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Burma

Malaria Operational Plan FY 2024

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

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ABBREVIATIONS

ACT	Artemisinin-based combination therapy
AL	Artemether-lumefantrine
ANC	Antenatal care
CDC	Centers for Disease Control and Prevention
CIFIR	Case Investigation Foci Investigation and Response
COVID-19	Coronavirus Disease 2019
CQ	Chloroquine
DFDA	Department of Food and Drug Administration
DHIS2	District Health Information Software 2
DOT	directly observed treatment
EHO	Ethnic Health Organization
FY	Fiscal year
G6PD	Glucose-6-phosphate dehydrogenase
Global Fund	Global Fund to Fight AIDS, Tuberculosis and Malaria
HIV	Human Immunodeficiency Virus
ICMVs	Integrated Community Malaria Volunteers
IPTf	Intermittent preventive treatment for forest goers
IPTp	Intermittent preventive treatment for pregnant women
ISO	International Organization for Standardization
ITN	Insecticide-treated mosquito net
LLIHNs	Long-lasting insecticide treated hammock nets
MCBRS	Malaria Case Based Reporting and Surveillance
MDA	Mass Drug Administration
MEMT	Malaria Elimination Management Team
MIP	Malaria in Pregnancy
MMW	Migrant malaria workers
MOH	Ministry of Health
MOP	Malaria Operational Plan
NMCP	National Malaria Control Program
NSP	National Strategic Plan
<i>Pf</i>	<i>Plasmodium falciparum</i>
<i>Pv</i>	<i>Plasmodium vivax</i>
PMI	U.S. President's Malaria Initiative
PQ	Primaquine
RAI3E	Regional Artemisinin Resistance Initiative 3 Elimination
RAI4E	Regional Artemisinin Resistance Initiative 4 Elimination
RDT	Rapid diagnostic test
SBC	Social and Behavior Change
SM&E	Surveillance, Monitoring, and Evaluation
SP	Sulfadoxine-pyrimethamine
TDA	Targeted Drug Administration

UNOPS	United Nations Office for Project Services
USAID	United States Agency for International Development
VBDC	Vector Borne Disease Control
WHO	World Health Organization

EXECUTIVE SUMMARY

On February 1, 2021, Burma's military overthrew the democratically elected government in a coup d'état. The coup severely affected several crucial sectors in Burma, including health, education and banking. It hindered health service delivery, including malaria prevention, control, and elimination activities. In the past three years, Burma has experienced an alarming spike in malaria cases. In 2022, the number of malaria cases detected in Burma was 130 percent higher than in 2019, the last year before COVID-19, and the political conflict affected service delivery and reporting. Unfortunately, *Plasmodium (P.) falciparum* is on the rise in Burma, with 56 percent more cases diagnosed in 2022 compared to 2021, while *P. vivax* cases increased by 66 percent in the past year. As the political crisis persists, the proposed U.S. President's Malaria Initiative (PMI) fiscal year (FY) 2024 planning budget for Burma is \$9 million, with a focus on maintaining progress in malaria control and advancing programming to eliminate malaria. This Malaria Operational Plan summary outlines PMI activities planned in Burma in FY 2024. 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.

To review specific country context for Burma, 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.

U.S. President's Malaria Initiative

Launched in 2005, the [U.S. President's Malaria Initiative](#) supports implementation of malaria prevention, diagnosis, and treatment measures as well as cross-cutting interventions. PMI's 2021–2026 strategy, [End Malaria Faster](#), envisions a world free of malaria within our generation with the goal of preventing malaria cases, reducing malaria deaths and illness, and eliminating malaria in PMI partner countries. PMI currently supports 27 countries in Sub-Saharan Africa and three programs across the Greater Mekong Subregion in Southeast Asia to control and eliminate malaria. Burma began implementation as a PMI partner country in FY 2011.

Rationale for PMI's Approach in Burma

Overview of Planned Interventions

The proposed FY 2024 PMI funding for Burma is \$9 million. PMI will support the following intervention areas with these funds:

- 1. Vector Monitoring and Control**

As outlined in Burma National Strategic Plan (NSP) for malaria elimination, the NMCP will focus on an ‘epidemiology-led entomology for problem solving’ approach, selecting vector control interventions based on epidemiological stratification to accelerate progress towards elimination. PMI Burma continues to support evidence-based vector surveillance and the deployment of both traditional and innovative vector control tools to achieve Burma’s malaria control and elimination goals.

Proposed investments with FY 2024 funding:

- PMI will continue to provide technical assistance and capacity strengthening for central NMCP and State/Region entomologists and support cascade training to state/region staff in entomological monitoring, including insecticide resistance and vector bionomics as part of foci investigations in PMI-supported states/regions.
- PMI will procure approximately 200,000 standard pyrethroid insecticide treated nets (ITNs) for continuous distribution through integrated community malaria volunteers (ICMVs)/mobile malaria workers (MMWs) in PMI-supported areas, as well as 6,500 long-lasting insecticide treated hammock nets (LLIHNs) and 2,500 combination hammocks + nets for forest goer communities along the Thai-Burma border.
- PMI will support distribution of 300,000 ITNs/LLIHNs/combo hammocks + nets
- In addition, PMI will procure and distribute topical repellents (125,000 bottles/tubes) as part of a forest goer package that includes social behavior change (SBC) materials.

2. Malaria in Pregnancy

In line with Burma’s NSP, PMI supports a two-pronged approach to reduce the burden of malaria infection among pregnant women with the provision of ITNs and effective case management of malaria. Efforts will target people most vulnerable to malaria including migrant workers, refugees, and other hard-to-reach and ethnic minority populations.

Proposed investments with FY 2024 funding: PMI will support provision of ITNs targeted to pregnant women through antenatal clinics in PMI-focus areas, as well as relevant updates to the malaria treatment guidelines (e.g., use of artemisinin combination therapies (ACTs) in the first trimester) and subsequent training of community-based health providers as needed.

3. Drug-Based Prevention

PMI does not currently support seasonal malaria chemoprevention or other drug-based prevention approaches in Burma.

4. Case Management

PMI Burma provides access to diagnostic testing for suspected malaria cases and treatment of confirmed cases with quality-assured drugs through three service delivery channels:

community-based outreach, public health facilities, and the private sector. PMI primarily implements at the community level through ICMVs, with MMWs focusing on hard-to-reach and mobile populations including displaced populations. Malaria resurgence is occurring in remote hard-to-reach, forested, border areas that are particularly difficult to access due to the ongoing conflict. Forest-goers, migrants, mobile populations, internally displaced persons, and ethnic groups face elevated risk of malaria.

Proposed investments with FY 2024 funding:

- PMI will continue to procure malaria case management commodities, including Rapid Diagnostic Tests (RDTs), ACTs, chloroquine (CQ) and primaquine (PQ), to allow community-based ICMVs and MMWs to deliver services in hard-to-reach areas in PMI supported townships.
- PMI will work to strengthen the quality of case management practices of private providers and private companies to increase quality of service delivery.
- PMI will engage, assess, and provide technical assistance to public health facilities in targeted townships to improve case management practices, and develop a more complete understanding of case management services for each township that receives PMI support.
- PMI will increase efforts to improve adherence to radical cure treatment of *Plasmodium vivax* (Pv) through SBC interventions with service providers to increase and improve adherence to national treatment guidelines. The radical cure, which consists of Tafenoquine co-administered with chloroquine, serves to prevent a relapse of Plasmodium vivax malaria. ICMVs will conduct SBC interventions with patients to increase adherence to the complete dosing schedule.

5. Health Supply Chain and Pharmaceutical Management

The NSP aims to strengthen supply chain management and quality control processes for malaria commodities and other health products.

Proposed investments with FY 2024 funding:

- PMI will continue to strengthen the capacity of the central NMCP, states/regions, and townships and malaria implementing partners to conduct annual forecasting and supply planning, as well as quarterly commodity reviews across malaria partners to contribute to improved commodity availability, and to support the development of PMI's annual commodity gap analyses.
- PMI will strengthen the electronic logistics management and information system (eLMIS), and mSupply, a pharmaceutical supply chain management platform (managed by Sustainable Solutions Ltd., a company based in Auckland, NZ), to broaden and improve transparent management of malaria commodities in targeted PMI-supported townships including all the townships in Tanintharyi.

- PMI will continue to provide technical assistance to strengthen the Department of Food and Drug Administration's quality control laboratory management, and to ensure maintenance of International Organization for Standardization (ISO) accreditation.
- PMI will continue to provide technical assistance to private sector laboratories that produce antimalarials to improve quality assurance and good manufacturing practices, and support World Health Organization prequalification of their products.

6. Social and Behavior Change

According to the National Malaria Strategic Plan for malaria elimination (2021-2025), the NMCP will support malaria elimination through comprehensive SBC, community mobilization and advocacy. PMI will complement the NMCP's efforts by the following proposed investments.

Proposed investments with FY 2024 funding:

- PMI will seek to promote the following behaviors with corresponding audience segments through SBC investments: improved ITN and LLIN utilization by villagers, pregnant women, children, and forest goers; correct use and application of topical repellents among forest goers; prompt testing and treatment seeking among those with fever onset in PMI-supported areas; adherence to *Pv* radical cure for those who need treatment; and adherence to national malaria treatment guidelines by health providers at all levels in PMI supported areas.
- PMI will invest in the following channels to ensure diffusion of the messaging: billboards with malaria messages to reach migrant populations and active foci areas; increasing community-engagement in malaria elimination through ICMVs and community support groups, interpersonal communication, small group discussions by health care providers, and awareness raising at World Malaria Day.

7. Surveillance, Monitoring, and Evaluation

PMI supports the expansion, modernization, and strengthening of Burma's malaria information system to allow for accurate and timely identification of cases, reporting, and geographical presentation of results to guide appropriate response. PMI's focus will remain at the township and community levels.

Proposed investments with FY 2024 funding:

- PMI will strengthen the capacity of the township health department to lead surveillance activities, including improving data collection and reporting, data quality, case notification, and data review, analysis, interpretation, visualization, and use.
- In elimination-designated townships, PMI will support case-based reporting using digital tools, case investigations and follow-up response, and foci investigations as indicated.

- PMI will support the use of digital tools at the community level in elimination-designated townships to achieve real-time reporting of cases and a rapid response.
- PMI will provide technical assistance with the NMCP at the central level to complement World Health Organization's efforts to operationalize electronic database systems and support NMCP's surveillance, monitoring and evaluation needs.

8. Operational Research and Program Evaluation

PMI does not plan to support any operational research or program evaluation with FY 2024 funding.

9. Capacity Strengthening

The NSP emphasizes the NMCP's state/region team as the planning unit and the township as the implementation unit, while the national program provides policy/strategy guidance and monitoring support for malaria control and elimination. In alignment with this approach, PMI's capacity strengthening strategy provides each township tailored technical support using a phased approach as they reduce malaria and shift to malaria elimination and prevention of re-establishment.

Proposed investments with FY 2024 funding:

- PMI will invest an additional 300 community health workers in hard-to-reach areas, by recruiting, training and equipping them to detect and treat malaria and conduct malaria prevention activities at the community level.
- PMI will strengthen malaria surveillance, monitoring, and evaluation systems and build national, state/region, and township capacity through training and mentoring to use data to guide localized action and for adaptive learning.
- PMI will strengthen coordination and collaboration between NMCP, partners, communities, and the private sector through technical working group meetings, malaria elimination management team meetings and joint support supervision visits.

10. Staffing and Administration

To oversee all technical and administrative aspects of PMI in Burma, PMI funds a resident advisor representing the U.S. Agency for International Development (USAID) and a malaria specialist.

I. CONTEXT & STRATEGY

1. Introduction

Burma began implementation as a PMI partner country in fiscal year (FY) 2011. This FY 2024 Malaria Operational Plan (MOP) presents a detailed implementation plan for Burma, based on the strategies of PMI and the National Malaria Control Program (NMCP). This plan was developed in consultation with the NMCP and with the participation of national and international partners. PMI-supported activities will build upon investments made by the Global Fund to Fight AIDS, Tuberculosis, and Malaria (Global Fund), and other partners working to improve and expand malaria-related services. This document provides an overview of the strategies and interventions in Burma, describes progress to date, identifies challenges and relevant contextual factors, and provides a description of activities that are planned with FY 2024 funding. For more detailed information on the country context, 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)

PMI is led by the U.S. Agency for International Development (USAID) and implemented together with the U.S. Centers for Disease Control and Prevention (CDC). Launched in 2005, PMI supports implementation of malaria prevention and treatment measures – insecticide-treated mosquito nets, indoor residual spraying, accurate diagnosis and prompt treatment with artemisinin-based combination therapies (ACTs), intermittent preventive treatment of pregnant women, and drug-based prevention – as well as cross-cutting interventions, including surveillance, monitoring and evaluation; social and behavior change; 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 27 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 Burma

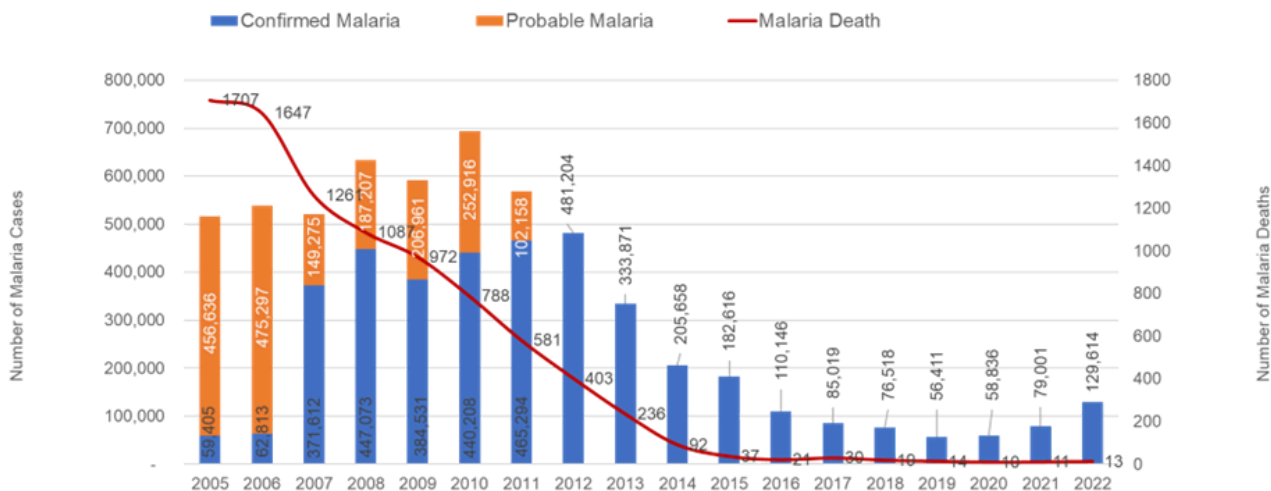
3.1. Malaria Overview for Burma

Significant progress was made in reducing the malaria burden in Burma between 2012 and 2020 (see Figures 1 and 2) and several areas of the country continue to progress toward elimination (Figures 3 and 4). The NMCP reported 129,614 malaria cases (106,024 *Plasmodium vivax*, 22,616 *P. falciparum* and 974 mixed infections) and 13 malaria deaths in 2022 (a number of public and private sector providers have not reported into the malaria information system). This marks a decline of 73 percent in cases and 97 percent in deaths from the 481,204 confirmed cases and 403 deaths registered in 2012. However, reported cases increased by 3 percent from 2019 to 2020, by 22 percent percent from 2020 to 2021, and by 64 percent from 2021 (79,001) to 2022. Prior to 2022, the increase in reported cases was entirely due to an increase in *P. vivax* infections (+ 30 percent in 2020 and + 50 percent in 2021). *P. falciparum* plus mixed reported cases declined by 35 percent in 2020 and by 2 percent in 2021. In 2022, *P. vivax* increased by 66 percent and *P. falciparum* plus mixed increased by 56 percent compared to 2021.

