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Thailand, Lao PDR, and Regional Malaria Operational Plan FY 2024

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ABBREVIATIONS

ACT	Artemisinin-based combination therapy
CMPE	Center for Malariology, Parasitology and Entomology
CQ	Chloroquine
DVBD	Division of Vector Borne Disease
ECAMM	External Competence Assessment of Malaria Microscopists
FY	Fiscal year
Global Fund	Global Fund to Fight AIDS, Tuberculosis and Malaria
GMS	Greater Mekong Subregion
iDES	Integrated drug efficacy surveillance
IPTf	Intermittent preventive treatment for forest-goers
IPTp	Intermittent preventive treatment for pregnant women
ITN	Insecticide-treated net
Lao PDR	Lao People's Democratic Republic
LLINs	Long-lasting insecticidal nets
MOP	Malaria Operational Plan
NMP	National malaria program
NSP	National Strategic Plan
PCR	Polymerase chain reaction
PMI	U.S. President's Malaria Initiative
PQ	Primaquine
RAI3E	Global Fund Regional Artemisinin Initiative 3 Elimination
RAI4E	Global Fund Regional Artemisinin Initiative 4 Elimination
SBC	Social and behavior change
TA	Technical assistance
TDA	Targeted drug administration
TES	Therapeutic efficacy study
USAID	United States Agency for International Development
WHO	World Health Organization

EXECUTIVE SUMMARY

To review specific country context for Thailand and the Lao People's Democratic Republic (Lao PDR), please refer to the country malaria profile located on [PMI's country team landing page](#), which provides an overview of the countries' malaria situations, key indicators, the strategic plans of the national malaria programs (NMPs), and the partner landscape.

U.S. President's Malaria Initiative

Launched in 2005, the [U.S. President's Malaria Initiative \(PMI\)](#) supports implementation of malaria prevention and treatment measures as well as cross-cutting interventions. PMI's 2021–2026 strategy, [End Malaria Faster](#), envisions a world free of malaria within our generation with the goal of preventing malaria cases, reducing malaria deaths and illness, and eliminating malaria in PMI partner countries. PMI currently supports 27 countries in Sub-Saharan Africa and 3 programs across the Greater Mekong Subregion (GMS) in Southeast Asia to control and eliminate malaria. PMI has been a proud partner in the GMS since 2011 and began implementation in Thailand and Lao PDR in fiscal year (FY) 2011.

Rationale for PMI's Approach in the GMS

Despite the tremendous progress made in the reduction of malaria morbidity and mortality in the GMS over the past decade, there still remain recalcitrant active foci and risks of resurgence and outbreak in Thailand and Lao PDR. The majority of programming needs, including key malaria commodities, are met by the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund) Regional Artemisinin Initiative 3 Elimination (RAI3E) malaria grant, which will end by December 2023. A fourth grant (RAI4E) is expected to be in place to ensure that GMS countries sustain the gains made thus far and accelerate toward malaria elimination. In support of the regional goal of malaria elimination by 2030, PMI's support focuses on strengthening malaria programming at the national and subnational level through the improved use of strategic information, by providing limited commodity support and technical assistance (TA) to improve surveillance (particularly for drug resistance) and response, with capacity-strengthening efforts, and by enhancing supply chain management systems.

Overview of Planned Interventions

PMI's strategic approach for Thailand and Lao PDR involves providing TA and filling needed technical and commodity gaps to accelerate malaria elimination efforts.

The proposed FY 2024 PMI funding for the Regional Development Mission for Asia is \$3 million, with which PMI will fund the following intervention areas.

1. Vector Monitoring and Control

PMI will support the NMPs in Thailand and Lao PDR, working with key stakeholders and partners on entomological aspects of foci investigation and strengthening entomological capacity through training and cross-border TA.

PMI will procure insecticide-treated nets (ITNs) to fill gaps among the populations at risk of malaria in Thailand and Lao PDR, based on the relevant NMP's estimation of the needs of people seeking refuge and mobile populations as well as active foci of transmission. PMI procurements may include long-lasting insecticidal nets (LLINs) and/or insecticide-treated hammock nets for populations at risk, especially forest-goers who are less likely to regularly use nets. PMI will also procure nets to address regional emergency needs that arise due to natural disasters or outbreaks of malaria.

2. Malaria in Pregnancy

PMI does not support implementation in Thailand and Lao PDR and will only provide TA funding to improve malaria in pregnancy interventions that reach pregnant women through procurement of ITNs distributed to vulnerable people seeking refuge and mobile populations as well as strengthening overall case management, including ensuring commodities are available to diagnose and manage cases of malaria in pregnancy.

3. Drug-Based Prevention

Although Lao PDR is implementing several chemoprevention strategies (e.g., targeted drug administration and intermittent preventive therapy for forest-goers) as elimination-accelerator strategies, PMI does not fund these activities. Thailand is exploring the use of chloroquine mass drug administration to bring down the burden of *Plasmodium vivax* along the Thailand–Burma border.

4. Case Management

While Global Fund and domestic resources are expected to meet most case management procurement needs through 2023, this is not certain as the RAI4E funding request has yet to be approved. PMI plans to fill all gaps to ensure access to malaria testing and treatment in remote areas affected by the upsurge of cases concentrated in western Thailand, unanticipated outbreaks, natural disasters, and the transition between Global Fund grants.

With the Global Fund, PMI will continue to support TA for the implementation of therapeutic efficacy studies, as needed and feasible, and integrated drug efficacy surveillance (iDES) to monitor drug efficacy in the GMS. PMI will also continue to support microscopy training and regional slide banks.

5. Health Supply Chain and Pharmaceutical Management

As malaria cases continue to decrease and malaria becomes increasingly focal, PMI will provide TA support to NMPs to improve their coordination and management of the supply chain by developing and improving the availability of logistics data to ensure continuous availability of commodities while limiting expiry of unused products. PMI will continue to support strengthening the quality of the logistics management information systems data and reporting while also ensuring commodity data is incorporated into the malaria information systems in both Thailand and Lao PDR.

6. Malaria Vaccine

PMI does not support the roll out of the malaria vaccine in the GMS.

7. Social and Behavior Change

No social behavior change (SBC)-specific activities are planned with PMI funding. PMI in-country staff will continue to support the NMPs with their SBC strategies.

8. Surveillance, Monitoring, and Evaluation

Thailand continues to implement its national 1-3-7 strategy (i.e., each malaria case is reported within 24 hours, investigated within 72 hours, and appropriately responded to within 7 days), with general improvements achieved in reporting and completeness. However, the current political crisis in Burma has negatively impacted Thailand's ability to maintain high 1-3-7 rates. As malaria services transition from vertical malaria clinics/posts to integrated health promotion hospitals that provide broader general health services, the quality of both malaria services and data need to be ensured. PMI will continue to support strengthening the transition and integration of malaria services reporting from malaria clinics to the general health services (health promotion hospitals). PMI will also aim to support the rollout of subnational-level prevention of re-establishment strategies, including the integration and use of available climate and environmental data to inform targeting of high-risk areas and preventing malaria resurgence.

With an updated risk stratification and national elimination strategy, Lao PDR is intensifying case-based surveillance activities in all elimination districts. The malaria module of the District Health Information System 2 has expanded to include a mix of private-public data, elimination data (case notification, investigation, classification, focus investigation, and response), iDES, vector control interventions, and entomological surveillance. PMI will continue to support the use of District Health Information System 2 data to inform decision making at all levels, particularly district- and provincial-level capacity strengthening.

9. Operational Research and Program Evaluation

Key operational research in Thailand and Lao PDR currently receive funding from the Global Fund, the Bill & Melinda Gates Foundation, and the Medicines for Malaria Venture. Although PMI does not plan to fund operational research in FY 2024, it will closely monitor the outcomes of these projects to inform potential rollout of promising approaches in the near future.

10. Capacity Strengthening

PMI supports the strengthening of national program capacity as a key priority in Thailand and Lao PDR. Depending on need and evolving epidemiology, PMI will continue to fund national and subnational capacity-strengthening and training efforts in entomology; program management; malaria elimination/certification; quality assurance/quality control for diagnostics; supply chain; and surveillance, monitoring, and evaluation.

11. Staffing and Administration

PMI supports a single interagency team led by the United States Agency for International Development (USAID) Mission Director or their designee, comprising a country team member representing USAID and two locally hired foreign service nationals based in Thailand and Lao PDR, respectively. The interagency team oversees all technical and administrative aspects of PMI, including finalizing the project design, implementing malaria prevention and treatment activities, monitoring and evaluating outcomes and impact, reporting results, and providing guidance and direction to PMI implementing partners.

I. CONTEXT AND STRATEGY

1. Introduction

Thailand and the Lao People’s Democratic Republic (Lao PDR) began implementation as a U.S. President’s Malaria Initiative (PMI) partner country in FY 2011. This FY 2024 Malaria Operational Plan (MOP) presents a detailed implementation plan for Thailand, Lao PDR, and a modest regional component based on the strategies of PMI and the national malaria programs (NMPs). It was developed in consultation with the NMPs as well as national and international partners. PMI proposes activities that build on investments made by partners to improve and expand malaria-related services, including the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund). This document provides an overview of the strategies and interventions in Thailand and Lao PDR, reports progress to date, identifies challenges and relevant contextual factors, and describes activities planned with FY 2024 funding. For more detailed information on the country context, please refer to the country malaria profiles for Thailand and Lao PDR, which provide overviews of the countries' malaria situations, key indicators, their respective NMPs, strategic plans, and partner landscapes.

2. U.S. President’s Malaria Initiative

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

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

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

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

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

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

3. Rationale for PMI's Approach in Thailand, Lao PDR, and Regional

3.1. Malaria Overview

Thailand: Thailand had made rapid progress in reducing the number of reported confirmed malaria cases, from 43,939 in FY 2011 to 2,949 in FY 2021. In addition, the number of active foci of transmission in the country decreased 58 percent from 1,108 in FY 2016 to 469 in FY 2021, and the number of *Plasmodium falciparum* cases plummeted from 3,348 to 56 over the same period—a 98 percent reduction.

