malaria Rapid Diagnostic Test
MSP	Malaria Strategic Plan
NMCP	National Malaria Control Program
NPRL	National Parasitic Reference Laboratory
OTSS	Outreach Training and Supportive Supervision
PBO	Piperonyl Butoxide
PMI	U.S. President's Malaria Initiative
QA	Quality Assurance
QI	Quality Improvement
RAS	Rectal Artesunate Suppository
SBC	Social and Behavior Change
SDP	Service Delivery Point

SM&E	Surveillance, Monitoring, and Evaluation
SP	Sulfadoxine-pyrimethamine
TES	Therapeutic Efficacy Study
TWG	Technical Working Group
USAID	U.S. Agency for International Development

EXECUTIVE SUMMARY

To review specific country context for Malawi, please refer to the Malawi Malaria Profile, which provides an overview of the country's malaria situation, key indicators, the National Malaria Control Program (NMCP) strategic plan, 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 24 countries in sub-Saharan Africa and three programs across the Greater Mekong Subregion in Southeast Asia to control and eliminate malaria. Malawi began implementation as a PMI partner country in fiscal year (FY) 2006.

Rationale for PMI's Approach in Malawi

PMI support to the prevention, diagnosis, and treatment of malaria is in line with the 2017–2022 Malaria Strategic Plan and complementary to the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund)-supported interventions. PMI's ongoing support to routine surveillance results in reliable data to ensure programming targets high-burden malaria districts and the most vulnerable populations.

Overview of Planned Interventions

The proposed FY 2023 PMI funding for Malawi is $23 million. PMI will support the following intervention areas with these funds:

1. Vector Monitoring and Control

Under Vector Monitoring and Control, PMI supports entomological monitoring, indoor residual spraying (IRS), and insecticide-treated mosquito nets (ITNs) targeting those most vulnerable to malaria (i.e., pregnant mothers and children under five years of age) and Malawians living in high-burden malaria districts. With FY 2023 funding, PMI will continue to support entomological monitoring in 13 sites in six districts across the country, IRS in one high-burden malaria district, and procurement, warehousing, and distribution of ITNs for use at antenatal care clinics (ANC) and labor and delivery wards nationwide. Additionally, PMI will support the 36-month data collection for durability monitoring and the final phases (i.e., final data analysis, report writing, and presentation to stakeholders) of an ongoing IRS/ITN impact evaluation.

2. Malaria in Pregnancy

PMI supports the procurement, warehousing, and distribution of sulfadoxine-pyrimethamine (SP) and the delivery of a comprehensive package of interventions including intermittent preventive treatment for pregnant women (IPTp) administered through ANC, including supportive supervision of health facility providers to reinforce IPTp3+ and strengthen IPTp documentation in ANC registers; provision of ITNs to pregnant women at first ANC and at delivery; and case management of malaria-infected pregnant women.

FY 2023 funding will be used to procure and distribute SP and ITNs, support group mentorship and supportive supervision to strengthen malaria in pregnancy implementation, and strengthen the use of data collection tools at ANC and labor and delivery.

3. Drug-based Prevention

PMI does not support seasonal malaria chemoprevention or other drug-based prevention in Malawi.

4. Case Management

Case management activities supported by PMI include procurement of commodities, such as malaria rapid diagnostic tests (mRDTs), artemisinin-based combination therapies (ACTs), rectal artesunate suppositories (RAS), and gloves and sharps boxes; training and supportive supervision of health workers; and therapeutic efficacy studies. With FY 2023 funding, PMI will support training and supportive supervision of health workers in at least five districts.

5. Health Supply Chain and Pharmaceutical Management

With FY 2023 funding, PMI support includes the warehousing and distribution of ITNs, mRDTs, ACTs, SP, and RAS, and technical assistance to the Government of Malawi. At the national level, technical assistance is provided directly to the NMCP and the Drug Theft Investigation Unit within the Ministry of Health (MOH). At the local level, technical assistance related to commodities management and data collection is provided to districts and health facilities across the entire country.

6. Social and Behavior Change

With FY 2023 funding, PMI will support national and district-level coordination and capacity building; strengthen mass media and interpersonal communication activities prioritizing prompt care-seeking and early/regular ANC attendance; and strengthen the social and behavior change monitoring and evaluation system by improving District

Health Information Software 2 data capture, reporting, analysis, and decision-making aimed at improving community-level care-seeking behaviors.

7. Surveillance, Monitoring, and Evaluation

With FY 2023 funding, PMI will support the NMCP and the Central Monitoring and Evaluation Division within the MOH to strengthen surveillance monitoring and evaluation activities to guide NMCP decision-making on program implementation. In eight districts, PMI aims to strengthen the Health Management Information System so that routine malaria data are more accurate at all levels and data are used effectively. In addition, PMI will continue to strengthen routine surveillance systems at the central, district, and community levels, support surveillance assessments, and strengthen community-based information systems.

8. Operational Research and Program Evaluation

No operational research or program evaluation activities are planned with FY 2023 funding.

9. Capacity Strengthening

Capacity strengthening is a central part of PMI's project portfolio, with specific activities reflected in each technical area listed above. In addition to the aforementioned technical areas, with FY 2023 funding PMI will support the U.S. Peace Corps to integrate malaria in their programming, and a local governance project to address ITN misuse.

I. CONTEXT AND STRATEGY

1. Introduction

Malawi began implementation as a U.S. President's Malaria Initiative (PMI) partner country in fiscal year (FY) 2006. This FY 2023 Malaria Operational Plan (MOP) presents a detailed implementation plan for Malawi, based on the strategies of PMI and the National Malaria Control Program (NMCP). It was developed in consultation with the NMCP and with the participation of national and international partners. PMI is proposing activities that build on partner investments to improve and expand malaria-related services, including investments by the the Global Fund to Fight AIDS, Tuberculosis, and Malaria (Global Fund). This document provides an overview of the strategies and interventions in Malawi, describes progress to date, identifies challenges and relevant contextual factors, and provides a description of activities that are planned with FY 2023 funding. For more detailed information on the country context, please refer to the Country Malaria Profile, which provides an overview of the country's malaria situation, key indicators, the NMCP strategic plan, and the partner landscape.

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

The U.S. President's Malaria Initiative is led by the U.S. Agency for International Development (USAID) and implemented together with the U.S. Centers for Disease Control and Prevention. Launched in 2005, PMI supports implementation of malaria prevention and treatment measures—insecticide-treated mosquito nets (ITNs), indoor residual spraying (IRS), accurate diagnosis and prompt treatment with artemisinin-based combination therapies (ACTs), intermittent preventive treatment of pregnant women (IPTp), and drug-based prevention—as well as cross-cutting interventions such as surveillance, monitoring and evaluation (SM&E); social and behavior change (SBC); and capacity strengthening. 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 24 countries in sub-Saharan Africa and three programs in the Greater Mekong Subregion 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 upon the progress to date in PMI-supported countries, PMI will work with NMCPs 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 Malawi

3.1. Malaria Overview for Malawi

Malaria is endemic to Malawi, with the entire population of 19 million people susceptible, particularly during the rainy season between November and April. There are more than six million confirmed cases of malaria annually. Among children under five years of age, malaria parasite prevalence by microscopy was 24 percent nationally (2017 Malaria Indicator Survey [MIS]). For more detailed information on malaria indicators, please refer to the Country Malaria Profile.

3.2. Key Challenges and Contextual Factors

A variety of factors contribute to Malawi's difficulties in controlling malaria. Malawi is one of the poorest countries in sub-Saharan Africa, and the Government of Malawi's (GOM) limited budget for malaria programming funds staff salaries, while donors (i.e., PMI and Global Fund) support all other aspects of malaria control. The perceived severity of malaria is low in Malawi, which impedes population uptake of malaria prevention and treatment efforts such as prompt care-seeking (2021 MIS). Consistent and correct use of ITNs is also low, which subjects much of the population to malaria transmission risk in the absence of other vector control interventions (2021 MBS).

On a positive note, the Ministry of Health (MOH) and NMCP are dedicated to combating malaria in Malawi. The PMI in-country team has close working relationships with the NMCP and the Global Fund and works with both organizations on a regular basis. As the current chair of the South African Development Community, Malawi is benefiting from regular cross-border knowledge exchange with neighboring countries, including regional coordination discussions and sub-regional NMCP and partner review of progress, and identification of malaria program implementation bottlenecks, challenges, and best practices.

3.3. PMI's Approach for Malawi

In Malawi, PMI supports all the technical components of the 2017–2022 Malaria Strategic Plan (MSP)[1] except for larvicidal management. PMI aims to reduce malaria morbidity and mortality across the entire country via targeted interventions in specific districts and nationwide support for commodities to prevent, diagnose, and treat malaria.

To address the aforementioned challenges, PMI works closely with the Global Fund to coordinate support to Malawi to ensure appropriate coverage of key interventions. Given Malawi's limited resources, PMI has continuously provided support to routine surveillance and health and logistics management information systems to ensure quality data are available for decision-making. This allows both PMI and Global Fund to target support to areas with the highest need. To ensure appropriate risk perceptions among Malawians and encourage prompt care-seeking, PMI supports behavior change communication activities at the national, district, and community levels and both pre- and in-service training of health workers, as well as individual-level SBC activities at the community level.

In terms of malaria prevention activities, PMI's approach closely aligns with the NMCP's priorities of entomological monitoring, IRS implementation, routine ITN distribution, and prevention of malaria in pregnancy (MIP). Within case management of malaria, PMI's approach ensures that commodities such as malaria rapid diagnostic tests (mRDTs) and ACTs are available nationwide, while supply chain system support aims to increase management capacity through technical assistance and minimize stockouts and loss of commodities.

As the NMCP is burdened by chronic underfunding from the national budget, a key area in need of support is NMCP program management. PMI provides direct technical assistance by U.S. government staff to improve the quality of NMCP programming

[1] The MSP is currently under review and the new plan will be released in 2023, covering the period between 2023 and 2030.

across all technical areas. PMI also responds to requests as a result of unforeseen challenges, such as climate-related disasters. PMI has responded to natural disasters by supporting the distribution of ITNs, malaria RDTs, and ACTs to cyclone-affected areas.

