

The following document is an abbreviated malaria operational plan. The principles guiding development of this document—country-led, inclusive, consultative with a broad audience, and transparent—are consistent with best practices that the U.S. President’s Malaria Initiative (PMI) has instituted since its inception. While an in-depth background of malaria in this country can be found in the detailed [FY 2018 malaria operational plan](#) on [pmi.gov](#), this abbreviated document provides a high-level overview of PMI’s program in this country, including key strategic updates, country data and progress updates, and a detailed list of activities to be supported with FY 2019 U.S. Government PMI funding.

This abbreviated malaria operational plan has been approved by the U.S. Global Malaria Coordinator and reflects collaborative discussions with the national malaria control programs and partners in country. The final funding available to support the plan outlined here is pending final FY 2019 appropriation. If any further changes are made to this plan it will be reflected in a revised posting.



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PRESIDENT'S MALARIA INITIATIVE

BURMA

Abbreviated Malaria Operational Plan FY 2019

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ABBREVIATIONS and ACRONYMS

ACT	Artemisinin-based combination therapy
ANC	Antenatal care
API	Annual Parasite Incidence
CDC	Centers for Disease Control and Prevention
DFDA	Department of Food and Drug Administration
DFID	Department for International Development
DHS	Demographic and Health Survey
EPI	Expanded program of immunization
FETP	Field Epidemiology Training Program
FY	Fiscal year
G6PD	Glycose-6-phosphate dehydrogenase enzyme testing
HMIS	Health Management Information System
IFETP	International Field Epidemiology Training Program
IRS	Indoor residual spraying
LLIN	Long-lasting insecticidal net
LMIS	Logistics Management Information System
LSM	Larval source management
JICA	Japan International Cooperation Agency
MICS	Multiple indicator cluster survey
MIP	Malaria in pregnancy
MIS	Malaria indicator survey
MMFO	Malaria management field operation
MMP	Mobile and migrant populations
MOHS	Ministry of Health and Sport
MOP	Malaria operational plan
MRH	Maternal and reproductive health
NMCP	National Malaria Control Program
OR	Operational research
PMI	President's Malaria Initiative
RAI	Regional Artemisinin-resistance Initiative
RAI2E	Regional Artemisinin-resistance Initiative 2 Elimination
RDT	Rapid diagnostic test
SARA	Service availability readiness assessment
SBCC	Social and behavior change communication
TES	Therapeutic efficacy surveillance
TPR	Test positivity rate
VBDC	Vector Borne Disease Control
VMW	Village malaria worker
WHO	World Health Organization

I. INTRODUCTION

This abbreviated fiscal year (FY) 2019 Malaria Operational Plan (MOP) presents an implementation plan for Burma, based on the strategies of the U.S. President’s Malaria Initiative (PMI) and the National Malaria Control Program (NMCP), and building on investments made by PMI and other partners to improve and expand malaria-related services. It was developed in consultation with the NMCP and with the participation of national and international partners involved in malaria prevention and control in the country. The [FY 2018 MOP](#) contains a more detailed and comprehensive description of the malaria situation in Burma, country health system delivery structure, Ministry of Health and Sport (MOHS) organization, and PMI’s progress through April/May of 2017. This abbreviated MOP describes critical changes/updates to overall NMCP and PMI strategic approaches, as well as newly proposed activities under each technical area to be supported with FY 2019 funds.

