U.S. PRESIDENT'S MALARIA INITIATIVE

Burma

Malaria Operational Plan FY 2023

This FY 2023 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 2023 appropriation from the 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
API	Annual Parasite Incidence
ARPA	American Rescue Plan Act
CDC	Centers for Disease Control and Prevention
CIFIR	Case Investigation, Foci Investigation and Response
COVID-19	Coronavirus disease
CQ	Chloroquine
C19RM	COVID-19 Response Mechanism
CY	Calendar year
DFDA	Department of Food and Drug Administration
EPA	U.S. Environmental Protection Agency
FY	Fiscal year
Global Fund	Global Fund to Fight AIDS, Tuberculosis and Malaria
ICMVs	Integrated Community Malaria Volunteers
IDP	Internally Displaced Population
ISO	International Organization for Standardization
ITN	Insecticide-Treated mosquito Net
LLIHNs	Long-Lasting Insecticide Treated Hammock Nets
MCBRS	Malaria Case Based Reporting and Surveillance
MIP	Malaria in Pregnancy
MoH	Ministry of Health
MOP	Malaria Operational Plan
NMCP	National Malaria Control Program
Pf+m	*Plasmodium falciparum*+mixed infection
PMI	U.S. President's Malaria Initiative
PQ	Primaquine
Pv	Plasmodium vivax
RAI3E	Regional Artemisinin-resistance Initiative 3 Elimination
RDT	Rapid Diagnostic Test
SBC	Social and behavior change
UNHCR	United Nations High Commissioner for Refugees
UNOPS	United Nations Office for Project Services
USAID	United States Agency for International Development
USG	United States Government
WHO	World Health Organization

The U.S. President's Malaria Initiative (PMI)—led by the U.S. Agency for International Development (USAID) and implemented together with the U.S. Centers for Disease Control and Prevention (CDC)—delivers cost-effective, life-saving malaria interventions alongside catalytic technical and operational assistance to support Burma to end malaria. PMI has been a proud partner of Burma since 2011, helping to decrease malaria morbidity and mortality by 85 and 98 percent, respectively, from 2012 to 2021 through investments totaling almost $93.5 million.

On February 1, 2021, Burma's military overthrew the elected government in a coup d'état. The coup devastated key sectors in Burma and hampered health service delivery, including malaria prevention, control, and elimination activities. With the political crisis still ongoing, the proposed PMI fiscal year (FY) 2023 planning budget for Burma is $9 million, with a focus on maintaining the malaria gains and ultimately eliminating malaria. This Malaria Operational Plan (MOP) summary outlines planned PMI activities in Burma for FY 2023. See accompanying **FY 2023 Country Profile**, located on PMI's country team landing page, and **FY 2023 Budget Tables** (Tables 1 and 2) for activities and budget amounts, available on pmi.gov. Developed in consultation with key malaria stakeholders, proposed activities reflect national and PMI strategies, draw on best-available data, and align with the Burmese context and health system. Proposed PMI investments support and build on those made by the National Malaria Control Program (NMCP) as well as other donors and partners. See the **Gap Analysis Tables** in the annex for information on commodities (ITNs, RDTs, ACTs, CQ and PQ).

Since the FY 2022 MOP was developed, the following key updated information/data, policy and strategic updates, challenges, contextual factors, and changes to the MOP have been made:

Updated Information/Data - Current Malaria Situation

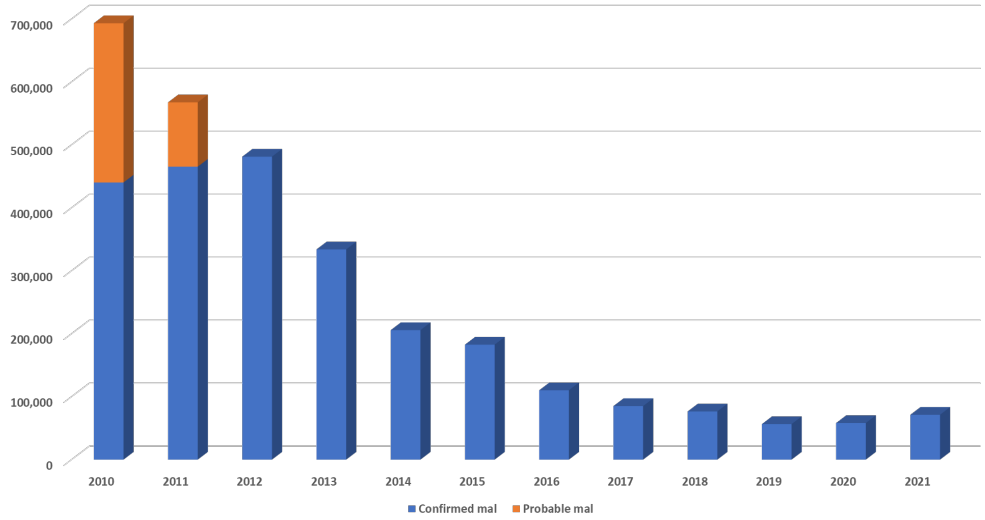
Significant progress was made in reducing the malaria burden in Burma from 2012 to 2020 (see Figures 1 and 2) and several areas of the country are progressing toward elimination (Figures 3 and 4). The National Malaria Control Program (NMCP) reported 71,180 malaria cases (56,576 *Plasmodium vivax*, 14,132 *P. falciparum* and 472 mixed infections) and 8 malaria deaths in 2021[1]. This marks a decline of 85 percent in cases and 98 percent in deaths from the 481,204 confirmed cases and 403 deaths registered in 2012. However, reported cases increased by 3% from 2019 to 2020, and by 22% percent from 2020 (58,132) to 2021 (71,180)[2]. This increase in reported cases was

[1] WHO: Mekong Malaria Elimination Programme Epidemiology Summary Volume 26, February 2022. Data on imported cases is currently not available