3.4. Key Changes in this MOP

There are no major changes to the FY 2023 MOP as compared to the FY 2022 MOP.

II. OPERATIONAL PLAN FOR FY 2023

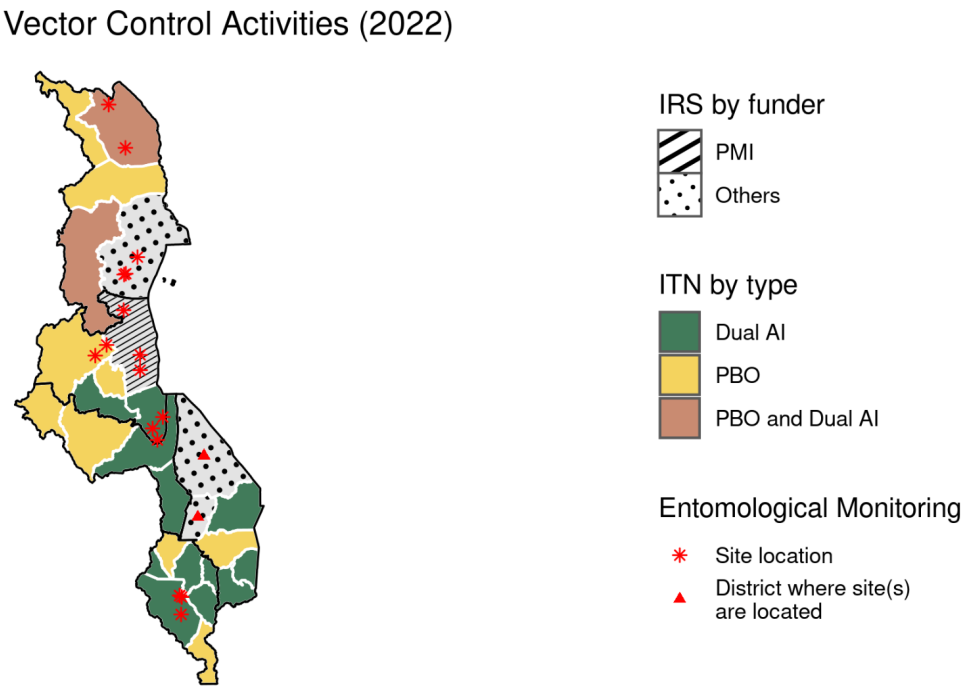
1. Vector Monitoring and Control

1.1. PMI Goal and Strategic Approach

The NMCP's MSP promotes an integrated vector management strategy, including vector surveillance, insecticide resistance management, universal access to quality long-lasting ITNs through continuous and mass distribution of ITNs, implementation of quality IRS in selected suitable epidemiological areas, and larval source management. PMI supports the use of all of these interventions except larval source management. In 2021, the NMCP revised its national policy to a two-year mass ITN campaign cycle.

The Global Fund currently supports mass campaigns every three years while PMI supports continuous distribution of ITNs via antenatal care (ANC) and at labor or delivery channels nationwide. PMI implements IRS in one district and provides technical assistance to Global Fund-supported IRS in three districts. PMI supports entomological monitoring in 13 sites in six districts while the Global Fund supports four additional sites in the two districts where it supports IRS (Balaka and Mangochi).

Figure 1. Map of Vector Control Activities in Malawi by District (2022)



*Note that ITNs are not distributed via mass campaigns in the districts that receive IRS; PBO ITNs are distributed nationwide, including in these districts, via routine channels.

1.2. Recent Progress (between April 2021 and April 2022)

- Supported entomological monitoring in 13 sentinel sites in six districts, in collaboration and partnership with a local institution, the Malaria Alert Center. Activities included vector bionomics and insecticide resistance monitoring. For more information about entomological monitoring, please refer to the 2021 Entomological Report.
- Supported activities collecting data on human-vector behavior in five sites, including human landing catches, to assess mosquito biting behavior, and supported conducting of surveys in sampled houses to determine when mosquitoes and humans intersect in space (indoors or outdoors) and time of night.
- Supported the procurement and nationwide distribution of piperonyl-butoxide (PBO) ITNs to pregnant women and newborns through continuous distribution channels (ANC and labor and delivery).
- Supported prevention of MIP by providing sulfadoxine-pyrimethamine (SP) for IPTp and providing ITNs to women at their first ANC visit.
- In collaboration with the Global Fund and the NMCP, provided technical assistance for planning for the 2021–2022 national ITN mass distribution campaign, distributing PBOs and two types of dual active ingredient (AI) ITNs.
- Supported ITN durability monitoring by implementing pre-distribution bioassay data collection, monitoring dual AI and PBO ITNs from the 2021 campaign cohort.
- Supported the baseline report and monitoring plan for an evaluation of the 2021 and 2022 IRS campaign and ITN mass campaign, which has three objectives: comparison of the impact of IRS and new ITNs; comparison of the impact of Interceptor G2 (IG2) and Royal Guard ITNs and PBO ITNs; and assessment of non-inferiority between IG2 and Royal Guard ITNs.
- Supported national, facility, and community-level SBC activities to improve demand for ITNs, increase appropriate use, promote care, and mitigate against misuse (e.g., activities to assess the extent to which ITNs are being used for fishing). For more information, please refer to the Social and Behavior Change section.
- Supported the implementation of the fourth year of IRS under the current PMI central vector control mechanism[2] in one district, covering 120,097 structures

[2] Note: The government of Malawi first conducted IRS in Northern Nkhotakota in 2007 and has been spraying in various districts since then (i.e., 2009: Nkhotakota; 2010: Nkhotakota & Salima; 2011: Nkhotakota; 2012: Salima, Nsanje, Chikwawa, Karonga, Nkhata Bay, Mangochi. However, high levels of pyrethroid and carbamate resistance necessitated a shift to more expensive, short-acting

and protecting 481,075 people between October 4 and November 12, 2021. For more information about IRS, please refer to the 2021 End of Spray Report.

- Provided technical assistance to the NMCP, World Vision International, the Global Fund Principal Recipient, and District Health Offices with the planning, training, supervision, and close-out of IRS operations in three districts (Balaka, Mangochi and Nkhata Bay).
- Trained and engaged 1,478 Community Health Action Group members in one district to support IRS mobilization and spray activities.
- Conducted spray quality assessments and residual insecticide efficacy monitoring in eight sites in two IRS districts.

1.3. Plans and Justification for FY 2023 Funding

The FY 2023 funding tables contain a full list of vector monitoring and control activities that PMI proposes to support in Malawi with FY 2023 funding. Please visit www.pmi.gov/resources/malaria-operational-plans-mops for these FY 2023 funding tables.

1.3.1. Entomological Monitoring

PMI will continue to support entomological monitoring in 13 sites in six districts. Selected districts will include one that received PBO ITNs in the 2021 mass campaign, two that received dual AI ITNs, one that received a mix of net types, and two that were targeted with IRS. Data on human-vector behavioral interactions will be collected in five sites. Combined with the streamlined ITN durability data, these data will be used as part of evaluation activities to inform future decisions on the most cost-effective mix of vector control interventions in Malawi.

Summary of Distribution and Bionomics of Malaria Vectors in Malawi

As of 2021, *An. funestus* s.l. is the primary vector in most of Malawi while *An. gambiae* s.l. is a secondary vector. *An. gambiae* s.l. is composed almost entirely of *An. Arabiensis,* although *An. gambiae* s.s. is present at very low frequencies in a few sites. *An. coustani* has increasingly been collected in several sites in Malawi, particularly by human landing catches, but none have been found to be infected with *Plasmodium falciparum,* and it is unclear if this mosquito species contributes to malaria transmission.

The number of *An. funestus* collected tends to increase beginning early in the rainy season which usually starts around November/December. *An. funestus* populations reach a peak in May/June, although this species tends to be found in permanent and

organophosphate insecticides, and PMI suspended direct support for IRS in Malawi in 2012. It was re-initiated in 2018 with the advent of more affordable, effective insecticides.

semi-permanent aquatic habitats and therefore, populations may persist throughout the year. The seasonality of *An. gambiae* s.l. is less obvious in most sites with low numbers found throughout the year. The one exception is Karonga district, where large numbers of *An. gambiae* s.l. are collected in August or September, likely corresponding to rice irrigation cycles. Based on human landing catch data, *An. funestus* bites predominantly indoors while *An. gambiae* s.l. (*An. arabiensis* in most sites) bites predominantly outdoors. Both species are frequently sampled resting indoors by pyrethrum spray catch or indoor aspirations. However, the relative numbers resting indoors versus outdoors is unknown, as outdoor resting sites have not been sampled.

An. funestus is the predominant mosquito species in most of the sites with the exception of Karonga district. *An. gambiae* s.l. is also predominant in Salima district, although numbers of all mosquito species are generally low in this area. However, this is one site where *An. gambiae* s.s. can regularly be found, particularly during the rainy season, when it comprises up to 25 percent of the *An. gambiae* s.l. collected. *An. funestus* is strongly anthropophilic, with nearly 90 percent of blood meals identified as being from humans. In contrast, less than 30 percent of *An. gambiae* s.l. had fed on humans, which likely reflects the predominance of the more zoophilic *An. arabiensis*. Sporozoite infection rates in *An. funestus* are nearly threefold higher than that of *An. gambiae* s.l., likely reflecting the strong anthropophilic tendencies of *An. funestus*.

Status of Insecticide Resistance in Malawi

Anopheles funestus is highly resistant to pyrethroid insecticides (alpha-cypermethrin, deltamethrin, and permethrin), with resistance observed at up to 10 times the diagnostic dose. However, pre-exposure to PBO fully restores susceptibility to all pyrethroids, even at the diagnostic dose in most sites. *An. funestus* is fully susceptible to pirimiphos-methyl (organophosphate), clothianidin (neonicotinoid), and chlorfenapyr (pyrrole).