II. OVERVIEW OF PMI IN BURMA

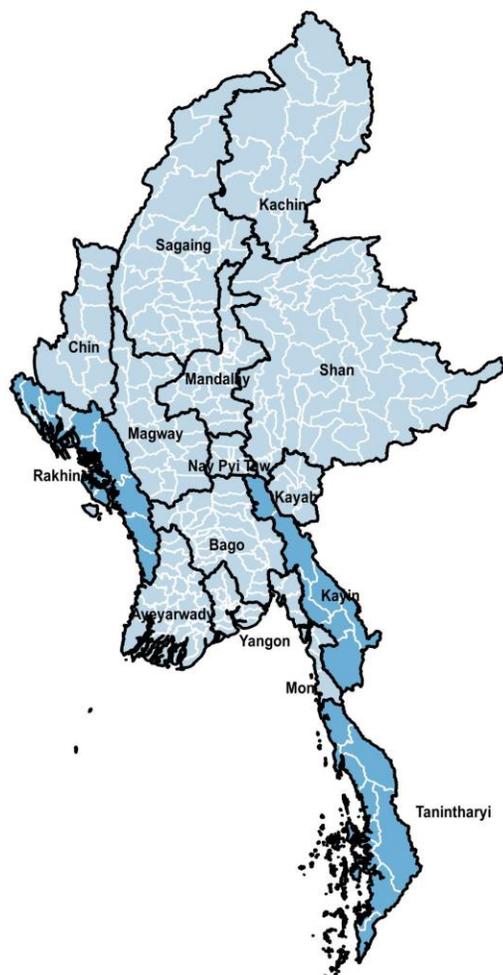
Burma began implementation as a PMI focus country in FY 2011. The proposed FY 2019 PMI budget for Burma is \$9 million. PMI supports the NMCP’s strategy both at national and local levels.

At national level, PMI supports capacity building, particularly for entomology and epidemiology, monitoring therapeutic efficacy of antimalarial drugs, strengthening malaria surveillance, antimalarial drug quality assurance systems, supply chain management for health commodities, and quality assurance for malaria diagnosis. At local level, PMI supports comprehensive, community-based malaria services for at-risk populations with vector control and case management interventions. It involves public and private sectors, including ethnic health organizations that covers more than 1,600 villages and work-sites in Kayin State (4 townships), Rakhine State (16 townships), and Tanintharyi Region (10 townships), for a total beneficiary population of about 900,000 people.

PMI’s geographic reach has been determined in close coordination with the NMCP, other partners and donors to ensure comprehensive coverage in well-defined administrative areas. Assistance is provided at all levels of the local health system, and interventions are focused on priority groups, such as remote communities and mobile and migrant populations (MMPs). Please see Figure 1 for the geographic distribution of FY 2019 PMI-supported activities.

Cognizant of the tenuous refugee situation along the border with Bangladesh and the potential for infectious disease outbreaks given the current context and conditions, PMI will be ready to rapidly respond in the event of a malaria outbreak. PMI will collaborate closely with the Global Fund and other stakeholders to mobilize quickly to prevent spread and/or worsening of the malaria situation along the border area.

Figure 1: Geographic Distribution of FY 2019 PMI-Supported Activities



FY 2019 PMI-Supported Activities

- Nationwide support: Support therapeutic efficacy monitoring and the 2020 DHS; strengthen QA/QC for malaria diagnostics, quality of private sector case management practices, pharmaceutical management, and malaria surveillance. Central-level support to strengthen routine surveillance and the FDA.
- Focused support: Above-listed activities + support for entomological monitoring, SBCC, procurement of malaria-related commodities, and strengthening malaria-related service delivery in targeted communities.
- State/territory boundaries (township-level boundaries are outlined in white)

III. STRATEGY UPDATES

A five-year (2016-2020) National Strategic Plan for Intensifying Malaria Control and Accelerating Progress towards Malaria Elimination was developed in 2016, together with the National Plan for Malaria Elimination in Burma (2016-2030) and the Monitoring & Evaluation Plan (2016-2020).

The new Global Fund/Regional Artemisinin-resistance Initiative 2 Elimination (RAI2E) (2018-2020) started its implementation in January 2018 with a total budget of \$97,456,740 allocated to Burma for the 3-year period. The RAI2E encompasses 14 sub-recipients, whereas 19 sub-recipients were supported by the previous Global Fund round: 12 under the New Funding Model (2013-2016) and 7 under the Regional Artemisinin-resistance Initiative (RAI) (2014-2016). Several coordination meetings at national and local level were organized among all implementing partners and donors to ensure full coverage of malaria services in all endemic areas, to update the maps of geographic coverage by different partners, and to prevent gaps or duplication of assistance.