[2] Note this figure may be higher given challenges with reporting and distribution in the health system

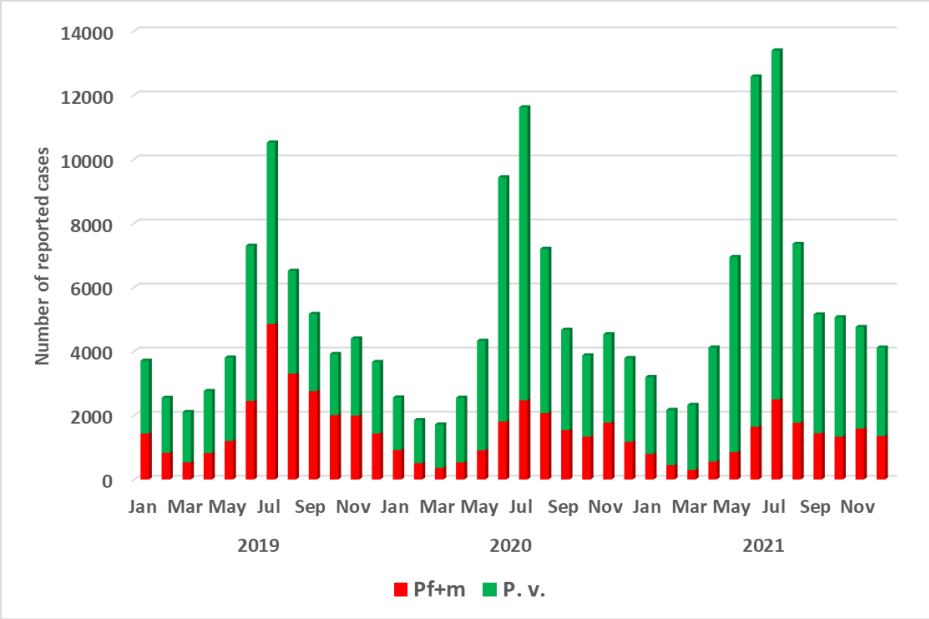
entirely due to an increase in *P. vivax* infections (+30% in 2020 and + 32% in 2021) as *P. falciparum* plus mixed reported cases declined by 35% in 2020 (-8,208) and by 5% in 2021 (-811). The case increase is multifactorial and includes COVID-19 and coup-related disruptions of malaria prevention and case management services, lack of full implementation of and/or adherence to *P. vivax* radical cure and increase in displaced populations due to conflict into areas of malaria transmission.

Figure 1. Confirmed and probable malaria cases in Burma from 2010 to 2021.



Source: Burma NMCP annual review meeting data, December 2021 and WHO: Mekong Malaria Elimination Programme Epidemiology Summary Volume 26, February 2022.

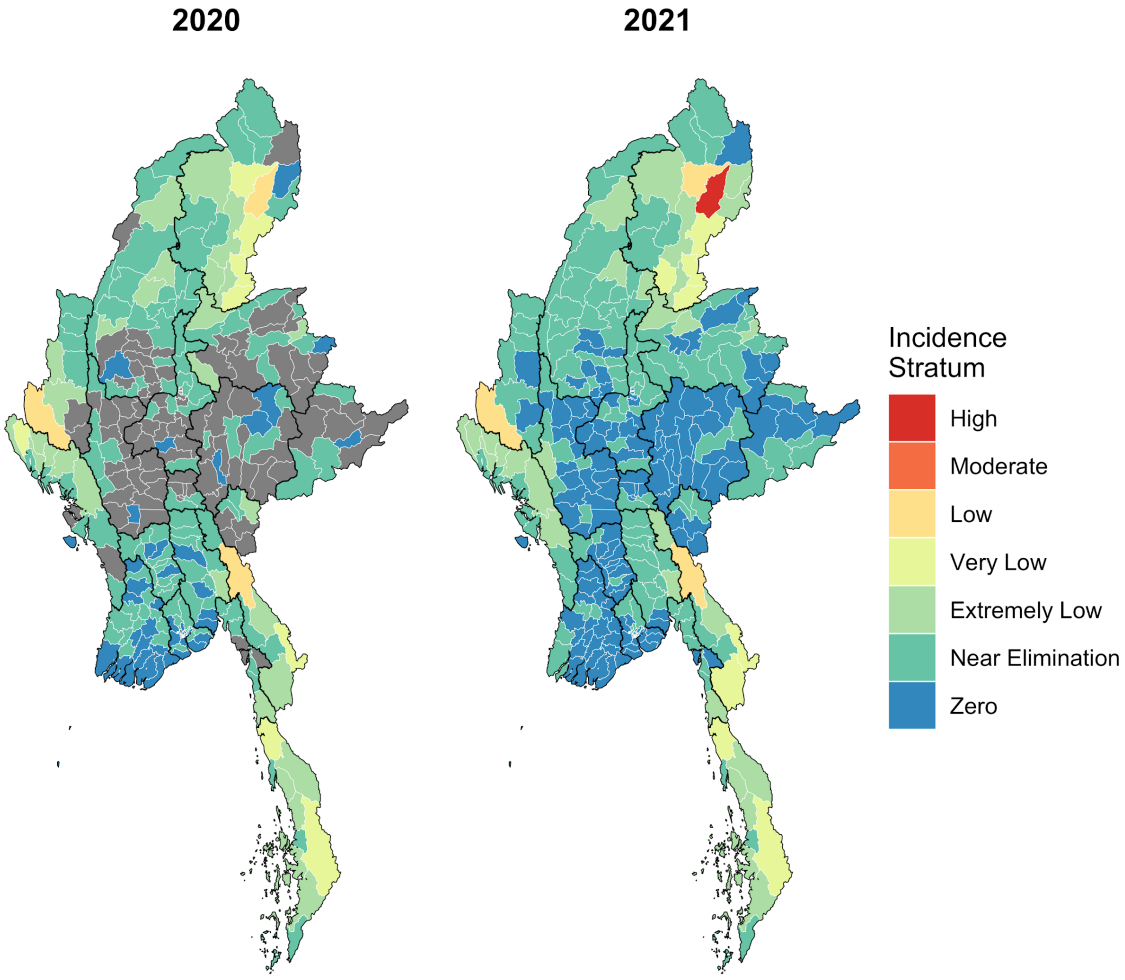
Figure 2. Reported malaria cases in Burma by parasite species from 2019-2021