The reason behind cases increasing is multifactorial and includes COVID-19 and political conflict-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.

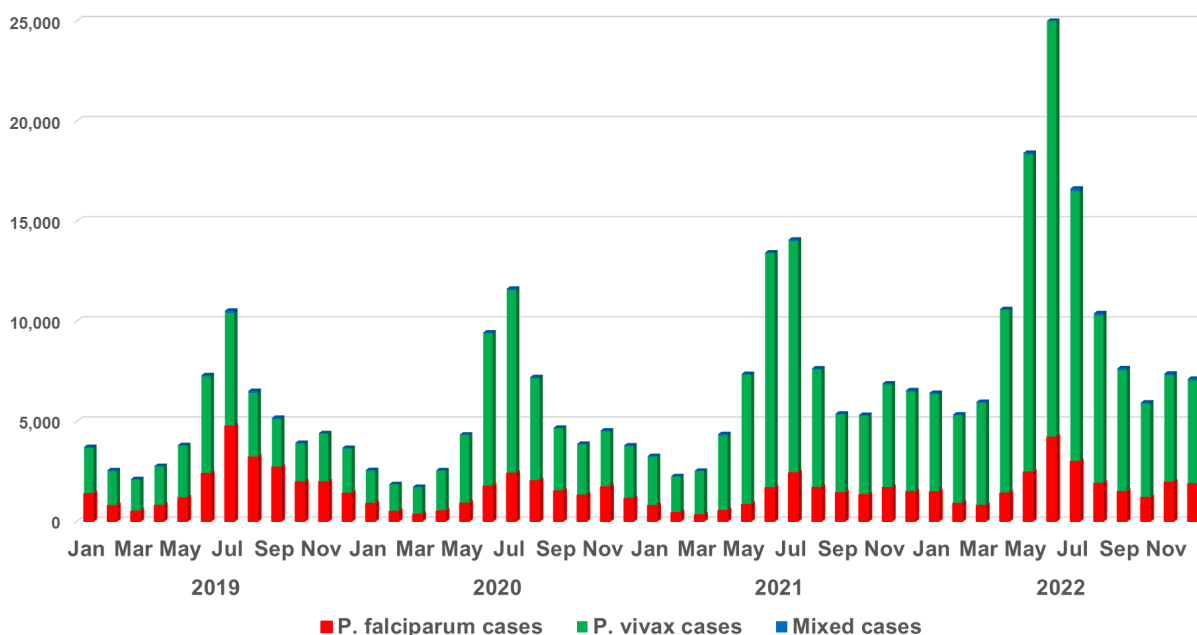
Current Malaria Situation

Figure 1. Confirmed and Probable Malaria Cases and Deaths in Burma from 2005– 2022



Source: Presentation on March 6, 2023, by Dr Nay Yi Yi Linn, Deputy Director (NMCP) Ministry of Health, Myanmar.

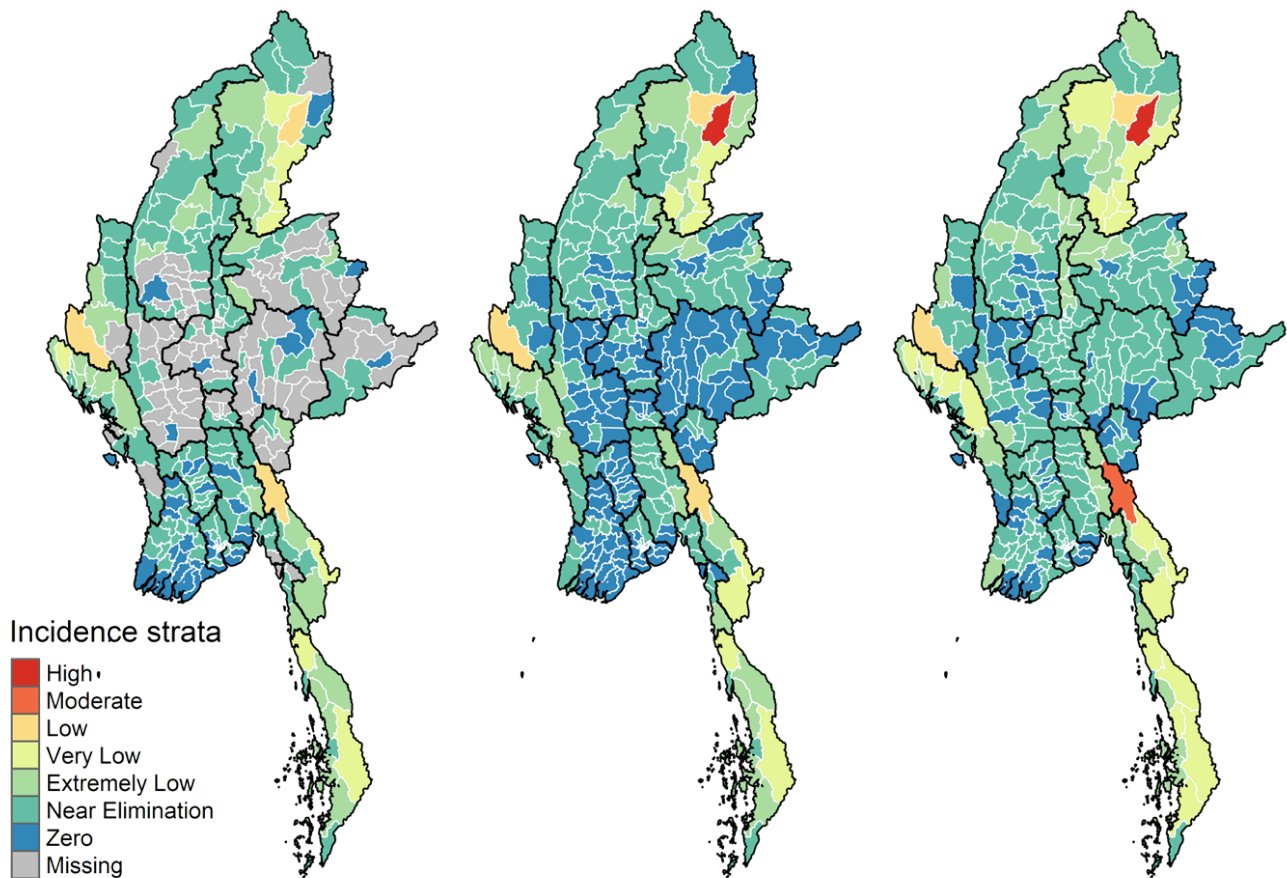
Figure 2. Reported Malaria Cases in Burma by Parasite Species from 2019–2022



Source: World Health Organization: Mekong Malaria Elimination Programme Epidemiology Summary. Data on imported cases is currently not available. Note, mixed cases are too few to be visible on the graph (974 in 2022)

Using standardized transmission intensity definitions recommended in the PMI Technical Guidance, the following incidence maps (2020, 2021, and 2022) (Figure 3) were generated which correspond to World Health Organization (WHO) definitions for high, moderate, and low transmission, but uses a finer breakdown for very low transmission.

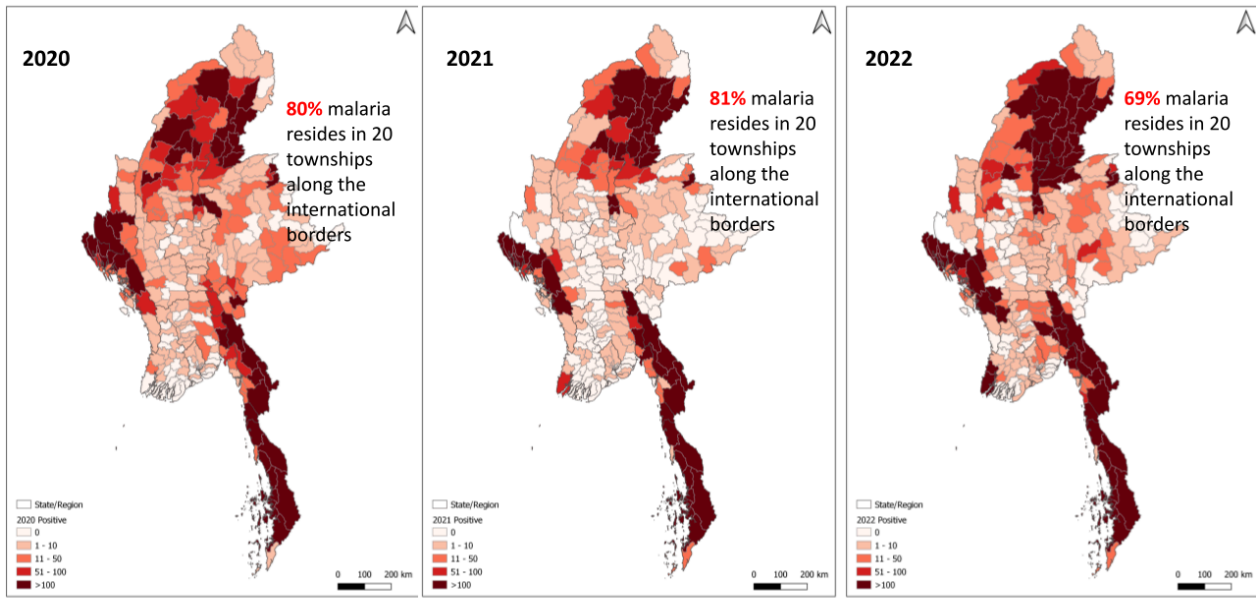
Figure 3. Township-level Malaria Risk Stratification Map (based on Annual Parasite Index*) for Burma (2020–2022)



Note: * 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).

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. The following maps (Figure 4) for 2020, 2021, and 2022 show the number of reported cases by township.

Figure 4. Township-level Malaria Risk Stratification Map* (Reported Cases) (2020– 2022)



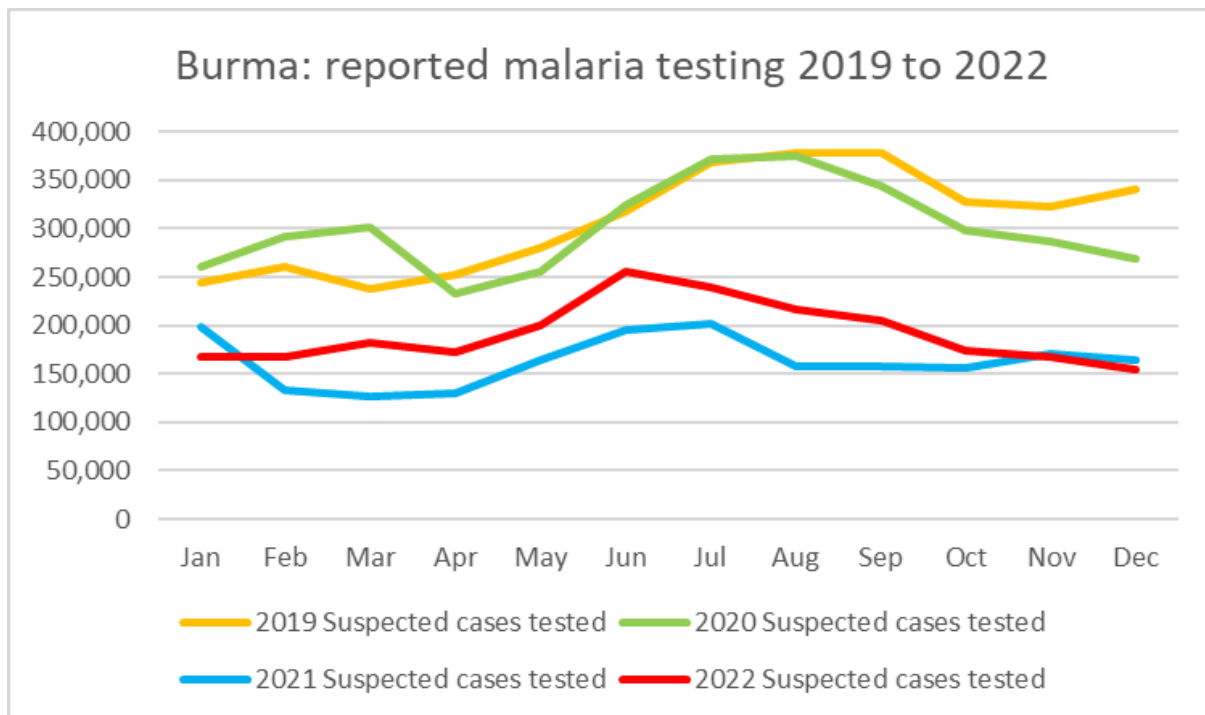
*Data incomplete for 2022

Source: Malaria Situation in Myanmar presentation by Dr Nay Yi Yi Linn, Deputy Director NMCP, at Malaria Partners Meeting Bangkok, Thailand March 6, 2023

For more detailed information on malaria indicators, please refer to the [Country Malaria Profile](#).

3.2. Key Challenges and Contextual Factors

Figure 5. Reported Malaria Testing in Burma from 2019–2022



Notes: 2022 private sector data pending

3.3. PMI's Approach for Burma

The activities proposed in this MOP are tailored to the diverse contexts in Burma and the expectation that the current political challenges will continue into 2025.

With FY 2024 MOP funding, PMI will support implementation of community-based malaria services through ICMVs in Rakhine, Tanintharyi, Kayin and Sagaing. PMI coordinates closely with the Global Fund, other partners and donors operating in areas with malaria incidence, to ensure comprehensive coverage of administrative areas.