The National Plan for Malaria Elimination aims to achieve the elimination of indigenous *Plasmodium falciparum* in the five states/regions of Yangon, Mandalay, Bago, Mon, Magway, and the Union Territory of Nay Pyi Taw by 2020. However, these administrative units are facing constraints and delays in the establishment and full deployment of the required elimination tools (e.g., case-based reporting system; case and foci identification, investigation, and classification; availability of qualified staff, means of transport, and elimination committees, etc.). Taking into account these limitations, in January 2018 the core sub-group, Technical and Strategic Group on Malaria, gave the task to PMI to pilot a comprehensive elimination approach in three townships of Rakhine State, whose results may provide a useful model for scale-up in other parts of the country.

Conflict and instability in northern Rakhine State, which was already characterized by extreme poverty, under-development, and recurrent episodes of intercommunal and inter-religious conflicts worsened after August 25, 2017 when an insurgent group launched attacks on police and military posts killing 12 officers. Following the attacks and the response by Myanmar's security forces, nearly 700,000 refugees fled from Myanmar to Bangladesh, constituting a large-scale humanitarian crisis. These events have continued to disrupt international assistance in Rakhine State, particularly through limitations on access to communities.

PMI's plan to expand its geographical coverage to all 17 Townships of Rakhine State was impacted by the recent events, particularly in the 3 northern Townships of Maungdaw, Buthidaung, and Rathedaung, which were mainly inhabited by the Muslim minority and the most affected by the military response. Access by national and international relief organizations to the three northern Townships is under the control of government authorities. In early 2018, the government allowed a few organizations to resume humanitarian and development activities. As conditions have allowed, PMI has continued to recruit and train new village malaria workers (VMWs) to ensure the provision of community-based malaria services in 292 villages in the 3 northern townships. PMI is carefully monitoring the evolving humanitarian and political situation and is ready to re-engage in these areas with malaria services upon the repatriation of refugees to Rakhine and as access is permitted by the local authorities.

IV. DATA UPDATES AND EVIDENCE OF PROGRESS

No results are available from new surveys or studies. Table 1 and Table 2 provide results of the most recent key survey-based malaria indicators in Burma between 2013–2016 and the evaluation of key malaria indicators reported through the routine surveillance system between 2012-2017, respectively. Figures 2 and 3 show trends in key malaria indicators and malaria incidence by townships, respectively.

Table 1: Evolution of Key Survey-Based Malaria Indicators in Burma from 2013 to 2016

Indicator	2013 CAP-Malaria Tanintharyi Rakhine Kayin	2012-13-14 Global Fund Implementing Partners	2013-14 CAP- Malaria Project	2015 MIS	2015-2016 DHS
% Households with at least one ITN	37.8%	2013: 68%	2013:97.6% 2014:97.3%	18.7% (52% D1; 65% D4)*	26.8%
% Population with access to an ITN	NA	NA	NA	NA	NA
% Children under five who slept under an ITN the previous night	NA	2013: 58.5% 2014: 44.6%	NA	16.0%	18.6%
% Pregnant women who slept under an ITN the previous night	NA	2013: 56.5% 2014: 42.4%	NA	17.1%	18.4%
% Population that slept under an ITN the previous night	21%	2013: 86% 2014: 62.7%	2013: 61% 2014: 82%	10.4%	15.6%
% Children under five years old with fever in the last two weeks for whom advice or treatment was sought	NA	2013: 11.6% 2014: 7.5%	NA	70.5%	65.0%
% Children under five with fever in the last two weeks who had a finger or heel stick	NA	NA	NA	4.3% (all ages)	3%
% Children receiving an artemisinin-based combination therapy (ACT) among children under five years old with fever in the last two weeks who received any antimalarial drugs	NA	NA	NA	NA	NA
Under-5 mortality rate per 1,000 live births	NA	NA	NA	NA	50
% children under five with parasitemia (by PCR, if done)				<1% (all ages)	

*D1: Domain 1 consisted of high malaria risk areas (API>5); D4: Domain 4 consisted of hard to reach areas including non-state actor areas

Preliminary 2017 surveillance reports indicate a decrease in malaria cases from 110,146 in 2016 to 85,019 in 2017.