However, Thailand's goal to eliminate all indigenous malaria cases by 2024 is currently in jeopardy. The military coup in Burma in February 2021 resulted in an influx of people seeking refuge in Thailand, and the country has experienced a 200 percent increase in malaria cases over 2021 levels. In FY 2022, there were 8,500 malaria cases (all species) reported compared with 2,949 in the previous fiscal year. *P. falciparum* cases also increased from 56 to 197 (250 percent) from FY 2021 to FY 2022. PMI's approach in Thailand will focus on technical assistance (TA) to identify effective interventions to address the upsurge cases along the Thailand–Burma border and to prevent the re-establishment of malaria in areas already malaria-free. PMI will continue to fill necessary malaria commodity gaps identified through RAI4E grant negotiations. For more detailed information on malaria indicators, please refer to the country malaria profile for Thailand.

Lao PDR: Lao PDR has made significant strides toward malaria elimination. Both *P. falciparum* and *P. vivax* are found concentrated in the southern part of the country; however, 85 percent of *P. falciparum* malaria cases are reported from only seven districts in four southern provinces. Total malaria cases have declined from 9,328 in 2017 to 2,309 in 2022—a 75 percent reduction. Lao PDR reported zero malaria deaths in 2019 and 2020, one in 2021, and one in

2022. Lao PDR is making great progress toward its goal of eliminating all indigenous malaria cases by 2030. PMI's approach in Lao PDR involves surveillance systems for the implementation of 1-3-7 and supporting subnational verification and eventual nationwide certification. PMI will also contribute to the national malaria commodity needs to ensure high coverage of basic malaria services. For more detailed information on malaria indicators, refer to the country malaria profile for Lao PDR.

3.2. Key Challenges and Contextual Factors

Thailand: Despite the tremendous progress in reducing the number of active foci and residual nonactive foci to cleared foci, two provinces (Phuket and Chaiyaphum) out of a total of 35 nationwide that had been declared malaria-free in 2018, reverted their status to active-foci provinces in 2019 due to reported indigenous cases. Another province, Phitsanulok, despite not having reported malaria cases for several years, reverted to an active-foci province in 2020 due to an influx of migrant workers from Burma at rubber-tapping plantations. Remaining active foci are clustered in three border areas: in the west near Burma and in the east near Cambodia, where high population mobility associated with the importation of malaria parasites complicates surveillance, and in the south near Malaysia, where civil unrest disrupts service delivery.

Since February 2021, the political coup in Burma and the influx of refugees across the Thailand border pose logistical and geopolitical challenges to providing adequate malaria services to these populations. Malaria incidence has been on the rise in some districts along the Thailand–Burma border, and provincial health offices are on alert to ensure adequate malaria services and response.

Climate change and environmental disturbances contribute to increased malaria risk and transmission, particularly in areas that have previously eliminated malaria. The use of climate and environmental data, including strengthening engagement with the non-malaria and non-health sectors, such as the Ministry of Environment and others, will be important.

Another emerging threat is the growing prevalence of *P. knowlesi*, a fifth malaria parasite species that has been classified as zoonotic malaria. Although the World Health Organization (WHO) does not include the elimination of zoonotic malaria in the scope of its human malaria elimination certification scheme, the increasing trend of *P. knowlesi* malaria could threaten the malaria elimination initiative in Thailand, which saw a fourfold increase in *P. knowlesi* malaria cases, from 31 in 2018 to 140 in 2022. The five provinces with the highest number of *P. knowlesi* malaria are Ranong, Songkhla, Chumphon, Trat, and Satun.

Lao PDR: A wide variety of mobile and static population groups at risk of malaria in endemic areas drives the varying local epidemiology in Lao PDR, requiring different malaria control strategies adapted to the behaviors groups at risk, local cultural and traditional practices, local health infrastructure, and environmental conditions. The level of malaria risk for each of these groups varies according to several location-dependent factors, including degree of endemicity,

accessibility, health system strength, and poverty. Villages located in high-risk forested areas belong to a broad range of ethnic minority groups who speak 240 distinct languages, challenging health messaging and communication efforts. Poverty in these communities is often extreme.

Due to the remoteness of hard-to-reach ethnic populations and a fragmented supply chain management system, stockouts of malaria commodities resulting in periodic and isolated malaria outbreaks are not uncommon in Lao PDR. The current approach is to ensure that health facilities and village malaria workers in high-burden areas have adequate quantities of rapid diagnostic tests and ACTs that are regularly resupplied.

3.3. PMI's Approach

Thailand: Four strategies guide Thailand's elimination goal and objectives: (1) scaling up malaria elimination activities; (2) developing technology, innovation, measures, and models appropriate for malaria elimination; (3) developing partnerships among stakeholders at the national and international level to enable malaria elimination; and (4) promoting/empowering the community to take an active role in malaria prevention. To this end, the Division of Vector Borne Disease (DVBD) has focused on developing a robust and integrated surveillance system able to rapidly and efficiently respond to the malaria situation; increase capacity and coverage of services in diagnosis and treatment at all levels and sectors and for all populations at risk of malaria based on the principle of equity; scale up detection of symptomatic and asymptomatic malaria patients, including submicroscopic parasitemia cases; scale up coverage of prevention of malaria transmission through vector surveillance, vector control, and personal protection among target populations; and develop a system for following up on every malaria case to ensure cure and elimination of drug-resistant malaria parasites.

PMI supports the DVBD's goals and objectives by strengthening malaria programming at the national and subnational level and using strategic information, providing limited commodity support and TA for improved surveillance and response, capacity-strengthening, and pharmaceutical management systems. In light of the Global Fund country and Regional Artemisinin Initiative grants that have increased access to basic malaria services over the past decade, PMI support to Thailand has generally focused on expanding the role of malaria surveillance and response, improving existing supply chain management systems, and ensuring informed decision making based on evidence and strategic information at all levels. With uncertainties of a fully resourced Global Fund Regional Artemisinin Initiative 4 Elimination (RAI4E) grant, PMI intends to shift toward increasing domestic resource mobilization and advocacy for malaria elimination at the national and subnational level—leveraging partnerships and resources from domestic local government sources, private and corporate sectors, and other non-health sectors.

The planned 2020 Malaria Program Review in Thailand was delayed by the COVID-19 pandemic. In late 2022, with technical support from WHO and co-funding from the Global Fund and USAID/PMI, Thailand conducted an external review that included external evaluators, partners, and stakeholders. Key recommendations include: (1) focus on a response plan for Tak Province; (2) increase vigilance on *P. falciparum* foci management (e.g., 100 percent 1-3-7 performance and prompt implementation of innovative strategies) to interrupt its transmission; (3) ensure all provinces have and implement a prevention of re-establishment plan based on national guidelines; (4) focus on collaboration with other sectors and agencies to ensure integration and sustainability; and (5) establish provincial communicable disease committees to monitor progress.

Lao PDR: Lao PDR's RAI3E malaria grant meets the majority of the country's programming needs, including commodities such as rapid diagnostic tests, ACTs, and long-lasting insecticidal nets (LLINs), as well as SBC activities. However, future funding through RA14E is uncertain. PMI works with the national malaria program and in-country partners to help accelerate nationwide elimination by 2030. PMI provides limited technical support to Lao PDR to improve technical and programmatic capacity for strategic information and to strengthen national malaria surveillance and monitoring and evaluation systems for malaria control and elimination.

Lao PDR conducted a Malaria Program Review in October 2019 of the progress achieved under the previous National Strategic Plan (NSP) (2016–2020) to guide the development of “the next one. The review indicated that Lao PDR is on track to achieve its malaria elimination targets by 2030. Key recommendations include: (1) strengthen data use at all levels; (2) intensify and improve service delivery for high-risk groups; (3) ensure that commodities are available; (4) strengthen subnational staff capacity to conduct operational malaria elimination strategies; and (5) introduce radical cure for *P. vivax* at the health-center level.

3.4. Key Changes in this MOP

Thailand: Despite the likely derailment of Thailand's malaria elimination goals by 2024 due to the political crisis in Burma and no anticipated changes in PMI's funding levels, significant changes in strategy, activities, or budget levels compared with the previous MOP are not yet warranted.

Lao PDR: There are no significant changes in strategy, activities, or budget levels compared with the previous MOP.

II. OPERATIONAL PLAN FOR FY 2024

1. Vector Monitoring and Control

1.1. PMI Goal and Strategic Approach

Thailand: The DVBD's National Strategic Plan (2017–2026) targets one ITN for every 1.8 residents in areas at risk of malaria, while a ratio of 1:1 is used for short-term/mobile populations, forest rangers, and military personnel based in malaria-endemic villages. ITNs should be replaced every three years. As external resources for LLINs have been declining, Thailand has shifted domestic resources toward the retreatment of nets for villages, while LLINs are intended for mobile populations, people seeking refuge, and displaced persons.

Long-lasting insecticide-treated hammock nets are distributed in endemic villages in select provinces for those who cannot use ITNs, such as people seeking refuge, forest rangers, and soldiers spending nights in the forest and at the Thailand–Cambodia border. Domestic resources fund the procurement of repellents, insecticides for indoor residual spraying, and net retreatment. PMI funds the procurement of the majority of LLINs for people seeking refuge and mobile populations in Thailand, and the Global Fund finances the distribution of these commodities to the communities, civil society organizations, and refugee camps. The DVBD aims to strengthen entomology networks at the regional, provincial, and district levels for vector surveillance and prevention of re-establishment. It identified TA gaps for guideline development and capacity strengthening on vector surveillance for the next generation of entomologists, mosquito surveillance equipment for improving foci management, and new tools to reach outdoor-biting malaria vectors.

Lao PDR: The Lao National Strategic Plan (2021–2025) seeks to protect 100 percent of targeted high-risk populations with appropriate vector control interventions, including ITNs. Current strategies include delivery of family-size LLINs to targeted high-risk populations (based on risk strata) every three years through mass distribution, annual continuous distribution of family size LLINs to pregnant women at antenatal care units, and single-size LLINs to people seeking refuge and mobile populations and to the military and other formal sector forest-goers, such as forest and wildlife protection personnel.

