

PMI

U.S. PRESIDENT'S MALARIA INITIATIVE

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This 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 funding available to support the plan outlined here is pending finalization of the FY 2020 appropriation. If any further changes are made to this plan it will be reflected in a revised posting.

U.S. PRESIDENT'S MALARIA INITIATIVE

BURMA

Malaria Operational Plan FY 2020

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ABBREVIATIONS

ACT	Artemisinin-based combination therapy
ANC	Antenatal care
API	Annual Parasite Incidence
BMGF	Bill and Melinda Gates Foundation
CDC	Centers for Disease Control and Prevention
CY	Calendar year
DFDA	Department of Food and Drug Administration
DHIS2	District Health Information System 2
DHS	Demographic and Health Survey
eLMIS	Electronic logistics management information system
FETP	Field Epidemiology Training Program
FY	Fiscal year
Global Fund	Global Fund to Fight AIDS, Tuberculosis and Malaria
GMS	Greater Mekong Subregion
ICMV	Integrated community malaria volunteer
IPC	Interpersonal communication
IFETP	International Field Epidemiology Training Program
IPTp	Intermittent preventive treatment for pregnant women
IRS	Indoor residual spraying
ITN	Insecticide-treated net
LLIN	Long lasting insecticidal net
M&E	Monitoring and evaluation
MIP	Malaria in pregnancy
MIS	Malaria indicator survey
MMP	Mobile and migrant populations
MMW	Mobile malaria workers
MOHS	Ministry of Health and Sports
MOP	Malaria Operational Plan
NMCP	National Malaria Control Program
NSP	National strategic plan
PMI	U.S. President's Malaria Initiative

RAI2E	Regional Artemisinin-resistance Initiative 2 Elimination
RDT	Rapid diagnostic test
SBC	Social and behavior change
SM&E	Surveillance, monitoring, and evaluation
TES	Therapeutic efficacy study
UNICEF	United Nations Children's Fund
UNOPS	United Nations Office for Project Services
USAID	United States Agency for International Development
VBDC	Vector Borne Disease Control
VMW	Village malaria worker
WHO	World Health Organization

I. INTRODUCTION

The U.S. President's Malaria Initiative (PMI)—led by the U.S. Agency for International Development (USAID) and implemented together with the U.S. Centers for Disease Control and Prevention (CDC)—delivers cost-effective, lifesaving malaria interventions alongside catalytic technical and operational assistance to support Burma to end malaria. PMI has been a proud partner of Burma since 2011, helping to decrease malaria morbidity and mortality by 84 and 95 percent, respectively, from 2012 to 2018 through investments totaling \$64.4 million through FY 2019.

The proposed PMI fiscal year (FY) 2020 budget for Burma is \$9 million. This Malaria Operational Plan (MOP) outlines planned PMI activities in Burma for FY2020. Developed in consultation with the National Malaria Control Program (NMCP) and key stakeholders, proposed activities reflect national and PMI strategies, draw on best-available data, and align with the country context and health system. Proposed PMI investments support and build on those made by the Government of Burma as well as other donors and partners.