Table 2: Evolution of Key Malaria Indicators Reported through Routine Surveillance Systems in Burma from 2012 to 2017

	2012	2013	2014	2015	2016	2017
Total # Cases (Confirmed) ¹	481,204	333,871	205,658	182,452	110,146	85,019
# Confirmed Cases with Rapid Diagnostic Test (RDT) ²	405,394	307,362	193,648	175,986	103,429	
# Confirmed by microscopy ²	79,192	26,509	12,010	6,782	6,717	
# Presumed Cases ³						
Total # <5 Cases ⁴						
Total # Malaria Deaths ⁵	403	236	92	37	21	29
Data Completeness (%) ⁶						
Examined with RDT	1,158,420	1,162,083	1,415,837	2,564,707	3,063,167	
Test Positivity Rate (TPR) ⁷	35%	26%	14%	7%	3%	

¹Total # cases: Total number of reported malaria cases. All ages, outpatient, inpatient, confirmed and unconfirmed cases. 2017 figure is preliminary.

²# confirmed cases: Total diagnostically confirmed cases by RDT or microscopy. All ages, outpatient, inpatient.

³# presumed cases: Total clinical/presumed/unconfirmed cases. All ages, outpatient, inpatient. Not reported by the NMCP but presumed to be zero.

⁴Total #<5 cases: Total number of <5 cases. Outpatient, inpatient, confirmed, and unconfirmed. Not reported by the NMCP.

⁵Total # Malaria Deaths Reported: All ages, outpatient, inpatient, confirmed, and unconfirmed

⁶Data completeness: Number of monthly reports received from health facilities/Number of health facility reports expected (i.e., number of facilities expected to report multiplied by the number of months considered). Not reported by the NMCP but the completeness is presumed to be close to 100% from the public sector.

⁷Test Positivity Rate (TPR): Number of confirmed cases (#2 above)/Number patients receiving an RDT for malaria

Figure 2: Trends in Key Malaria Indicators Reported in Routine Surveillance Systems