Additional strategies to expand coverage of LLINs include increasing the number of single nets for people seeking refuge and mobile populations through continuous distribution channels (e.g., village malaria workers); using a bottom-up approach in consultation with provinces, districts, and civil society organizations to estimate the number of nets for this cohort; establish a stockpile of emergency nets that are centrally located and available in key provinces for active foci and outbreak response as well as public health emergencies (e.g., flooding or displacement); and provide LLINs for all beds in health facilities in high-transmission-risk settings.

PMI supports the procurement of ITNs directed toward areas with ongoing malaria transmission, primarily in the south of the country, and to populations at risk, including forest-goers, remote ethnic minority groups, and pregnant women. PMI also supports training in comprehensive, integrated epidemiological and entomological foci investigations, coordinating closely with key stakeholders in the region, including WHO and the Asia Pacific Malaria Elimination Network Vector Control Working Group.

Figure 1. Map of the Distribution of Primary Malaria Vectors in Thailand, 2019–2023

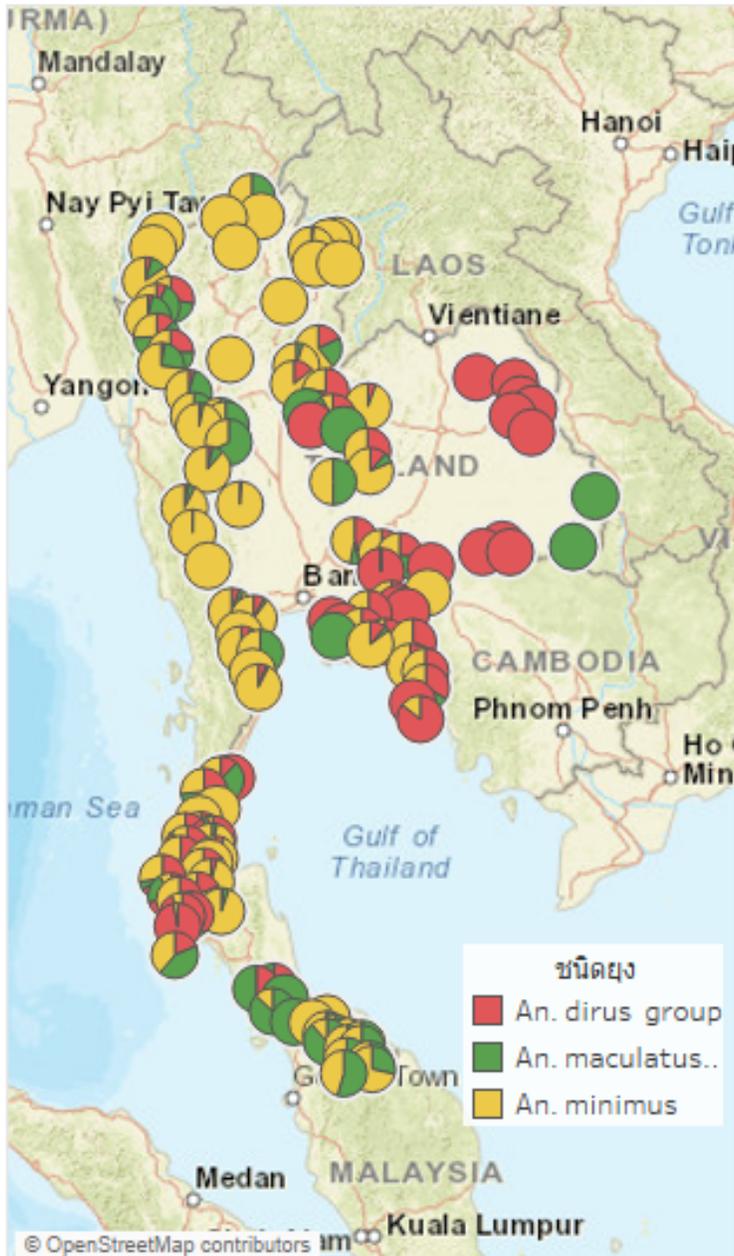
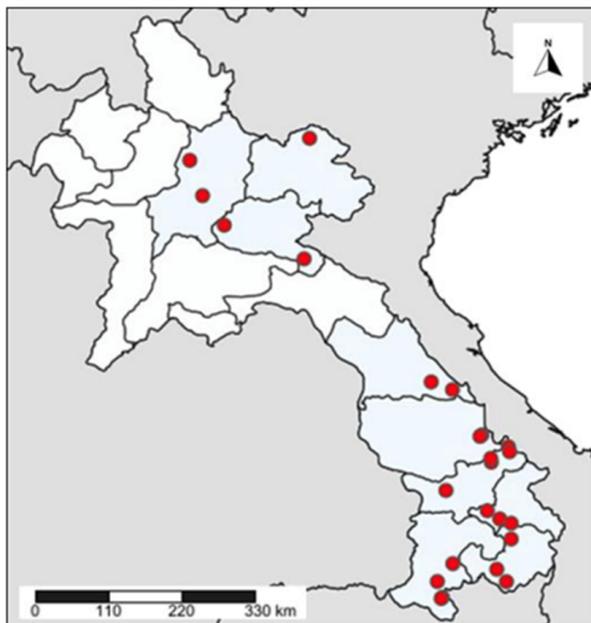


Figure 2. Map of Entomological Monitoring Sites in Lao PDR, 2018–2020



1.2. Recent Progress (March 2022–March 2023)

Thailand

- PMI funded the procurement and delivery of 80,300 LLINs for people seeking refuge and other groups experiencing vulnerability in malaria foci areas, while Global Fund resources were used for distribution costs (March 2023).
- PMI financed the DVBD's plan for distributing LLINs to high-risk groups, including migrant workers living in camps along the Thailand–Burma border.

Lao PDR

1. In coordination with Global Fund and domestic contributions from the Government of Lao PDR, PMI contributed to the procurement of 220,314 LLINs for a massive national LLIN campaign in the second quarter of 2022. The campaign focused on populations at risk, including forest-goers, migrant workers, ethnic minorities living in remote areas, and pregnant women.
2. PMI procured and delivered 70,000 LLINs (December 2022) for pregnant women and outbreak response.
3. PMI procured and delivered basic entomological laboratory equipment, including microscopes and CDC light traps (January 2023).
4. In collaboration with the Thailand International Cooperation Agency, PMI supported capacity-strengthening for entomology and foci investigations among provincial staff from Lao PDR and northern Thailand. The training was conducted by the DVBD with the aim of increasing cross-border collaboration on foci investigations.

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 fund in Thailand and Lao PDR.

1.3.1. Entomological Monitoring

Malaria transmission in the GMS is complex. Various Anopheles (*An.*) species in the *An. dirus* complex, *An. minimus* complex, and *An. maculatus* group are recognized as malaria vectors in the region and can range from primary vectors to secondary/suspected vectors to nonvectors. Furthermore, at least eight other species have been identified as potential secondary vectors based on the detection of Plasmodium infection in wild mosquitoes, although their importance in malaria transmission likely varies by geographic location.

Thailand: Based on surveys of 76 sentinel sites across Thailand in 2022, *An. minimus s.l.* is the primary vector along the Thailand–Burma border. *An. dirus s.l.* is more prevalent in forested areas in the south near the border with Malaysia and in the southeast near the Cambodia border. Members of the *An. maculatus* complex are found throughout Thailand, although at most sites, they were less prevalent than *An. minimus s.l.* or *An. dirus s.l.* Identified secondary vectors include *An. epiroticus* and *An. aconitus*. Suspected secondary vectors include *An. barbirostris*, *An. campestris*, *An. philippinensis*, *An. anularis*, *An. culicifacies*, and *An. kochi*. The abundance and biting behavior of these vectors varies geographically and seasonally. The widely distributed *An. minimus s.l.* tends to be zoophilic when there are animal host options for feeding and has a preference for outdoor biting. Members of the *An. maculatus* complex are mainly zoophilic with a preference for outdoor feeding. *An. dirus* predominantly inhabit forest and forest-fringe regions and show a preference for feeding on humans and outdoor biting.

Lao PDR: The Center for Malariology, Parasitology and Entomology (CMPE) established entomological surveillance in 13 sentinel districts from nine provinces—three from the north (Houaphanh, Luang Prabang, and Xiengkhouang) and six from the south (Attapeu, Champassak, Khammouane, Saravane, Savanakhet, and Sekong) (Figure 2). Vector surveillance was also carried out in malaria active foci as part of malaria response. Anopheles mosquitoes collected between 2018 and 2020 represented 15 different species or species complexes. The primary malaria vectors, in order of abundance, were *An. maculatus s.l.*, *An. minimus s.l.*, and *An. dirus s.l.* However, this may not accurately reflect the actual primary vectors as not all sibling species may be vectors. Furthermore, while *An. dirus s.l.* was the least abundant of the three primary vectors, it was the most strongly anthropophilic, indicating that it is likely a more efficient malaria vector. All three of the primary vectors were collected inside houses by human landing catches but were more abundant in the forest. The most abundant secondary malaria vector species was *An. barbirostris*, followed by *An. nivipes*. Thirty-two percent of the primary vectors were collected outdoors before 10:00 p.m., coinciding with when people were active outside. As part of the Lao National Strategic Plan 2020–2025,

routine entomological surveillance will be replaced by responsive operations that concentrate on collecting core bionomic data (species presence, biting behavior in villages and in forest/field settings, and resistance status if possible) from outbreak areas, persistent transmission foci, and high-burden areas to identify causes and develop solutions.