Anopheles arabiensis is also resistant to pyrethroid insecticides at most sites, although there is more variability in this species. In Karonga, *An. arabiensis* is resistant to alpha-cypermethrin and deltamethrin but exhibits only suspected resistance (mortality between 90 percent and 98 percent) to permethrin. Similarly, *An. arabiensis* in Chikwawa are resistant to deltamethrin but suspected resistant to permethrin. However, pre-exposure to PBO does not result in full restoration of susceptibility in many sites. *An.opheles arabiensis* is fully susceptible to pirimiphos-methyl, clothianidin, and chlorfenapyr.

1.3.2. Insecticide-treated Mosquito Nets

Malawi will continue to support ITN activities as described in the Recent Progress section. PMI will continue to support procurement and distribution of ITNs through

continuous distribution channels. Based on findings from the NetCalc activity[3] to be conducted in 2022, PMI may support a supplementary channel to help sustain coverage levels achieved via mass campaigns. PMI has been procuring PBO ITNs but will discuss with the NMCP whether they would like to transition to dual AI nets with FY 2023 funding, based on data from the evaluation and durability monitoring. PMI will continue to support streamlined durability monitoring (36-month time point) of PBOs, IG2s, and Royal Guard nets that were distributed in 2021–2022. PMI will continue to support the IRS/ITN impact evaluation; the baseline time period for comparison began in January 2018 up until 2021–2022 when PBO and dual AI ITNs were distributed throughout Malawi, and the post-campaign period runs through May 2024 to include two to three peak transmission seasons. A stakeholder meeting with the Vector Control Technical Working Group (TWG) is planned for calendar year (CY) 2024 to disseminate findings and discuss implications.

PMI also supports SBC to improve use and care of ITNs and to mitigate against misuse.

ITN Distribution in Malawi

In Malawi, ITNs are currently distributed via mass distribution campaigns approximately every three years. Continuous distribution channels are currently targeted to pregnant women at ANC and to mothers at labor and delivery. The country transitioned from standard nets to PBO nets during its 2020 mass distribution campaign. During the 2021–2022 campaign, the country distributed PBOs and two types of dual AI nets. The NMCP's Vector Control TWG determined the district-level geographic distribution of the PBOs and dual-AI nets mass campaign based on multiple factors, including: malaria burden of the district; cost (dual AIs were priced lower than PBOs due to the Innovative Vector Control Consortium's New Nets Project copayment subsidy); location of entomological sites to facilitate monitoring; and subnational populations (to avoid mixing different types of nets in a single district). PBO nets are currently distributed nationwide via continuous distribution.

Currently, there are no gaps projected for the existing continuous distribution channels. However, given the timing of the Global Fund grant cycle and the timing of the next mass distribution campaign, the country may experience a major gap in 2024. PMI and the NMCP will carefully monitor issuing and coverage data over the coming year.

[3] An Excel-based modeling tool models different continuous distribution scenarios based on country-specific data, and provides estimations of the ability of various combinations of channels to overall universal coverage.

Please refer to the **ITN Gap Analysis Table** in the annex for more detail on planned quantities and distribution channels.

Table 1. Streamlined Durability Monitoring (2021 Mass Campaign Cohort)

Campaign Date	Site	Brand	Pre-distribution	12 months	24 months	36 months
Nov 2021	Chikwawa	IG2 (chlorfenapyr+ alphacypermethrin)	Nov 2021	Nov 2022 (*planned*)	Planned	Planned
Jan 2022	Kasungu	PermaNet 3.0 (PBO+deltamethrin)	Nov 2021	Nov 2022 (*planned*)	Planned	Planned
Nov 2021	Salima	Royal Guard (alphacypermethrin+ pyriproxyfen)	Nov 2021	Nov 2022 (*planned*)	Planned	Planned

1.3.3. Indoor Residual Spraying

Malawi will continue to support IRS activities as described in the Recent Progress section**.** In CY 2024, PMI will support the planning and implementation of IRS in one district using organophosphates as indicated in the Malawi Insecticide Resistance Management Plan. PMI will also support the evaluation of the 2021–2023 IRS in four districts. Furthermore, PMI will provide technical assistance to the NMCP and District Health Officers in three Global Fund-supported districts.

Table 2. PMI-supported IRS Coverage

Calendar Year	District*	Structures Sprayed (#)	Coverage Rate (%)	Population Protected (#)	Insecticide
2021	Nkhotakota	120,097	92.80%	481,075	Fludora Fusion (Clothianidin + deltamethrin), SumiShield 50WG (Clothianidin)
2022	Nkhotakota	109,999 (85% of structures found in 2021)**	85%**	TBD	Actellic 300 CS (Pirimiphos-methyl)
2023**	Nkhotakota	TBD	85%	TBD	Neonicotinoids
2024**	TBD	TBD	TBD	TBD	Organophosphates

* Planned

IRS Insecticide Residual Efficacy in Malawi

Wall bioassays were conducted monthly following the 2021 IRS campaign at five sites in two districts and showed a residual efficacy of Fludora Fusion and SumiShield 50WG of five months at the time of MOP writing (monitoring is currently ongoing).

2. Malaria in Pregnancy

2.1. PMI Goal and Strategic Approach

To combat the problem of malaria during pregnancy, PMI supports all aspects of the NMCP's national strategy for malaria in pregnancy (MIP), which includes provision of ITNs at the first ANC visit, a minimum of three doses of IPTp starting at 13 weeks gestational age, and effective case management of uncomplicated and severe malaria per World Health Organization guidelines. Artemether-lumefantrine is recommended for all three trimesters of pregnancy in Malawi. The NMCP's goal is to increase uptake of at least three doses of IPTp from 12 percent in 2014 to 60 percent by 2022. There has been continuous improvement, with IPTp3+ reaching 30.4 percent in the 2015–2016 Demographic and Health Survey and 41.1 percent in the 2017 MIS. District Health Information Software, Version 2 (DHIS2) data suggest that the country is close to meeting the 60 percent target.

PMI supports the delivery of a comprehensive package of integrated interventions through ANC to increase uptake and ensure improved pregnancy outcomes and maternal survival, including IPTp administered through ANC, provision of ITNs to pregnant women at first ANC and at delivery, and case management of malaria-infected pregnant women, as follows:

Health facility-based IPTp: The MOH promotes MIP prevention through directly observed therapy (DOT) for IPTp that is facilitated by PMI/Malawi's nationwide procurement and distribution of SP and DOT supplies (cups and safe drinking water, as needed) at all facilities.

Community-based IPTp: The MOH is exploring multiple channels for delivery of IPTp to increase uptake. Currently, delivery is limited to one channel (ANC clinics). In 2020, the NMCP completed a pilot study on feasibility, acceptability, and effectiveness of the use of health surveillance assistants (HSAs) for community IPTp distribution. The study found an overall improvement in IPTp1+ of 13.5 percentage points, (95 percent confidence interval: 4.7–22.3 percent). IPTp3+ did not statistically significantly increase (6.9 percentage point increase; 95 percent confidence interval: 5.9–19.6 percent). HSAs made fewer than desired follow-up visits, highlighting the need to better understand HSA workload prior to rolling out this strategy on a broader scale. Results of this study have been disseminated to guide training for HSAs on community IPTp. Opportunities remain for scaling up ANC in rural/community areas.

Provision of quality IPTp care: The NMCP improves MIP quality of care through PMI-supported training of ANC health service providers. The MOH also conducts quarterly integrated supervision visits to ANC providers, focusing on MIP and safe motherhood, to improve their knowledge, skills, and attitudes in the provision of care to pregnant

women. The MOH also conducts regular meetings of the MIP sub-Working Group Committee and other related coordinating mechanisms (e.g., Case Management TWG).

Please see the Insecticide-treated Mosquito Net section for further details on how PMI supports routine ITN distribution through ANC channels.

2.2. Recent Progress (between April 2021 and April 2022)

- Procured 1.7 million and delivered 1.6 million doses of SP in CY 2021; per available supply chain data, stockout rates of SP averaged approximately 3.9 percent in 2021 and 4.3 percent between January and March of 2022.
- Provided IPTp and integrated malaria into maternal and neonatal health services, including incorporating messaging into routine ANC activities.
- Supported appropriate case management of malaria in pregnant women, including working with the NMCP to review and revise the MIP guidelines for health workers and to review and revise 10 job aids and wall charts for MIP.
- Supported the NMCP to review and update existing supportive supervision checklists, including assessing competencies for prevention and treatment of MIP.
- Supported outreach training and supportive supervision (OTSS) MIP module implementation in three districts (Mchinji, Nkhata Bay, and Kasungu) at the facility level to ensure appropriate ANC activities and SP and ITN distribution.
- Supported a national MIP TWG meeting.
- Conducted supportive supervision of 66 providers from 63 health facilities to reinforce IPTp3+ and strengthen IPTp documentation.
- Supported NMCP orientation to sensitize 92 community local leaders (77 male and 15 female) on available MIP services within their respective geographic authorities.
- Conducted an MIP ITN assessment to determine whether ITN demand was being met at ANC and labor and delivery visits; found that almost all women received ITNs (and most at first visits), but documentation at labor and delivery was inadequate.
- In supported MIP districts, helped ensure that 55 percent of pregnant women received three or more IPTp doses during ANC in 2021.
- Supported continuous distribution of PBO ITNs through ANC and at labor and delivery (see Insecticide-treated Mosquito Net section).

2.3. Plans and Justification for FY2023 Funding

The FY 2023 funding tables contain a full list of malaria in pregnancy activities that PMI proposes to support in Malawi with FY 2023 funding. Please visit www.pmi.gov/resources/malaria-operational-plans-mops for these FY 2023 funding tables.