Source: Based on WHO compiled monthly data reports (As of Feb 2022).
Abbreviations: Pf+m- *Plasmodium falciparum* + mixed; P.v.- *P. vivax*

Using standardized transmission intensity definitions recommended in the PMI guidance, the following updated 2020 and 2021 incidence maps (Figure 3) were generated which correspond to World Health Organization (WHO) definitions for high, moderate, and low transmission, but use a finer breakdown for very low transmission.

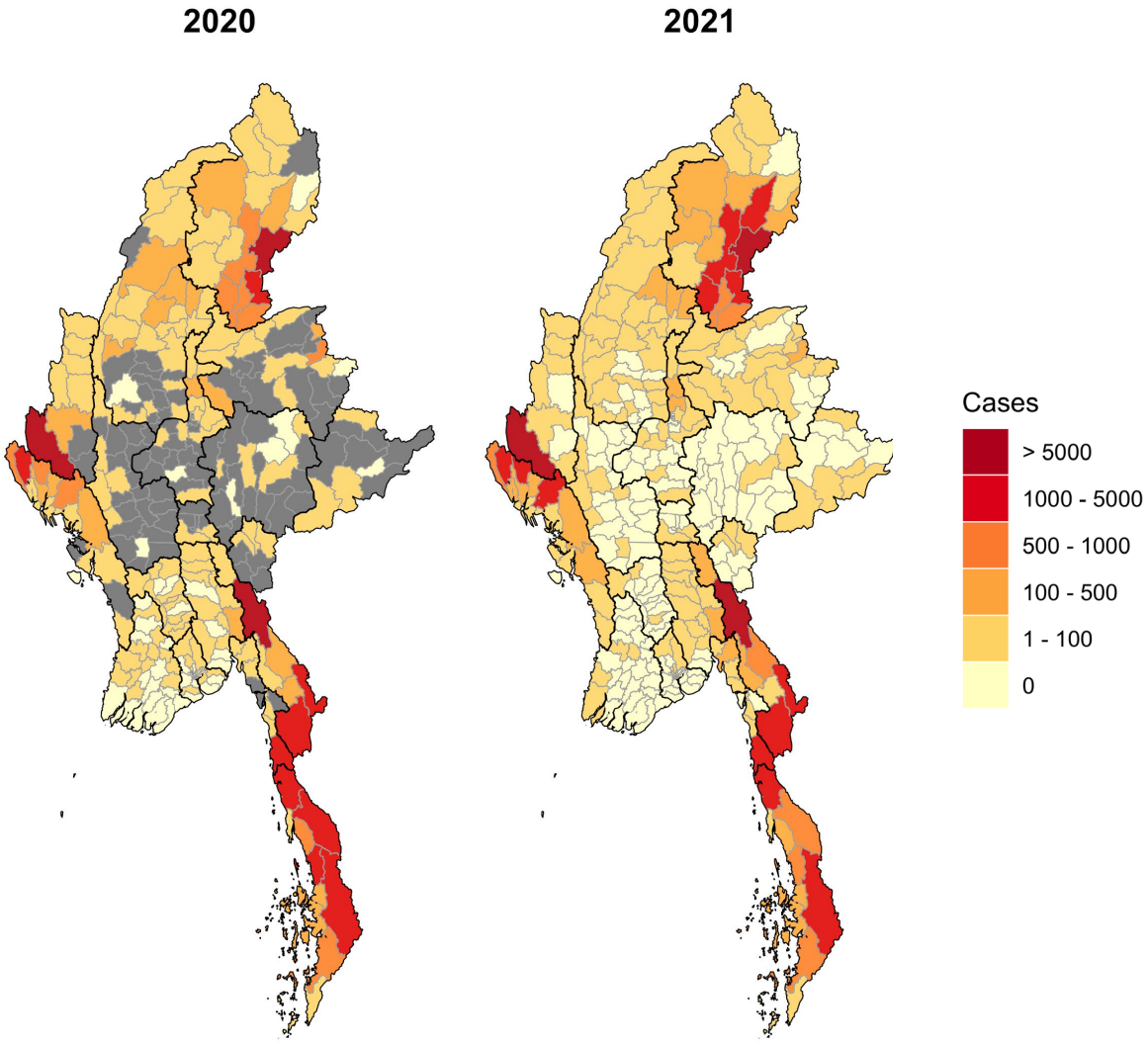
Figure 3. Township-level malaria risk stratification map (based on API*) for Burma (2020 and 2021



*API: Annual Parasite Incidence- High > 450; Moderate 250 - 450; Low > 100 - 250; Very Low > 10 and < 100; Extremely Low > 1 and < 10; Near Elimination > 0 and < 1; Zero; Source: Based on WHO compiled township level reports (As of Feb 2022). Gray areas indicate townships without reported data.

In areas where case numbers are extremely low, the use of absolute number of cases by township can be much more useful than the Annual Parasite Incidence (API). The following maps (Figure 4) for 2020 and 2021 show the number of reported cases by township.

Figure 4. Township-level malaria risk stratification map* (based on reported cases) for Burma (2020 and 2021)



*Gray areas indicate townships without reported data.
Source: Based on WHO compiled township level reports (As of Feb 2022).