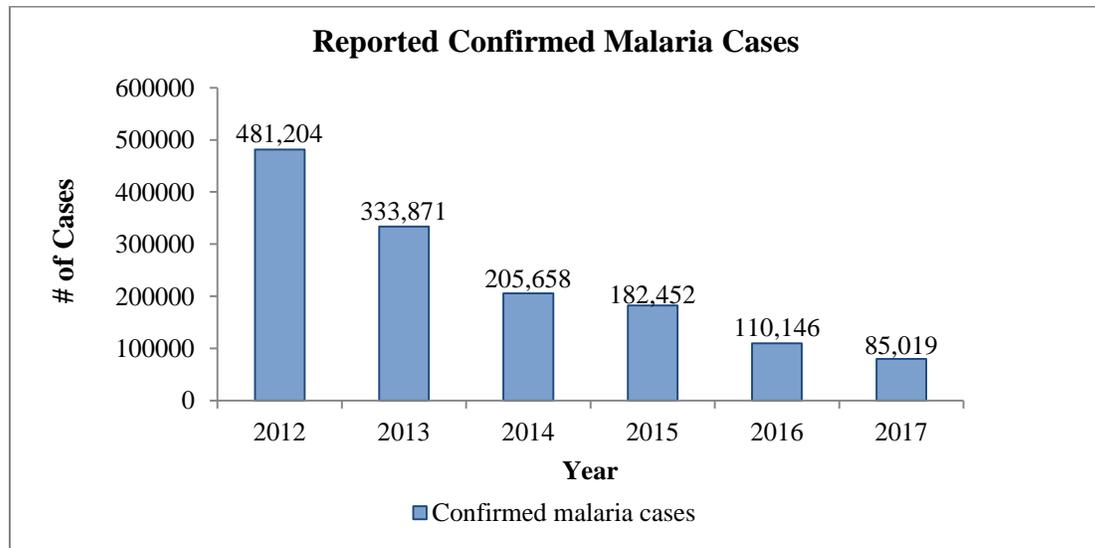
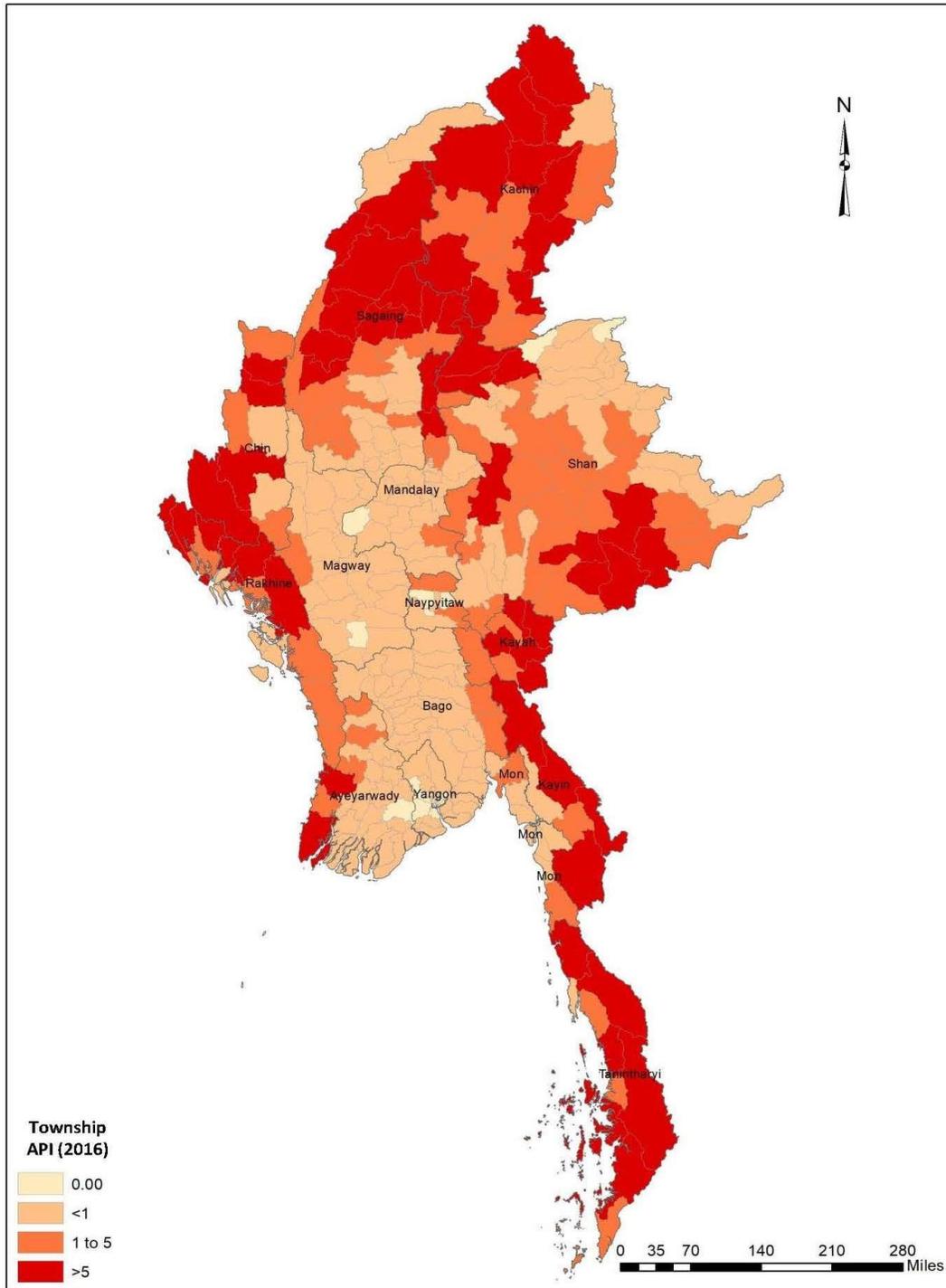


Figure 3: Malaria Incidence* by Township



* API: Annual Parasite Incidence (confirmed malaria cases/1,000 population at risk/year)

V. NEW OR EXPANDED ACTIVITIES AND KEY CHANGES

1. Vector control

a. Entomologic monitoring and insecticide resistance management

No new activities or significant changes are proposed.