Figure 6: Reported Malaria Cases by State/Region in Burma from 2020 to 2022

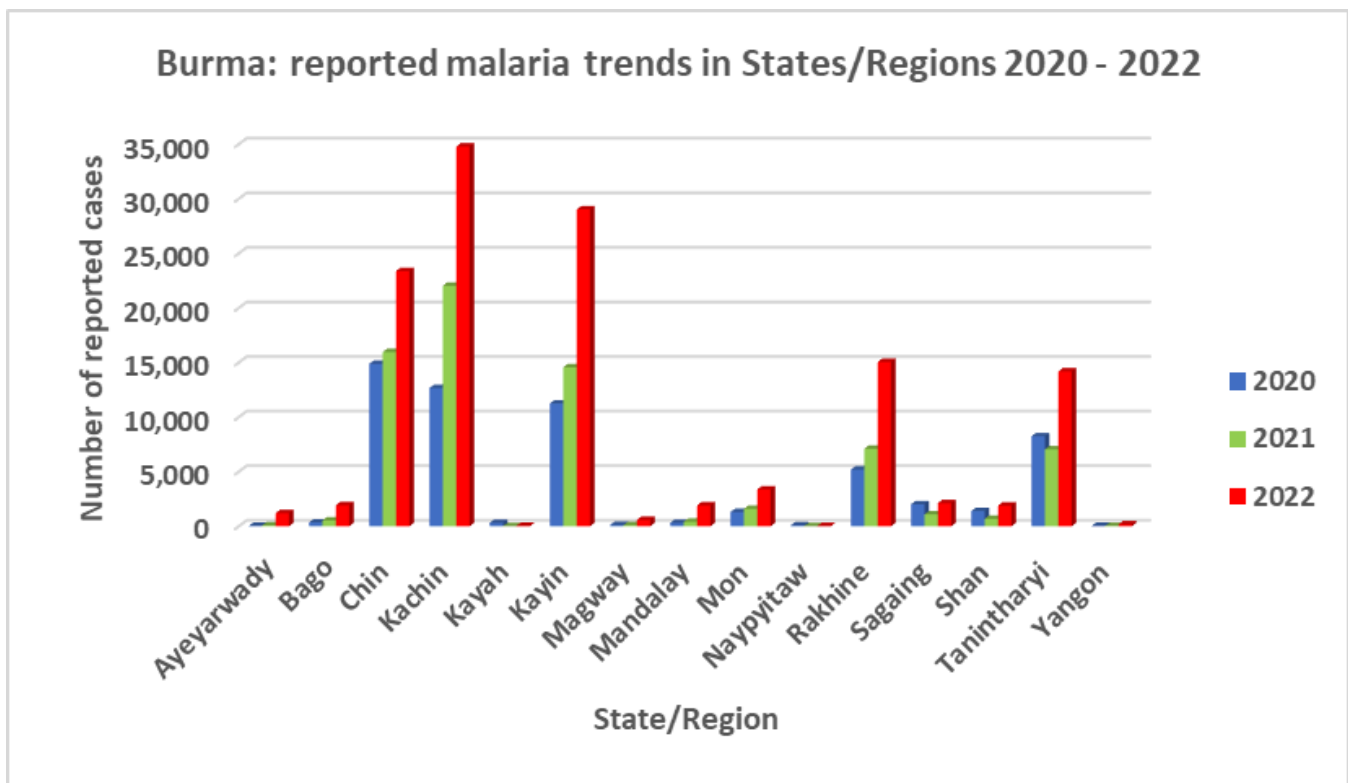
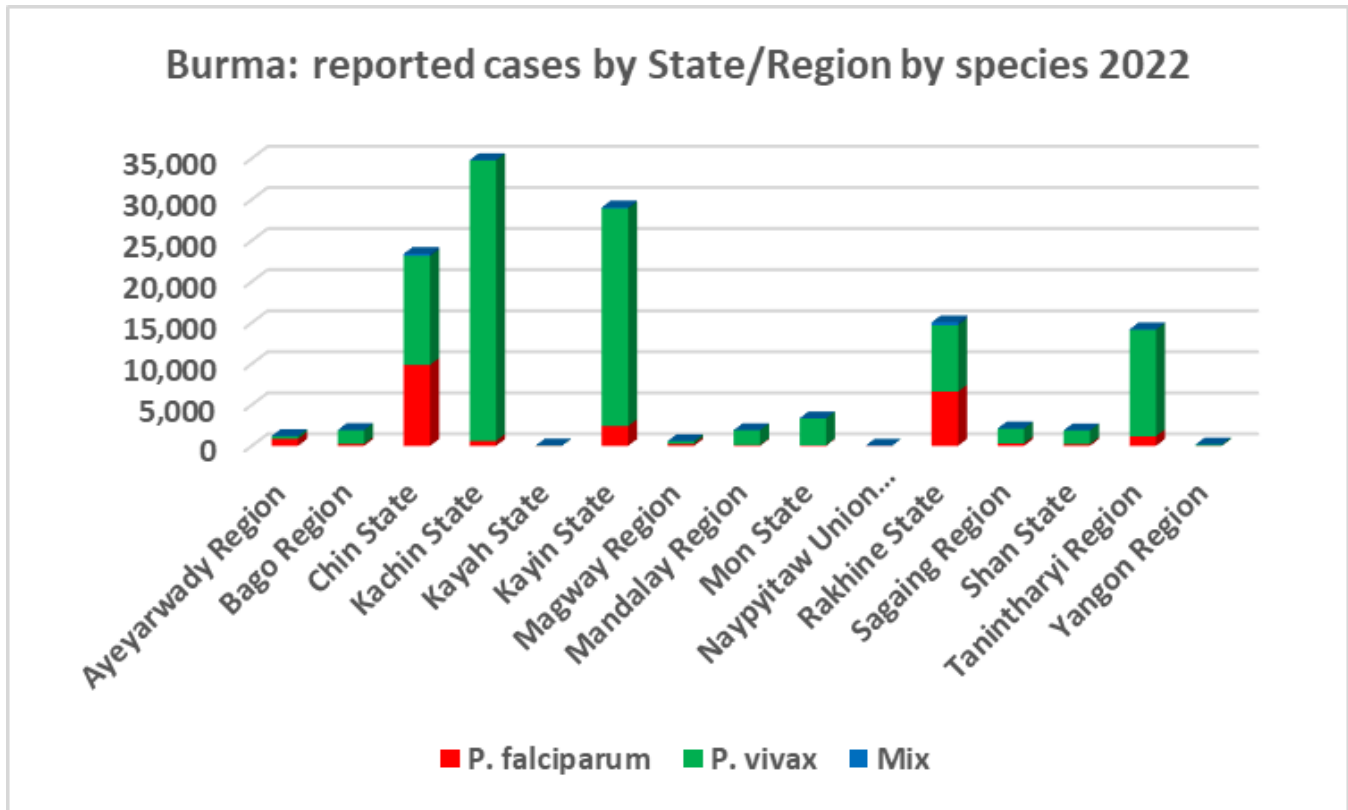


Figure 7: Reported Malaria Cases by State/Region by Species in Burma in 2022



Global Fund Grant Implementation

The Global Fund is the principal malaria donor in Burma. The current Regional Artemisinin Resistance Initiative 3 Elimination (RAI3E) grant (2021-2023), totaling \$90.1 million for Burma, is implemented by the United Nations Office for Project Services (UNOPS) and Save the Children, together with 14 sub-recipients including the NMCP. While PMI currently provides support in 36 townships, Global Fund is providing support in every township. In townships where Global Fund and PMI overlap, community-based services provided by ICMVs are supported by PMI implementing partners and Global Fund subrecipients operating in the township; the Global Fund has primary responsibility for supporting all health facilities and basic health staff. The Regional Artemisinin Resistance Initiative 4 Elimination (RAI4E) malaria grant proposal (2024-2026) was developed and submitted in March 2023.

Strategic Updates

An external Malaria Program Review, conducted in November 2022, reviewed the current malaria status and identified achievements, best practices, challenges, and possible solutions to guide future strategic planning for malaria control. The final report is pending but key observations and findings included:

- Reported *P. vivax* malaria cases during the twelve-month period ending in June 2022 almost tripled relative to 2019 cases and there has been a sharp rise in *P. falciparum* incidence since March 2022.
- Stockouts of malaria case management commodities were driven by optimistic targets based on steady decline of malaria incidence, and consequent projections of commodity needs, in a context where rapid rectification was very difficult.
- Implementing partners were able to continue malaria services at the majority of service delivery points though there were disruptions to services in conflict areas in some states and regions.
- ICMVs and the private sector have played a key role filling gaps left by the public sector since the political conflict, and support for these service providers should continue.
- Significant delivery challenges due to the on-going conflict and security issues exist for ITNs and may increase in the future.
- Entomological surveillance to guide vector control interventions is hampered by lack of human resources, resulting in sub-optimal use of existing vector control resources.
- ITNs for the 2022 mass distribution have not yet reached target beneficiaries (1.8 million ITNs remain positioned in central stores) and distribution is hampered in conflict areas.
- With the increasing trend in malaria cases and internally displaced populations, the goal of eliminating *Plasmodium falciparum* (*Pf*) by 2026 is fragile. The mid-term review concluded that “the elimination agenda is still alive but at risk” and significant progress towards malaria elimination is unlikely until equitable access to malaria services for everyone everywhere is achieved.

In response to the increase in reported malaria cases observed in both 2021 and 2022, WHO is collaborating with the NMCP to develop a strategy and action plan for intensification and acceleration toward malaria elimination. Intensification strategies target higher burden townships with current malaria activities but with better coordination and full implementation of achieving universal coverage. In addition, the following acceleration interventions and how they will be implemented are being discussed:

1. Chemoprevention through mass drug administration (MDA) in areas of moderate to high transmission of *P. falciparum*.
2. Targeted Drug Administration (TDA) for *P. falciparum* to reduce burden among highest at-risk population.
3. Reactive Indoor Residual Spraying in active foci and residual non-active foci.
4. Intermittent Preventive Treatment for forest-goers (IPTf).
5. Routine Active Fever Screening post MDA & TDA and to populations returning from risk areas.

In alignment with these new strategies, the NMCP, in consultation with partners including WHO, revised their micro-stratification guidelines. Implementation of intensification and acceleration activities is determined by the new WHO recommended stratum:

- A (Active foci with ongoing transmission at higher level (defined as > 24 cases/year/village),
- B (Active foci with ongoing transmission at lower level (defined as < 24 cases/year/village),
- C (residual non-active foci - no indigenous cases for 12-36 months),
- D (cleared foci- no indigenous cases for 36+ months), and
- E (no malaria historically).

The revised micro-stratification reflects village level stratification based on epidemiological characteristics including transmission, burden, and manageability of caseload.

Overview of PMI Planned Interventions

In the current context and with increasing malaria cases, PMI focuses on the township level as the unit of operation and implementation of interventions and activities. As such, PMI has classified each supported township into one of four categories:

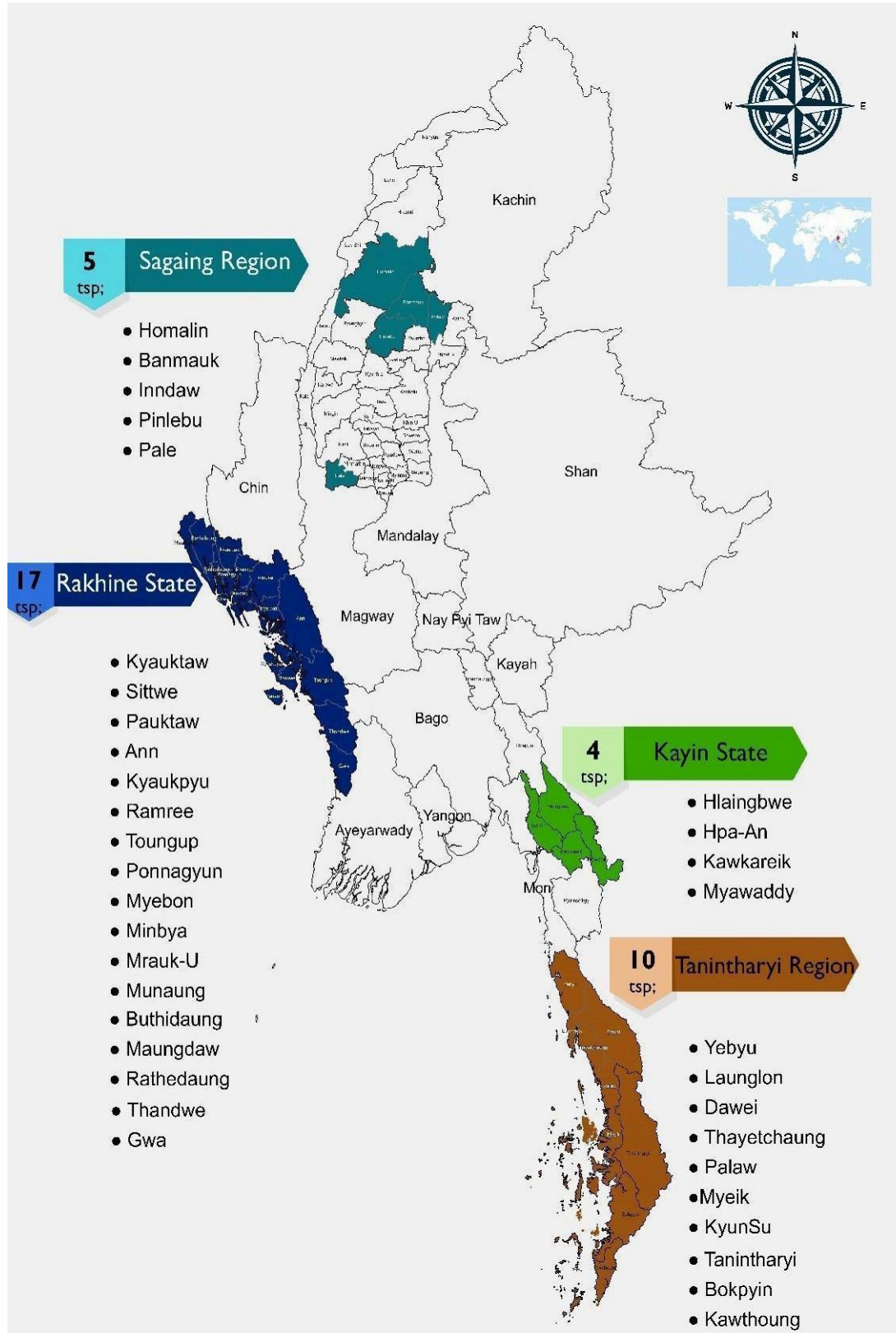
1. Maintenance of services: these townships are in conflict areas where operations are very difficult and continuity of malaria services is the priority.
2. Intensification: these townships have a higher malaria burden.
3. Transition to elimination: these townships have lower malaria burden but still report too many cases to allow investigation of every *Pv* and *Pf* case. PMI will support investigating and responding to every *Pf* case. Because there are fewer *Pf* cases, this is a more feasible approach.
4. Elimination: these townships have few cases and are able to fully implement Case Investigation Foci Investigation and Response (CIFIR). This classification would also include prevention of re-introduction.

PMI supports the concept of the intensification and acceleration activities stratified by township. Of the proposed acceleration activities, PMI supports active fever screening/ surveillance or proactive case detection. PMI does not support the other newly recommended drug-based interventions (e.g. MDA, TDA, and IPTf), and the alternative ACT (artesunate-pyronaridine) isn't available in-country. The RAI4E Global Fund application plans for procuring and using artesunate-pyronaridine for MDA, TDA, and IPTf. If PMI-supported ICMVs and project areas/villages participate in MDA, TDA, and IPTf acceleration, PMI will support the relevant ICMVs to carry out these activities with commodities from Global Fund.

PMI Approach by State/Region

Assuming the current conflict situation continues, PMI will have the following operational and implementation approach in supporting the PMI targeted states and regions.