PMI will continue to support MIP activities as described in the Recent Progress section. PMI will continue a split approach to increase geographic coverage, supporting MIP OTSS interventions in at least three districts (not yet selected) while supporting group mentorship at facility and community levels in approximately 11 districts (planned). Support in all districts will improve overall MIP data quality through data review and strengthening activities. In terms of MIP prevention activities, continued quantification of ITN distribution and uptake in CY 2022 will determine whether expansion of ITN distribution at first ANC and labor and delivery or via another channel is warranted. Although PMI will continue to fund 100 percent of SP and DOT supplies (as needed), PMI will continue to advocate for additional GOM support for the procurement of SP and DOT supplies. PMI will also advocate for the MIP OTSS module to be added into routine integrated supportive supervision visits. The national MIP TWG will continue to be supported, along with changes to MOH ANC guiding documents and registers (e.g., labor and delivery) to better document ITN distribution. PMI will continue to look for opportunities to support building capacity for community IPTp.

Please refer to the **SP Gap Analysis Table** in the annex for more detail on planned quantities and distribution channels. PMI acknowledges the current projected gap in 2024 and will be closely monitoring pipelines and coordinating with other partners to ensure needs are met.

3. Drug-based Prevention

PMI does not support seasonal malaria chemoprevention or other drug-based prevention in Malawi.

4. Case Management

4.1. PMI Goal and Strategic Approach

The Malawi NMCP's MSP promotes a comprehensive case management strategy that includes quality-assured parasitological testing of all cases of suspected uncomplicated malaria, prompt and effective treatment with ACT of all cases of parasitologically confirmed uncomplicated malaria, and pre-referral and/or definitive management of severe febrile illness and severe malaria. The NMCP also aims to ensure consistent availability of high-quality diagnostic and treatment commodities through proper quantification, procurement, and distribution; quality assurance (QA) for malaria diagnostics; supervising health workers on malaria case management at all levels of the health system; and supporting and expanding community case management in hard-to-reach areas (i.e., communities that are more than five kilometers from a health facility). The NMCP's approach to QA includes the provision of guidelines and job aids, OTSS, and lessons learned workshops. The OTSS activities are the core of the QA approach

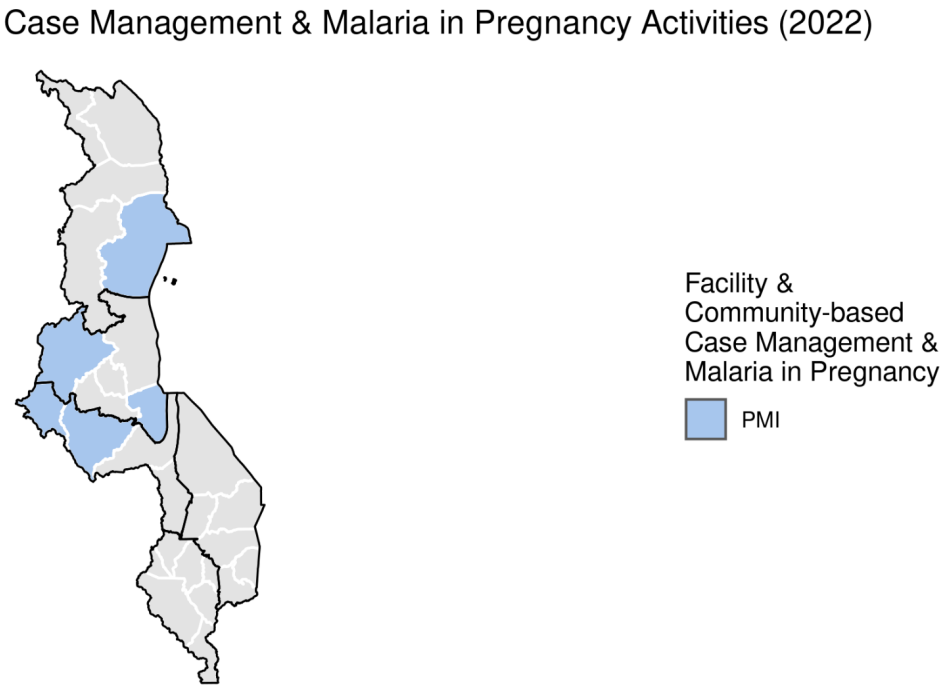
and utilize on-site training and long-term, ongoing support to strengthen diagnostic and treatment services. During scheduled visits, supervisors identify areas for improvement and provide immediate feedback to laboratory and clinical staff. The NMCP recommends that facilities receive quarterly visits at enrollment and then two visits per year after minimum compliance standards are met.

PMI supports all aspects of the NMCP approach through support to national policy and programmatic activities, commodity procurement, and improvement of facility and community-level health worker performance. PMI supports procurement and distribution of approximately half of the mRDTs and ACTs for the management of uncomplicated malaria, with the remainder supported by the Global Fund. PMI procures RAS for pre-referral management of severe malaria, while the Global Fund procures injectable artesunate; both donors share distribution of both commodities. PMI supports the strengthening of diagnostic and case management activities in support of the NMCP through the OTSS program in three districts (Mchinji, Nkhata Bay, and Kusungu), which complements the quarterly Global Fund-supported integrated supportive supervision visits that the NMCP initiates in all districts. The PMI-supported complementary OTSS visits are designed to coincide with the NMCP-led supervision visits. PMI also supports national-level coordination meetings, including the Case Management TWG and the National Malaria Advisory Board, and the updating of critical case management policy, guidelines, and job aids and tools. In terms of laboratory strengthening, PMI supports malaria microscopy, external competency assessments, and diagnostic refresher training.

The community health worker (CHW) program, which has been in existence since the 1970s, provides basic health services in rural and urban communities by formal CHWs with participation from the local community. The primary health worker cadre in the CHW program is Health Surveillance Assistants (HSAs), who have historically provided health promotion and prevention services but now also provide diagnostic and treatment services. Other cadres include Community Health Nurses, Community Midwife Assistants, and Assistant Environmental Health Officers. The GOM intends to reach a target of one HSA per 1,000 population by 2022; however, as of April 2022, the ratio was approximately one HSA per 1,825 population (i.e., approximately 10,773 HSAs in total). HSAs who specifically work in hard-to-reach areas, defined as communities more than five kilometers from a health facility, are targeted for training and supervision to provide integrated community case management (iCCM) for children less than five years of age through village health clinics; malaria community case management (CCM) is supported in communities where non-malaria commodities are not available. Approximately 50 percent of HSAs are trained in iCCM, which includes the malaria CCM module, whereas the remainder have not undergone iCCM training and cannot perform related duties, including malaria CCM. HSAs receive a stipend of approximately

US$200 per month. PMI supports HSAs through commodity procurement, in-service group training, and supervision. PMI commodity support includes mRDTs and artemether-lumefantrine for prompt diagnosis and effective treatment of uncomplicated malaria cases and RAS as pre-referral treatment for suspected severe forms of malaria. GOM and other partners support commodities for pneumonia and diarrhea. PMI/Malawi also supports supervision of HSAs in the use of mRDTs, adherence to mRDT results, appropriate use of ACTs, and pre-referral use of RAS. The biggest current challenge faced by the community health system is placement of HSAs in hard-to-reach communities. PMI intends to prioritize potential future support toward hiring and training HSAs serving in those areas.

Figure 2. Map of Case Management, Community Health, and Malaria in Pregnancy Service Delivery Activities in Malawi



4.2. Recent Progress (between April 2021 and April 2022)

National-Level Case Management Activities

- Reviewed the updated Guidelines for the Treatment of Malaria in Malawi to ensure the NMCP's alignment with World Health Organization guidelines and global best practice.
- Supported coordination of the Case Management TWG (two meetings) and National Malaria Advisory Board (one meeting).
- Supported the NMCP to review pre-service and in-service training curricula and update seven existing supportive supervision checklists.

- Supported the NMCP to review job aids and wall charts for malaria case management.
- Supported the NMCP to conduct quarterly district technical review meetings in three districts (Mchinji, Nkhata Bay, and Kasungu).
- Supported the NMCP and the National Parasitic Reference Laboratory (NPRL) to conduct one basic malaria diagnostics refresher training and one advanced malaria diagnostics refresher training; 60 laboratory staff (45 male, 15 female) were trained in basic training, and 21 of the best performing participants (19 male, 2 female) were selected to participate in the advanced training.
- Supported participation of 13 qualified microscopists to attend national External Competency Assessment of Malaria Microscopists certification.
- Supported NMCP-NPRL to conduct a review meeting for malaria microscopy proficiency testing and blinded malaria blood film slide re-reading in intra- and inter-facilities.
- Support the development of laboratory accreditation (Southern African Development Community Accreditation Services) roadmap for the NPRL.
- Supported NPRL to develop a malaria microscopy proficiency testing scheme and blinded malaria blood film slide re-reading in intra- and inter-facilities.

Commodities

- Coordinated procurement and delivery schedules with the NMCP and the Global Fund to reduce distribution costs while ensuring that appropriate central and service delivery point (SDP) stock levels of mRDTs and antimalarials were maintained.
- Procured approximately 9.3 million ACTs and approximately 50,000 RAS, including procurement using reprogrammed pipeline funds.
- Procured approximately 10.5 million mRDTs and ancillary diagnostic supplies (gloves and sharps containers) for mRDT implementation, including commodities procured through reprogrammed pipeline funds.

Facility Level

- Supported the NMCP to review existing OTSS data and other case management data to determine gaps in malaria service delivery in three districts (Mchinji, Nkhata Bay, and Kasungu).
- Supported the NMCP to conduct one round of facility laboratory and clinical OTSS in three districts (Mchinji, Nkhata Bay, and Kasungu; 74 facilities).
- Supported NMCP to conduct laboratory, clinical, and MIP OTSS lessons learned workshops for national and district-level stakeholders.

Community Level

- Supported malaria-specific cluster-based review meetings with key workers (data clerks, staff conducting mRDTs, clinicians, nurses, and pharmacists) to better use malaria data at the community level.
- Supported NMCP and the MOH's Integrated Management of Childhood Illness program to conduct supportive supervision of HSAs at village health clinics; 72 clinics were visited, consisting of 72 iCCM providers (61 males and 11 females). Furthermore, a total of 27 (24 males and 3 female) HSA supervisors were reached.

Please note that recent progress with monitoring antimalarial efficacy and the therapeutic efficacy study (TES) approach is presented in the Plans and Justification for FY 2023 Funding section below.