The MOHS highlights the importance of strengthening entomological capacity in Burma. With FY 2019 funding, support for capacity building will continue, primarily via short-term consultant entomologists from the Centers for Disease Control and Prevention (CDC). These efforts consist of trainings at the central laboratory of Gyogone in Yangon and field-based activities at sub-national level in PMI-supported states and regions. PMI coordinates closely with other partners supporting entomology in Burma and in the region, including the Japan International Cooperation Agency (JICA), the Thailand Ministry of Public Health, the World Health Organization (WHO), and University of California-San Francisco. At the central laboratory, PMI has supported training workshops for ELISA and insecticide resistance intensity monitoring. Should the infrastructure in the Gyogone laboratory be sufficiently improved, PMI will support development of molecular capacity for accurate identification of the numerous sibling species of *Anopheles* present in Burma. Of greater importance is supporting integration of entomological activities into foci investigation, so that these investigations assess how best to impact transmission of malaria in specific foci, whether via various methods of case finding, use of long-lasting insecticidal nets (LLINs), indoor residual spraying (IRS), or larval source management (LSM).

b. Insecticide-treated nets

No new activities or significant changes are proposed.

PMI continues to provide both LLINs and funding for their distribution as in previous years. Geographic targeting of LLINs is based upon malaria risk stratification and close consultation with the NMCP, the Global Fund, and other partners.

The NMCP has planned a nationwide mass campaign starting in early 2019. PMI will procure 300,000 LLINs, expected to arrive in country at the end of 2018, while the bulk of the nearly 6 million LLINs for the campaign will be procured by the Global Fund. PMI will also procure 350,000 LLINs, expected in country in early 2019, to cover the mass campaign needs in the PMI focus areas. The 300,000 LLINs planned by PMI in 2020 will be used for community-based continuous and top-up distribution through the network of village malaria workers.

c. Indoor residual spraying

Not implemented in Burma.

2. Malaria in pregnancy

No new activities or significant changes are proposed.

The Burma MOHS, in coordination between the Maternal and Reproductive Health (MRH) Division and the NMCP, finalized their new national Antenatal Care (ANC) guidelines based on the 2016 WHO ANC policy recommendations and included recommendations for managing malaria during pregnancy. A core

group of technical members from MRH as well as other health programs, including HIV, TB and NMCP, met over the last year advising on the development of the national guidelines. The new ANC guidelines were finalized in December 2017 at a broad consensus and stakeholder meeting and launched in April 2018. PMI will support malaria in pregnancy (MIP) training of health staff including auxiliary nurses and midwives as part of the broader package of training provided for health workers on the new national ANC guidelines. Although the national guidelines recommend implementing single screen and treat (SST) for all pregnant women attending ANC in high transmission areas, PMI will not supply ANCs with RDTs in support of the approach but will instead closely monitor the implementation and results of this strategy to help advise on its further continuation.

3. Case management

No significant changes are proposed.

PMI will continue to procure rapid diagnostic tests (RDTs), artemisinin-based combination therapies (ACTs), and antimalarials for *Plasmodium vivax* treatment to meet the needs of our PMI focus areas and non-state actors' areas for use by community level volunteers, implement community case management in approximately 2,000 villages, continue the therapeutic efficacy surveillance (TES) monitoring, and strengthen national and sub-national quality assurance and quality control for malaria diagnosis.