1.3.2. Status of insecticide resistance

Thailand: Between 2019 and 2021, insecticide resistance surveillance was carried out in one to two provinces each year. A number of pyrethroids (alpha-cypermethrin, deltamethrin, permethrin, bifenthrin, and cyfluthrin) and organophosphates (malathion and fenitrothion) were tested in one to three districts per province. Not all of the insecticides were tested at all of the sites. *Anopheles dirus* in Parchin Buri Province showed possible resistance to alpha-cypermethrin but was susceptible to the other pyrethroids and the organophosphates. In Uthai Thani Province, *An. minimus* was susceptible to the three pyrethroids tested (alpha-cypermethrin, bifenthrin, and deltamethrin). No testing was carried out using organophosphates. There was possible resistance of *An. barbirostris* to deltamethrin in Uthai Thani. *An. minimus* in Prachuab Kiri Kan Province was susceptible to deltamethrin but possibly resistant to permethrin, and *An. barbirostris* was resistant to deltamethrin. In Chachoengsao Province, *An. barbirostris* showed high levels of resistance to all pyrethroids (except permethrin, which was not tested) and the two organophosphates. In this province, *An. epiroticus* was also highly resistant to deltamethrin.

Lao PDR: Historically, insecticide resistance surveillance for malaria vectors was carried out sporadically in Lao PDR. In 2014–2015, resistance testing was carried out in 10 provinces along a north-south transect. In general, no resistance to pyrethroids (deltamethrin and permethrin) was detected in the primary vectors from the *An. dirus*, *An. minimus*, or *An. maculatus* complexes. Reduced susceptibility to permethrin was detected at two sites. No pyrethroid resistance was detected in secondary vectors. Resistance to dichlorodiphenyl-trichloroethane (DDT) was found in primary and secondary as well as nonvector species in several provinces.

1.3.3. Insecticide-Treated Nets

In collaboration with partners, including the Global Fund for distribution costs, PMI will continue to support the procurement of LLINs for continuous distribution to Thailand and Lao PDR, concentrating on populations at risk of malaria, such as forest-goers, migrant workers, people living in remote areas, ethnic minorities, and pregnant women. Where possible, PMI supports SBC TA to improve the use and care of ITNs and to mitigate against misuse.

1.3.4. ITN Distribution

Thailand: Thailand currently conducts only continuous distribution of LLINs to people seeking refuge and mobile populations and other groups at risk of malaria, including forest-goers and refugees living in camps. With several provinces reverting back to having local transmission, along with the current conflict in Burma, the forecasted requirements of LLINs may not be sufficient. PMI is working with the DVBD to ensure that any unanticipated gaps are covered through Global Fund reprogramming or other sources.

Lao PDR: The Lao National Strategic Plan (2021–2025) aims to protect 100 percent of targeted high-risk populations with appropriate vector control interventions, including ITNs. PMI is working with the CMPE to ensure that any unanticipated gaps are covered through Global Fund reprogramming or other sources.

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

1.3.5. Indoor Residual Spraying

PMI does not fund indoor residual spraying in Thailand or Lao PDR.

1.3.6 Other Vector Control

Thailand locally procures and distributes topical repellents and conducts retreatment of nets using domestic resources.

With support from the Armed Forces Research Institute of Medical Sciences, Lao PDR is conducting operational research on treated uniforms, spatial repellents, and forest packs. The results of these studies are expected by the end of 2023.

2. Malaria in Pregnancy

2.1. PMI Goal and Strategic Approach

Given the very low overall prevalence of malaria, IPTp to prevent malaria during pregnancy is not recommended and has not been implemented in GMS countries. Instead, Thailand and Lao PDR provide ITNs to households in high-risk areas and ensure prompt diagnosis and treatment of malaria cases during pregnancy.

Antenatal care attendance is generally high in all GMS countries; however, there are identified barriers related to accessibility and cost of services, particularly among vulnerable populations, including people seeking refuge, mobile populations, and people residing in geographically remote and isolated areas. Thailand follows the focused antenatal care guidance, including promoting five visits during pregnancy. The Ministry of Public Health is aware of the updated 2016 WHO antenatal guidance and is considering how to incorporate it in Thailand. In Lao

PDR, the Ministry of Health has adopted the 2016 guidance, including the recommended eight contacts during pregnancy.

In Thailand, pregnant women with suspected malaria are referred to district hospitals for diagnosis and treatment. First-line treatment for *P. falciparum* in the first trimester is quinine; in the second and third trimesters, it is artesunate–mefloquine. *P. vivax* is treated with chloroquine in all trimesters. There is no policy for the prevention of *P. vivax* relapse during pregnancy.

In Lao PDR, the NSP supports the procurement of small batches of ITNs for continuous distribution via health centers, primarily for pregnant women and people seeking refuge and mobile populations, for the replacement of damaged ITNs and for new residents in high-risk areas. Malaria treatment guidelines advise using oral quinine in the first trimester of pregnancy, but it is rarely available in hospital outpatient centers or antenatal care units, nor is clindamycin widely available. The NMP is aware of the new WHO recommendation for using ACT to treat malaria during the first trimester of pregnancy and plans to update the malaria treatment guidelines accordingly by the end of 2023 or early 2024. Artemether-lumefantrine is the first-line treatment for the management of malaria in the second and third trimesters for both *P. vivax* and *P. falciparum* malaria. Similar to most countries in the Mekong, there is no policy or strategy to prevent *P. vivax* relapses during pregnancy.

For Thailand and Lao PDR, PMI supports a two-pronged approach to prevent malaria infection among pregnant women, including the provision of ITNs and early effective case management of malaria and anemia.

2.2. Recent Progress (March 2022–March 2023)

PMI procured ITNs in Thailand and Lao PDR for distribution to mobile populations, people seeking refuge, pregnant women, and others experiencing vulnerability. More specifically, PMI supported 20,000 LLINs for continuous distribution to pregnant women through antenatal care visits in Lao PDR.

2.3. Plans and Justification for FY 2024 Funding

The [FY 2024 funding tables](#) contain a full list of malaria in pregnancy activities that PMI proposes to fund in Thailand and Lao PDR.

PMI will continue to fund the procurement of ITNs provided to groups experiencing vulnerability.

3. Drug-Based Prevention

PMI does not fund seasonal malaria chemoprevention or other drug-based prevention in Thailand or Lao PDR.

3.1. Other Drug-Based Prevention

In Lao PDR, with support from the Global Fund and TA from WHO, targeted drug administration (TDA) and intermittent preventive treatment for forest-goers (IPTf) with artesunate-pyronaridine (Pyramax) are being implemented as strategies for accelerating progress on *Plasmodium falciparum* malaria elimination in residual areas at increased risk of malaria outbreak and other areas of active transmission. Lao PDR will implement two rounds of TDA one month apart for all populations (ages 7–49) in select communities. Three monthly rounds of IPTf to prevent reinfection will be delivered to the same population, who are considered to be at high risk (e.g., those sleeping overnight in the forest or field). The targeted populations are identified through a village-based census as well as active fever screening carried out by village health workers every two weeks. These elimination accelerator strategies will be expanded to *P. vivax* with the use of chloroquine with funding from RAI4E.

In Thailand, with support from the Global Fund and TA from WHO, mass drug administration with chloroquine for *P. vivax* will be piloted in Tak and scaled to other high-burden provinces.

3.1.1. PMI Goal and Strategic Approach

Since the proposed accelerator strategies (TDA, IPTf, and active fever screening) are supported in Lao PDR and Thailand by Global Fund with TA from WHO, PMI does not currently have plans to fund the implementation of these activities. Because these strategies are being implemented with limited evidence, PMI has encouraged NMPs, with WHO assistance, to prioritize the generation of evidence and documentation of these interventions. In Thailand, PMI is providing limited TA support to the DVBD for the design and development of data collection and monitoring tools for the chloroquine mass drug administration pilots. Lao PDR has received technical support from WHO to pilot the accelerator strategies in southern Lao PDR.

3.1.2. Recent Progress (March 2022–March 2023)

PMI did not fund any seasonal malaria chemotherapy or other drug-based prevention activities.

In 2022, Lao PDR implemented *P. falciparum* accelerator strategies in seven districts, targeting approximately 24,000 people. Two rounds of TDA were conducted in March/April and May, and IPTf and active-fever screening activities began in June. The incidence results revealed a large (about 74 percent) reduction in *P. falciparum* cases and a 16 percent reduction in *P. vivax* compared with previous years, with high coverage of TDA, IPTf, and active-fever screening

achieved in six of the seven targeted districts. However, there were no control villages for comparison.

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

PMI supports gap filling for malaria case management commodities, integrated drug efficacy surveillance (iDES)/therapeutic efficacy studies (TES) to monitor drug efficacy, and quality microscopy. PMI does not fund health-facility- or community-level case management implementation in Thailand or Lao PDR.

Thailand: To achieve malaria elimination by 2024, the strategic plan of the Division of Vector-Borne Diseases (DVBD) aims to: (1) increase capacity and coverage of malaria case management at all levels, for all sectors, and for all population groups based on equity; (2) scale up detection of asymptomatic and low-parasitemia patients through active case detection in malaria transmission areas and among populations at risk, military bases, and refugee camps by using microscopy and molecular techniques; and (3) scale up an iDES system for patient follow-up to ensure cure and to eliminate drug-resistant parasites.

In areas not experiencing transmission, diagnosis and treatment only occurs in hospitals (not in the community). In areas experiencing transmission, diagnosis and treatment occurs both in the community (rapid diagnostic tests and microscopy) and in hospitals (microscopy only).

As malaria incidence has declined over the years in Thailand and throughout the GMS, it has become increasingly more difficult to enroll patients in standard WHO TES studies to monitor drug efficacy and resistance. Through PMI support, WHO has provided TA to the DVBD to implement iDES throughout the country, relying on the routine malaria surveillance system to track, follow up, and ensure effective treatment outcomes for every malaria case. Malaria-positive blood slides (10 percent for *P. vivax* and 100 percent for all other species) collected for iDES are sent to a regional lab for microscopy confirmation and eventually to the National Reference Lab in Bangkok for polymerase chain reaction (PCR) and molecular confirmation.

The manufacturer of 15 mg primaquine (PQ) in Thailand is expected to cease production of this formulation. The strategy will be to ensure that, at minimum, the 7.5 mg dose remains available (for children and adults), especially because more than 92 percent of malaria cases in Thailand are *P. vivax*.