4.3. Plans and Justification for FY 2023 Funding

The FY 2023 funding tables contain a full list of case management activities that PMI proposes to support in Malawi with FY 2023 funding. Please visit www.pmi.gov/resources/malaria-operational-plans-mops for these FY 2023 funding tables.

National-Level Case Management Activities

PMI's support for case management activities has been informed by discussions with the NMCP, various stakeholders including the Global Fund, and its funded partners. PMI will continue to support case management activities at the national level using a central mechanism as described in the Recent Progress section.

Commodities

PMI will continue to procure ACTs, mRDTs, and RAS as described in the Recent Progress section, including commodities that HSAs use in the community.

Please refer to the **ACT, mRDT, and Artesunate suppository Gap Analysis Tables** for more detail on planned quantities and distribution channels. The current projected gaps in commodities as seen in the Gap Analysis Tables are partly due to the Global Fund grant ending in 2024 and the Global Fund not being able to make future commodities commitments on this as-yet approved grant.

Facility Level

PMI will continue to support the activities as described in the Recent Progress section. This includes support to improve malaria case management service delivery in health facilities, with activities including strengthening recognition and parasitological testing of suspect malaria cases, adherence to testing results, and prompt and appropriate treatment for confirmed malaria cases. PMI will continue to utilize both a field support

case management partner and a local bilateral partner to provide expertise specific to malaria case management.

Community Level

PMI will continue to support improved CCM service delivery activities as described in the Recent Progress section and prompt and appropriate treatment for confirmed malaria cases. This may include training of HSAs in malaria CCM in response to specific requests and supervision and mentorship at the community level. The local bilateral case management partner will provide expertise specific to malaria community case management in its supported districts (Salima and Lilongwe rural).

4.4. Monitoring Antimalarial Efficacy

Table 3. Ongoing and Planned Therapeutic Efficacy Studies

Ongoing Therapeutic Efficacy Studies			
Year	**Site name**	**Treatment arm(s)**	**Plan for laboratory testing of samples**
NA	NA	NA	NA
Planned TESs (funded with previous or current MOP)			
Year	**Site name**	**Treatment arm(s)**	**Plan for laboratory testing of samples**
2023	TBD	TBD	TBD

Per the agreement among PMI, Global Fund, and the MOH, PMI is now the sole donor providing TES funding, which was included in MOP FY 2020, with planned implementation in 2022–2023 using a local partner. Final agreement about sites, arms, and lab testing will occur during the third quarter of FY 2022 during protocol development. Start-up funding for a planned TES in 2025 is included in this MOP.

5. Health Supply Chain and Pharmaceutical Management

5.1. PMI Goal and Strategic Approach

The NMCP has identified supply chain system strengthening as a key intervention area in its fight against malaria. Overall, the NMCP's goal is to ensure malaria commodity availability at all levels in the supply chain. One of the key supply chain management objectives of the MSP is the reduction of the annual average stockout rate of all artemether-lumefantrine, locally known as LA, from 7 percent in 2016 to 3 percent in 2022; other commodities (including non-malaria) are set at 5 percent, per national supply chain guidelines. To support this objective and build an efficient and effective procurement and supply chain system, PMI supports all of Malawi's supply chain priorities across the nation including commodity quantification, procurement, warehousing, and distribution of ITNs, SP, ACTs, mRDTs, as well as supply chain technical assistance.

PMI operates a parallel supply chain for its commodities, and it will continue to store and distribute its commodities through a private sector-managed parallel supply chain until the Central Medical Stores Trust is able to manage an integrated national supply chain system. PMI will continue to coordinate with the Global Fund as well as other U.S. government agencies to support the GOM's implementation of the 2021–2026 Master Supply Chain Transformation Plan which is aimed at integrating parallel supply chains.

5.2. Recent Progress (between April 2021 and April 2022)

As one of the major malaria donors in Malawi, PMI's main supply chain investments aim to improve malaria commodity availability at SDPs through improved forecasting and supply planning, logistics information systems, direct warehousing, delivery of commodities to health sites and supply chain management technical assistance. Some recent progress includes:

- Maintained stockouts of "All artemether-lumefantrine" under 2 percent from April 2021 to March 2022, including under 1 percent between May 2021 and April 2022.
- Provided technical and financial support to the NMCP to convene a national quantification of malaria commodities in March 2022 which included key malaria stakeholders.
- Supported re-location of malaria commodities from health facilities with damaged/flooded storage areas following Cyclone Ana in January 2022. PMI also supported emergency distribution of ITNs to internally displaced persons in 15 cyclone-affected districts.
- Reduced PMI's direct distribution rounds to SDPs by 50 percent following a formal integration of the central to SDP level delivery of malaria commodities with the Global Fund.
- Funded NMCP's quarterly Drug Management Task Force meetings to review data, address supply chain bottlenecks, and ensure commodity availability.
- Leveraged the U.S. President's Emergency Plan for AIDS Relief and other U.S. government programs to initiate development of the MOH's Digital Supply Chain strategy, which aims to support implementation of MOH's initiative of end-to-end visibility for supply chain data for all health elements, including malaria.
- Supported the national drug regulatory body, the Pharmacy and Medicines Regulatory Authority, to conduct post-market surveillance for malaria medicines in the public and private sector.

5.3. Plans and Justification with FY 2023 Funding

The FY 2023 funding tables contain a full list of health supply chain and pharmaceutical management systems strengthening that PMI proposes to support in Malawi with FY

2023 funding. Please visit www.pmi.gov/resources/malaria-operational-plans-mops for these FY 2023 funding tables.

With FY 2023 funding, PMI will continue to provide financial support and technical assistance to the NMCP to complete the following activities:

- National quantification of malaria commodities, including quarterly forecast reviews.
- Procurement, warehousing, and distribution of ITNs, SP, ACTs, mRDTs, and severe malaria medicines to SDPs.
- Technical assistance together with other U.S. government programs to the GOM to strengthen the MOH's capacity to manage warehousing and distribution for all health commodities, including those for malaria.
- Technical and financial support for district-led integrated supply chain supervision.
- Maintenance and implementation of interoperability initiatives of the national Open Logistics Management Information System.
- Coordination with the Global Fund to improve community level (i.e., village health clinics) commodity tracking of malaria commodities.
- Support to NMCP's quarterly Drug Management Task Force meetings to review data, address supply chain bottlenecks, and ensure commodity availability.
- Support to the MOH's Drug Theft Investigation Unit to conduct medicine audits, implement risk mitigation plans, investigate theft cases, and ensure accountability of malaria commodities.
- Support for NMCP with commodity accountability performance tracking and data quality assessments.
- Leveraging Global Fund, United Nations Children's Fund, and other U.S. government program funds to continue implementation of MOH-integrated end-to-end visibility for supply chain data through support for logistics system interoperability and commodity traceability (using the global standard GS1 and National Product Catalogue).

6. Social and Behavior Change

6.1. PMI Goal and Strategic Approach

PMI supports the NMCP in its effort to sustain and improve malaria awareness and knowledge, shift social norms, and increase the utilization of appropriate malaria interventions in Malawi to at least 80 percent by 2030. PMI supports these efforts at the national, district, and community levels. At the national level, PMI provides technical assistance and support for capacity strengthening activities and coordination. For

example, PMI supports the *Malungo Zii* (Malaria Free) slogan developed by the NMCP and its partners as a component of the *Moyo ndi Mpamba, Usamalireni* (Life is Precious, Take Care of It) central campaign platform that is at the core of the National Health Communication Strategy. In 2021, PMI supported the launch of the Zero Malaria Starts with Me campaign within the country's larger, more comprehensive SBC strategy, which clearly outlines a strategic process, key target behaviors, specified target populations, the use of formative research, and continuous monitoring of key behaviors and known determinants.

PMI is currently supporting ongoing efforts to revise the Malaria Communication Strategy in line with the revised National Health Communication Strategy 2021–2026. The revised Malaria Communication Strategy will feed into the next iteration of the MSP 2023–2030, which will be aligned to the Health Sector Strategic Plan III (2022–2030).

At the district level, PMI activities are focused on assisting districts to implement quarterly SBC working group meetings and develop communication materials and relevant guidelines to promote the uptake and maintenance of malaria prevention and treatment behaviors, including two prioritized behaviors: prompt care-seeking for children under five years of age and early ANC attendance. Through partnerships with local media organizations and community-based organizations, and in collaboration with CHWs, PMI supports the NMCP's efforts to expand mass media and community-level interpersonal communication activities aimed at increasing correct and consistent ITN use and care, prompt care-seeking for fever, use of mRDTs by providers and demand for mRDTs and IPTp by patients, early ANC attendance, and provider adherence to diagnostic results for treatment with ACTs.

6.2. Recent Progress (between April 2021 and April 2022)

During the last 12 months, PMI transitioned the implementation of SBC from a bilateral mechanism to a central mechanism. A prolonged transition period resulted in fewer SBC activities being conducted as the new mechanism started up.

SBC activities supported by PMI include those related to:

- **Print materials:** Disseminated 1,371 (371 posters and 1,000 stickers) copies of existing malaria-specific print SBC materials on correct and consistent use of nets.
- **Radio programs:** Re-broadcasted four existing radio spots on malaria prevention and treatment behaviors. Broadcasts totaled 455.7 minutes over the last 12 months on six community radio stations and reached an estimated 808,853 people across the country. The key messages in the radio spots were 1) prompt care-seeking within 24 hours of the onset of fever, 2) dangers

of self-medication without a parasitological test, and 3) importance of adherence to a full treatment regimen.