About 300,000 RDTs and 10,000 ACTs per year are estimated necessary in the 31 townships currently covered by PMI, with a beneficiary population of about 1.3 million. The National Plan for Malaria Elimination (2016-2030) advocates active screening for malaria infections during foci investigation, particularly in active foci that show signs of refractoriness, and for mobile and migrant populations and ethnic groups in remote and border areas. Additionally, it recommends keeping the annual blood examination rate for populations at-risk in active and non-active residual foci well above 5 percent, and preferably closer to 10 percent. The quantification of the RDT needs has also taken into account these recommendations. A surplus of ACTs in relation to the treated cases is unavoidable in the context of rapidly declining malaria incidence and the need to maintain minimum stock levels at all health centers and community-based malaria workers.

Although diagnosis and treatment of malaria is free in the public sector, the 2015 Malaria Indicator Survey (MIS) noted that about 30 percent of healthcare seekers sought treatment for fever from the private sector, both formal and informal. In addition, despite having made tremendous progress through the subsidized artemisinin monotherapy replacement project funded by UK's Department for International Development (DFID), the ACTWatch survey from 2015 noted the presence of artemisinin monotherapy in 30 percent of private outlets. However, much of this stock pre-dates the oral monotherapy ban and will likely expire shortly. PMI will support training of private providers on malaria case management through existing networks and professional associations, support the ban on oral artemisinin monotherapies, as well as improve malaria case reporting into the national malaria information system. These efforts will be crucial as the country moves to progressively eliminate malaria and document their progress.

Since 2011, the national guidelines for malaria diagnosis and treatment recommended primaquine, as single dose of 0.75mg/kg (predates the later WHO recommendation of 0.25mg/kg dose) on day 0 for the treatment of uncomplicated *P. falciparum* malaria, without previous glucose-6-phosphate dehydrogenase (G6PD) enzyme testing. This recommendation was reconfirmed in the 2015 guidelines. The Department of Medical Research has conducted several surveys on the prevalence of G6PD deficiency in Burma, among different ethnic groups, and has reached a consensus that 0.75mg/kg single

dose can be administered without previous G6PD testing. Primaquine radical cure for *P. vivax* is currently administered without G6PD testing. At the community level, the weekly primaquine regimen for eight weeks is recommended. Our implementing partner has been administering primaquine under directly observed treatment and has not noted any clinically significant adverse events. The MOHS has not yet considered the potential role of tafenoquine in the future but did note significant challenges around ensuring adherence to the longer radical cure regimens with primaquine. PMI will continue to follow the implementation of primaquine radical cure as well as support the introduction of tafenoquine if the MOHS determines that would be needed.

4. Cross-cutting and other health systems strengthening

a. Pharmaceutical management

No new activities or significant changes are proposed.

PMI will continue to provide technical assistance to the Department of Food and Drug Administration (DFDA) and the national laboratory of Nay Pyi Taw so that it can maintain accreditation of its drug quality testing laboratory. Additionally, DFDA staff in Nay Pyi Taw and Mandalay will start new training in risk-based post-marketing surveillance and in the use of new portable screening technology enabling DFDA to support state/region teams of Vector Borne Disease Control to perform testing of antimalarial drugs at the local level.

PMI will support efforts of the NMCP to develop a more uniform approach to malaria commodity management through the implementation of the electronic Logistics Management Information System (LMIS), called mSupply, as a platform for developing a national eLMIS and for improving local level generation and use of data to improve availability of medicines.

b. Social and behavior change communication

No new activities or significant changes are proposed.

PMI continues to support social and behavior change communication (SBCC) activities in the fields of preventive methods to promote the sustained use of LLINs, and case management to promote early diagnosis and treatment and adherence to prescribed treatment through a network of more than 1,800 VMWs based in 31 townships of Kayin, Rakhine and Tanintharyi States/Regions. Results of several surveys (VectorWorks LLIN durability monitoring/2016-2017, DHS/2016, MIS/2015, CAP-Malaria/2015, NetWorks/2014, PSI/2014) have consistently shown that the use of conventional non-treated nets is a well-accepted traditional practice in the majority of households, and they frequently compete with or delay the use of LLINs distributed by the malaria program. Particular attention is therefore given to SBCC messages explaining the advantages of treated nets; promoting their continuous use; and appropriate washing, drying, and repair practices. Standardized SBCC materials and messages, adapted to relevant ethnic groups and languages, will be disseminated at the community level mainly through interpersonal communication approaches by village malaria workers and private providers.

c. Surveillance, monitoring, and evaluation

No new activities or significant changes are proposed.