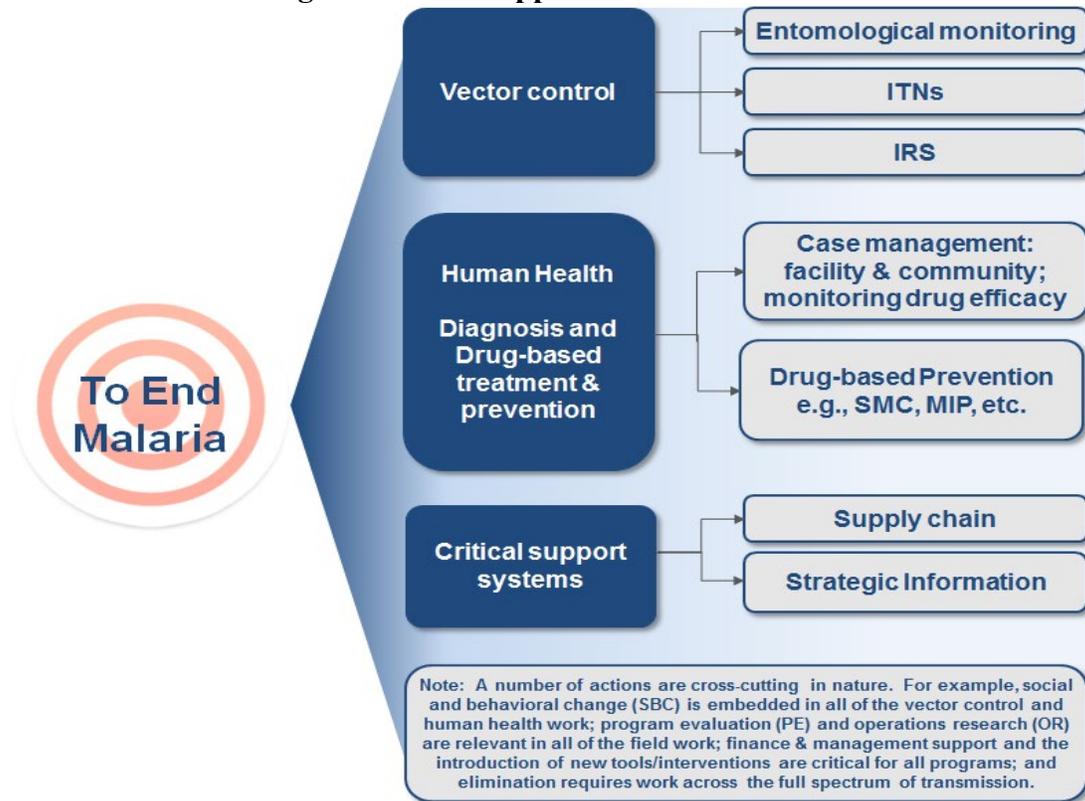
Burma at a Glance

- **Geography:** Burma is 676,578 km² in size, and it stretches 2,200 km from north to south and 925 km from east to west at its widest points. It borders Bangladesh, India, China, Laos, Thailand, and it is divided administratively into seven States and seven Regions with 330 townships.
- **Climate:** Tropical monsoon with rainy season from May to November and dry season from December to April.
- **Population in 2019:** 54,339,766 (mid-year estimation of the Myanmar's Ministry of Labour, Immigration and Population)
- Population at risk of malaria: 26.5 million in 2019 (population residing in malaria epidemiological Strata 2 and 3)
- **Principal malaria parasites:** *Plasmodium falciparum* and *P. vivax*
- **Principal malaria vectors:** *Anopheles dirus* and *An. minimus* are the primary vectors. *An. annularis*, *An. jeyporiensis*, and *An. sundaicus* are among the prevalent secondary vectors
- **Malaria incidence per 1,000 population:** Annual parasite incidence (API) = 1.5 in 2018 (NMCP, annual report)
- **Under-five mortality rate:** 50 deaths per 1,000 live births (DHS, 2016)
- **World Bank Income Classification & GDP:** Lower middle income. Gross domestic product per capita: US\$1,326 in 2018 with annual growth rate of 6.2% (<https://data.worldbank.org/country/myanmar>)
- **Trafficking in Persons designations, 2016-2019:** 2016, Tier 3; 2017, Tier 2 Watch List; 2018, Tier 3; 2019, Tier 3 (Department of State's Trafficking in Persons Report, June 2019) (<https://www.state.gov/wp-content/uploads/2019/06/2019-Trafficking-in-Persons-Report.pdf>)

- **Malaria funding and program support partners include:**
 - Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund)
 - U.S. President’s Malaria Initiative
 - Japan International Cooperation Agency
 - Bill and Melinda Gates Foundation (BMGF)
 - World Health Organization (WHO)
 - UK’s Department for International Development
 - Asian Development Bank
 - European Union
 - China International Development Cooperation Agency
- **PMI Support of National Malaria Control Strategy:** 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.
- **PMI Investments:** Burma began implementation as a PMI focus country in FY 2011. The proposed FY 2020 PMI budget for Burma is \$9 million, which brings the total PMI investment to nearly \$73.4 million.

PMI organizes its activities and planning levels around the activities below, in line with the national malaria strategy.