- **Social media engagement**: Partnered with local implementing partners, 20 popular local musicians, and social media influencers to scale up the reach of malaria prevention and treatment messages on Facebook in advance of World Malaria Day 2022. Through the *Moyo ndi Mpamba* WhatsApp and Facebook pages, PMI complemented family and maternal and child health funding to disseminate targeted, integrated messaging promoting key behaviors such as prompt care-seeking for children under five years of age, gender-sensitive approaches to facilitate male involvement in child care (including care-seeking), and correct and consistent net use every night year round for children under five years of age. The messages reached 2,399 people.
- **Community mobilization and engagement:** To support ongoing community mobilization and engagement on malaria prevention and treatment, the following activities were implemented:
    - Reached 320 people with malaria-specific messages on prevention and treatment in Salima district. These activities were implemented through community mobilizers including radio listeners clubs, community health action groups (CHAGs), community theater groups, village health committees, and community leaders.
        - CHAGs also implemented the Community Action Cycle, a process through which communities are mobilized to organize for action; explore development issues and set priorities; and plan, act, and evaluate successful programs. Through this approach, CHAGs mobilized communities for action, promoted positive health behaviors, and created demand for health services. Ten community action plans have been developed for Community Action Cycle implementation.
    - Oriented 150 CHAG members (64 males, 86 females) in Salima on how to implement the Community Action Cycle.
- **Capacity strengthening:** PMI continued to provide SBC capacity strengthening to the MOH Health Education Services (HES), NMCP, and districts to lead and coordinate SBC programs at the national and district levels. Key highlights in this area include:
    - Supported MOH to continue the roll-out of the national SBC monitoring and evaluation system that facilitates SBC data entry in DHIS2. To date, PMI, in collaboration with MOH, supported the Central Monitoring and Evaluation Division (CMED) to successfully revise the SBC

monitoring and evaluation reporting form which includes indicators on prompt care-seeking for childhood illnesses of malaria, pneumonia, and diarrhea, and these indicators have since been configured in the national DHIS2. PMI supported the training of CCM HSAs in collection and routine reporting of malaria care-seeking data in the national DHIS2. The trainings reached 6,103 CCM HSAs in hard-to-reach areas, senior HSAs, health facility officer-in-charges as mentors, and data entry clerks. The trainings covered 87 percent of target HSAs currently working in hard-to-reach areas. PMI also supported supportive supervision visits in selected districts, district review meetings, and production and dissemination of reporting forms to all districts and health facilities across the country.

    - Supported the MOH to roll out national SBC quality assurance and quality improvement (QA/QI) standards to improve the quality of SBC messages, minimize duplication of efforts, and enhance production of culturally sensitive messages. Over the last 12 months, an MOH–HES-led QA/QI taskforce held weekly meetings, disseminated QA/QI standards to all implementing partners, and advocated for their continued use in the design and implementation of SBC activities by all implementing partners and districts.

- **Malaria Behavior Survey (MBS) Implementation:** PMI supported survey implementation and the MBS data synthesis and dissemination to SBC partners and stakeholders, and continued to develop the capacity of the NMCP and HES to ensure that malaria SBC activities are informed by behavioral theory, are evidence-based, and utilize findings and recommendations from the 2021 MBS for improved targeted and tailored implementation. Data were also used to inform SBC activities implemented in the 2021–2022 mass ITN campaign to promote net use and proper care.
- Despite the progress to date, the following technical areas present significant challenges for which greater SBC investment or attention is needed to improve the uptake and/or maintenance of behaviors.

    - **Net misuse:** Anecdotal evidence suggests there are high levels of ITN misuse, particularly for fishing. Because this issue is cross-cutting, several small studies on net misuse have been conducted recently. An environmental assessment on the impact of fishing with ITNs on Lake Malawi (and other bodies of water) will be conducted in the coming months. Upon completion of the assessment, more evidence will be available and will generate specific recommendations to address the issue, including SBC strategies to address net misuse.

- **MIP:** Although Malawi has nearly reached the national target coverage for IPTp3+ (currently at 56 percent; target is 60 percent for 2022), NMCP intends to increase the target in the MSP 2023–2030 to 85 percent to be in line with global best practices. Since the adoption of the first MIP guidelines, Malawi has made significant progress in increasing IPTp3+. However, additional SBC investments are needed to further sensitize pregnant women, community gatekeepers, faith-based leaders, and ANC providers to support continued adoption and maintenance of early and repeat ANC visits and improved IPTp uptake.
- **Case management:** Although Malawi has a salaried cadre of HSAs who staff village health clinics in hard-to-reach areas, care-seeking within 24 hours of the onset of fever has stagnated at around 31 percent. To improve uptake of prompt care-seeking, PMI supported the MOH to configure community-based care-seeking indicators for common childhood illnesses (malaria, pneumonia, and diarrhea) to ensure availability of routine data to the granularity of the health facility level. With FY 2023 funding, enhanced SBC investment will be needed to support analysis and utilization of data for the design of SBC interventions to improve uptake and maintenance of prompt care-seeking in communities with low rates of prompt care-seeking.

6.3. Plans and Justification with FY 2023 Funding

The FY 2023 funding tables contain a full list of SBC activities that PMI proposes to support in Malawi with FY 2023 funding. Please visit www.pmi.gov/resources/malaria-operational-plans-mops for these FY 2023 funding tables.

With FY 2023 funding, PMI will support and facilitate the following activities:

- National-level coordination and capacity building through the Malaria SBC TWG.
- District-level TWG meetings.
- Strengthening of community-based SBC activities through continued implementation of interpersonal communication activities, including CHAGs, care groups, and household visits, in approximately five districts (TBD) to promote the uptake of prioritized behaviors.
- Mass media through the broadcasting of *Moyo ndi Mpamba* radio products to promote prompt care-seeking within 24 hours from the onset of fever, early ANC attendance, uptake of IPTp, and correct and consistent use of ITNs.

- Strengthening the SBC monitoring and evaluation system by improving DHIS2 data capture, reporting, analysis, and decision-making for community-level care-seeking behaviors.
- NMCP finalization and roll-out of the Malaria Communication Strategy 2023–2030 and continued roll-out of the Zero Malaria Starts with Me advocacy campaign in coordination with evidence-based SBC implementation.
- NMCP implementation of SBC capacity strengthening activities based on the recommendations from the endline SBC capacity assessment for MOH–HES.
- Technical assistance to NMCP and partners on SBC implementation activities for ITN distributions and IRS.

6.4. Priorities

While PMI supports SBC activities that promote the uptake and maintenance of all key malaria interventions, FY 2023 funds will prioritize two behaviors: see Table 4.

Table 4. Priority Behaviors to Address

Behavior	Target Population	Geographic Focus	Programming to Address Behavior
Prompt care-seeking for fever for children under five years of age	Caregivers of children under five years of age	Salima, Mchinji, Lilongwe, Kasungu, Nkhata Bay	• Conduct community- and household-level interpersonal communication and community-level engagements through care groups and community health action groups. • Promote improved quality of care at health facilities and village clinics through community health action groups and community scorecards. • Provide technical assistance to national and community media stations for production and airing of radio shows and spots to promote prompt care-seeking.
Early and regular ANC attendance	Pregnant women, heads of households, community leaders	Salima, Mchinji, Lilongwe, Kasungu, Nkhata Bay	• Develop multi-pronged SBC activities that reinforce the benefits of early and frequent ANC and address harmful cultural and traditional beliefs related to ANC/IPTp uptake. • Promote community leader engagement with care groups and integrate ANC with existing community-based services. • Support capacity strengthening for respectful maternity care policies, attitudes, and interpersonal communication skills of service providers.

7. Surveillance, Monitoring, and Evaluation

7.1. PMI Goal and Strategic Approach

The SM&E objectives of NMCP and CMED form the basis for the implementation of the PMI SM&E activities for malaria control in Malawi. In support of these objectives, PMI will continue to support strengthening the Health Management Information System (HMIS) at all levels, focusing on improving the quality and NMCP's use of malaria data. PMI and the NMCP have prioritized interventions such as strengthened governance and enabling at all levels of the HMIS, increased availability of quality health data, and increased demand and use of health data and information.

7.2. Recent Progress (between April 2021 and April 2022)

PMI supported and facilitated the following activities at the central level:

- Two malaria monitoring and evaluation TWG meetings and SM&E thematic meetings.
- Four data review meetings at the national and zonal levels. CMED and NMCP coordination with the Global Fund Project Implementation Unit and service providers to expedite the printing and distribution of malaria-related registers and reporting tools.
- Technical assistance to the development of the digital health policy and planning, including DHIS2 data management support in terms of equipment and technical and financial resources.
- Technical assistance in the design, implementation, and finalization of the 2020 Data Quality Assessment, which was funded by the Global Fund.
- Technical assistance to develop the standard operating procedures on security and data access for all data systems in Malawi.
- Technical support to strengthen the implementation of DHIS2 in central hospitals.
- Technical support to develop NMCP's Integrated Supportive Supervision and Mentorship checklist and feedback workshop.
- Technical support to NMCP during the Global Fund-funded malaria data review meetings that were conducted in the south and central regions.

PMI supported the following activities at the Admin II (district) and facility levels:

- Data quality training for 32 NMCP and HMIS Officers in 16 districts that had experienced key staff changes that disrupted malaria data quality processes.
- Technical inputs to the malaria district reviews in Mchinji and Salima districts.

- Supportive supervision to DHIS2 expansion sites in nine districts: Mulanje, Zomba, Mzimba North, Nkhotakota, Blantyre, Lilongwe, Salima, Kasungu, and Mangochi.
- CMED data mentorship and program feedback meetings with extended District Health Management Teams in all 29 districts in Malawi. HMIS Officers, previously trained with PMI support, led the feedback meetings, demonstrating the strengthened capacity of MOH staff.
- NMCP organization of and co-facilitation of data-driven meetings for facility in-charges and data clerks in Nkhata Bay and Kasungu districts. A total of 220 health workers were reached.
- Data review and data mentorship meetings in 30 health facilities, reaching 250 and 275 health workers, respectively.
- District-level routine HMIS data collection by increasing the number of users entering data into DHIS2 through provision of data bundles, targeting supportive supervision to facilities that were struggling to put together reports due to lack of designated data clerks, and data verification exercises.

7.3. Plans and Justification with FY 2023 Funding

The FY 2023 funding tables contain a full list of SM&E activities that PMI proposes to support in Malawi with FY 2023 funding. Please visit www.pmi.gov/resources/malaria-operational-plans-mops for these FY 2023 funding tables.