Table 3 notes the major surveillance, monitoring and evaluation activities conducted since 2012 and planned through 2020 by the NMCP. Currently, WHO and Save the Children are testing two electronic

tools for malaria surveillance in Mon State: 1) a District Health Information System 2 (DHIS-2) case-based surveillance tool operated by basic health staff using a tablet in health facilities; and 2) a mobile application tool for a case-based reporting by malaria volunteers in the community. Once the results of these two pilots are available (anticipated by the end of the year), revised platform(s) are developed, and their wide scale implementation is endorsed by the NMCP, PMI plans to support its implementation in the PMI-supported areas.

A second Demographic and Health Survey (DHS) is planned in 2020 and PMI will support the inclusion of a malaria module in this survey. The inclusion of any biomarkers has not been finalized and will be informed by in-country discussions and PMI headquarter guidance.

Table 3. Surveillance, Monitoring, and Evaluation Data Sources

Data Source	Survey Activities	Year								
		2012	2013	2014	2015	2016	2017	2018	2019	2020
Household surveys	Demographic Health Survey (DHS)				X*	X*				(X)
	Malaria Indicator Survey (MIS)	X* (sub-national MARC)			X					
	Multiple Indicator Cluster Survey (MICS)									
	Expanded Program Immunization (EPI) survey									
	National Household Census			X*						
Health Facility surveys	Service Availability Readiness Assessment (SARA) survey				X*					
Malaria Surveillance and Routine System Support	Support to parallel malaria surveillance system									
	Support to Health Management Information System (HMIS)		X	X	X	X	X	X	(X)	(X)
	Support to Integrated Disease Surveillance and Response (IDSR)									
Therapeutic efficacy surveillance	<i>In vivo</i> efficacy testing	X	X	X	X	X	X	X	(X)	(X)
Other Surveys	Entomological surveillance and insecticide resistance monitoring	X	X	X	X					

*: Not funded by PMI
(): Planned activities

d. Operational research

No new activities or significant changes are proposed.

Operational research (OR) needs supported by FY 2019 funding will likely be related to implementation of methods to detect low-level parasitemia in active foci and control of outdoor transmission. These needs will be defined by the results of ongoing OR on highly sensitive RDTs and experience in case and foci investigation. Although the final results of the highly sensitive RDTs are expected in the last quarter of 2018, preliminary results look promising with three to four times the test positivity rates as compared

to conventional RDTs. However, as these results need to be validated by PCR, no conclusions on the future role of these tests can be made. Therefore, no OR is specified at this time.

e. Other health systems strengthening

No new activities or significant changes are proposed.

Since 2012, PMI continues to support training and capacity building for NMCP, and regional and township level staff on specific technical areas on an annual basis such as epidemiology, entomology, and malaria surveillance and response. PMI continues to support participation of NMCP and MOHS public health staff in the national Field Epidemiology Training Program (FETP) and the International Field Epidemiology Training Program (IFETP) based in Thailand. In order to build more malaria management and field operations (MMFO) capacity, PMI has supported the adaptation of the regional MMFO course to the local needs and developed an in-country two-week course. In June 2017, PMI supported the national MMFO training for 23 mid-level managers from all states and regions. In addition, in collaboration with WHO, PMI supported the training of 12 laboratory technicians from central and state/regional levels on slide cross-checking and proficiency testing as well as a comprehensive 3-week entomology training jointly supported by PMI, WHO, and JICA in November 2017.

5. Staffing and administration

PMI Burma supports staffing and administration that follow PMI policy, as articulated in the FY 2018 MOP.