Lao PDR: To eliminate *P. falciparum* by 2025 and all malaria by 2030, the Lao NSP 2021–2025 has a strategic objective of maintaining universal access to quality malaria diagnosis, increasing testing to reach national annual blood examination rate targets, and providing effective treatment to 100 percent of cases. Malaria control and elimination efforts in Lao PDR have embraced a comprehensive service delivery model. A new testing algorithm in 2018 calls for the testing of all febrile cases and high-risk populations. Quality assurance of pharmaceuticals is conducted in collaboration with the Food and Drug Department twice a year. A national slide bank was initiated in 2016 but was not maintained due to limited samples. For external quality assessments, slides are sent to Lao PDR twice a year for reading. For internal assessment, the districts and provinces send slides to the CMPE for parasite count validation and assessment.

In addition to routine diagnosis and management of malaria cases, intensified elimination activities are being proposed with RAI4E funding in specific areas. In five districts with a high-burden of malaria cases, elimination acceleration activities, including active-fever surveillance, will aim to clear *P. falciparum* and *P. vivax*. Mobile malaria workers targeting mobile populations and Kato¹ malaria workers targeting seasonal farm sites will be recruited and trained in these areas.

For *P. vivax* radical cure, glucose-6-phosphate dehydrogenase tests are available at all hospitals as well as at health centers in medium- and high-risk strata. PQ given over seven days will be prescribed to those who can access these tests, while the eight-week regimen can be used at all levels, including by the village malaria workers for patients who cannot access the tests or who have any contraindications.

4.2. Recent Progress (March 2022– March 2023)

Thailand

- PMI procured and delivered 90,000 tablets of the 7.5 mg formulation of PQ (December 2022).
- PMI procured and delivered 7,000 vials of injectable artesunate, split into multiple shipments, with different expiration dates, to reduce potential waste while maximizing on-shelf availability.
- PMI supported iDES rollout; drug policy reviews; and related meetings, including the regional TES meeting. PMI also supported the development of a dashboard, standard operating procedures, analytics, and presentations to improve iDES and routine use of generated data.

¹ Kato refers to a community or territory of small groups, often comprising family members, in or near deeply forested areas.

Lao PDR

- PMI procured 150,000 tablets of the 7.5 mg PQ formulation (expected delivery by August 2023).
- PMI supported monitoring of TES at three sites and iDES expansion to 121 elimination districts in northern and central provinces; drug policy reviews; and related meetings, including participation in the regional TES meeting.
- PMI supported the revision of and training on standard operating procedures for the malaria commodities for the CMPE, Medical Products Supply Center, partners, and provincial- and district-level malaria and warehouse personnel.
- PMI supported the CMPE to conduct supervision visits to 11 districts in Savannakhet Province.
- PMI supported the updating of the national treatment guidelines to include artesunate-mefloquine as a second-line treatment for uncomplicated *P. falciparum* and *P. vivax*.

Regional

- The annual regional TES/iDES meeting was held in Bangkok on November 28–29, 2022, to share updates on therapeutic efficacy and drug resistance.
- PMI funded a pilot in Vietnam to deliver iDES in three provinces, which was then expanded to areas with significant malaria caseloads in south and central Vietnam.
- In collaboration and consultation with WHO/WPRO and the lead facilitator of the External Competence Assessment of Malaria Microscopists (ECAMM), PMI supported the update and maintenance of the E-hub/ECAMM database application system to track certified microscopists in the region.

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

4.3. Plans and Justification for FY 2024 Funding

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

As described in the recent progress section, PMI will continue to support gap filling for malaria case management commodity procurement, TA for drug efficacy monitoring through TES or iDES, and strengthening microscopy diagnostic capacity in the region.

Please refer to the ACT, rapid diagnostic test, injectable artesunate, and PQ gap tables in the [annex](#) for additional details on planned quantities and distribution channels.

Monitoring Antimalarial Efficacy

Table 1. Ongoing and Planned Therapeutic Efficacy Studies (TES)

Ongoing TES or iDES			
Year	Site Name	Treatment Arm(s)	Plan for Laboratory Testing of Samples
2021–2022	Thailand (iDES)	<ul style="list-style-type: none"> Dihydroartemisinin-piperaquine (except artesunate-pyronaridine for Ubon Ratchatani and Sisaket provinces) for <i>P. falciparum</i> Chloroquine+PQ for <i>P. vivax</i> 	DVBD-Ministry of Public Health, Thailand (PCR, molecular genotyping and Kelch 13 assays)
2022	Lao PDR 1. Attapeu 2. Savannakhet 3. Sekong	Artemether–lumefantrine	Institute Pasteur Cambodia (PCR, molecular genotyping and Kelch 13 assays)
2022	Vietnam (iDES) in Binh Phuoc, Gia Lai, Phu Yen)	Artesunate-pyronaridine for <i>P. falciparum</i>	Institute Pasteur Cambodia (PCR, molecular genotyping and Kelch 13 assays)
Planned TES*/iDESs (funded with previous or current MOP)			
Year	Site name	Treatment arm(s)	Plan for Laboratory Testing of Samples
2023	Thailand (iDES, nationwide)	Dihydroartemisinin-piperaquine + PQ (except Pyramax for Ubon Ratchatani and Sisaket provinces) for <i>P. falciparum</i> chloroquine + PQ for <i>P. vivax</i>	DVBD-Ministry of Public Health, Thailand (PCR, molecular genotyping and Kelch 13 assays)
2023	Lao PDR (iDES in 148 districts) TES in: 1. Attapeu 2. Savannakhet 3. Sekong	Artemether–lumefantrine for <i>P. falciparum</i> and <i>P. vivax</i>	Institute Pasteur Cambodia (PCR, molecular genotyping and Kelch 13 assays)
2023	Vietnam (iDES in Binh Phuoc, Gia Lai, and Phu Yen) TES in Gia Lai	Artesunate-pyronaridine for <i>P. falciparum</i> chloroquine+PQ for <i>P. vivax</i>	Institute Pasteur Cambodia (PCR, molecular genotyping and Kelch 13 assays)

AL: artemether + lumefantrine; AS-PYR: artesunate + pyronaridine; CQ: chloroquine; DHA-PIP: Dihydroartemisinin + piperaquine; K13: Kelch 13; iDES: integrated drug efficacy surveillance; Pf: *Plasmodium falciparum*; PCR: polymerase chain reaction; PQ: Primaquine; Pv: *Plasmodium vivax*.

5. Health Supply Chain and Pharmaceutical Management

5.1. PMI Goal and Strategic Approach

PMI supports the region through the provision of TA in supply chain management focused on strengthening pharmaceutical management, supply chain systems, and procurement of malaria commodities to maintain minimum stocks on hand at health facilities. Maintaining minimum stocks on hand will also help ensure that life-saving malaria treatments are available when needed and to support prevention of re-establishment strategies. For sustainability, domestic resource mobilization is needed to support a national stockout reduction strategy for countries nearing malaria elimination.

Thailand: Thailand aims to eliminate *Plasmodium falciparum* by 2023 and become free of locally transmitted malaria by 2024. However, the resurgence of malaria transmission along the western border provinces since December 2021 and the continued influx of cross-border populations from Burma due to the political unrest and reopening of international borders post COVID-19 has increased the needs for all malaria commodities. To support Thailand in getting back on track, PMI will continue strengthening the logistics and supply chain management system, which includes pharmaceuticals, insecticides for indoor residual spraying, and other non-drug supplies. PMI will continue to fill identified malaria commodity gaps for people seeking refuge across borders and internally displaced people. Furthermore, PMI will work with the DVBD to advocate for increased domestic resource mobilization and to address procurement and supply management issues locally to accelerate malaria elimination and prevent re-establishment.

Lao PDR: In line with the regional malaria elimination goals, Lao PDR is aiming to eliminate locally transmitted malaria by 2030. The NSP for 2021–2025 is the second of a three-phased approach to eliminate all forms of malaria in the country. The target is to eliminate *P. falciparum* in the entire country by 2025, as previously planned under the national strategic plan for 2016–2020. It includes strengthening interventions targeted at the southern part of the country to reduce the malaria burden while also expanding and enhancing efforts to eliminate malaria in low-burden focal areas. To achieve this, one of the strategic objectives is to maintain universal access to quality malaria diagnosis and provide effective treatment to all malaria cases. Under this NSP, PMI will focus on procurement of malaria commodities to fill national gaps, while providing targeted TA to ensure coordination for supply planning and commodity distribution and use.

5.2. Recent Progress (March 2022–March 2023)

Thailand

- Elaborated and executed against supply plans specific to PMI focus areas.
- Developed requisition orders based on supply planning and provided supplementary assistance for subsequent order placement and delivery.
- Completed monthly PPMRm for Global Fund, PMI, and government-funded commodity contributions.
- Coordinated in-country receipt, storage, and distribution of all PMI-funded shipments from the ports of entrance to consignees.
- Conducted quarterly analysis of central stock levels, commodity procurements, and supply plans.
- Continued to provide technical support to the DVBD for quantification and forecasting to strengthen the county's capacity in supply chain management for malaria elimination and rapid response of any resurgences or outbreaks.
- Extended the visibility of commodity data on the procurement and supply management online system from the central to the district level. This online system will be linked to the prevention of re-establishment stratification module to estimate/quantify the minimum stock level at district health offices and health facilities to prevent stockout and ensure prompt community-level response.
- Supported an external consultant to participate in the Thailand Malaria Program Review (2022) and reviewed procurement and supply management as a key component of the national malaria elimination and prevention of re-establishment strategy.

Lao PDR

- Continued to provide TA to the CMPE for supply chain management, support for supply chain coordination and strengthened stock management and reporting at the subnational level.
- Conducted quarterly analyses of central stock levels, commodity procurements, and supply plans.
- Conducted a training on supply chain management of malaria commodities standard operating procedure and on supply chain and storeroom management for the CMPE staff.

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 Thailand and Lao PDR.