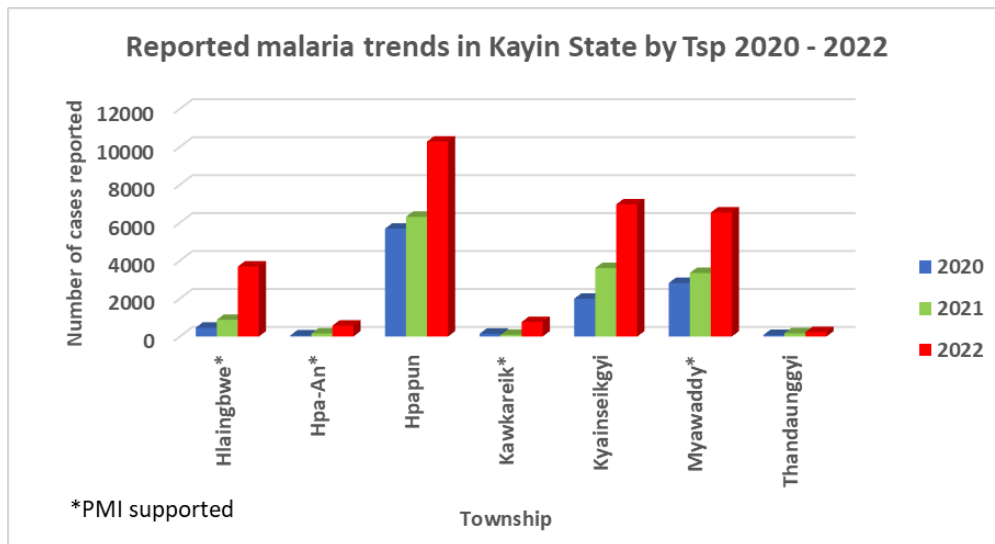
Figure 8: Map of Burma Showing PMI-supported States, Regions and Townships



Kayin (Karen) State: Intense fighting limits the ability of PMI partners to fully operate and implement activities in these areas. PMI will maintain the current community level service delivery activities with ICMVs in four supported townships. The total number of malaria cases

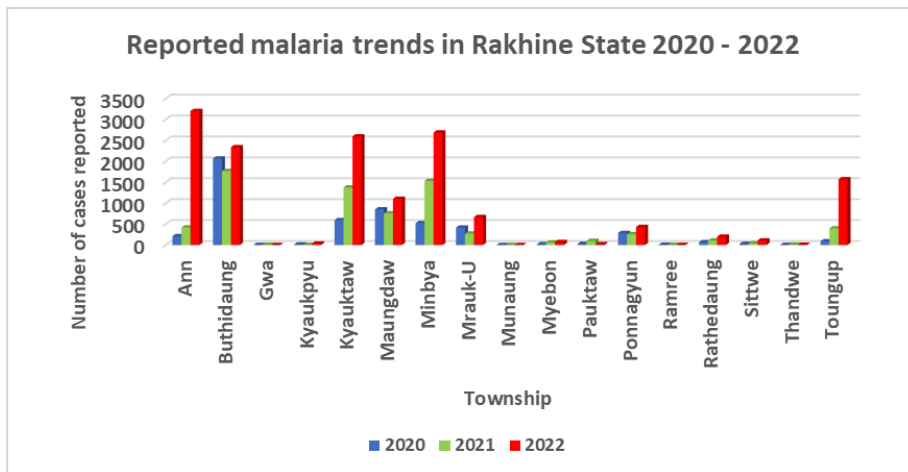
reported in Kayin in 2022 was 29,019, representing a 99 percent increase from 2021, and a 158 percent increase from 2020. Hpapun Township had the highest number of cases reported at 10,271 (Annual parasite index 273). The number of reported *Pf* cases increased by 78 percent from 2021 to 2022. Hpapun Township had the highest number of reported *Pf* cases in 2022 at 1,243.

Figure 9: Kayin State Reported Malaria Cases by Township, 2020–2022



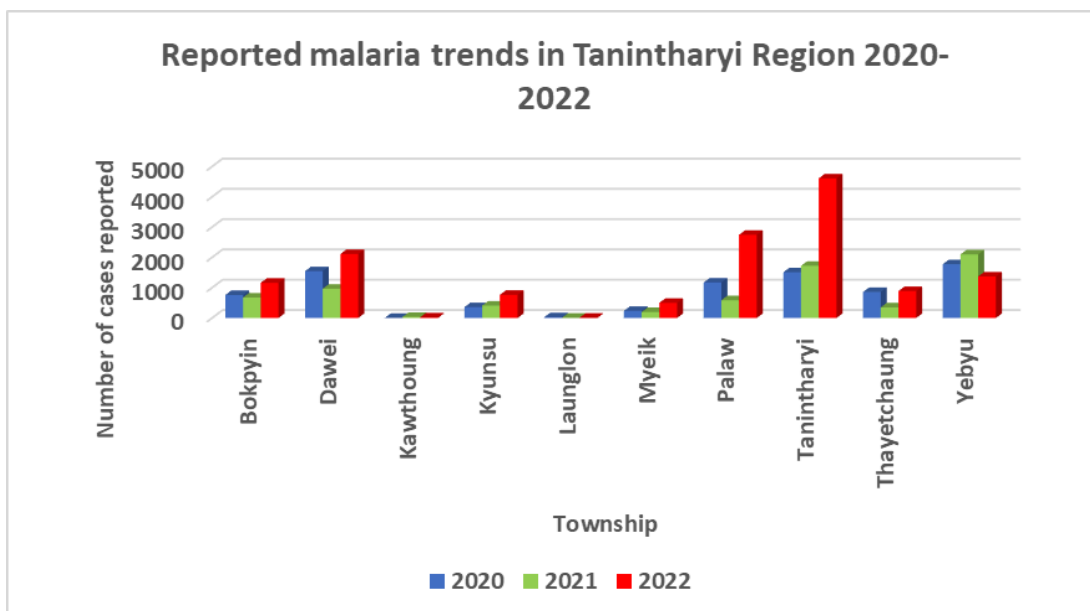
Rakhine: Rakhine State has remained relatively secure and stable; however, in 2022, the active conflict worsened security and disrupted operations in some townships. PMI had planned to expand service delivery activities in all 17 supported townships, but due to the worsening security situation, this was not possible. Reported malaria cases increased by 112 percent from 2021 to 2022, with *Pf* increasing by 97 percent. Southern Rakhine was on track to eliminate all forms of human malaria prior to this uptick in cases. Five of seven townships continue to do well with very few reported cases in 2022: Gwa (0), Thandwe (4), Kyaukpyu (33), Ramree (2), and Manaung (0). Manaung Township has had no reported cases for over three years. However, two townships have experienced a resurgence - Toungup and Ann. Toungup Township was one of the original piloted elimination townships and reported only 88 cases in 2020. The number of reported cases increased to 397 (*Pf* 393) in 2021 and leaped to 1,571 in 2022 (*Pf* 1,092). Ann Township was categorized as a “Transition to Elimination” township in 2021 with 210 reported cases in 2020 and 418 (*Pf* 287) in 2021. In 2022, Ann reported 3,205 cases, with 1,769 *Pf*.

Figure 10: Rakhine State Reported Malaria Cases by Township, 2020–2022



Tanintharyi: In 2021, the unstable situation led PMI to focus on maintaining community-level support only. However, the current context is more secure in some areas allowing for more complete implementation. Reported malaria cases in Tanintharyi increased by 101 percent from 2021 (7,046) to 2022 (14,182), with *Pf* cases increasing by 196 percent. The *Pf* increase is of particular concern for the Greater Mekong Subregion’s battle against artemisinin resistance as Tanintharyi has a very long border with Thailand. Seven of ten townships had a large increase in reported cases, while Kawthoung, Launglon, Yebyu had lower or essentially unchanged levels. These three townships are in position to eliminate *Pf*. Kawthoung reported only one case each in the past two years, Launglon reported no *Pf* cases for two years, and Yebyu reported two *Pf* cases in 2022. Thayetchaung Township is also in good position to eliminate *Pf* with only nine cases reported in 2022. Tanintharyi Township reported the most malaria cases in total (4,608) and the most *Pf* cases (635).

Figure 11: Tanintharyi Region Reported Malaria Cases by Township, 2020–2022



3.4 Key Changes in this Malaria Operational Plan

The Burma context is constantly shifting, and PMI is adapting as much as possible to control the upsurge in malaria cases and continue on the path toward elimination. There are no significant changes noted in activities in the FY 2024 MOP.

II. OPERATIONAL PLAN FOR FY 2024

1. Vector Monitoring and Control

1.1. PMI Goal and Strategic Approach

PMI Burma continues to support evidence-informed deployment of traditional and new vector control tools to achieve country malaria control and elimination goals. The NMCP vector control strategy includes provision of free ITNs for all populations at risk of contracting malaria through continuous and mass distribution, including the distribution of LLIHNs to forest going populations, re-impregnation of existing nets and focal response and reactive indoor residual spraying with a non-pyrethroid insecticide in the event of outbreaks/confirmed transmission when appropriate.

In addition, the National Strategic Plan (NSP) suggests conducting selective larval source management, implementing novel vector control tools and personal protection measures as appropriate among at-risk, high-exposure populations, and promoting insecticide treated uniforms for the defense services. The NSP reiterates conducting ‘epidemiology-led entomology for problem solving’ approach to accelerate progress towards elimination and to ensure that malaria does not become re-established in areas where transmission has ceased.

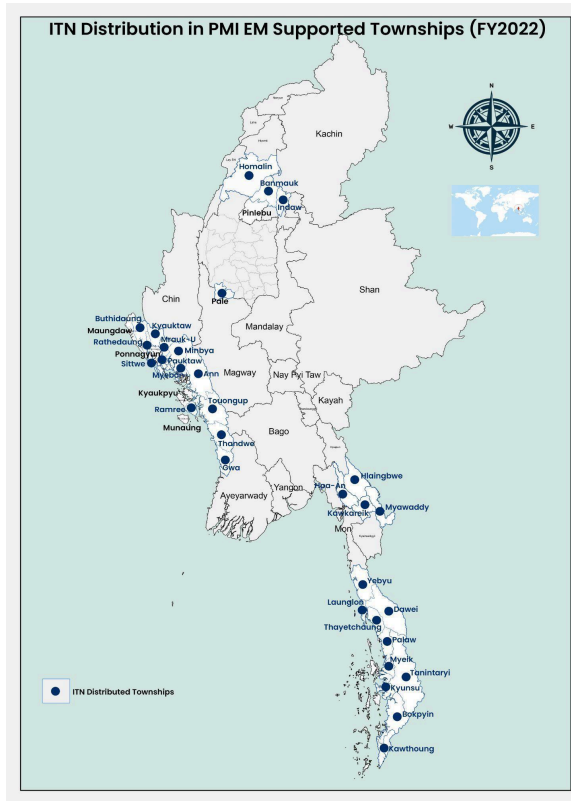
The insecticide resistance surveillance activities will focus on areas where the agricultural use of pesticides is high. The entomologists under the Deputy Director for malaria will be responsible for planning, coordination and monitoring of vector control activities, including monitoring the coverage and quality and the residual efficacy of insecticides on ITNs and spray surfaces. The NMCP is planning to restructure the entomology units and strengthen the capacity of entomology staff with new skill sets needed in these areas.

PMI will support the procurement and distribution of ITNs for all populations at risk of malaria. In addition, PMI will support the procurement of LLIHNs and topical repellents for forest goers who may be at higher risk of malaria and less likely to carry and use ITNs while in the forest. With FY 2024 funds, PMI will continue to provide technical assistance and capacity strengthening for NMCP and state/region staff in entomological monitoring, including both insecticide resistance and vector bionomics as part of foci investigations in PMI-supported regions/states.

The Global Fund supports all of the NSP’s vector control interventions except topical repellents. The Global Fund procured 426,846 ITNs which will be targeted for distribution based on the most up-to-date stratification of malaria risk available. ITNs are distributed to

established villages via continuous distribution with locally appropriate behavior change communication to ensure correct and consistent ITN use.

Figure 12. Map of Vector Control Activities in Burma



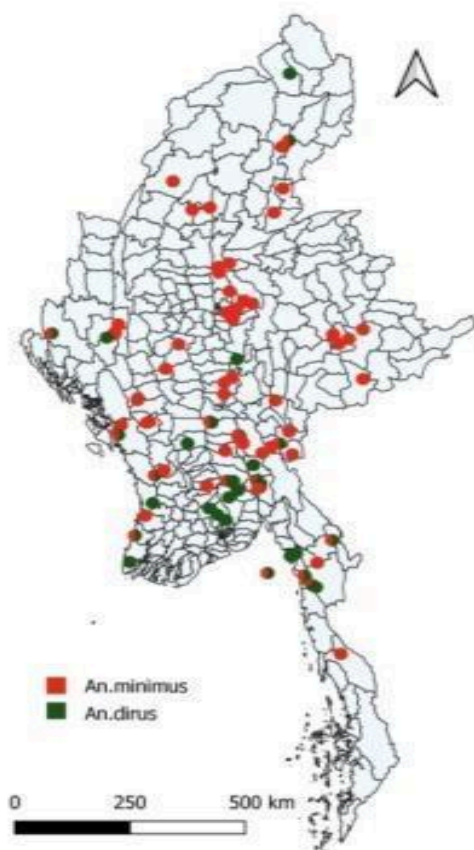
In August 2022, the NMCP entomology team performed vector surveillance activities in two villages (Sipant and Khatbu) in Waimaw township of Kachin State. Using CDC light traps and pyrethrum spray sheet collection, and human landing catches, *Anopheles (An.) minimus* was found both indoors and outdoors.

Summary of Distribution and Bionomics of Malaria Vectors in Burma

Malaria transmission in Burma is closely associated with two malaria vectors that inhabit the forest and forest fringe: *An. dirus* and *An. minimus*. The *An. dirus* species complex survives in dense shade and high humidity and plays a role as an efficient vector in the major monsoon and post-monsoon seasons. The next most efficient vector *An. minimus* (sensu lato) is more widespread than *An. dirus* and acts as a major pre-monsoon and monsoon vector in hilly areas. Secondary vectors such as *An. culicifacies*, *An. philippinensis* and *An. annularis* occur in areas of irrigated open farmland such as flooded rice fields and sporadic secondary transmission can take place in these areas as a result of imported cases. *An. maculatus*, *An. sinensis*, *An. aconitus* and *An. jeyporensis* have also been implicated as vectors of limited capacity. *An. sundaicus* can support transmission in coastal areas, particularly in areas where aquaculture projects have been abandoned resulting in accumulations of brackish water. The

behavior of malaria vectors in Burma varies depending on climatic and other environmental factors. Both indoor and outdoor biting takes place, but primary vectors are characterized, at least seasonally, by their early evening outdoor biting habit.

Figure 13: Major Malaria Vector Distribution in Burma



Source: Presentation slide of Entomology session, Annual Evaluation Meeting NMCP, 2022

Status of Insecticide Resistance in Burma

From 2015 to 2020, PMI supported NMCP to conduct insecticide resistance monitoring activities in Burma. In 2019, NMCP conducted insecticide resistance monitoring in 10 sites [Kayah (Shadaw), Mon (Belin), Shan (MongPyin), Yangon (Hlegu), Sagaing (Homalin), Ayeyarwaddy (Kyangin), Yangon (Taikkyi), Bago (Taungoo), Shan (S)(Mongpan), Shan (N) (Kunglon)] and two sites [(Tanintharyi (Thayatchaung) and Kayin (Hpaan)] in 2022. In these surveys, multiple species were tested including the major vectors *An. minimus*, *An. dirus* and *An. maculatus*, and the minor vectors *An. kochi*, *An. aconitus*, *An. jamesii*, *An. philippinensis*, *An. annularis*, and *An. hyrcanus*. Susceptibility tests were conducted for deltamethrin, permethrin, lambdacyhalothrin, cyfluthrin, etofenprox, and dichloro-diphenyl-trichloroethane. In all cases except for one, species tested were completely susceptible. The exception was for *An. hyrcanus* in Ann Township in Rakhine State where only 75 percent mortality was observed following exposure to deltamethrin.

1.2. Recent Progress (March 2022–March 2023)

- Based on the WHO guidelines on vector control needs assessment, PMI conducted a needs assessment survey in collaboration with the NMCP of State/Regional entomological activities in terms of capacity and logistic requirements. The key findings and recommendations are:
 - The current entomological assistant in Rakhine has received required training; no special training is needed for him to conduct the existing entomological tasks.
 - There is a shortage of entomological equipment and supplies for Rakhine State and it was recommended to establish a system to provide required materials for the entomology team.
 - Basic entomology training for foci investigation has not been conducted; it was proposed that the central entomology team consider this training for PMI-supported malaria elimination areas.
- Conducted an assessment on “Feasibility status of rearing *Anopheles sundaicus* in Rakhine State.” According to the findings, establishing an insectary at the Rakhine State’s Vector Borne Disease Control unit (VBDC) was not feasible because of space constraints and lack of human resources related to entomology. Instead of supporting insectaries at the State/Regional level, it was recommended to provide technical, and financial support for the existing central insectary laboratory and strengthen regional/state level capacity through the central entomology team.
- PMI placed an order of 250,000 pyrethroid ITNs and 6,500 LLINs, including 1000 combination hammocks and nets.
- PMI supported ICMVs/MMWs to distribute 120,608 ITNs procured by PMI through mass campaigns (116,346), continuous distribution (1,490), and other channels (2,772) in 31 townships. Due to security reasons, ITN distribution did not occur in one township in Sagaing and three Townships in northern Rakhine. ITNs were distributed through the mobilization of ICMVs and village leaders according to the situation concerned.
- PMI monitored ITN coverage and utilization in 3,549 households in 169 villages. Among the monitored villages, 156 (92.3 percent) had acceptable ITN coverage, and 153 (90.5 percent) had acceptable ITN utilization.
- Conducted 27 community-level social behavior change (SBC) activities to improve demand for ITNs, increase appropriate use, promote care, and mitigate against misuse. For more information, please refer to the SBC section.