Challenges and Contextual Factors

This section briefly describes specific issues that influence PMI's programming in Burma.

Post-Coup context: Since Burma's military overthrew the elected government in a coup d'état on February 1, 2021, PMI has planned for alternative means of malaria programming, relying on implementing partners to reach beneficiaries at the township and community levels. The Mission bilateral PMI-funded Eliminate Malaria project currently covers four townships in Karen State and five townships in Sagaing Region.

Two townships in Karen (Myawaddy and Kawkareik) and two townships in Sagaing (Pale and Pinlebu) have experienced serious conflict resulting in the relocation of township team staff to other townships for their safety. However, Integrated Community Malaria Volunteers' (ICMVs) case management and reporting activities have been resilient despite the challenging conditions and are currently ongoing. ICMVs accounted for 89% of reported testing and 92% of reported cases in 2021, compared to 61% and 82%, respectively, in 2020. Obstacles to the national surveillance systems include a lack of healthcare workers in conflict zones, a disruption of case management efforts and reporting, gaps in the health commodity supply chain, and delayed reporting of complete data from township levels to the national level.

Increased displaced populations: The violent military crackdown and civilian armed resistance that followed pushed displacement of people to record levels. The United Nations High Commissioner for Refugees (UNHCR) announced as of February 28, 2022, the number of internally displaced people (IDPs) in Burma has doubled since February last year, and crossed the 800,000 mark. Most of these IDPs reported from Sagaing Region (240,600), Karen State (96,000), Kachin State (95,200), Kayah State (89,700) Shan State-South (56,300), and Magway Region (50,500). IDP numbers are increasing and the availability of malaria services in some townships is very limited due to security risks. The Ethnic Health Organizations who previously provided health services to minority ethnic groups are also facing increased restrictions and shortages of malaria commodities and finances for operations.

COVID-19: In Burma, from January 2020 to mid-May 2022, there have been 613,182 confirmed cases of COVID-19 with 19,434 deaths. As of 18 May 2022, a total 45.5% of the population had received two doses of a COVID-19 vaccine (the lowest in the WHO South East Asia Regional Office region) and 57% had received at least one dose (https://covid19.who.int/ region/searo/country/mm). The country experienced waves of the pandemic, disrupting malaria services for periods of time. For example, between quarter three and quarter four of 2020, there was a 31% reduction in malaria testing nationally, and in PMI-supported areas during this same period, directly observed treatment dropped by 28%, ITN distribution fell by 20%, in-person training dropped by 93%, and case notification by fell by 25%. PMI-supported health care workers received the necessary personal protective equipment (446,135 surgical masks, 3,269,400 hand sanitizers, 176,900 latex gloves, and 15,940 units of bar soaps) and other support during the second wave and the third waves of COVID-19. PMI adjusted its programming approaches and provision of services by using virtual methods for training, supervision, data collection, and interpersonal communication to reduce risks to health providers and communities. PMI played a key role in coordinating key stakeholders and partners to develop the Global Fund COVID-19 Response Mechanism (C19RM) proposal to ensure the availability of infection prevention and control supplies

for health care providers. The implementation of activities under this mechanism has been somewhat slow because of the post-coup context in the country. The PMI-funded Defeat Malaria project implemented mitigation activities in Rakhine State with $300,000 received from American Rescue Plan Act (ARPA) funds. Those activities concluded in March 2022 and additional ARPA Global Fund Technical Assistance funds ($1.5 million) will support mitigation activities in Rakhine for a 12- month period starting from July 2022.

NMCP and partner engagement: The NMCP remained non-operational between the February 2021 coup and January 2022. In mid-December, the Ministry of Health (MoH) appointed a new acting Program Manager and discussions started in early February with malaria partners, including the Global Fund to plan and implement malaria activities. The National Security Council's Interim Policy Guidance in response to the coup limits USG engagement with regime public sector counterparts to technical coordination discussions and limited technical assistance.

The NMCP has yet to initiate technical working group meetings with implementing partners, despite the clear need for activity coordination and discussion of technical issues, including radical cure for *P. vivax* malaria, introduction of topical repellents etc,).

Global Fund Grant Implementation: The Global Fund is the principal malaria donor in Burma. The Regional Artemisinin Resistance Initiative 3 Elimination (RAI3E) grant (2021-2023) with a total budget of $90.1 million is implemented by the United Nations Office for Project Services (UNOPS) and Save the Children, together with 14 sub-recipients including the NMCP. After the military coup, the regime Ministry of Health (MoH) and NMCP were not in an operational status until mid-December 2021. Furthermore, Global Fund grant implementation was hampered by the public sector health workforce strike, which included 75% of the workforce at its peak in April 2021, and remained around 50% on strike as of December 2021.

Policy and Strategic Updates

Intensification strategy to reduce malaria burden and accelerate elimination: In response to the increase in reported malaria cases in 2021, the NMCP initiated a discussion with partners in January 2022 to prepare a strategy and action plan to intensify malaria activities in higher burden townships and accelerate malaria elimination activities within the operational context in Burma. The objectives of malaria intensification and acceleration plan are to:

- Strengthen efforts to support coordination and ensure universal coverage and full implementation of malaria activities.

- Ensure flexible operational decision making for a more agile and aggressive approach to respond to the epidemiologic changes, considering the context of the area; and
- Implement aggressive, targeted and responsive approaches to deploy interventions to impact risk and deplete parasite reservoirs in populations with highest risks.

The NMCP is in an initial stage of planning and working with partners, including WHO, to identify specific townships for intensification and acceleration efforts based on available and historical epidemiological data. This process will also articulate the appropriate intervention package for each type of township.