Figure 1. PMI's Approach to End Malaria



PMI's approach is both consistent with and contributes to USAID's Journey to Self-Reliance framework. Building and strengthening the capacity of Burma's people and institutions – from the central level to communities – to effectively lead and implement evidence-based malaria control and elimination activities remains paramount to PMI. As denoted in Table 2 (the budget table), nearly all of PMI's planned support for FY2020 in the areas of vector control, human health, supply chain and strategic information contains elements of capacity building and system strengthening. PMI/Burma will continue to rely on and engage with local partners such as Myanmar Nurse and Midwives Association, Myanmar Health Assistant Association, Karen Department of Health and Welfare, Back Pack Health Worker Team, and is expanding its local partner base to reach high-risk populations such as forest-goers, migrants, and ethnic minority groups.

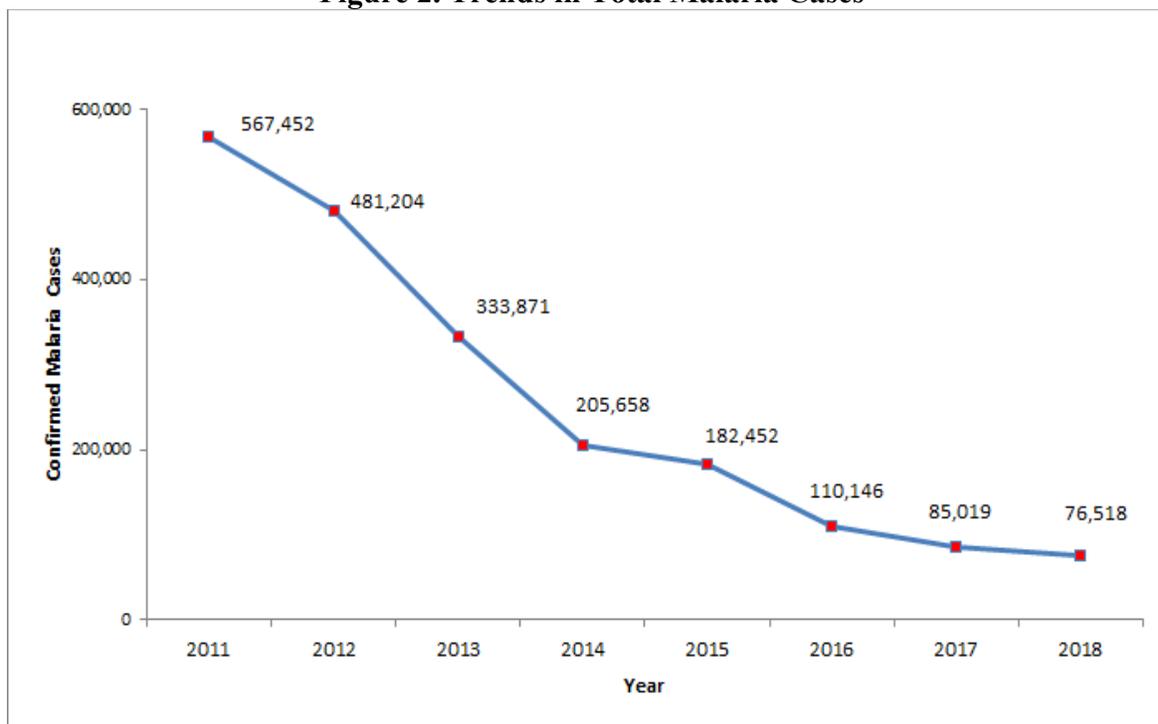
To accelerate the journey to self-reliance, PMI developed a programmatic inventory to assess the strengths and persistent challenges of Burma's program (see Annex B). The activities proposed in this MOP are tailored to draw on these strengths and address the weaknesses, which will be monitored to evaluate the effectiveness of capacity building efforts. In addition, while PMI is cognizant that it will take time before Burma is capable of fully financing its development priorities, PMI will work with other partners (e.g., the Global Fund) to jointly track Burma's funding commitments across the malaria portfolio.