1.3. Plans and Justification for FY 2024 Funding

The [FY 2024 funding tables](#) contain a full list of vector monitoring and control activities that PMI proposes to support.

1.3.1. Entomological Monitoring

- PMI will provide technical assistance and capacity strengthening support to NMCP/State/Region entomology teams. Support for entomological monitoring will include both insecticide resistance and vector bionomics as part of foci investigations in

PMI-supported regions/states. The budget for entomological monitoring includes national-level coordination, technical assistance support, capacity strengthening for entomological staff in entomological surveillance, including foci investigations, and entomological data management.

1.3.2. Insecticide-Treated Nets

- PMI will support the procurement and distribution of ITNs through continuous distribution. With FY2024 funding, PMI will procure approximately 200,000 standard pyrethroid ITNs (includes 6,500 LLIHNS, 2,500 combination hammocks and nets) for continuous distribution through ICMVs and other community malaria workers to at-risk populations in PMI-supported areas including mobile and migrant communities.
- Please see the SBC section for details on challenges and opportunities to improve intervention uptake or maintenance.

ITN Distribution in Burma

- PMI will support distribution of approximately 300,000 ITNs procured using PMI FY23 funds from the central warehouse to ICMVs for continuous distribution. Distribution will include promotion and SBC and will target stable populations and special populations including migrants, internally displaced persons, and remote, hard-to-reach communities.
- Please refer to the ITN Gap Table in annex for more detail on planned quantities and distribution channels.

1.3.3. Indoor Residual Spraying

PMI does not support indoor residual spraying in Burma.

1.3.4. Other Vector Control

The NMCP supports a number of promising novel vector control tools and personal protection measures to tackle transmission, as appropriate, among forest-goers who are considered to be an at-risk, high-exposure population. These novel interventions include hammocks with integrated nets treated with long-lasting insecticide; topical repellents; insecticide treated clothing e.g. longyi;¹ insecticide treated blankets; screening of forest huts with long-lasting insecticide treated netting; and, the treatment of cattle and/or humans with ivermectin as an endectocide.

Based on the positive results of the operational research (OR) conducted in Burma and updated PMI FY 2023 MOP technical guidance, PMI plans to provide topical repellents as part

¹ A longyi is a sheet of cloth widely worn in Burma. It is approximately 2 meters long and 80 centimeters wide. The cloth is often sewn into a cylindrical shape. It is worn around the waist, running to the feet, and held in place by folding fabric over without a knot. It is sometimes folded up to the knee for comfort.

of the forest goer package that includes ITNs/LLIHNs/combo hammocks and nets and SBC materials.

With FY2024 funds, PMI will support the procurement and distribution of 125,000 topical repellent bottles to distribute to 25,000 forest goers (averaging 5 cycles of replenishment) in both PMI supported areas and selected non-supported areas where there are large numbers of forest-goers.

Please see the SBC section for details on challenges and opportunities to improve intervention uptake or maintenance.

2. Malaria in Pregnancy

2.1. PMI Goal and Strategic Approach

Malaria prevention is identified as a key intervention in the current NSP (2021–2025) which calls for universal coverage of high-risk populations with appropriate malaria prevention measures. Given the relatively low prevalence of malaria in Burma, intermittent preventive treatment for pregnant women (IPTp) is not part of the national strategy. Instead, the Ministry of Health (MOH) and PMI support promotion of universal ITN coverage and prompt diagnosis and treatment of clinical cases of malaria in pregnant women as they remain a vulnerable group. The MOH adopted the new WHO antenatal care (ANC) guidelines, including recommending eight ANC contacts during pregnancy. In high transmission areas, the NSP supports rapid diagnostic test (RDT)-based malaria screening for pregnant women during routine ANC visits, although implementation of this approach has not been consistently applied in practice and there is little data reported on results of the RDT screening tests. The NSP also supports the provision of additional ITNs delivered through routine ANC services for pregnant women in communities targeted for mass ITN distribution. Burma's national malaria treatment policies for pregnant women is the following: quinine is used in the first trimester (which may be combined with clindamycin) and ACTs in the second and third trimester (as stated in national treatment guidelines). Treatment for severe malaria is with intravenous or intramuscular artesunate. The NMCP plans to update the malaria treatment policy in 2023 to reflect the new WHO recommendation calling for the use of ACTs in the 1st trimester of pregnancy to treat uncomplicated *Pf* malaria. PMI supports a two-pronged approach to reduce the burden of malaria infection among pregnant women with the provision of ITNs and ensuring effective case management of malaria, especially amongst the most vulnerable populations, including migrant workers, refugees, and other hard-to-reach and ethnic minority populations. PMI supports provision of ITNs to pregnant women in the PMI-focus areas and relevant updates to the malaria treatment guidelines as needed.

2.2. Recent Progress (March 2022–March 2023)

PMI supported strengthening case management of malaria in pregnancy (MIP) through identification and referral of cases by ICMVs and distributed 436 ITNs to pregnant women at the first ANC visit in PMI focus areas.

2.3. Plans and Justification for FY2023 Funding

The [FY 2024 funding tables](#) contain a full list of MIP activities that PMI proposes to support.

- Distribute ITNs to pregnant women at first ANC visit in high transmission areas to ensure coverage of newly formed households and newly pregnant women.
- Support refresher training for public health facility midwives and nurses and mobile outreach teams in targeted areas to strengthen MIP services.

Please see the SBC section for details on challenges and opportunities to improve intervention uptake or maintenance.

3. Drug-Based Prevention

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

3.1. Other Drug-Based Prevention

The NMCP and WHO have recommended introducing MDA, TDA, and IPTf for key populations in key areas in order to accelerate burden reduction and mop-up residual *Pf* malaria transmission. In addition, WHO is proposing monthly chemoprevention with chloroquine for three months (during the peak transmission season) as a malaria elimination accelerator activity in a small number of high *Pv* burden areas with high prevalence of glucose-6-phosphate dehydrogenase (G6PD) deficiency.

3.1.1. PMI Goal and Strategic Approach

Since the proposed accelerator chemoprevention strategies (e.g., MDA, TDA, IPTf) will be supported by the Global Fund RAI4E with technical assistance from WHO in Burma, PMI does not currently have plans to support these activities.

3.1.2. Recent Progress (March 2022–March 2023)

No seasonal malaria chemoprevention or other drug-based prevention activities were supported with PMI funding.

3.1.3. Plans and Justification for FY 2024 Funding

No seasonal malaria chemoprevention or other drug-based prevention activities are proposed with FY 2024 funding.

4. Case Management

4.1. PMI Goal and Strategic Approach

In Burma, the NMCP's objective is to ensure universal diagnostic testing of suspected malaria cases and effective treatment of confirmed cases with quality assured drugs through three

channels of service delivery: community-based, public health facilities, and the private sector. Malaria case management is not only to reduce malaria mortality and morbidity but also to prevent onward transmission.

The diagnosis of malaria is based on clinical suspicion and on the detection of parasites or antigens in the blood (parasitological or confirmatory diagnosis) by RDTs or microscopy. RDTs are used by basic health staff in sub-rural health centers and rural health centers and by ICMVs at community level. RDT test kits for identification of both *Pf* and *Pv* species are used. Quality-assured microscopy is to be made available at township hospitals in endemic areas and at state/region levels nationwide, though RDTs are used when microscopy is not available.

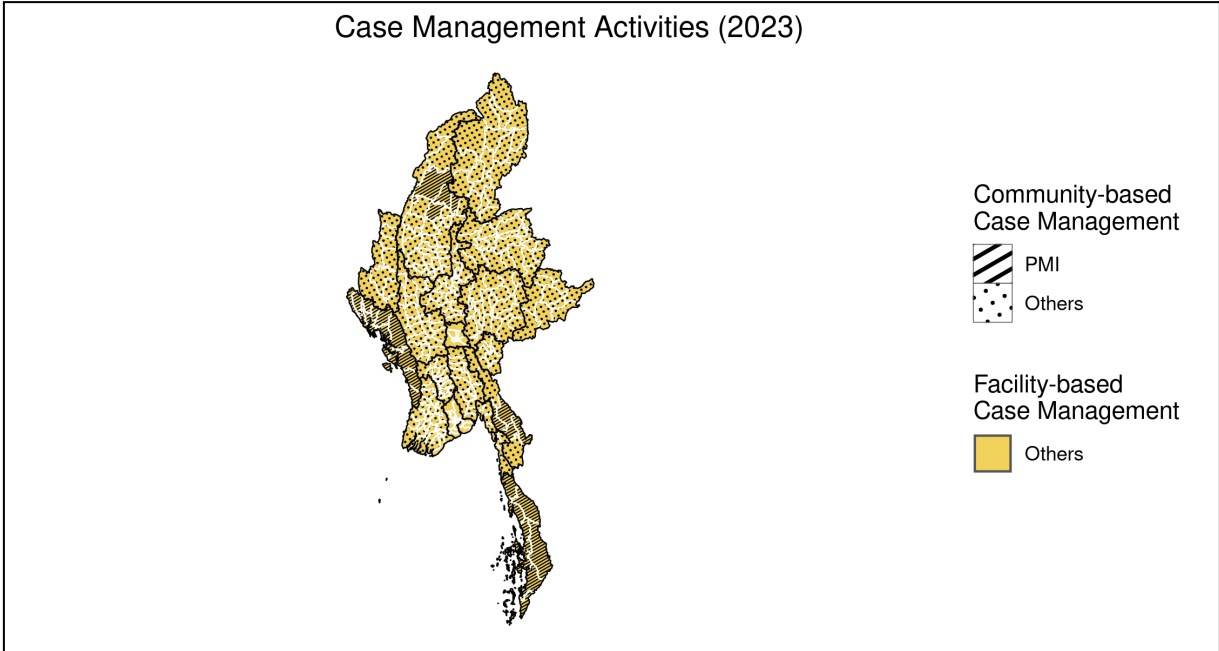
The main determinant of antimalarial treatment policy is the therapeutic efficacy of the antimalarial medicines in use. Artemether-lumefantrine (AL) is the first-line treatment of uncomplicated *P. falciparum* in Burma. Approved alternative ACTs include artesunate plus mefloquine and dihydroartemisinin-piperaquine. Additionally, single-dose primaquine is recommended to prevent transmission of *P. falciparum* malaria. It is recommended that treatment be supervised (directly observed treatment, or DOT) for three days. Severe and complicated malaria cases should be referred immediately to the nearest hospital for treatment with intravenous or intramuscular artesunate. The recommended treatment of uncomplicated *Pf* malaria in the first trimester of pregnancy is currently quinine plus clindamycin for 7 days. With WHO recommending the use of AL in the first trimester for treatment of uncomplicated *Pf* malaria, Burma plans to amend its NMCP guidelines to align with this recommendation. CQ is used for the treatment of *Pv* malaria, together with 14-day primaquine (PQ) (0.25mg base/kg/day) for radical cure of hypnozoites without G6PD testing. If G6PD testing is available, Burma is now recommending PQ, 0.5mg/kg/day for 7 days, in those without G6PD deficiency. It is recommended that PQ treatment be supervised through DOT by family members or by ICMVs on days 3, 5, 7, 10, and 14.

PMI supports this approach through support to national level policy and programmatic activities in targeted villages in 36 townships in four states/regions (Kayin, Rakhine, Sagaing, and Tanintharyi). Since 2011, with Global Fund and PMI support, a large network of village malaria workers has been developed, providing diagnostic and treatment services to nearly 18,000 communities located outside the catchment area of public health services. In 2018, many of the village malaria workers were renamed as ICMVs and trained in the control of other communicable diseases (e.g., tuberculosis, Human Immunodeficiency Virus [HIV], dengue, filariasis, etc.) PMI supports over 2,100 ICMVs covering over 3000 villages and worksites through training, re-training, and supervision to improve worker performance. ICMVs provide early diagnosis and effective treatment with RDTs, ACTs, CQ, and PQ to hard-to-reach communities for all ages with the exception of pregnant women and children less than 1 year of age. PMI also supports MMWs who are mobilized from migrant workers working in remote forested hard-to-reach worksites to provide essential malaria case management services.

In addition, PMI engages and provides technical and commodity support to the private sector including private companies and private general practitioners to improve malaria case management and reporting in targeted townships.

PMI procures case management commodities including RDTs, ACTs, CQ, and PQ to support ICMVs in PMI target areas. In 2024, PMI will account for approximately 25 percent of case management commodities and Global Fund will support 75 percent.

Figure 14. Map of Case Management and Community Health Service Delivery Activities in Burma



4.2. Recent Progress (March 2022–March 2023)

Between March 2022 and March 2023, implementation of case management activities has remained challenging on several fronts. Immediately after the political conflict began, health providers stopped working in approximately 75 percent of public health facilities and an estimated 50 percent are functioning as of March 2023. ICMVs were also affected but not to the same extent. Overall, reported malaria testing decreased by 46 percent from 2020 to 2021. In 2022, reported testing has recovered slightly with an increase of 30 percent at the public health facility and community levels compared to 2021.

Table 1: Malaria testing and reported cases by different stakeholders 2020–2022

Health facility level	2020		2021		2022	
	Exam	Positive	Exam	Positive	Exam	Positive
Public	1,398,930	10,707	372,790	8,474	520,878	13,374
Private	69,912	864	185,193	8,311	*	*
Community	2,196,397	47,265	1,400,402	62,216	1,784,380	116,240
Total	3,665,239	58,836	1,958,385	79,001	2,305,258	129,614

*Source: Malaria Situation in Myanmar presentation by Dr Nay Yi Yi Linn, Deputy Director NMCP, at Malaria Partners Meeting Bangkok, Thailand March 6, 2023. *Data not available.

The ongoing conflict has disrupted PMI’s ability to support and resupply commodities to ICMVs in non-government-controlled areas. The Sagaing Region and Kayin State have been the most difficult PMI-supported areas to implement since the conflict began due to insecurity. Tanintharyi Region was challenging early on, but has had some improvement operationally in the last 12 months. Rakhine State was operating at near-normal levels early on but is now much more challenging.

Centrally, the new government has instituted new procedures for donated commodity importation. This delayed the arrival of all PMI procured case management commodities until 1st quarter of 2023. In addition, commodity distribution plans must now be pre-approved at multiple levels prior to transport, furthering delays and risk of stock-outs. Please see the Health Supply Chain and Pharmaceutical Management section for details on case management commodity challenges.

Despite all these challenges, PMI funded the following activities:

Central Level Case Management Activities

- Due to travel restrictions on PMI USG staff, PMI’s implementing partners have attended national-level coordination meetings which have been restarted.
- Two new central-level policy changes are currently under discussion and will be supported by PMI when approved:
 - Use of AL in the first trimester of pregnancy for treatment of uncomplicated *P. falciparum* malaria.
 - Use of PQ at 0.5mg/kg/day for seven days in patients without G6PD deficiency after testing.
- Updating DOT standard operating procedures to directly observed and supervised therapy for all *Pf*, *Pv*, and mixed infection by integration of family DOT/peer DOT and tele-supervision.

Commodities

- Procured and distributed 230,900 malaria RDTs to PMI supported ICMVs and MMWs in supported townships.
- Procured and distributed 7,232 ACT treatments, 58,140 chloroquine tablets, and 174,250 primaquine tablets to ICMVs and MMWs in PMI-supported townships.
- Quarterly monitoring visits to review appropriate storage of malaria diagnostics and drug stock management systems at township levels.