Overview of Planned Interventions

The activities proposed in this MOP are tailored to the current context in Burma and the expectation that the current challenges will continue into 2024. Since the FY 2022 MOP was developed, the availability of new data, updated policy, and/or strategic priorities relevant for the FY 2023 MOP were taken into consideration in proposing the following activities and programmatic changes.

With FY 2023 MOP funding, in 2024, PMI will support implementation of community-based malaria services through ICMVs in targeted states/regions. PMI selects and implements activities in targeted states/regions in close coordination with the Global Fund, other partners and donors operating in these areas, to ensure comprehensive coverage of administrative areas. Assuming the current conflict situation continues, PMI will have the following operational and implementation approach in supporting the four PMI targeted states and regions.

- **Rakhine:** With the improved security and stability in Rakhine**,** PMI will expand malaria intensification activities (including community and facility-based case management, vector monitoring and control, surveillance, and SBC) in all 17 PMI-focused townships. Additionally, PMI will support the scale-up of elimination activities within 12-13 townships and eliminate all forms of human malaria in Southern Rakhine (7 Townships).
- **Tanintharyi:** Because of the unstable situation in this area, PMI will maintain community-level support only. Community and facility-based case management, vector monitoring and control, surveillance, and SBC activities will be implemented and accelerated where possible; as well as efforts to eliminate *Plasmodium falciparum* from PMI-supported townships.
- **Sagaing and Kayin:** Given intense fighting and the limited ability of PMI partners to operate in these areas and implement activities**,** PMI will try to

maintain the current community level activities with ICMVs focused on malaria prevention and control services in supported townships.

In addition, PMI will specifically support the following interventions with FY 2023 funding:

Vector Monitoring and Control: With FY 2023 funds, PMI will procure approximately 445,000 standard pyrethroid ITNs for continuous distribution through ICMVs in PMI-supported areas and non-state actor areas, and 5,000 long-lasting insecticide hammock nets (LLIHNs) for forest goer communities along the Thai-Burma border. PMI will continue to provide technical assistance and support for foci investigation, including mosquito collection, in PMI-supported Rakhine states and Tanintharyi Region. Based on the positive results of the operational research conducted in Burma and the updated PMI FY 2023 MOP technical guidance, PMI plans to provide topical repellents as part of the forest goer package that includes ITNs/LLIHNs and SBC materials to 2,000 forest goers. Since, as of CY 2022, there are no WHO pre-qualified topical repellents, U.S. Environmental Protection Agency (EPA)-approved topical repellents that are commercially available in Burma will be procured and distributed for the forest goer package.

Case Management: With FY 2023 funds, PMI will procure approximately 500,000 Pf/Pv, single-use RDTs, 10,000 adult doses of ACT, 200,000 primaquine tablets and 100,000 chloroquine tablets for use by ICMVs in PMI focus areas and non-state actor areas. PMI will continue to strengthen malaria diagnosis and treatment capacity of ICMVs and private providers in PMI supported areas and provide training, implementation, mentoring, and supportive supervision. In implementing community level activities, PMI continues to provide a monthly motivational allowance for ICMVs. Similar technical support will be provided to a limited number of public sector health facilities in selected areas, including management of and referral of severe malaria cases. In addition, if security and political conditions are amenable, refresher training will be provided for public health facility midwives and nurses and mobile outreach teams in targeted focus areas to strengthen malaria in pregnancy (MIP) services.

Health Supply Chain and Pharmaceutical Management: PMI will continue to build capacity and support to the regions/states/townships, and their malaria partners for annual forecasting and supply plan, as well as periodic quarterly reviews that will contribute to PMI annual commodity gap analyses. PMI will support expansion of the supply chain software platform (mSupply) to areas in Rakhine supported by other malaria partners and improve the visibility of malaria commodities. In addition, PMI will continue to support strengthening the Department of Food and Drug Administration's (DFDA) quality control laboratory and maintenance of ISO accreditation, as well as

improve quality assurance of private sector laboratories' antimalarials seeking Good Manufacturing Practices of prequalification for locally produced chloroquine.

Social and Behavior Change: PMI will continue to support development and implementation of evidence-based, targeted SBC messages adapted to the local context (e.g., elimination, relevant ethnic groups, and languages). SBC messages will be disseminated at the community level through ICMVs and community structures, including private providers, to strengthen prompt treatment-seeking and utilization of malaria prevention interventions like topical repellents and LLIHNs. In consultation with partners, the SBC tools developed during the operational research study for the use of repellents, including seeking early treatment and use of LLIN and other personal protection measures as part of forest goers' package will be further developed. Adherence to the 14-day drug regimen for radical cure of *P. vivax* will also continue to be a priority for SBC messages.

Surveillance: With FY 2023 funds, PMI Burma will continue to support movement towards an integrated malaria surveillance system to allow for accurate and timely identification and reporting of cases, to comprehensively monitor progress, and to inform and guide the geographical deployment of appropriate responses and strategies. PMI Burma will focus support at state/region, township, and community levels, including transitioning from ICMV paper-based reporting to digital reporting. In elimination areas, PMI will continue to collaborate with partners to improve case-based surveillance and implementation of case/foci investigations and response (CIFIR) appropriate to the local epidemiological and programmatic context.

In December 2022, PMI collaborated with WHO and Save the Children in a Training of Trainers for the Malaria Case Based Reporting and Surveillance (MCBRS) application. PMI-supported ICMVs in four townships of Rakhine have now been trained on MCBRS and have the application on their phones. The training is to be expanded to other partners and health facilities in those townships, and subsequently rolled out in all Townships in Rakhine. With FY 2023 funds, MCBRS will be expanded to the Tanintharyi Region, as well as other PMI supported areas, if conditions allow.