PMI will continue to support a broad array of malaria SM&E activities focusing on improving the country's M&E capacity, data quality assurance, and using data for decision-making.

With FY 2023 funding, PMI will continue to support strengthening of routine HMIS, with an emphasis on improving the quality, timeliness, and use of malaria-specific surveillance data, as well as assessments of commodity accountability at health facilities in the following districts: Lilongwe, Mchinji, Nkhotakota, Kasungu, Mulanje, Nkhata Bay, Mangochi, and Dowa.

PMI will provide targeted programmatic and technical support to the NMCP and CMED to strengthen governance and the enabling environment, increase availability and interoperability of quality health data and information systems, and improve data analysis and use with respect to GOM malaria abatement efforts.

Figure 3. Map of Districts with PMI SM&E Support in Malawi

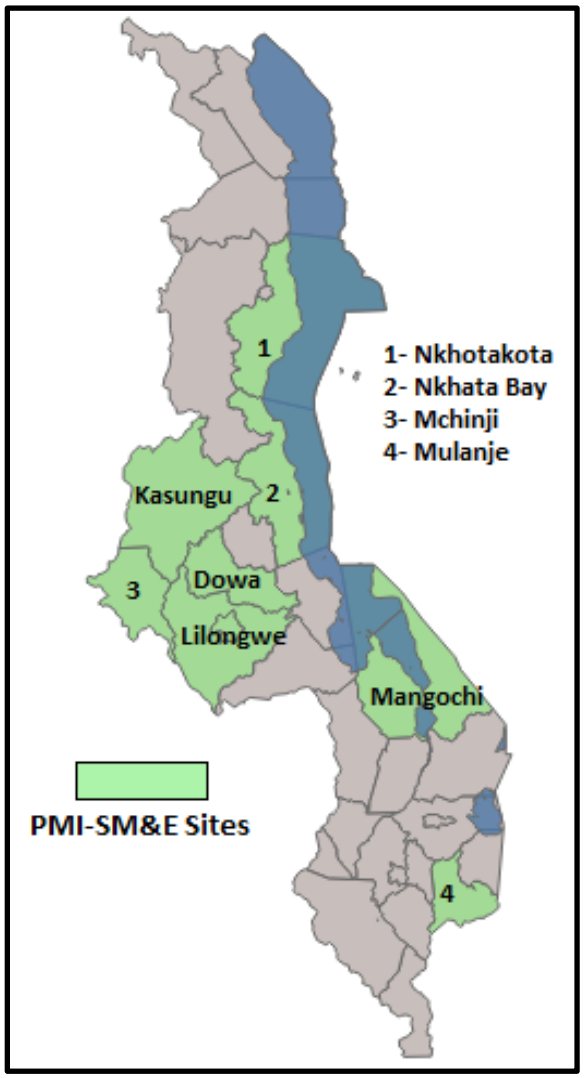


Table 5. Available Malaria Surveillance Sources

Source	Data Collection Activity	2020	2021	2022	2023	2024	2025
Household Surveys	Demographic Health Survey			P^			
Household Surveys	Malaria Indicator Survey		X*				
Household Surveys	Multiple Indicator Cluster Survey	X*					
Household Surveys	Expanded Program on Immunization Survey						
Health Facility Surveys	Service Provision Assessment						

Source	Data Collection Activity	2020	2021	2022	2023	2024	2025
Health Facility Surveys	Service Availability Readiness Assessment Survey						
Health Facility Surveys	Other Health Facility Survey						
Malaria Surveillance and Routine System Support	Therapeutic Efficacy Studies	X*			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,X*	P, P*	P, P*	P, P*	P, P*
Malaria Surveillance and Routine System Support	Support to Integrated Disease Surveillance and Response						
Malaria Surveillance and Routine System Support	Electronic Logistic Management Information System						
Malaria Surveillance and Routine System Support	Malaria Rapid Reporting System						
Other	End-user verification						
Other	School-based Malaria Survey						
Other	Knowledge, Attitudes, and Practices Survey, Malaria Behavior Survey		X				
Other	Malaria Impact Evaluation						
Other	Entomologic Monitoring Surveys	X, X*	X, X*	P, P*	P, P*	P	P

*Non-PMI funded activities

X denotes completed activities, P denotes planned activities, and P^ denotes likely to be postponed.

8. Operational Research and Program Evaluation

8.1. PMI Goal and Strategic Approach

The operational research objective in Malawi's National Malaria Strategic Plan (2017–2022) is to conduct priority studies as guided by the National Malaria Research Agenda (2017–2021), which lays out priority research questions in the following thematic areas: Case Management, Malaria in Pregnancy, and Vector Control.

The NMCP places a high value on evidence generated from research within and outside Malawi by established research institutions. The NMCP uses evidence maps to identify, organize, and summarize scientific evidence, and to prioritize research priorities as

outlined in the National Malaria Research Agenda. The NMCP uses such evidence to guide the implementation and monitoring and evaluation of MSP activities.

Additionally, the NMCP prioritizes the role that research institutions play in implementation and evaluation of the MSP to include:

- Participation in appropriate TWGs
- Provision of technical assistance in the monitoring of drug efficacy and insecticide resistance
- Provision of technical assistance in the conduct of the MIS and other surveys
- Provision of technical support in essential studies on malaria epidemiology, vector control, prevention of malaria in pregnancy, case management, surveillance, and behavior change

PMI works together with the NMCP, implementing partners, and other donors and research institutions to support relevant operational research/program evaluation that is designed to provide data to inform MOH and NMCP programs and policy. PMI will support the NMCP to update the research priorities for malaria when the National Health Research Agenda is updated.

8.2. Recent Progress (between April 2021 and April 2022)

The Malawi Community Case Management Study, a randomized controlled trial assessing the impact, accessibility, and feasibility of extending CCM to all ages vs. standard practice (i.e., only children under five years of age) in Malawi, launched in February 2022. The baseline survey was completed in early April 2022. HSA training in extending CCM was ongoing as of April 2022, and the study will run for 12 months before the endline survey. The main challenges so far have been starting the baseline during heavy rains in rural areas and bringing a local partner on board for their first time working with USAID.

Table 6. PMI-funded Operational Research/Program Evaluation Studies in Malawi

Recently Completed OR/PE Studies	Status of Dissemination	Start date	End date
NA			
Ongoing or Planned OR/PE Studies	**Status**	**Start date**	**End date**
Malawi Community Case Management Study (extending CCM to all ages)	Ongoing—field data collection	February 2022	February 2023

Table 7. Non-PMI-funded Operational Research/Program Evaluation Studies in Malawi

Source of Funding	Implementing institution	Research Question/Topic	Current status/ timeline
Gavi, the Vaccine Alliance; the Global Fund; and Unitaid.	Malawi College of Medicine, Malaria Alert Center; Malawi Liverpool Wellcome Trust	Malaria Vaccine Implementation Program	Data collection ongoing
U.S. National Institute of Allergy and Infectious Diseases	Michigan State University, University of Malawi College of Medicine/Malaria Alert Centre, Boston University School of Public Health, University of Maryland School of Medicine, University of Michigan	International Centers of Excellence for Malaria Research: Identify why standard malaria control and prevention efforts in Malawi have not had significant impacts on malaria disease incidence and parasite prevalence, including studies on barriers to bed net use, effect of insecticide resistance and impact of PBO nets on bed net efficacy, impact of the RTS,S malaria vaccine on infection prevalence and transmission, non-random contact between human hosts and *Anopheles* vectors (especially school age children), human and parasite determinants of developing asymptomatic infection vs. life-threatening malaria illness	Implementation ongoing
Essential Entomological Indicators for assessment of Long-Lasting Insecticidal Nets (ESSENTIALS)	Liverpool School of Tropical Medicine, University of Malawi College of Medicine/Malaria Alert Centre	The project aims to collect essential entomological indicators to monitor the impact of new nets (IG2 and Royal Guard). The goal is to develop robust entomological indicators that are predictive of the epidemiological impact of new vector control tools. *Anopheles* population dynamics, biting patterns, experimental hut trials, insecticide resistance, and behavioral assays/net probing behaviors are monitored in Chikwawa where IG2 was distributed.	Implementation ongoing

8.3. Plans and Justification with FY 2023 Funding

No operational research/program evaluation activities are proposed with FY 2023 funding.

9. Health System Strengthening

9.1. PMI Goal and Strategic Approach

PMI supports the NMCP in their objective to improve program management and performance through each of the NMCP's focus areas under that objective: human resource capacity, program planning and reviews, partnerships and coordination, resource mobilization, cross-border initiatives, and malaria epidemic preparedness and response. PMI support for the aforementioned NMCP focus areas is reflected in all technical areas listed above (e.g., SM&E, Case Management, etc.). Additionally, PMI continues to provide support to the U.S. Peace Corps as part of malaria control efforts led by the NMCP. As needed, PMI works with technical offices across USAID/Malawi to identify areas for collaboration and integration such as in the governance and environment sectors.

9.2. Recent Progress (between April 2021 and April 2022)

- A scoping exercise was undertaken to determine the focus of an environmental assessment that will look at the impacts of fishing with ITNs in Lake Malawi and other bodies of water. PMI has proposed to support the environmental assessment to be conducted in 2022 with MOP FY 2020 funding and MOP FY 2021 reprogramming funding.
- Due to the COVID-19 pandemic, Peace Corps Volunteers in Malawi returned to the United States, and no PMI-supported activities took place during their absence.
- The previously supported local governance project ended during the reporting period.

9.3. Plans and Justification with FY 2023 Funding

The FY 2023 funding tables contain a full list of capacity strengthening activities that PMI proposes to support in Malawi with FY 2023 funding. Please visit www.pmi.gov/resources/malaria-operational-plans-mops for these FY 2023 funding tables.

PMI will support and facilitate the following activities:

- With the return of volunteers to Malawi, support Peace Corps Volunteers to assist with malaria activities throughout the country.