Facility Level:

- Trained health staff from private facilities to provide malaria prevention and case management services.

Township Level

- PMI supported 42 joint supervision and on-site coaching visits of ICMVs by health facility staff and township teams.

Community Level

- Provided both initial and refresher training to 157 health workers (ICMVs and MMWs) on malaria diagnosis and RDT use in all PMI supported townships.
- Conducted ICMV training in collaboration with respective township health department and VBDC staff for capacity strengthening for malaria as well as tuberculosis, HIV, dengue, leprosy, and lymphatic filariasis.
- Trained 155 ICMVs to monitor the severity of symptoms and any adverse events after initiating PQ treatment for radical cure of *Pv*.
- Enhanced access to improved quality case management for hard-to-reach populations through strategic screening sites, MMWs, mobile visits, and outreach activities in collaboration with township health departments, private sector, and EHOs.
- Proactive community case management (weekly fever surveillance) tested a total of 4,286 people in 92 villages with higher malaria transmission detecting 1,251 positive cases (44 *Pf* cases, 1,187 *Pv* cases, and 20 mixed infection cases).
- In collaboration with NMCP, proactive case detection tested a total of 4,751 people during high malaria transmission season and outbreak-prone areas prior to the transmission season in 19 villages/worksites/forest farms finding 310 positive cases (*Pf*: 94, *Pv*: 198, Mixed: 18).
- Conducted a total of 619 ICMVs supervision visits in-person and 176 via tele-supervisions.

4.3. Plans and Justification for FY 2024 Funding

The [FY 2024 funding tables](#) contain a full list of case management activities that PMI proposes to support.

Unless the political context changes by the time MOP FY2024 funding is available, implementation of case management activities will continue to be a challenge. Although PMI

plans to re-engage technically at the central level, the focus will remain at the township and community levels. Twenty-six of the 36 PMI supported townships have increasing malaria trends, and these townships are mostly along the border areas that are difficult to access. With FY2024 funding, PMI will work at the central level to support national-level coordination, collaboration, and partnership through technical working groups and provide technical assistance in policy/guideline development and revision.

PMI will continue to procure malaria case management commodities to support community-based ICMVs in PMI supported townships. The processes for importation, warehousing, and distribution have undergone government-led, mandatory changes that have caused some delays and uncertainty. PMI has mostly adapted to the new importation and warehousing requirements. The new regulations for commodity distribution continue to be a challenge. All malaria commodity distribution plans must be pre-approved at all levels—central, state/region, and township—before release from the government warehouse. Certain supported areas are considered to be opposition zones by the government and commodities are not being approved for those villages. Unfortunately, these areas also tend to have the highest malaria burden.

The new warehousing arrangement creates additional concerns, but also opportunities. All imported malaria commodities from all partners must now be pooled at the central warehouse. Although PMI will continue to direct commodities to supported ICMVs, the commodities released from the warehouse to PMI could be Global Fund procured commodities, and vice versa. If Global Fund procurement is delayed, the release of PMI commodities to other partners could lead to short falls for PMI distribution. Therefore, PMI Burma has added an additional line to the Gap Table to account for such scenarios. However, the new arrangement provides an opportunity to have access to needed commodities if PMI experiences a delay in importation. Using a first-in-first-out distribution strategy for the central warehouse should also decrease the risk of expiring commodities.

Please refer to the RDT, ACT, CQ, and PQ Gap Tables in the annex for more detail on planned quantities and distribution channels.

PMI Burma has prioritized case management support at the community level through ICMVs and MMWs. However, since the political conflict began, public health facility services have decreased, and private provider services have increased, therefore, in FY 2023, PMI will begin to engage, assess, and provide technical assistance to public health facilities in targeted supported townships, expanding to additional townships each year into FY 2024. With FY2024 funding, PMI will support training, mentoring, and supportive supervision of public facility-based malaria case management and appropriate care/referral of severe malaria cases in supported townships.

In the private sector, PMI will work to strengthen the quality of case management practices of private provider associations by expanding training coverage of private sector providers and

facilitating the reporting of private sector malaria case data into the national malaria information system. In addition, PMI will continue to strengthen the quality of case management practices and malaria data reporting of private sector companies such as rubber and palm oil plantations, gold and lead mining, and forestry and fisheries.

Much of the credit for Burma's great progress toward malaria elimination between 2010 and 2019 was due to the extensive network of community malaria volunteers (now ICMVs) diagnosing and treating malaria in the hard-to-reach populations. The current malaria upsurge is occurring mostly in areas along the border that are difficult to access. With FY2024 funding, PMI Burma will continue to prioritize community case management through approximately 2,500 ICMVs and MMWs. Support will include training of newly recruited volunteers, refresher training, supervision including joint visits with rural health center staff and township teams, and quarterly stipend payments.

Reported testing by community workers dropped after the start of the political conflict. Although reported testing increased by 27 percent from 2021 to 2022, the activity has not recovered yet to pre-conflict levels. To regain control of the malaria upsurge and return to a path toward elimination, PMI Burma will expand deeper into the hard-to-reach areas in supported townships to provide access to malaria services to forest-goers, migrants, mobile populations, internally displaced persons, and ethnic groups.

PMI will not support therapeutic efficacy studies with FY2024 funding as they are supported by the Global Fund. Nonetheless, relevant findings from the studies will be taken into account by the national treatment guidelines to ensure the most efficacious drugs continue to be used in-country.

Social and behavior change is critical to case management implementation in Burma. In addition to lower perceived risk in low transmission settings influencing treatment seeking behavior, a key priority is adherence to radical cure treatment of *Pv*. Social and behavior change targeted toward service provider adherence to national treatment guidelines and patient adherence to complete dosing schedule are equally important.

Please see the SBC section for details on challenges and opportunities to improve intervention uptake or maintenance.

Monitoring Antimalarial Efficacy

Table 2. Ongoing and Planned Therapeutic Efficacy Studies

Ongoing Therapeutic Efficacy Studies			
Year	Site name	Treatment arm(s)	Plan for laboratory testing of samples
2021- 2022	None		
2022- 2023	Waingmaw Township, Kachin State	Chloroquine for <i>P. vivax</i>	In-country at Department of Medical Research, Ministry of Health
Planned TESs (funded with previous or current MOP)			
Year	Site name	Treatment arm(s)	Plan for laboratory testing of samples
		None planned	

5. Health Supply Chain and Pharmaceutical Management

5.1. PMI Goal and Strategic Approach

The NMCP procurement and supply management system is vertical in nature and largely relies upon donor funding and implementing partners to help it meet program needs. Key NMCP and PMI priorities include ensuring availability and use of quality-assured antimalarial medicines, diagnostics, and preventive commodities at service delivery points, with no stockouts reported. Under the current context, procurement and delivery of international aid, including health commodities, have been hampered by unclear and changing guidelines, delays getting necessary clearances for commodity imports, particularly getting signatures, as well as conflict and worsening security situation in certain regions in Burma.

Currently malaria health commodities are mainly procured by the Global Fund (UNOPS) and PMI. Among the implementing partners, the two Global Fund principal recipients (Save the Children and UNOPS) have played a key role in ensuring distribution of ACTs, RDTs, and other malaria commodities for all areas covered by the Global Fund grant. PMI primarily supports malaria commodity procurement and distribution to the PMI-supported areas. Since the political conflict, based on MOH guidelines, the NMCP has instructed that all donor-funded health commodities, unless otherwise directed, should be delivered to MOH-appointed warehouses such as the VBDC warehouse in Yangon. As of 2023 March, LLINs are permitted to be delivered to various implementing partner’s warehouses due to the lack of storage space at MOH-appointed warehouses. The Central Medical Store Department within the Medical Care Services of the Department of Health is in charge of the distribution of antimalarial drugs to all township hospitals and health departments.

Each implementing partner may request commodities based on the approved distribution list from NMCP in consultation with states/regions and townships. The MOH provides the approved commodity distribution list to implementing partners who need to seek further approval from the General Administrative Department of the respective states/regions and townships for distribution of the requested commodities. Transportation of commodities to conflict-affected areas has been hampered by the current security situation in the country and it is not uncommon for vehicles transporting health commodities to be stopped at checkpoints. Limited availability of trained staff due to health worker strikes and the civil disobedience movement have affected commodity management practices, resulting in stockouts and expiration of commodities.

PMI's support has primarily consisted of providing technical assistance in commodity quantification, quarterly reviews of partner commodity stocks, monitoring availability of commodities (medicines, diagnostics, and ITNs) in PMI focus areas, and implementation and management of the electronic logistics management information system (eLMIS), mSupply [Sustainable Solutions Ltd. (Auckland, New Zealand)] with the expansion of the system from the central and regional level to the township level.

The Department of Food and Drug Administration (DFDA) headquartered in Nay Pyi Taw is one of the departments under the Ministry of Health that aims to ensure the safety and quality of Food, Drugs, Medical Devices and Cosmetics in the country. PMI supports capacity strengthening of the DFDA and technical assistance to the pharmaceutical chemistry lab, in Nay Pyi Taw, to monitor the quality of antimalarials, inspect and assess private laboratories, and maintain ISO accreditation.

5.2. Recent Progress (March 2022–March 2023)

In FY2022, PMI supported the quantification, procurement, and distribution of malaria commodities including ITNs, RDTs, ACTs, Chloroquine, and Primaquine specific to PMI focus areas; developed requisition orders based on supply planning and provided supplementary assistance for subsequent order placement and delivery; completed monthly procurement planning and monitoring report for malaria for Global Fund, PMI, and government-funded commodity contributions; and coordinated in-country receipt, storage, and distribution of all PMI-funded shipments from the ports of entrance to consignees.

In addition, PMI coordinated three quarterly malaria commodity stock review meetings with NMCP, PMI and Global Fund partners to share stock information, challenges, and risk management strategies. During these meetings, PMI was able to identify and subsequently redistribute excess and near expiring commodities to avoid stockouts and expiries. PMI conducted the “Basic Principles in Pharmaceutical Supply Chain Management” training for 156 supply chain participants from MOH and development partner supply chain cadres in three training sessions in Rakhine State and one training in Shan North State. PMI trained 33 PMI implementation partner staff in the mSupply “Basic-User Training” and “Super-User Training”

and 23 PMI implementation partner staff received mSupply “Basic-User Refresher Training” for one central and 10 district warehouses of PMI-Eliminate Malaria project.

The COVID-19 pandemic and the conflict situation in Burma disrupted DFDA's medicines regulatory system in 2021, affecting the quality assurance of medicines including antimalarials. DFDA field offices had limited capacity to perform regulatory functions due to a lack of skilled staff and essential supplies. The backbone of DFDA, the Nay Pyi Taw pharmaceutical chemistry lab, lost about 70 percent of its workforce, which severely reduced its testing output. However, as of 2022, the number of staff increased from 11 to 20 as DFDA transferred several staff from state/region offices to Nay Pyi Taw and hired new staff.

In 2022, to strengthen the skills and knowledge of DFDA laboratory staff, PMI organized four technical webinars on analytical testing & regulation and also provided preventive maintenance training to the metrology team at Nay Pyi Taw pharmaceutical chemistry lab to maintain ISO 17025:2017 accreditation. The laboratory underwent ISO 17025:2017 reaccreditation assessment by the American National Standards Institute National Accreditation Board in September 2022 and achieved re-accreditation in ten scopes of testing originally accredited.

PMI organized a technical webinar on proficiency testing/inter-laboratory comparison for 34 participants including participants from DFDA laboratories in Nay Pyi Taw, Yangon, and Mandalay as well as private sector participants from YSI Pharmaceuticals quality control laboratory, and Myanmar Pharmaceutical. Participants learned how to plan an inter-laboratory comparison study, including quality assurance activities to perform prior to the study and the statistics methods to evaluate results. The knowledge gained from this webinar helped the DFDA to organize an inter-laboratory comparison study among Burma's medicines testing laboratories.

PMI conducted a capacity assessment for one of the private pharmaceutical companies, YSI Pharmaceuticals, and provided technical assistance to improve laboratories' quality management systems, perform quality control testing of antimalarials, and strengthen good manufacturing practices at manufacturing facilities and prepare for WHO Prequalification for chloroquine.

5.3. Plans and Justification with FY 2024 Funding

The [FY 2024 funding tables](#) contain a full list of health supply chain and pharmaceutical management systems strengthening that PMI proposes to support.

In the current context, coordination and management of malaria commodities among donors and partners are critical. To ensure availability of key commodities in PMI target areas as well as to respond to urgent requests from other areas, PMI will monitor and address potential bottlenecks in procurement and distribution of malaria commodities, including Global Fund-financed commodities. With FY2024 funding, PMI will actively engage and support annual malaria commodity quantification exercises, and continue to coordinate quarterly stock

review meetings with partners to avoid stockouts and expiries of malaria commodities. PMI will assist the NMCP to strategize and develop commodity ordering and distribution procedures for partners. PMI will provide refresher training and continue to support technical assistance for mSupply implementation in currently supported townships and expand mSupply implementation into all ten townships in Tanintharyi Region.

PMI will continue to provide technical assistance and training support to the DFDA Nay Pyi Taw laboratory so that it can maintain its ISO accreditation status and conduct quality assurance programs for malaria commodities. PMI will also continue to support YSI pharmaceuticals to further improve their laboratory staff capacity through advanced training and technical assistance to strengthen their good manufacturing practices.

With FY 2024 funding, PMI will continue to procure and deliver malaria commodities including: ITNs and LLHNS, RDTs, ACTs, CQ, and PQ through ICMVs and other community malaria workers in PMI-supported areas, including migrants. In addition, PMI will procure and distribute topical repellents tubes/bottles to include in the forest goer package.

6. Social and Behavior Change

6.1. PMI Goal and Strategic Approach

A “Behavioural Change Communication Strategy on Malaria Elimination in Myanmar” was developed and released in 2017. The document outlines well defined behavioral objectives, specific target groups, suitable approaches, detailed tools, and clear key messages. These behavioral objectives include:

- All community members in malaria transmission areas including local residents and at-risk populations will sleep under an ITN every night.
- All fever cases and eligible persons nearby a malaria case will take blood test for malaria.
- All malaria cases will adhere to the treatment provided by trained health staff and integrated community malaria volunteers.
- All service providers of malaria will follow the National Malaria Treatment Guidelines for health facilities and community malaria volunteers.

According to the NSP (2021-2026), the NMCP will provide support for elimination of malaria through comprehensive SBC, community mobilization, and advocacy. The NMCP is in the process of revitalizing the SBC technical working group to work with health authorities and implementing partners to implement SBC activities targeting various populations to address the barriers to key malaria-related prevention and elimination behaviors. The RAI4E proposal supports implementation of SBC activities targeting migrant populations moving from non-endemic to endemic areas, and vice versa, including targeting people in worksites and temporary shelters.

In 2022, PMI supported the development of an SBC strategy to guide PMI-supported SBC activities. The SBC strategy identifies two segments of at-risk populations: static populations and mobile and hard-to-reach populations. Static populations consist of people who live in established villages including plantation workers and some ethnic minority groups. The mobile migrant workers include workers involved in timber extraction including illegal loggers, sandalwood collectors, groups digging out timber stumps to produce carved ornaments, gold miners and workers involved in infrastructure development projects such as roads and dams.

Other mobile, at-risk populations include internally displaced populations and some ethnic minority groups in hard-to-reach areas.