Malaria Elimination: PMI has supported malaria elimination surveillance and response activities in three townships (Toungup, Ramree, and Munaung) of Rakhine State for a few years, and is currently planning to expand elimination activities to an additional eight townships in the State. With FY 2023 funding, additional townships in other States/Regions will initiate elimination activities, and prevention of reintroduction activities will be required in certain Townships (for example, Munaung Township has had no indigenious cases for three years). The basic elimination activity package includes expanded case surveillance through public, private, and community health mechanisms; directly observed therapy and referral of specific cases; case recording

and immediate notification (day one reporting); and case and foci investigation and implementation of appropriate response (CIFIR) activities within seven days.

Humanitarian Assistance: To support malaria prevention, testing, and treatment in conflict affected areas, and to serve displaced people who move into townships with malaria transmission, PMI will coordinate with humanitarian partners to identify townships where ongoing humanitarian efforts need to incorporate malaria prevention, testing, and treatment activities. PMI will assess their capacity for malaria service delivery, and engage in strategic and programmatic discussions with relevant partners (including WHO, Global Fund, and other malaria donors and implementing partners) to plan malaria programming as needed in the humanitarian assistance context. PMI will provide necessary capacity building support to humanitarian partners and will continue to allocate commodities to support humanitarian assistance partners' malaria case management activities in four malaria risk townships where PMI partners are unable to operate due to the conflict situation.

For more information about the malaria situation, malaria control progress, and intervention-specific data in Burma, please refer to the **FY 2023 Country Profile**.

ANNEX: GAP ANALYSIS TABLES

Table A-1. ITN Gap Analysis Table

Calendar Year	2022	2023	2024	2025
Total country population[1]	55,770,232	56,242,997	56,719,770	57,200,584
Total population at risk for malaria[2]	23,983,762	24,192,484	24,403,022	24,609,887
PMI-targeted at-risk population[3]	1,709,108	1,810,672	1,922,392	2,034,112
Population targeted for ITNs[4]	1,709,108	1,810,672	1,922,392	2,034,112
ITN need to maintain UC in PMI supported villages plus 10% for population growth[5]	348,152	368,841	391,598	414,356
Continuous Distribution Needs				
Channel 1: ANC[6]	2,100	2,100	2,100	2,100
Channel 2: Community plus mobile and migrate populations	348,152	368,841	391,598	414,356
ITN support to non-PMI supported areas[7]	0	20,000	40,000	60,000
Hamock ITN for Forest goers[8]	0	5,000	5,000	5,000
Estimated Total Need for Continuous Channels	350,252	395,941	438,698	481,456
Mass Campaign Distribution Needs				
Mass distribution campaigns[9]	0	0	0	0
Estimated Total Need for Campaigns	0	0	0	0
Total ITN Need: Continuous and Campaign	**350,252**	**395,941**	**438,698**	**481,456**
Partner Contributions				
ITNs carried over from previous year[10]	186,649	0	166,059	27,361
ITNs from Government	0	0	0	0
ITNs from Global Fund				
ITNs from other donors	0	0	0	0
ITNs planned with PMI funding	150,000	562,000	**300,000**	**450,000**
Total ITNs Contribution Per Calendar Year	**336,649**	**562,000**	**466,059**	**477,361**
Total ITN Surplus (Gap)	**(13,603)**	**166,059**	**27,361**	**(4,095)**

Footnotes:

[1] Source: Ministry of Labour, Immigration and Population, Township Projection 2014-2021. Population growth is estimated at 0.87% per year.

[2] Population at risk for malaria includes people living in malaria epidemiological strata 2 & 3 in 2019.

[3] Estimated population in PMI project areas in 4 states/regions.

[4] Currently the entire population supported by PMI in 36 townships are targeted for ITNs.

[5] ITN distribution is calculated from target population using 1.8 persons per net distributed to 1/3 of the population each year and factoring a 10% increase through population growth and project expansion.

[6] ITNs for ad hoc distribution through ANC channel (PMI bilateral project Defeat Malaria distributed 2,056 ITN through ANC during FY21).

[7] ITNs to support distributions within PMI supported Townships, but beyond project supported villages including internally displaced persons camps.

[8] Hammock ITNs for forest-goers in Kayin State and Tanintharyi Region where forest-goers sleep in hammocks.

[9] Mass campaigns during the current political crisis will be difficult. PMI will implement continuous channels and "micro" mass campaigns (village level) in order to maintain high coverage.

[10] 186,649 stock on hand reported by PMI bilateral project (Defeat Malaria) as of 12/31/2021

Table A-2. RDT Gap Analysis Table

Calendar Year	2022	2023	2024	2025
Total country population[1]	55,770,232	56,242,997	56,719,770	57,200,584
Total population at risk for malaria[2]	23,983,762	24,192,484	24,403,022	24,609,887
PMI-targeted at-risk population[3]	1,709,108	1,810,672	1,922,392	2,034,112
RDT Needs				
Total number of projected fever cases[4]	262,573	301,959	332,155	348,763
Percent of fever cases tested with an RDT[5]	100%	100%	100%	100%
Case investigation, foci investigation and response (CIFIR)	39,386	30,196	24,912	26,157
RDT support to non-PMI supported areas[6]	40,000	30,000	30,000	30,000
Fever surveillance activities[7]	39,386	30,196	24,912	26,157
RDTs to maintain minimal diagnostic capacity[8]	30,000	30,000	30,000	30,000
RDT Needs (tests)	**148,773**	**120,393**	**109,824**	**112,315**
Needs Estimated based on a Combination of HMIS and Consumption Data				
Partner Contributions (tests)				
RDTs from Government	0	0	0	
RDTs from Global Fund	0	0	0	
RDTs from other donors	0	0	0	
RDTs planned with PMI funding	400,000	400,000	**400,000**	**500,000**
Total RDT Contributions per Calendar Year	**400,000**	**400,000**	**400,000**	**500,000**
Stock Balance (tests)				
Beginning Balance[9]	373,000	561,402	821,009	1,091,185
- Product Need	148,773	120,393	109,824	112,315
+ Total Contributions (received/expected)	400,000	400,000	400,000	500,000
Estimated expires or donated	62,825	20,000	20,000	20,000
Ending Balance	561,402	821,009	1,091,185	1,458,870
Desired End of Year Stock (months of stock)[10]	12	8	6	6
Desired End of Year Stock (quantities)	341,345	241,567	190,989	200,538
Total Surplus (Gap)	**220,057**	**579,442**	**900,196**	**1,258,331**