PMI will continue to support health supply chain and pharmaceutical management activities in Thailand and Lao PDR as described in the recent progress section.

6. Social and Behavior Change

6.1. PMI Goal and Strategic Approach

Thailand: Thailand’s national malaria elimination strategy (2017–2026) includes an objective to promote and empower communities to prevent and control malaria themselves. To this end, the national strategy calls on communities and individuals to participate in malaria control activities.

With Global Fund and domestic support, Thailand provided comprehensive SBC, community mobilization, and access to health services for both Thai people and those seeking refuge who are residing in malaria transmission zones in the 31 provinces in Thailand that border neighboring countries. Thailand’s Royal Princess Project also supports some community and school-based activities along the border, including health education and malaria screening. SBC activities involving displaced Burmese people, mobile populations along the Thailand–Burma border, and other populations seeking refuge in Thailand along border provinces are implemented by community-based organizations supported by the Global Fund. Under the RAI4E proposal, the DVBD and partners will expand support for village health volunteers and other community-based malaria volunteers to promote patient adherence through supervised treatment and referral for case follow up after treatment for *P. falciparum* and *P. vivax*, and assist local authorities to undertake outreach/mobile activities to communities to increase access to diagnosis, treatment, and prevention packages (LLINs, insecticide-treated hammock nets, and domestically procured repellents). The funding request also plans for civil society organizations to support SBC activities, including developing and producing materials in appropriate languages and expanding the use of digital technology to improve monitoring of prevention, access to care, treatment adherence, and some information on gender and social inclusion.

Lao PDR: The Lao NSP (2021–2025) supports a comprehensive SBC strategy and includes a strategic objective calling for the implementation of a comprehensive SBC approach for malaria elimination through comprehensive behavior change communication, community mobilization, and advocacy. In addition to the training and advocacy activities focused on providers, the program works with the national Ministry of Health’s Center for Information, Education and Health; implementing partners; and communities to educate target groups on malaria and its prevention, and to support improved access to malaria services. SBC efforts are identified in the RAI4E application with the NMP and subpartners, proposing to reach

ethnic minorities through trained village malaria workers from the same communities. In addition, SBC materials promoting treatment adherence will be made available in multiple local languages; radio campaigns will also be broadcasted in multiple languages. The NMP plans to integrate SBC messages into key activities, such as TDAs, IPTf, active fever surveillance, outbreak response, and foci response, rather than as standalone SBC activities.

6.2. Recent Progress (March 2022–March 2023)

In both Thailand and Lao PDR, PMI provided limited and targeted TA support for SBC to improve access to and use of malaria interventions. PMI provided TA to ensure that SBC materials were translated into appropriate languages and that SBC messaging was integrated into malaria case management services, including for pregnant women and forest-goers.

6.3. Plans and Justification for FY 2024 Funding

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

No specific funding is planned for SBC activities in Thailand and Lao PDR over the next 12 months; however, PMI’s Regional Development Mission for Asia and Lao Country Office staff continue to stay engaged at the national level and provide TA and support to the DVBD and the CMPE for their SBC efforts, as needed.

Priorities

While PMI supports integrated SBC activities that promote the uptake and maintenance of all key malaria interventions, the following three behaviors will be prioritized, leveraging Global Fund and other resources:

Table 2. Priority Social Change Behaviors to Address

Behavior	Target Population	Geographic Focus	Programming to Address Behavior
Personal protection and prompt care-seeking for fever among ethnic minority groups in Lao PDR	Forest-goers	Malaria hotspots	<ul style="list-style-type: none"> • Provide TA to understand risk behaviors of ethnic minority groups • Develop targeted strategies to prevent malaria infection and improve care-seeking behaviors
Adherence to case management guidelines in Thailand	Health facility and community-based providers and school-aged children	Nationwide	<ul style="list-style-type: none"> • Advocate for training of private hospital and Health Promotion Hospital staff to ensure adherence of case management guidelines • Provide TA to develop targeted strategies to improve treatment adherence among school-age children

Additional Support Activities

Thailand has observed an increase in malaria infection among school-aged children (ages 5–14), particularly in some provinces near the Thailand–Burma border. More data need to be collected on the specific behavioral factors that contribute to increased risk of malaria infection among children in this age cohort in Thailand and Lao PDR. PMI will provide support for the analysis and use of epidemiological data to increase understanding of these risk factors and develop better-targeted interventions.

7. Surveillance, Monitoring, and Evaluation

7.1. PMI Goal and Strategic Approach

Thailand: PMI supports the DVBD’s goal for malaria elimination by 2024 and will focus TA for the national program in the following areas: (1) ensuring the collection and use of quality, standardized routine data that feed into a comprehensive national surveillance system, and supporting timely analysis and use of this information to inform and guide programming; (2) supporting the DVBD in expanding and improving the various modules of the Malaria Information System, including capacity for routine case follow-up and monitoring of treatment outcomes, foci investigations, and supply chain management; and (3) supporting the DVBD to document and disseminate lessons learned to the wider malaria community. PMI prioritizes the need to prepare provinces for subnational elimination and to strengthen subnational capacity to develop and implement prevention of re-establishment strategies.

Lao PDR: Recognizing the heterogeneity of malaria transmission in the country, two surveillance and response guidelines have been developed: surveillance and response in burden reduction areas (southern provinces), and surveillance and response in elimination areas (northern provinces). In burden reduction areas, case reporting is based on aggregated numbers that are reported monthly via the District Health Information System 2, and response is provided at the population level. In elimination areas, the low volume of confirmed cases allows for an individual-level case response. PMI supports surveillance strengthening nationally but is focused on individual case reporting and response using the 1-3-7 approach (i.e., each malaria case is notified within 24 hours, investigated within 72 hours, and appropriately responded to within seven days) in malaria elimination districts.

7.2. Recent Progress (March 2022–March 2023)

Thailand

- PMI supported the DVBD to improve their iDES dashboard and to develop a supporting user guide in both print and video format.
- PMI supported the DVBD’s prevention of re-establishment efforts by preparing a package to continue subnational stratification efforts, including the methodology and list of relevant data sources.

- PMI supported the DVBD’s subnational verification activities by supporting data reviews for three provinces.
- PMI supported the DVBD with strategic information analysis and use in preparing five research briefs on priority topic areas, including iDES follow-up rates, malaria among school-aged children, increasing malaria cases along the Thailand–Burma border, stratification for prevention of re-establishment, and environmental factors.

Lao PDR

- In coordination with the Global Fund, WHO, and the national malaria program, PMI supported the training of health staff in 125 malaria elimination districts on the updated National Surveillance Guidance for Malaria Elimination and Response, which focuses on case investigation, foci investigation, and response.
- PMI conducted an assessment and a dissemination workshop of the 1-3-7 approach to identify technical, operational, and programmatic gaps for the effective implementation of this strategy.
- PMI conducted training on malaria subnational elimination certification and conducted self-assessments for selected provinces.

7.3. Plans and Justification with FY 2024 Funding

The [FY 2024 funding tables](#) contain a full list of surveillance, monitoring, and evaluation activities that PMI proposes to support in Thailand and Lao PDR.

PMI will continue to support the DVBD’s surveillance strengthening activities and use of routine data to refine and accelerate elimination efforts, including efforts to analyze and strategically respond to increased incidence in Thailand–Myanmar border areas and among school-aged children. Additionally, PMI will continue to support subnational verification and prevention of re-establishment strategies, including automation of stratification, as well as activities to integrate and sustain malaria programming.

Lao PDR continues case-based surveillance activities in all elimination districts using the 1-3-7 approach. PMI will contribute to strengthening implementation of the 1-3-7 approach and support the use of District Health Information System 2 data (which includes private–public mix data, elimination data, iDES, vector control interventions, and entomological surveillance) to inform decision making at all levels, particularly capacity strengthening at the district level.

Table 3. Available Malaria Surveillance Sources in Thailand

Source	Data Collection Activity	2020	2021	2022	2023	2024	2025
Malaria Surveillance and Routine System Support	iDES	X	X [†]	X [†]	P	P	P
Malaria Surveillance and Routine System Support	Support to Parallel Malaria Surveillance System	X [†]	X [†]	X [†]	P	P	P
Malaria Surveillance and Routine System Support	Electronic Logistics Management Information System	X [†]	X [†]	X [†]	P	P	P
Other	Knowledge, Attitudes, and Practices Survey; Malaria Behavior Survey	X*					

*Non-PMI funded activities

† Co-funded activities

X denotes completed activities

P denotes planned activities

Table 4. Malaria Surveillance Sources in Lao PDR

Source	Data Collection Activity	2020	2021	2022	2023	2024	2025
Malaria Surveillance and Routine System Support	TES	X	X [†]	X [†]	X [†]	P	P
Malaria Surveillance and Routine System Support	iDES		X [†]	X [†]	P	P	P
Malaria Surveillance and Routine System Support	Support to Parallel Malaria Surveillance System	X [†]	X [†]	X [†]	P	P	P
Malaria Surveillance and Routine System Support	Electronic Logistics Management Information System	X [†]	X [†]	X [†]	P	P	P

*Non-PMI funded activities

† Co-funded activities

X denotes completed activities

P denotes planned activities.

8. Operational Research and Program Evaluation

8.1. PMI Goal and Strategic Approach

Thailand: To support the vision of a malaria-free Thailand by 2024, the DVBD aims to conduct research to develop knowledge, technology, innovation, interventions, and guidelines for surveillance, prevention, and elimination of malaria to fit with local situations.

Lao PDR: The Lao NSP for Malaria Control and Elimination 2021–2025, which aims to eliminate malaria by 2030, includes a strategic intervention area to expand operational

research to guide strategic decisions, use technology to address bottlenecks, and innovative ways to address residual malaria transmission and effectively deliver services to hard-to-reach populations.

PMI keeps abreast of the evolving country and regional operational research priorities; results from studies in the region; and the development of promising, highly sensitive point-of-care diagnostics and outdoor transmission measures, to plan accordingly. In addition, PMI participates in the RAI3E grant’s operational research subcommittee to guide its investment decisions in the region. Due to lengthy processes for in-country approvals, delayed results from planned operational research, and limited funding allocations in the RAI4E, no such research will be supported through the regional component as under the previous grant, but PMI encourages support from the country grants.