PMI-supported SBC activities include:

- Training and on-site coaching for implementing partner staff, ICMVs, community mobilizers and community support group members on SBC and participatory learning approaches. The participatory learning approach method aims to empower local people to conduct situation and audience analyses, malaria mapping, focus group discussions, participatory problem tree analysis, and ranking method for decision making and better planning. Based on the outputs of the participatory learning approach sessions, communities implement tailored and prioritized malaria prevention and control activities.
- Interpersonal communication for all malaria cases by both facility and community-based providers;
- Group health talks in the communities during ITN distribution and during visits to work sites and forest camps;
- Development of SBC materials for ITNs, LLINs, repellents, malaria symptoms, and early access to malaria case management; and
- Social mobilization around World Malaria Day.

6.2. Recent Progress (March 2022–March 2023)

Implementation of SBC activities have made little progress because of civil unrest in most of the PMI implementation areas. PMI trained 155 ICMVs, conducted community mobilization, interpersonal communication, and group health talks, reaching 80,002 villagers and 15,367 migrants. In addition, PMI supported distribution of 22,586 pamphlets and 202 posters in PMI targeted townships.

Moreover, PMI also enrolled 2,624 forest goers in a client-oriented voucher mechanism and provided forest packs which included topical repellents, ITNs, long-sleeve shirts and key malaria messages. Follow-up with 526 forest goers after one year revealed 92 percent of forest goers slept under an ITN and 77 percent used topical repellents.

Past supported activities: PMI supported a cross-sectional behavior survey in mid-2019 in 19 supported townships in Kayin State, Rakhine State and Tanintharyi Region. It showed that information on malaria was typically received from basic health staff (70 percent) and ICMVs (63 percent). Fifty-three percent of respondents also accessed information about malaria

during group health talks during ITN distribution and 21 percent of respondents received information during a visit to receive a parasitological test for malaria. Results from the 2019 cross-sectional behavior survey showed that 36 percent of respondents had knowledge that malaria was transmitted by mosquito bites; however, there were misconceptions such as “malaria is caused by drinking unpurified water” and “eating dirty food” among respondents. Regarding prevention of malaria, 92 percent of respondents knew that sleeping under a mosquito net could prevent malaria, and 85 percent of respondents were aware of ITNs. Regarding behaviors practiced by respondents, 89 percent of the respondents reported sleeping under untreated nets, and 83.4 percent reported sleeping under an ITN. Almost half of the respondents (46 percent) received malaria treatment from a government health center and 34 percent of respondents received treatment from an ICMV. Only .7 percent sought treatment from unqualified fraudulent practitioners (quacks). Nearly all (96 percent) respondents believe that blood testing is required for diagnosis of malaria. Finally, 79 percent of respondents expressed being worried about death and 49 percent were worried about cerebral malaria, however, there was less concern for relapse or recrudescence.

Below is an overview of trends and related SBC implications for each intervention that PMI supports in Burma.

ITN ownership and utilization

Based on the 2018 community-based knowledge, attitudes, and practice survey of 7,114 households, 99 percent had at least one mosquito net and 79 percent had at least one ITN. Out of 7,114 households, 42 percent had sufficient ITNs. People in households with sufficient ITNs were more likely to report using an ITN (82 percent) than those from households without sufficient ITNs (39 percent). Regarding sleeping under a net the previous night, almost all household members (93 percent) slept under any net and 58 percent slept under an ITN. About 94 percent of women and 94 percent of pregnant women slept under any net, while ITN use was 58 percent and 54 percent, respectively.²

The survey found that 1,178 (17 percent) of the 7,114 households had at least one forest goer, and 1,735 (5 percent) of them went to the forest within the last three months. Of all forest goers, 74 percent took mosquito nets into the forest, but only 29 percent used simple nets (i.e., untreated) and 42 percent used ITNs. The use of ITNs was highest in children under 5 years old (54 percent). Use was slightly higher in females (49 percent) than males (40 percent). The most common reasons for not using mosquito nets were not having a sufficient number of nets (27 percent) followed by unwillingness to use (23 percent), and perception that it was not appropriate to hang in the forest (13 percent)³

² National Malaria Control Program/World Health Organization. Community-based Malaria Knowledge, Attitudes, and Practice Survey 2018. (Burma, 2018).

³ Ibid.

Care-seeking Behavior for Fever

The survey found that of 7,114 households, 1,594 (22 percent) households had a family member reporting fever within the last two weeks. Among 32,497 household members, 2,133 (7 percent) had fever within the last two weeks. The reported fever was higher in Tanintharyi (13 percent) and Rakhine (11 percent). Regarding the source of treatment, self-medication (22 percent) and RHC/Sub-center (32 percent) were the main sources of receiving the treatment.⁴

Among the 119 facilities from Township, Station, RHC, and Sub-centre surveyed, all patients received treatment in accordance with national treatment guidelines except for one patient who was not treated according to the national guidelines. Among hospitalized patients from 11 township hospitals and 11 station hospitals, the proportion of treatment in line with the national treatment guidelines was 82 percent in township hospitals and 91 percent in station hospitals.⁵

Adherence to the National Malaria Treatment Guideline appeared to be good at all visited sites by the WHO Malaria Program Review Team.⁶

6.3. Plans and Justification with FY 2024 Funding

The [FY 2024 funding tables](#) contain a full list of SBC activities that PMI proposes to support.

At the national level, PMI plans to provide technical assistance and support development of malaria elimination specific SBC strategies, operational plans, and implementation tools in consultation with partners. PMI also plans to continue to implement evidence-based SBC activities at the community level and strengthen the capacity of ICMVs and private providers to improve prompt treatment-seeking and adherence to treatment protocols. Additionally, PMI will support the implementation of SBC activities to improve adherence to *P. vivax* radical cure which will be informed by the planned operational research study to assess the feasibility and acceptability of introducing G6PD testing at the community level.

Lastly, PMI will support strengthening the national SBC technical working group which provides an effective forum for malaria-related SBC activities.

Priorities

In FY2024, as described in table 3, PMI will support SBC activities to increase the practice of the following behaviors:

1. Use of ITNs by villagers, pregnant women, and children
2. Use of LLINs and application of topical repellents by forest goers;
3. Prompt testing and treatment seeking within 24 hours of onset of fever
4. Adherence to *P. vivax* radical cure

⁴ Ibid.

⁵ Ibid.

⁶ World Health Organization. Myanmar External Malaria Program Review 2022.

5. Compliance with national malaria treatment guidelines by health care providers.

Table 3: Priority behaviors to address

Targeted Population	Behavior for Prevention	Behavior for Case Management
Villagers in the intensification areas (including pregnant women & children)	<ul style="list-style-type: none"> To sleep under an ITN every night 	<ul style="list-style-type: none"> To take malaria tests and seek treatment within 24 hours of onset of fever. To take a full dose and full course of antimalarial drugs.
Forest workers	<ul style="list-style-type: none"> Sleep under ITN/ LLIHN Apply topical repellent (especially working at night) 	<ul style="list-style-type: none"> To take a malaria test and treatment within 24 hours of onset of fever. To take a full dose and full course of antimalarial drugs. To test for malaria upon returning from the forest.
Health care providers (ICMVs, public and private health care workers, general practitioners)		<ul style="list-style-type: none"> To follow the National Malaria Treatment Guidelines.

ICMV: integrated community malaria volunteers; ITN: insecticide-treated mosquito net; LLIHN: long-lasting insecticide treated hammock nets.

7. Surveillance, Monitoring, and Evaluation

7.1. PMI Goal and Strategic Approach

In Burma, the NMCP's objective is to expand, modernize and strengthen the national malaria information system to allow accurate and timely identification of cases, reporting, and geographical presentation of results to guide appropriate response. Although progress has been slow, the vision continues to be the integration of the current Malaria Information System into a District Health Information System 2 (DHIS2) system for HIV, tuberculosis, and malaria.

PMI Burma supports the strengthening of malaria surveillance systems at national, state/region, township, and community levels and the movement towards an integrated system that includes incorporating data from public, private, and community sectors to monitor progress comprehensively and inform the deployment and targeting of appropriate responses and strategies. Historically in Burma, PMI has collaborated with the NMCP, WHO, and Global Fund in providing technical assistance and resources for surveillance, monitoring and evaluation (SM&E) activities nationally and sub-nationally. PMI has supported the NMCP's goal of transitioning from the current Access-based database to the DHIS2 platform. In the current context, collaboration at the national level has been challenging, and PMI has focused on sub-national, township level support. In elimination areas, PMI continues to collaborate with partners to improve case-based surveillance and implementation of case/foci investigations and response appropriate to the local epidemiological and programmatic context. In a few

PMI-supported elimination townships, PMI has started to strengthen rapid reporting by transitioning from paper-based to digital reporting through the Malaria Case Based Reporting and Surveillance (MCBRS) application.

7.2. Recent Progress (March 2022–February 2023)

From March 2022–February 2023, implementation of a unified “one malaria surveillance system” has made little progress due to the political environment and weak partner coordination at the township level. The intent was to have all data flow from the village to the basic health service to the township and then to the central level. At present, implementing partners by necessity, continue to by-pass lower levels and send data directly to the NMCP at the central level. Only three PMI supported townships that are designated as “elimination” townships aggregate the data for review at the township level: Munaung, Ramree, and Toungup.

In addition, immediately after the political conflict began, health providers stopped working in approximately 75 percent of public health facilities. ICMVs were also affected but not to the same extent. Overall, reported testing decreased by 46 percent from 2020 to 2021. In 2022, reported testing has recovered slightly with an increase of 18 percent. However, reporting is often delayed for months with some conflict areas not reporting at all.

In elimination areas, a case-based surveillance and response system (also known as CIFIR) is to be implemented, and reporting units are required to notify higher levels of any confirmed malaria cases by phone or email within 24 hours. The township focal points together with VBDC staff are to conduct case investigations, and, if appropriate, focus investigations and response within seven days of notification. CIFIR is implemented based on township case load and readiness.

Since the township is the unit of implementation in Burma, PMI is focused on strengthening the collection, analysis, interpretation, and use of malaria surveillance data at the township level. However, the political conflict has disrupted the staffing at township level. Efforts have been stalled due to all decisions requiring multiple levels of approval prior to initiation. PMI has established a Malaria Elimination Management Team (MEMT) to monitor, analyze, and respond to township data in three elimination townships. MEMT were formed at the district/township level. This is the single unique management team led by the respective District/Township officers and composed with Basic Health Staff from Township, Station, Rural Health Centers. Roles and Responsibilities of MEMT are listed below:

1. System development with the involvement of implementing partners
2. Routine monthly surveillance data collection
3. Conduct monthly MEMT meetings
4. Case investigation, Foci investigation and Response
5. Monitoring on the surveillance system and corrective actions.

PMI intended to expand the model of the MEMTs to an additional 11 townships; however, this has not been possible due to staffing and central approval obstacles.

Despite all these challenges, PMI supported the following activities:

Central

- The MOH has added malaria to its mandatory notification list. All malaria cases are to be reported within 24 hours to a designated person at township level by phone/ SMS/ MCBRS/ in-person. PMI will support the implementation of this activity in supported townships.
- The NMCP has become more functional, and PMI has re-engaged through implementing partners to strengthen malaria surveillance, monitoring, and evaluation through revitalization of the Malaria Technical Steering Group and its related technical working groups.
- PMI supported developing a draft roadmap to navigate the transition from paper-based reporting to digital reporting. The roadmap aligns with the MOH, implementing partners, and donors in transitioning Burma to digital tools at the end of 2023.

Township-level

- PMI continued to strengthen the township malaria surveillance system through the provision of capacity strengthening of basic health staff, VBDC staff, implementing partner staff, and ICMVs through needs-based trainings and supportive supervision with on-the-job training in conducting case-based surveillance activities in alignment with Malaria Elimination Field Implementation Manual Guide developed by the national program.
- PMI supported a rapid situational assessment of all applicable levels of the malaria surveillance system in Rakhine State and Tanintharyi Region which identified areas for improvements including strengthening notification within 24 hours and establishing MEMT and surveillance response teams. No additional rapid assessments are currently planned.
- 77 implementing partner staff received training on data quality assurance, data analysis, interpretation, dissemination, and documentation for malaria elimination certification.
- 32 Rapid Data Quality Assessments visits were conducted. The assessments could not be conducted in the four remaining PMI supported townships due to intense conflicts and security restrictions.
- PMI supported preparation and implementation of case/foci investigation and response in targeted townships.
- In FY2022, ICMVs detected 595 malaria cases in the seven PMI-supported malaria elimination townships and 68.2 percent (406) of them were reported within one day. Case investigation was initiated for 443 cases (74 percent) and 72 percent of the cases (431) were investigated within three days. Through case investigation, 411 cases (92.7

percent) were classified as imported to the villages from within the township, 20 cases (4.5 percent) as imported from outside of the township, 10 as indigenous cases (1.7 percent) and 2 as relapse cases. All 10 indigenous cases received appropriate response activities within seven days.

Village-level

- In higher-burden townships, PMI supported ICMVs initiating weekly fever surveillance in hotspot villages. ICMVs tested 5,386 individuals and detected 1,376 malaria cases.
- To support transitioning from paper-based to digital reporting, PMI collaborated with WHO and Save the Children to pilot MCBRS in four malaria elimination townships of Rakhine State (Gwa, Ramree, Sittwe, and Toungup). 147 ICMVs were trained and are currently using the MCBRS mobile application.
- Monthly ICMV/Private provider meetings for report collection, data verification, and data analysis were conducted.

7.3. Plans and Justification with FY 2024 Funding

The [FY 2024 funding tables](#) contain a full list of SM&E activities that PMI proposes to support.

Unless the political context drastically changes by the time FY 2024 funding is available, the achievement of “one malaria surveillance system” is not possible. And without a highly functioning malaria surveillance system, malaria elimination (even for *Pf*) is very unlikely. Although PMI plans to re-engage technically at the central level, the focus will remain at the township and community level. Twenty-six of 36 PMI supported townships have increasing malaria trends, and surveillance systems need to be functioning at the township level to provide actionable data for prompt adjustments.

With FY 2024 funding, PMI will work at the central level to complement WHO's efforts in operationalization of electronic database systems (e.g., DHIS2 and MCBRS) and support NMCP's SM&E needs. PMI will advocate and coordinate among malaria implementing partners to ensure a common understanding of the importance of “one malaria surveillance system”.

At the state/region and township level, PMI will collaborate with partners to strengthen SM&E systems. PMI will strengthen the capacity of the Township Health Department to lead elimination activities. Activities will include improving data collection and reporting from all providers, data quality, case notification, and data review/analysis/interpretation/visualization /use at the township level in PMI targeted areas. In elimination designated townships, activities will include case-based reporting using digital tools (MCBRS), case investigations and follow-up response (including reactive case detection), and foci investigations as indicated. PMI will support the use of digital tools at the community level through MCBRS in elimination-designated townships to achieve real-time reporting of cases and a rapid response.

Table 4. 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						
Household Surveys	Multiple Indicator Cluster Survey						
Household Surveys	Expanded Program on Immunization Survey						
Health Facility Surveys	Service Provision Assessment						
Health Facility Surveys	Service Availability Readiness Assessment survey						
Health Facility Surveys	Other Health Facility Survey						
Malaria Surveillance and Routine System Support	Therapeutic Efficacy Studies				*P	*P	*P
Malaria Surveillance and Routine System Support	Support to Parallel Malaria Surveillance System	X	X	X	X	P	P
Malaria Surveillance and Routine System Support	Support to Health Management Information System				X	P	P
Malaria Surveillance and Routine System Support	Support to Integrated Disease Surveillance and Response						
Malaria Surveillance and Routine System Support	Electronic Logistics Management Information System	X	X	X	X	P	P
Malaria Surveillance and Routine System Support	Malaria Rapid Reporting System			X	X	P	P
Other	End User Verification						
Other	School-based Malaria Survey						
Other	Knowledge, Attitudes and Practices Survey, Malaria Behavior Survey				*P	*P	*P
Other	Malaria Impact Evaluation						
Other	Entomologic Monitoring Surveys						

*Asterisk denotes non-PMI funded activities, X denotes completed activities and P denotes planned activities.