Footnotes:

[1] Source: Ministry of Labour, Immigration and Population, Township Projection 2014-2021. Population growth is estimated at 0.87% per year.
[2] Population at risk for malaria includes people living in malaria epidemiological strata 2 & 3 in 2019.
[3] Estimated population in PMI project areas in 4 states/regions.
[4] Testing decreased by 18% in 2021 in PMI-supported villages following the military coup. Anticipate care seeking and testing to increase to near 2019 levels in 2022, and then continue to increase from population growth and project expansion.
[5] 100% of suspected malaria cases are tested with RDT by PMI partner.
[6] RDTs to support distributions within PMI supported Townships, but beyond project-supported villages, including internally displaced persons camps.
[7] Estimated RDT need for fever surveillance in higher burden villages as a part of an intensification response to increasing cases.
[8] A minimum diagnostic and treatment capacity needs to be maintained at points of service located in areas with extremely low and zero malaria. Policy is to keep 10 tests per provider.
[9] 373,000 stock on hand reported by DM as of 12/31/2021.
[10] The desired end of year stock was increased for 2022 and 2023 due to supply chain issues related to the political crisis.

Table A-3. ACT Gap Analysis Table

Calendar Year	2022	2023	2024	2025
Total country population[1]	55,770,232	56,242,997	56,719,770	57,200,584
Total population at risk for malaria[2]	23,983,762	24,192,484	24,403,022	24,609,887
PMI-targeted at-risk population[3]	1,709,108	1,810,672	1,922,392	2,034,112
ACT Needs				
Total projected number of malaria cases[4]	7,500	9,375	8,438	8,016
Pf cases[5]	1,500	1,725	1,553	1,475
Mixed cases (Pf + Pv)	55	63	57	54
CIFIR and Fever surveillance activities[6]	394	302	249	262
ACTs to maintain minimal treatment capacity[7]	4,500	4,500	4,500	4,500
ACT support to non-PMI supported areas[8]	2,000	2,000	1,000	1,000
Total ACT Needs (treatments)	**8,449**	**8,590**	**7,359**	**7,291**
Needs Estimated based on HMIS Data				
Partner Contributions (treatments)				
ACTs from Government	0	0	0	0
ACTs from Global Fund	0	0	0	0
ACTs from other donors [specify donor]	0	0	0	0
ACTs planned with PMI funding	10,020	10,020	**10,000**	**10,000**
Total ACTs Contributions per Calendar Year	**10,020**	**10,020**	**10,000**	**10,000**
Stock Balance (treatments)				
Beginning Balance[9]	60,948	7,519	2,449	1,590
- Product Need	8,449	8,590	7,359	7,291
+ Total Contributions (received/expected)	10,020	10,020	10,000	10,000
Estimated expires or donated[10]	55,000	6,500	3,500	3,000
Ending Balance	7,519	2,449	1,590	1,299
Desired End of Year Stock (months of stock)[11]	12	8	6	6
Desired End of Year Stock (quantities)	1,949	1,394	929	895
Total Surplus (Gap)	**5,570**	**1,055**	**660**	**404**

Footnotes:

[1] Source: Ministry of Labour, Immigration and Population, Township Projection 2014-2021. Population growth is estimated at 0.87% per year.

[2] Population at risk for malarias includes people living in malaria epidemiological strata 2 & 3 in 2019.

[3] Estimated population in PMI project areas in 4 states/regions.

[4] Reported cases increased by 59% from 2020 to 2021. Anticipate reported cases to continue to increase in 2022 and 2023, and then start to drop.

[5] Reported Pf cases increased by 80% from 2020 to 2021. Anticipate reported Pf cases to continue to increase in 2022 and 2023, and then start to drop.

[6] Estimated a TPR of 0.5% during Case Investigation, Foci Investigation and Response (CIFIR) and fever surveillance activities.

[7] A minimum diagnostic and treatment capacity needs to be maintained at points of service located in areas with extremely low and zero malaria. Policy is to keep 2 ACT treatments per provider.

[8] ACTs to support distributions within PMI-supported Townships, but beyond project supported villages, including internally displaced persons camps.

9 60,948 stock on hand reported by DM as of 12/31/2021.

[10] 40,000 ACTs with a short shelf life were shared with other partners at beginning of 2022 and 15,000 ACTs are likely to expire at the end of 2022.

[11] The desired end of year stock was increased for 2022 and 2023 due to supply chain issues related to the political crisis.