8.2. Recent Progress (March 2022–March 2023)

No PMI-supported operational research/program evaluation is ongoing or has been recently completed.

Table 5. Non-PMI-funded Operational Research/Program Evaluation Studies Planned/Ongoing in Thailand

Source of Funding	Implementing institution	Research Question/Topic	Current status/timeline
RAI2E/3E (Regional)	UCSF	Targeting high-risk populations with enhanced reactive case detection: A study to assess the effectiveness and feasibility of reducing <i>P. falciparum</i> and <i>P. vivax</i> malaria in Southern Lao PDR and Thailand	Completed
U.S. Department of Defense/Armed Forces Research Institute of Medical Sciences	UCSF/Royal Thai Army	Understand and target drivers of malaria transmission and burden reduction among the Royal Thai Army and local civilian populations in Sisaket and Yala Provinces (qualitative study)	Data collection completed; awaiting results
Medicines for Malaria Venture	PATH	Feasibility study to assess introduction of quantitative glucose-6-phosphate dehydrogenase testing before tafenoquine administration	Data collection completed; awaiting results

UCSF: University of California, San Francisco.

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

Source of Funding	Implementing institution	Research Question/Topic	Current status/ timeline
RAI2E/3E (Regional)	UCSF	Targeting high-risk populations with enhanced reactive case detection: A study to assess the effectiveness and feasibility of reducing <i>P. falciparum</i> and <i>P. vivax</i> malaria in Southern Lao PDR and Thailand	Data collection completed; awaiting results
U.S. Department of Defense	Armed Forces Research Institute of Medical Sciences	Evaluation of permethrin-treated uniforms and spatial repellents in the military population	Data collection completed; awaiting results

Table 7. Non-PMI-funded Operational Research/Program Evaluation Studies Planned/Ongoing in the Greater Mekong Subregion

Source of Funding	Implementing Institution	Research Question/Topic	Current Status/ Timeline
RAI3E (Regional)	MORU, Asia Pacific Malaria Elimination Network, UCSF, AHEAD	Sustaining village health worker programs with expanded roles in the GMS (Cambodia, Thailand, and Vietnam)	January 2021–June 2023
RAI3E (Regional)	Institute Pasteur Cambodia, Armed Forces Research Institute of Medical Sciences, PATH	<i>Plasmodium vivax</i> elimination in the GMS: targeting the hypnozoite reservoir, expanding access to radical cure treatments, and enhancing safe and effective case management (Cambodia)	January 2021–June 2023
RAI3E (Regional)	Burnet Institute, Health Poverty Action	Personal protection packages for reducing residual malaria transmission in forest-going mobile populations and among people seeking refuge in the GMS: Stepped-wedge trials with nested mixed methods study (Burma, Cambodia, Vietnam, and Lao PDR)	January 2021–June 2023
RAI3E (Regional)	Burnet Institute, Health Poverty Action	Optimizing 1-3-7 surveillance and response strategies to achieve malaria elimination across the GMS (Burma, Cambodia, Lao PDR, Thailand, and Vietnam)	January 2021–June 2023

8.3. Plans and Justification with FY 2024 Funding

No operational research/PE activities are proposed with FY 2024 funding.

9. Capacity Strengthening

9.1. PMI Goal and Strategic Approach

Strengthening national program capacity is a critical area of strategic focus of PMI's strategy. Depending on need and evolving epidemiology, PMI will continue to support national and subnational capacity-strengthening and training efforts related to program management, malaria elimination, quality assurance/quality control for diagnostics, supply chains, surveillance, monitoring and evaluation, and entomology in Thailand and Lao PDR.

9.2. Recent Progress (March 2022–March 2023)

Regional

- PMI, in collaboration with the Thailand International Cooperation Agency, supported a trilateral entomology training of Lao entomologists in March 2022 in Bangkok, Thailand. Strengthening entomological capacity is a priority capacity-strengthening area for Lao PDR, especially at the subnational level.
- PMI supported four resource speakers and sponsorship for five participants (Cambodia, Lao PDR, Thailand, Vietnam, and Philippines) to attend the Integrated Vector Management Training, organized by the Ministry of Health Malaysia (October 30–November 5, 2022)
- PMI supported the Bi-regional Malaria Elimination Training Workshop for the GMS and other ACTMalaria member countries, which was jointly organized by ACTMalaria and Ministry of Health Malaysia in collaboration with WHO/Western Pacific Region Office/South-East Asian Region Office (September 12–16, 2022). The training was attended by 23 participants from 11 countries, 6 of whom are national program managers or focal points.

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 in Thailand and Lao PDR with FY 2024 funding. See www.pmi.gov/resources/malaria-operational-plans-mops.

Strengthening capacity for subnational malaria elimination and provincial entomological capacity remain PMI priorities for Thailand and Lao PDR. PMI aims to support both efforts through training, including emphasizing new WHO guidance documents and preparing and conducting subnational verification/certification.

PMI will also support capacity strengthening for CMPE personnel by funding one individual to enroll in Thailand's two-year International Field Epidemiology Training Program.

10. Staffing and Administration

A minimum of three health professionals oversee PMI in Thailand and Lao PDR. The single interagency team, led by the USAID Mission Director or their designee, consists of a USAID representative and two locally hired experts, referred to as foreign service nationals, based in Bangkok and Lao PDR, respectively. PMI's interagency team works together to oversee all technical and administrative aspects of PMI, including finalizing details of the project design, implementing malaria prevention and treatment activities, monitoring and evaluation of outcomes and impact, reporting of results, and providing guidance and direction to PMI implementing partners.

ANNEX: GAP ANALYSIS TABLES

Table A-1. ITN Gap Analysis Table [Thailand]

Calendar Year	2023	2024	2025
Total country population	66,090,475	66,255,701	66,421,340
Total population at risk for malaria	806,835	683,912	602,231
PMI-targeted at-risk population	806,835	683,912	602,231
Population targeted for ITNs	806,835	683,912	602,231
Continuous distribution needs			
Channel 1: ANC			
Channel 1: ANC type of ITN			
Channel 2: EPI			
Channel 2: EPI type of ITN			
Channel 3: School			
Channel 3: School type of ITN			
Channel 4: Community (Thai and M1 in A foci)	339,523	271,474	227,278
Channel 4: Community type of ITN	Single Pyrethroid	Single Pyrethroid	Single Pyrethroid
Channel 5: M2 accessing malaria services	39,360	37,392	33,653
Channel 5: Type of ITN	Single Pyrethroid	Single Pyrethroid	Single Pyrethroid
Channel 6: Nine refugee camps (87 active foci)	38,519	24,104	7,073
Channel 6: Type of ITN	Single Pyrethroid	Single Pyrethroid	Single Pyrethroid
Channel 7: Myanmar pop (across the border, 178 shared foci)	48,333	48,800	49,305
Channel 7: Type of ITN	Single Pyrethroid	Single Pyrethroid	Single Pyrethroid
Estimated total need for continuous channels	465,735	381,770	317,309
Mass campaign distribution needs			
Mass distribution campaigns	0	0	0
Mass distribution ITN type			
Estimated total need for campaigns	0	0	0

Total ITN need: Continuous and campaign	465,735	381,770	317,309
Partner contributions			
ITNs carried over from previous year	-	38,444	0
LLINs from government			
Type of LLINs from government			
LLINs from Global Fund	423,879		
Type of LLINs from Global Fund	Single Pyrethroid	Single Pyrethroid	Single Pyrethroid
LLINs from other donors			
Type of LLINs from other donors			
LLINs planned with PMI funding	80,300	100,000	200,000
Type of LLINs with PMI funding	Single Pyrethroid	Single Pyrethroid	Single Pyrethroid
Total LLINs contribution per calendar year	504,179	138,444	200,000
Total LLIN surplus (gap)	38,444	(243,326)	(117,309)

Table A-2. RDT Gap Analysis Table [Thailand]

Calendar Year	2023	2024	2025
Total country population	66,090,475	66,255,701	66,421,340
Population at risk for malaria	806,835	683,912	602,231
PMI-targeted at-risk population	806,835	683,912	602,231
RDT needs			
Total number of projected suspected malaria cases (public sector)	750,671	704,111	572,884
Percent of suspected malaria cases tested with an RDT	23%	23%	16%
Total number of projected suspected malaria cases (community)	100,358	96,015	78,120
Percent of suspected malaria cases tested with an RDT	100%	100%	100%
RDT needs (tests)	273,012	257,961	169,781
Needs estimated based on HMIS data			
Partner contributions (tests)			
RDTs from government	50,000		
RDTs from Global Fund	381,450	142,992	140,901
RDTs from other donors	0	0	0
RDTs planned with PMI funding	18,750	100,000	100,000
Total RDT contributions per calendar year	450,200	242,992	240,901
Stock balance (tests)			
Beginning balance	34,050	211,238	196,269
- Product need	273,012	257,961	169,781
+ Total contributions (received/expected)	450,200	242,992	240,901
Ending balance	211,238	196,269	267,389
Desired end of year stock (months of stock)	12	12	12
Desired end of year stock (quantities)	273,012	257,961	169,781
Total surplus (gap)	(61,775)	(61,691)	97,607

Table A-3. ACT Gap Analysis Table [Thailand]

Calendar Year	2023	2024	2025
Total country population	66,090,475	66,255,701	66,421,340
Population at risk for malaria	806,835	683,912	602,231
PMI-targeted at-risk population	806,835	683,912	602,231
ACT needs			
Total projected number of malaria cases	8,119	6,495	4,547
Total ACT needs	406	338	237
Needs estimated based on a combination of HMIS and consumption data			
Partner contributions (treatments)			
ACTs from government	0		10,000
ACTs from Global Fund	10,000	0	0
ACTs from other donors	0	0	0
ACTs planned with PMI funding	0	0	0
Total ACTs contributions per calendar year	10,000	0	10,000
Stock balance (treatments)			
Beginning balance	4,938	14,532	9,498
- Product need	406	338	237
+ Total contributions (received/expected)	10,000	0	10,000
Estimated/projected expiries	0	4,696	
Ending balance	14,532	9,498	19,261
Desired end of year stock (months of stock)	0	0	0
Desired end of year stock (quantities)	9,660	9,660	9,660
Total surplus (gap)	4,872	(162)	9,601