- Support district-level government to develop and/or update by-laws related to the illegal use of ITNs for fishing and to develop radio spots and messaging around ITN misuse.
- Support activities to address the outcomes and recommendations from the environmental assessment on the impacts of fishing with ITNs in Lake Malawi and other bodies of water.
- Provide technical assistance in writing and revising key documents, such as the NMCP's Malaria Strategic Plan and related technical strategies (e.g., SBC, SM&E) and the application for the Global Fund's New Funding Mechanism Grant 4.

10. Staffing and Administration

A minimum of three health professionals oversee PMI in Malawi. The single interagency team led by the USAID Mission Director or their designee consists of a Resident Advisor representing USAID, one Resident Advisor representing the U.S. Centers for Disease Control and Prevention, and one or more 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	2022	2023	2024
Total country population	19,691,496	20,262,550	20,850,164
Total population at risk for malaria	19,691,496	20,262,550	20,850,164
PMI-targeted at-risk population	19,691,496	20,262,550	20,850,164
Population targeted for ITNs	19,691,496	20,262,550	20,850,164
Continuous Distribution Needs			
Channel 1: ANC	708,894	729,452	750,606
Channel 1: ANC Type of ITN	PBO	PBO	PBO
Channel 2: EPI	708,894	729,452	750,606
Channel 2: EPI Type of ITN	PBO	PBO	PBO
Channel 3: School			
Channel 3: School Type of ITN			
Channel 4: Community			
Channel 4: Community Type of ITN			
Channel 5:			
Channel 5: Type of ITN			
Estimated Total Need for Continuous Channels	1,417,788	1,458,904	1,501,212
Mass Campaign Distribution Needs			
Mass distribution campaigns			11,000,000
Mass distribution ITN type			Dual AI and PBO
Estimated Total Need for Campaigns	0	0	11,000,000
Total ITN Need: Continuous and Campaign	**1,417,788**	**1,458,904**	**12,501,212**
Partner Contributions			
ITNs from Government	0	0	0
Type of ITNs from Government			
ITNs from Global Fund	0	0	0
Type of ITNs from Global Fund			
ITNs from other donors	0	0	0
Type of ITNs from other donors			
ITNs planned with PMI funding	990,000	1,200,000	1,200,000
Type of ITNs with PMI funding	PBO	PBO	PBO
Total ITNs Contribution Per Calendar Year	**990,000**	**1,200,000**	**1,200,000**
Stock Balance (tests)			
ITNs carried over from previous year (Beginning Balance)	874,117	446,329	187,426
- Product Need	1,417,788	1,458,904	12,501,212
+ Total Contributions (received/expected)	990,000	1,200,000	1,200,000
Ending Balance	**446,329**	**187,426**	**(11,113,786)**
Desired End of Year Stock (months of stock)	**3**	**3**	**3**
Desired End of Year Stock (quantities)	354,447	364,726	3,125,303
Total ITN Surplus (Gap)	**91,882**	**(177,300)**	**(14,239,089)**

Table A-2. RDT Gap Analysis Table

Calendar Year	2022	2023	2024
Total country population	19,691,496	20,262,550	20,850,164
Population at risk for malaria	19,691,496	20,262,550	20,850,164
PMI-targeted at-risk population	19,691,496	20,262,550	20,850,164
RDT Needs			
Total number of projected suspected malaria cases	14,291,699	15,523,168	16,814,041
Percent of suspected malaria cases tested with an RDT	100%	100%	100%
RDT Needs (tests)	**14,291,699**	**15,523,168**	**16,814,041**
Needs Estimated based on a Combination of HMIS and Consumption Data			
Partner Contributions (tests)			
RDTs from Government	0	0	0
RDTs from Global Fund	2,963,050	0	0
RDTs from other donors	0	0	0
RDTs planned with PMI funding	6,000,000	12,200,000	7,500,000
Total RDT Contributions per Calendar Year	**8,963,050**	**12,200,000**	**7,500,000**
Stock Balance (tests)			
Beginning Balance	12,333,820	7,005,171	3,682,003
- Product Need	14,291,699	15,523,168	16,814,041
+ Total Contributions (received/expected)	8,963,050	12,200,000	7,500,000
Ending Balance	**7,005,171**	**3,682,003**	**(5,632,038)**
Desired End of Year Stock (months of stock)	6	6	6
Desired End of Year Stock (quantities)	7,145,850	7,761,584	8,407,021
Total Surplus (Gap)	**(140,679)**	**(4,079,581)**	**(14,039,059)**

Table A-3. ACT Gap Analysis Table

Calendar Year	2022	2023	2024
Total country population	19,691,496	20,262,550	20,850,164
Population at risk for malaria	19,691,496	20,262,550	20,850,164
PMI-targeted at-risk population	19,691,496	20,262,550	20,850,164
ACT Needs			
Total projected number of malaria cases	8,895,196	9,692,000	10,980,742
Total ACT Needs (treatments)	**8,895,196**	**9,692,000**	**10,980,742**
Needs Estimated based on a Combination of HMIS and Consumption Data			
Partner Contributions (treatments)			
ACTs from Government	0	0	0
ACTs from Global Fund	3,544,500	2,502,330	0
ACTs from other donors	0	0	0
ACTs planned with PMI funding	4,000,020	4,000,020	3,700,000
Total ACTs Contributions per Calendar Year	**7,544,520**	**6,502,350**	**3,700,000**
Stock Balance (treatments)			
Beginning Balance	12,964,941	11,614,265	8,424,615
- Product Need	8,895,196	9,692,000	10,980,742
+ Total Contributions (received/expected)	7,544,520	6,502,350	3,700,000
Ending Balance	**11,614,265**	**8,424,615**	**1,143,872**
Desired End of Year Stock (months of stock)	6	6	6
Desired End of Year Stock (quantities)	4,447,598	4,846,000	5,490,371
Total Surplus (Gap)	**7,166,667**	**3,578,615**	**(4,346,499)**

Table A-4. Inj. Artesunate Gap Analysis Table

Calendar Year	2022	2023	2024
Injectable Artesunate Needs			
Projected number of severe cases	97,847	106,612	109,807
Projected number of severe cases among children	45,597	49,681	51,170
Average number of vials required for severe cases among children	9	9	9
Projected number of severe cases among adults	52,250	56,931	58,637
Average number of vials required for severe cases among adults	12	12	12
Total Injectable Artesunate Needs (vials)	**1,037,376**	**1,130,300**	**1,164,178**
Needs Estimated based on a Combination of HMIS and Consumption Data			
Partner Contributions (vials)			
Injectable artesunate from Government	0	0	0
Injectable artesunate from Global Fund	1,753,229	548,435	800,000
Injectable artesunate from other donors	0	0	0
Injectable artesunate planned with PMI funding	0	0	0
Total Injectable Artesunate Contributions per Calendar Year	**1,753,229**	**548,435**	**800,000**
Stock Balance (vials)			
Beginning Balance	1,167,704	1,883,557	1,301,692
- Product Need	1,037,376	1,130,300	1,164,178
+ Total Contributions (received/expected)	1,753,229	548,435	800,000
Ending Balance	**1,883,557**	**1,301,692**	**937,514**
Desired End of Year Stock (months of stock)	6	6	6
Desired End of Year Stock (quantities)	518,688	565,150	582,089
Total Surplus (Gap)	**1,364,870**	**736,542**	**355,425**

Table A-5. RAS Gap Analysis Table

Calendar Year	2022	2023	2024
Artesunate Suppository Needs			
Number of severe cases expected to require pre-referral dose (or expected to require pre-referral dose based on number of providers for the service)	19,268	19,268	19,268
Total Artesunate Suppository Needs (suppositories)	**19,268**	**19,268**	**19,268**
Needs Estimated based on # of providers offering pre-referral services			
Partner Contributions (suppositories)			
Artesunate suppositories from Government	0	0	0
Artesunate suppositories from Global Fund	0	0	0
Artesunate suppositories from other donors	0	0	0
Artesunate suppositories planned with PMI funding	25,000	24,000	14,000
Total Artesunate Suppositories Available	**25,000**	**24,000**	**14,000**
Stock Balance (suppositories)			
Beginning Balance	16,454	22,186	26,918
- Product Need	19,268	19,268	19,268
+ Total Contributions (received/expected)	25,000	24,000	14,000
Ending Balance	**22,186**	**26,918**	**21,650**
Desired End of Year Stock (months of stock)	6	6	6
Desired End of Year Stock (quantities)	9,634	9,634	9,634
Total Surplus (Gap)	**12,552**	**17,284**	**12,016**

Table A-6. SP Gap Analysis Table

Calendar Year	2022	2023	2024
Total Country Population	19,691,496	20,262,550	20,850,164
Total Population at Risk for Malaria	19,691,496	20,262,550	20,850,164
PMI Targeted at Risk Population	19,691,496	20,262,550	20,850,164
SP Needs			
Total Number of Pregnant Women	921,562	911,815	938,257
Percent of pregnant women expected to receive IPTp1	100%	100%	100%
Percent of pregnant women expected to receive IPTp2	79%	79%	80%
Percent of pregnant women expected to receive IPTp3	60%	65%	65%
Percent of pregnant women expected to receive IPTp4	30%	35%	40%
Total SP Needs (doses)	**2,479,739**	**2,544,693**	**2,674,034**
Needs Estimated based on HMIS Data			
Partner Contributions (doses)			
SP from Government	0	0	0
SP from Global Fund	0	0	0
SP from other donors	0	0	0
SP planned with PMI funding	1,100,000	2,400,000	1,100,000
Total SP Contributions per Calendar Year	**1,100,000**	**2,400,000**	**1,100,000**
Stock Balance (doses)			
Beginning balance	2,150,838	771,099	626,406
- Product Need	2,479,739	2,544,693	2,674,034
+ Total Contributions (Received/expected)	1,100,000	2,400,000	1,100,000
Ending Balance	**771,099**	**626,406**	**(947,627)**
Desired End of Year Stock (months of stock)	6	6	6
Desired End of Year Stock (quantities)	1,239,870	1,272,346	1,337,017
Total Surplus (Gap)	**(468,771)**	**(645,940)**	**(2,284,644)**