Table A-5. Primaquine 7.5 Gap Analysis Table

Calendar Year	2022	2023	2024	2025
Total country population[1]	55,770,232	56,242,997	56,719,770	57,200,584
Total population at risk for malaria[2]	23,983,762	24,192,484	24,403,022	24,609,887
PMI-targeted at-risk population[3]	1,709,108	1,810,672	1,922,392	2,034,112
Primaquine Needs				
Total projected number of malaria cases[4]	7,500	9,375	8,438	8,016
Pf cases[5]	1,500	1,725	1,553	1,475
Pv cases[6]	5,945	7,587	6,828	6,486
Mixed cases (Pf + Pv)	55	63	57	54
Total projected number of malaria cases to be treated by PQ 14 days[7]	6,000	7,650	6,885	6,541
Total projected number of malaria cases to be treated by PQ single dose[8]	1,500	1,725	1,553	1,475
PQ support to non-PMI supported areas (cases)[9]	1,000	2,000	3,000	1,500
PQ to maintain minimal treatment capacity[10]	0	0	0	0
Total Primaquine 7.5mg Needs (tablets)	**205,000**	**280,550**	**286,095**	**233,990**
Needs Estimated based on HMIS Data				
Partner Contributions (tablets)				
PQs from Government	0	0	0	0
PQs from Global Fund	0	0	0	0
PQs from other donors [specify donor]	0	0	0	0
PQs planned with PMI funding	0	450,000	**300,000**	**200,000**
Total PQ Contributions per Calendar Year	**0**	450,000	300,000	200,000
Stock Balance (tablets)				
Beginning Balance[11]	567,292	0	154,450	148,355
- Product Need	205,000	280,550	286,095	233,990
+ Total Contributions (received/expected)	0	450,000	300,000	200,000
Estimated expires or donated[12]	366,618	15,000	20,000	15,000
Ending Balance	-4,326	154,450	148,355	99,365
Desired End of Year Stock (months of stock)[13]	12	8	6	6
Desired End of Year Stock (quantities)	177,000	149,700	101,048	95,995
Total Surplus (Gap)	**(181,326)**	**4,750**	**47,308**	**3,370**

Footnotes:

[1] Source: Ministry of Labour, Immigration and Population, Township Projection 2014-2021. Population growth is estimated at 0.87% per year.

[2] Population at risk for malarias includes people living in malaria epidemiological strata 2 & 3 in 2019.

[3] Estimated population in PMI project areas in 4 states/regions.

[4] Reported cases increased by 59% from 2020 to 2021. Anticipate reported cases to continue to increase in 2022 and 2023, and then start to drop.

[5] Reported Pf cases increased by 80% from 2020 to 2021. Anticipate reported Pf cases to continue to increase in 2022 and 2023, and then start to drop.

[6] Reported Pv cases increased by 53% from 2020 to 2021. Anticipate reported Pv cases to continue to increase in 2022 and 2023, and then start to drop.

[7] Assumes 7.5 mg tablets. One adult radical cure Tx of PQ for *P. vivax* = 28 tablets (15mg/day x 14 days).

[8] Assumes 7.5 mg tablets. One adult Tx for *P. falciparum* = 6 tablets (45mg once).

[9] PQs to support distributions within PMI supported Townships, but beyond project supported villages including internally displaced persons camps.

[10] NMCP does not have strategy to keep minimum stock of PQ at service providers.

[11] 567,000 stock on hand reported by DM as of 12/31/2021.

[12] All PQ will expire or will be shared by the end of 2022 or the beginning of 2023.

[13] The desired end of year stock was increased for 2022 and 2023 due to supply chain issues related to the political crisis.

Table A-6. Chloroquine Gap Analysis Table

Calendar Year	2022	2023	2024	2025
Total country population[1]	55,770,232	56,242,997	56,719,770	57,200,584
Total population at risk for malaria[2]	23,983,762	24,192,484	24,403,022	24,609,887
PMI-targeted at-risk population[3]	1,709,108	1,810,672	1,922,392	2,034,112
Chloroquine Tablets Needs				
Total projected number of malaria cases[4]	7,500	9,375	8,438	8,016
Total projected number of P. vivax malaria cases to be treated by CQ[5]	5,945	7,587	6,828	6,486
CQ support to non-PMI supported areas (cases)[6]	2,500	2,500	2,500	2,500
CQ to maintain minimal treatment capacity[7]	10,000	10,000	10,000	10,000
Total CQ tablet Needs (Case based)	**94,448**	**110,865**	**78,279**	**74,865**
Needs Estimated based on HMIS Data				
Partner Contributions (tablets)				
CQ from Government	0	0	0	0
CQ from Global Fund[8]	150,000	0	0	0
CQ from other donors [specify donor]	0	0	0	0
CQ planned with PMI funding	20,000	100,000	**100,000**	**100,000**
Total CQ Contributions per Calendar Year	**170,000**	**100,000**	**100,000**	**100,000**
Stock Balance (tablets)				
Beginning Balance[9]	203,092	118,644	57,779	39,500
- Product Need	94,448	110,865	78,279	74,865
+ Total Contributions (received/expected)	170,000	100,000	100,000	100,000
Estimated expires or donated	160,000	50,000	40,000	30,000
Ending Balance	118,644	57,779	39,500	34,635
Desired End of Year Stock (months of stock)[10]	12	8	6	6
Desired End of Year Stock (quantities)	59,448	50,577	34,139	32,432
Total Surplus (Gap)	**59,196**	**7,202**	**5,361**	**2,203**

Footnotes:

[1] Source: Ministry of Labour, Immigration and Population, Township Projection 2014-2021. Population growth is estimated at 0.87% per year.

[2] Population at risk for malarias includes people living in malaria epidemiological strata 2 & 3 in 2019.

[3] Estimated population in PMI project areas in 4 states/regions.

[4] Reported cases increased by 59% from 2020 to 2021. Anticipate reported cases to continue to increase in 2022 and 2023, and then start to drop.

[5] Reported Pv cases increased by 53% from 2020 to 2021. Anticipate reported Pv cases to continue to increase in 2022 and 2023, and then start to drop.

[6] CQs to support distributions within PMI-supported Townships, but beyond project supported villages including IDP camps.

[7] A minimum diagnostic and treatment capacity needs to be maintained at points of service located in areas with extremely low and zero malaria. Policy is to keep 10 tablets for each provider. As CQ has a shelf life of 5 years, 1/3 of need is planned to be procured each year.

[8] 150,000 received from Global Fund was originally planned to be a loan, but became a donation.

[9] 203,000 stock on hand reported by DM as of 12/31/2021.

[10] The desired end of year stock was increased for 2022 and 2023 due to supply chain issues related to the political crisis.