Table A-4. Inj. Artesunate Gap Analysis Table [Thailand]

Calendar Year	2023	2024	2025
Injectable artesunate needs			
Projected number of severe cases	15	15	15
Projected number of severe cases among children	0	0	0
Average number of vials required for severe cases among children			
Projected number of severe cases among adults	15	15	15
Average number of vials required for severe cases among adults	15	15	15
Total injectable artesunate needs (vials)	225	225	225
Needs estimated based on HMIS data			
Partner contributions (vials)			
Injectable artesunate from government			
Injectable artesunate from Global Fund			
Injectable artesunate from other donors			
Injectable artesunate planned with PMI funding	4,000	7,500	
Total injectable artesunate contributions per calendar year	4,000	7,500	0
Stock balance (vials)			
Beginning balance	6,000	7,638	12,101
- Product need	225	225	225
+ Total contributions (received/expected)	4,000	7,500	0
Estimated/projected expiries	2,137	2,812	3,456
Ending balance	7,638	12,101	8,420
Desired end of year stock (months of stock)	0	0	0
Desired end of year stock (quantities)	7,562	7,562	7,562
Total surplus (gap)	76	4,539	858

Table A-5. Primaquine 7.5 mg Gap Analysis Table [Thailand]

Calendar Year	2023	2024	2025
Total country population	66,090,475	66,255,701	66,421,340
Total population at risk for malaria	806,835	683,912	602,231
PMI-targeted at-risk population	806,835	683,912	602,231
Primaquine needs			
Total projected number of malaria cases	8,119	6,495	4,547
Total projected number of Pf cases (children <15 years old)	122	97	68
Total projected number of Pv cases (children <15 years old)	2,314	1,851	1,296
Tablets required to treat Pf cases (children <15 years old)	244	195	136
Tablets required to treat Pv cases (children <15 years old)	39,337	31,469	22,028
Total primaquine 7.5 mg needs (tablets) for treatment	39,580	31,664	22,165
Needs estimated based on HMIS data			
Partner contributions (tablets)			
Primaquine from government	0	0	0
Primaquine from Global Fund	0	0	0
Primaquine from other donors	0	0	0
Primaquine planned with PMI funding		150,000	150,000
Total primaquine contributions per calendar year	0	150,000	150,000
Stock balance (tablets)			
Beginning balance	90,000	50,420	130,129
- Product need	39,580	31,664	22,165
+ Total contributions (received/expected)	0	150,000	150,000
Estimated/projected expiries	0	38,627	
Ending balance	50,420	130,129	257,964
Desired end of year stock (months of stock)	0	0	0
Desired end of year stock (quantities)	132,380	132,380	132,380

Table A-6. ITN Gap Analysis Table [Lao PDR]

Calendar Year	2023	2024	2025
Total country population	7,559,791	7,673,188	7,788,286
Total population at risk for malaria	1,825,689	1,853,074	1,880,870
PMI-targeted at-risk population	1,825,689	1,853,074	1,880,870
Population targeted for ITNs (LLINs, family nets)	47,269	46,156	535,790
Continuous distribution needs			
Channel 1: ANC	47,629	31,450	0
Channel 1: ANC type of ITN	Single Pyrethroid	Single Pyrethroid	Single Pyrethroid
Channel 2: EPI			
Channel 2: EPI type of ITN			
Channel 3: School			
Channel 3: School type of ITN			
Channel 4: Community—acceleration strategy	0	16,650	9,250
Channel 4: Community type of ITN	Single Pyrethroid	Single Pyrethroid	Single Pyrethroid
Channel 5: Outbreak and foci response	0	6,800	6,800
Channel 5: Type of ITN	Single Pyrethroid	Single Pyrethroid	Single Pyrethroid
Estimated Total need for continuous channels	47,629	54,900	16,050
Mass campaign distribution needs			
Mass distribution campaigns	0	0	307,850
Mass distribution LLINs type	Single Pyrethroid	Single Pyrethroid	Single Pyrethroid
Estimated total need for campaigns	0	0	307,850
Total ITN need: Continuous and campaign	47,629	54,900	323,900
Partner contributions			
ITNs carried over from previous year	82,871	35,242	120,342
ITNs from government			
Type of ITNs from government			

LLINs from Global Fund (family size)	0	0	107,810
Type of LLINs from Global Fund	Single Pyrethroid	Single Pyrethroid	Single Pyrethroid
LLINs from other donors			
Type of LLINs from other donors			
LLINs planned with PMI funding		140,000	70,000
Type of ITNs with PMI funding	Single Pyrethroid	Single Pyrethroid	Single Pyrethroid
Total ITNs contribution per calendar year	82,871	175,242	298,152
Total ITN surplus (gap)	35,242	120,342	(25,748)

Table A-7. RDT Gap Analysis Table [Lao PDR]

Calendar Year	2023	2024	2025
Total country population	7,559,791	7,673,188	7,788,286
Population at risk for malaria	1,825,689	1,853,074	1,880,870
PMI-targeted at-risk population	1,825,689	1,853,074	1,880,870
RDT needs			
Total number of projected suspected malaria cases	850,000	850,000	850,000
Percent of suspected malaria cases tested with an RDT	85%	85%	85%
RDT needs (tests)	1,566,900	799,980	832,310
Select data source			
Partner contributions (tests)			
RDTs from government	130,000	75,000	0
RDTs from Global Fund	607,898	490,410	339,970
RDTs from other donors	0	0	0
RDTs planned with PMI funding	0	0	0
Total RDT contributions per calendar year	737,898	565,410	339,970
Stock balance (tests)			
Beginning balance	80,777	0	0
Expected expiries	0	0	0
- Product need	1,566,900	799,980	832,310
+ Total contributions (received/expected)	737,898	565,410	339,970
Ending balance	(748,225)	(234,570)	(492,340)
Desired end of year stock (months of stock)	0	0	0
Desired end of year stock (quantities)	0	0	0
Total surplus (gap)	(748,225)	(234,570)	(492,340)

Table A-8. ACT Gap Analysis Table [Lao PDR]

Calendar Year	2023	2024	2025
Total country population	7,559,791	7,673,188	7,788,286
Population at risk for malaria	1,825,689	1,853,074	1,880,870
PMI-targeted at-risk population	1,825,689	1,853,074	1,880,870
ACT needs			
Total projected number of malaria cases	2,018	1,732	1,497
Total ACT needs (treatments)	15,360	6,480	16,890
Select data source			
Partner contributions (treatments)			
ACTs from government	0	0	0
ACTs from Global Fund	1,713	22,087	0
ACTs from other donors	0	0	0
ACTs planned with PMI funding	0	0	0
Total ACTs contributions per calendar year	1,713	22,087	0
Stock balance (treatments)			
Beginning balance	17,819	2,986	3,466
Expected expiries	1,186	15,127	1,482
- Product need	15,360	6,480	16,890
+ Total contributions (received/expected)	1,713	22,087	0
Ending balance	2,986	3,466	(14,906)
Desired end of year stock (months of stock)	0	0	0
Desired end of year stock (quantities)	0	0	0
Total surplus (gap)	2,986	3,466	(14,906)

Table A-9. Inj. Artesunate Gap Analysis Table [Lao PDR]

Calendar Year	2023	2024	2025
Injectable artesunate needs			
Projected number of severe cases	7	6	5
Projected number of severe cases among children	0	0	0
Average number of vials required for severe cases among children	0	0	0
Projected number of severe cases among adults	0	0	0
Average number of vials required for severe cases among adults	10	10	10
Total injectable artesunate needs (vials)	4,205	4,195	55
Select data source			
Partner contributions (vials)			
Injectable artesunate from government	0	0	0
Injectable artesunate from Global Fund	2,584	4,437	0
Injectable artesunate from other donors	0	0	0
Injectable artesunate planned with PMI funding	0	0	0
Total injectable artesunate contributions per calendar year	2,584	4,437	0
Stock balance (vials)			
Beginning balance	1,630	9	0
Expected expiries	0	2,546	0
- Product need	4,205	4,195	55
+ Total contributions (received/expected)	2,584	4,437	0
Ending balance	9	(2,295)	(55)
Desired end of year stock (months of stock)	0	0	0
Desired end of year stock (quantities)	0	0	0
Total surplus (gap)	9	(2,295)	(55)

Table A-10. Primaquine Gap Analysis Table [Lao PDR]

Calendar Year	2023	2024	2025
Total country population	7,559,791	7,673,188	7,788,286
Total population at risk for malaria	1,825,689	1,853,074	1,880,870
PMI-targeted at-risk population	1,825,689	1,853,074	1,880,870
Primaquine needs			
Total projected number of malaria cases	2,018	1,732	1,497
Total projected number of Pf cases	354	246	171
Total projected number of Pv cases			
Total projected number of mixed cases (Pf + Pv)	1,664	1,486	1,326
Total primaquine needs (tablets)	207,400	430,800	154,200
Select data source			
Partner contributions (tablets)			
Primaquine from government	0	0	0
Primaquine from Global Fund	179,820	322,200	152,000
Primaquine from other donors	0	0	0
Primaquine planned with PMI funding	150,000	0	0
Total primaquine contributions per calendar year	329,820	322,200	152,000
Stock balance (tablets)			
Beginning balance	146,972	269,392	160,792
Expected expiries	0	0	0
- Product need	207,400	430,800	154,200
+ Total contributions (received/expected)	329,820	322,200	152,000
Ending balance	269,392	160,792	158,592
Desired end of year stock (months of stock)	0	0	0
Desired end of year stock (quantities)	0	0	0
Total surplus (gap)	269,392	160,792	158,592