8. Operational Research and Program Evaluation

8.1. PMI Goal and Strategic Approach

To achieve the national malaria strategic goal of eliminating *Pf* malaria by 2026 and all human malaria by 2030, the NMCP aims to expand research to address bottlenecks in operations and find innovative ways to address residual malaria transmission and effectively deliver services to hard-to-reach populations. Although research priorities will be reviewed annually, the

following topics were noted as initial priorities: innovative vector control measures; community and facility based malaria surveys; mobile and migrant malaria surveys; decision-making, resource allocation and financial authority within households; remote sensing to assess risk for difficult to reach populations; tools to address residual malaria transmission; micro-epidemiology of malaria in forest transmission foci; anthropological studies on forest goers; ivermectin trial for forest goers; barriers to access for high risk groups; locally appropriate tools for mobility assessment; new drugs (Tafenoquine); new regimens (primaquine 7 days); new diagnostic tools (quantitative point-of-care tests for G6PD deficiency) and innovative mHealth applications.

The Regional Component of Global Fund’s previous RAI grants have been a major funding source for OR in the Greater Mekong Subregion; however, no OR will be supported through the next Regional Component of RAI4E. PMI will support OR prioritized by the NMCP that addresses implementation bottlenecks for malaria control and elimination.

8.2. Recent Progress (March 2022–March 2023)

Although implementing OR has been challenging in the current political environment, PMI has identified a critical need to introduce G6PD testing in Burma and proposed OR to pilot the use of G6PD tests at the community level. A concept note was developed and approved by the OR Committee which aims to assess the feasibility, acceptability, and cost of incorporating point-of-care G6PD testing (a WHO-recommended standard) before prescribing primaquine for *Pv* malaria, at the community level.

A study to evaluate the effect of an extended package of interventions including topical repellents showed that the odds of repellent use was significantly lower among cases than controls. A draft manuscript was prepared and is being revised for clearance submission. The findings of this study along with other evidence from Burma informed PMI’s revised guidance allowing for the use of topical repellents in elimination settings.

Table 5. PMI-funded Operational Research/Program Evaluation Studies in Burma

Recently Completed OR/PE Studies	Status of Dissemination	Start date	End date
Impact of mosquito topical repellents and extended standard interventions on malaria control and elimination in Myanmar	Manuscript drafted	June 2019	June 2022
Ongoing or Planned OR/PE Studies	Status	Start date	End date
Demonstrating the feasibility of introducing glucose-6-phosphate dehydrogenase testing at the community level	Concept note approved/Protocol development	June 2023	June 2024

Table 6. Non-PMI funded Operational Research/Program Evaluation Studies Planned/Ongoing in Burma

Source of Funding	Implementing institution	Research Question/Topic	Current status/timeline
RAI3E (Regional)	Burnet Institute, Health Poverty Action	Personal protection packages for reducing residual malaria transmission in forest-going mobile and migrant populations in the Greater Mekong Subregion: Stepped-wedge trials with nested mixed methods study (Burma, Cambodia, Vietnam, and Lao PDR)	Jan. 2021–June 2023
RAI3E (Regional)	Burnet Institute, Health Poverty Action	Optimizing 1-3-7 surveillance and response strategies to achieve malaria elimination across the Greater Mekong Subregion (Burma, Cambodia, Lao PDR, Thailand, and Vietnam)	Jan. 2021–June 2023

RAI3E: Regional Artemisinin Resistance Initiative 3 Elimination.

8.3. Plans and Justification with FY 2024 Funding

No OR/PE activities are proposed with FY 2024 funding.

9. Capacity Strengthening

9.1. PMI Goal and Strategic Approach

One of the key interventions and supporting elements of Burma’s Malaria NSP is to strengthen the capacity and enabling environment of the NMCP to achieve its program goals of eliminating indigenous transmission of *Plasmodium falciparum* malaria by 2026, and putting Burma on the path to eliminate all forms of human malaria by 2030.

The political conflict initiated in 2021 and the subsequent escalation of hostilities, has significantly affected the functionality of its health system. The MOH lost nearly 40,000 qualified health workers, the majority of whom had supported program management, technical and service delivery.

In-line with national guidance that the township is the unit of implementation, PMI continues to focus its capacity strengthening activities at state/region and township levels with an emphasis on township staff and ICMVs.

9.2. Recent Progress (March 2022–March 2023)

- PMI trained 29 focal staff from the township health department to conduct CIFIR activities including routine data quality assessment.
- PMI recruited 2,143 formerly trained ICMVs and 1,117 of them received refresher training on community malaria activities.
- PMI provided 5-day technical skill training to 147 ICMV General Trainers and Master Trainers.

- PMI trained 157 ICMVs to conduct malaria surveillance, 78 on MCBRS, and 155 on diagnosis and prompt treatment, including SBC.
- PMI provided basic supply chain management and electronic logistics management information system (mSupply) training to township level staff and trained DFDA staff on quality management of malaria medicines (see details in Health Supply Chain and Pharmaceutical Management section).

9.3. Plans and Justification with FY 2024 Funding

The [FY 2024 funding tables](#) contain a full list of capacity strengthening activities that PMI proposes to support.

- PMI/Burma will recruit additional ICMVs and provide pre-service training for them to provide community level malaria services to hard-to-reach communities.
- PMI/Burma will continue refresher training to existing ICMVs to strengthen their capacity to provide comprehensive services including malaria elimination activities.
- PMI/Burma will continue to support advanced technical and management training to township and state/regional level staff in areas of malaria elimination surveillance, data management and use, case management, vector control, and evidence-based SBC programming and tool development.
- PMI/Burma will continue to provide technical training to DFDA and YSI pharmaceutical company staff on quality management, supply chain and mSupply training to township level staff and entomological training to NMCP/State/regional staff.

10. Staffing and Administration

A minimum of four health professionals oversee PMI in Burma. The single interagency team led by the USAID Mission Director, or their designee consists of resident advisors representing USAID and CDC, and two 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, reporting of results, and providing guidance and direction to PMI implementing partners.

ANNEX: GAP ANALYSIS TABLES

Table A-1. ITN Gap Analysis Table

Calendar Year	2023	2024	2025	2026
Total country population	56,242,997	56,719,770	57,200,584	57,685,474
Total population at risk for malaria	24,189,899	24,400,415	24,607,258	24,815,854
PMI-targeted at-risk population	1,810,672	1,922,392	2,034,112	2,145,832
Population targeted for ITNs	1,195,044	1,268,779	1,342,514	1,416,249
Continuous Distribution Needs				
Channel 1: ANC	2,100	2,100	2,100	2,100
Channel 1: ANC Type of ITN	Single Pyrethroid	Single Pyrethroid	Single Pyrethroid	Single Pyrethroid
Channel 2: EPI	0	0	0	0
Channel 2: EPI Type of ITN				
Channel 3: School	0	0	0	0
Channel 3: School Type of ITN				
Channel 4: Community	243,435	258,455	273,475	288,495
Channel 4: Community Type of ITN	Single Pyrethroid	Single Pyrethroid	Single Pyrethroid	Single Pyrethroid
Channel 5: Forest Goers		6,500	6,500	6,500
Channel 5: Type of ITN		Single Pyrethroid	Single Pyrethroid	Single Pyrethroid
Estimated Total Need for Continuous Channels	245,535	267,055	282,075	297,095
Mass Campaign Distribution Needs				
Mass distribution campaigns	0	0	0	0
Mass distribution ITN type				
Estimated Total Need for Campaigns	0	0	0	0
Total ITN Need: Continuous and Campaign	245,535	267,055	282,075	297,095
Partner Contributions				
ITNs carried over from previous year	86,981	0	0	117,925
ITNs from Government	0	0	0	0
Type of ITNs from Government				
ITNs from Global Fund				
Type of ITNs from Global Fund	0	0	0	0
ITNs from other donors				
Type of ITNs from other donors	0	0	0	0
ITNs planned with PMI funding	150,000	250,000	400,000	200,000
Type of ITNs with PMI funding	Single Pyrethroid	Single Pyrethroid	Single Pyrethroid	Single Pyrethroid
Total ITNs Contribution Per Calendar Year	236,981	250,000	400,000	317,925
Total ITN Surplus (Gap)	(8,554)	(17,055)	117,925	20,830

Table A-2. RDT Gap Analysis Table

Calendar Year	2023	2024	2025	2026
Total country population	56,242,997	56,719,770	57,200,584	57,685,474
Population at risk for malaria	24,189,899	24,400,415	24,607,258	24,815,854
PMI-targeted at-risk population	1,810,672	1,922,392	2,034,112	2,145,832
RDT Needs				
Total number of projected suspected malaria cases	253,549	278,904	306,794	337,474
Percent of suspected malaria cases tested with an RDT	100%	100%	100%	100%
Case investigation, foci investigation and response (CIFIR)	33,000	36,300	39,930	43,923
Fever surveillance activities	25,355	27,890	30,679	33,747
RDTs to maintain minimal diagnostic capacity	25,000	25,000	25,000	25,000
Account for non-PMI partner needs	50,710	55,781	61,359	67,495
RDT Needs (tests)	387,614	423,875	463,762	507,639
Needs Estimated based on Other (specify in comments)				
Partner Contributions (tests)				
RDTs from Government	0	0	0	0
RDTs from Global Fund	0	0	0	0
RDTs from other donors	0	0	0	0
RDTs planned with PMI funding	300,000	700,000	500,000	500,000
Total RDT Contributions per Calendar Year	300,000	700,000	500,000	500,000
Stock Balance (tests)				
Beginning Balance	92,775	0	261,125	332,363
- Product Need	387,614	423,875	463,762	507,639
+ Total Contributions (received/expected)	300,000	700,000	550,000	550,000
Estimated expires or donated	15,000	15,000	15,000	15,000
Ending Balance	(9,839)	261,125	332,363	359,724
Desired End of Year Stock (months of stock)	9	9	9	9
Desired End of Year Stock (quantities)	290,710	317,906	347,822	380,729
Total Surplus (Gap)	(300,549)	(56,781)	(15,459)	(21,005)

RDT: rapid diagnostic test.

Table A-3. ACT Gap Analysis Table

Calendar Year	2023	2024	2025	2026
Total country population	56,242,997	56,719,770	57,200,584	57,685,474
Population at risk for malaria	24,189,899	24,400,415	24,607,258	24,815,854
PMI-targeted at-risk population	1,810,672	1,922,392	2,034,112	2,145,832
ACT Needs				
Total projected number of malaria cases	23,252	30,228	31,739	25,391
PF cases	4,748	5,223	4,700	2,820
Mixed cases (Pf + Pv)	383	422	379	228
ACTs to maintain minimal treatment capacity	5,000	5,000	5,000	5,000
Account for non-PMI partner needs	1,026	1,129	1,016	610
Total ACT Needs (treatments)	11,157	10,644	10,080	8,048
Needs Estimated based on Other (specify in comments)				
Partner Contributions (treatments)				
ACTs from Government	0	0	0	0
ACTs from Global Fund	0	0	0	0
ACTs from other donors	0	0	0	0
ACTs planned with PMI funding	10,020	15,500	12,000	10,000
Total ACTs Contributions per Calendar Year	10,020	15,500	12,000	10,000
Stock Balance (treatments)				
Beginning Balance	11,036	7,399	9,755	9,175
- Product Need	11,157	10,644	10,080	8,048
+ Total Contributions (received/expected)	10,020	15,500	12,000	9,000
Estimated expires or donated	2,500	2,500	2,500	2,500
Ending Balance	7,399	9,755	9,175	7,627
Desired End of Year Stock (months of stock)	9	9	9	9
Desired End of Year Stock (quantities)	8,368	7,983	7,560	6,036
Total Surplus (Gap)	(969)	1,772	1,615	1,591

ACT: artemisinin-based combination therapy.

Table A-4. Primaquine Gap Analysis Table

Calendar Year	2023	2024	2025	2026
Total Country Population	56,242,997	56,719,770	57,200,584	57,685,474
Total population at risk for malaria	24,189,899	24,400,415	24,607,258	24,815,854
PMI-targeted at-risk population	1,810,672	1,922,392	2,034,112	2,145,832
Primaquine Needs				
Total projected number of malaria cases	23,252	30,228	31,739	25,391
Total projected number of Pf cases	4,748	5,223	4,700	2,820
Total projected number of Pv cases	18,121	24,584	26,660	22,344
Total projected number of mixed cases (Pf + Pv)	383	422	379	228
Total projected number of malaria cases to be treated by PQ 14 days	18,505	25,005	27,039	22,571
Total projected number of malaria cases to be treated by PQ single dose	4,748	5,223	4,700	2,820
PQ to maintain minimal treatment capacity	0	0	0	0
Account for non-PMI partner needs 14 d	3,701	5,001	5,408	4,514
Account for non-PMI partner needs single dose	950	1,045	940	564
Total Primaquine Needs (tablets)	655,935	731,486	785,295	648,917
Needs Estimated based on Other (specify in comments)				
Partner Contributions (tablets)				
Primaquine from Government	0	0	0	0
Primaquine from Global Fund	0	0	0	0
Primaquine from other donors	0	0	0	0
Primaquine planned with PMI funding	450,000	1,200,000	900,000	550,000
Total Primaquine Contributions per Calendar Year	450,000	1,200,000	900,000	550,000
Stock Balance (tablets)				
Beginning Balance	0	0	468,514	583,219
- Product Need	655,935	731,486	785,295	648,917
+ Total Contributions (received/expected)	450,000	1,200,000	900,000	550,000
Estimated expires or donated	50,000	50,000	50,000	50,000
Ending Balance	(205,935)	468,514	583,219	484,301
Desired End of Year Stock (months of stock)	9	9	9	9
Desired End of Year Stock (quantities)	491,951	548,615	588,971	486,688
Total Surplus (Gap)	(697,886)	(80,101)	(5,753)	(2,386)

Table A-5. Chloroquine Gap Analysis Table

Calendar Year	2023	2024	2025	2026
Total country population	56,242,997	56,719,770	57,200,584	57,685,474
Population at risk for malaria	24,189,899	24,400,415	24,607,258	24,815,854
PMI-targeted at-risk population	1,810,672	1,922,392	2,034,112	2,145,832
Chloroquine Tablets Needs				
Total projected number of malaria cases	23,252	30,228	31,739	25,391
Total projected number of P. vivax malaria cases to be treated by CQ	18,121	24,584	26,660	22,344
CQ to maintain minimal treatment capacity	12,500	12,500	12,500	12,500
Account for non-PMI partner needs	3,624	4,917	5,332	4,469
Total CQ tablet Needs (Case based)	229,955	307,506	332,416	280,624
Needs Estimated based on Other (specify in comments)				
Partner Contributions (tablets)				
CQ from Government	0	0	0	0
CQ from Global Fund	0	0	0	0
CQ from other donors [specify donor]	0	0	0	0
CQ planned with PMI funding	100,000	575,000	425,000	350,000
Total CQ Contributions per Calendar Year	100,000	575,000	425,000	300,000
Stock Balance (tablets)				
Beginning Balance	195,315	8,360	218,854	254,439
- Product Need	229,955	307,506	332,416	280,624
+ Total Contributions (received/expected)	100,000	575,000	425,000	300,000
Estimated expires or donated	57,000	57,000	57,000	57,000
Ending Balance	8,360	218,854	254,439	216,815
Desired End of Year Stock (months of stock)	9	9	9	9
Desired End of Year Stock (quantities)	172,466	230,629	249,312	210,468
Total Surplus (Gap)	(164,106)	(11,775)	5,127	6,347