II. MALARIA SITUATION AND MALARIA CONTROL PROGRESS IN BURMA

Significant progress has been made in recent years to reduce the malaria burden in Burma and several areas of the country are progressing toward elimination. The NMCP reported 76,518 malaria cases and 19 malaria deaths in 2018. This marks a decline of 84% in cases and 95% in deaths from the 481,204

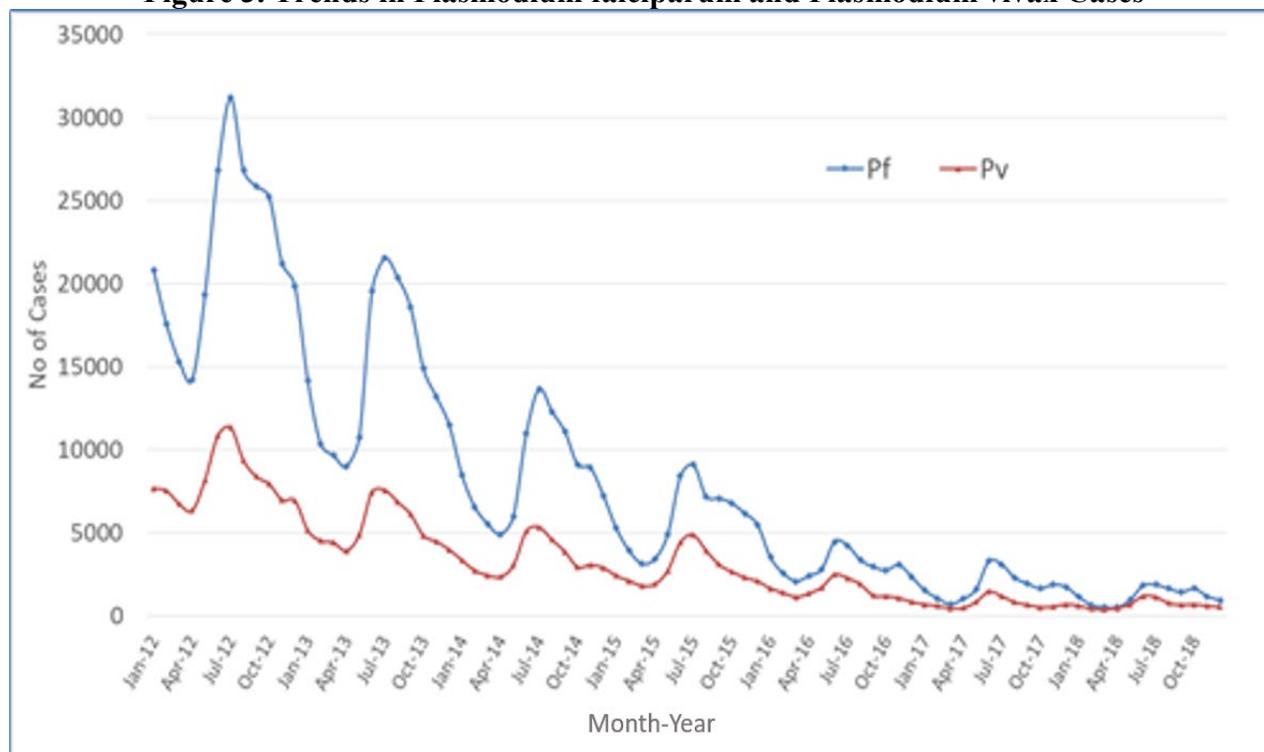
confirmed cases and 403 deaths registered in 2012 (Figure 2). However, the malaria burden in Burma remains the highest among the six countries of the Greater Mekong Sub-region (GMS), accounting for almost 47% of the total cases among the GMS countries in 2018. The NMCP estimates that malaria transmission occurs in 291 out of the total 330 townships, and that approximately 26.5 million people, or 48.7% of the total population, live in areas at risk for malaria. A total of 190 townships achieved an Annual Parasite Incidence (API) <1 /1,000 population in 2018 and are targeted for malaria elimination. *Plasmodium falciparum* and *P. vivax* are the major species, with occasional reports of *P. malariae* and *P. ovale*. The proportion of cases due to *P. falciparum* has declined over the past decade; in 2018 it accounted for 52% of cases. Recent trends of the *P. falciparum* and *P. vivax* caseload in Burma are shown in Figure 3 and proportion of cases attributed to different age groups in Figure 4. Figure 5 notes the township level malaria strata based on incidence in 2018 with the highest burden strata (API >1) townships concentrated in the southeast and the northwest.

Figure 2. Trends in Total Malaria Cases



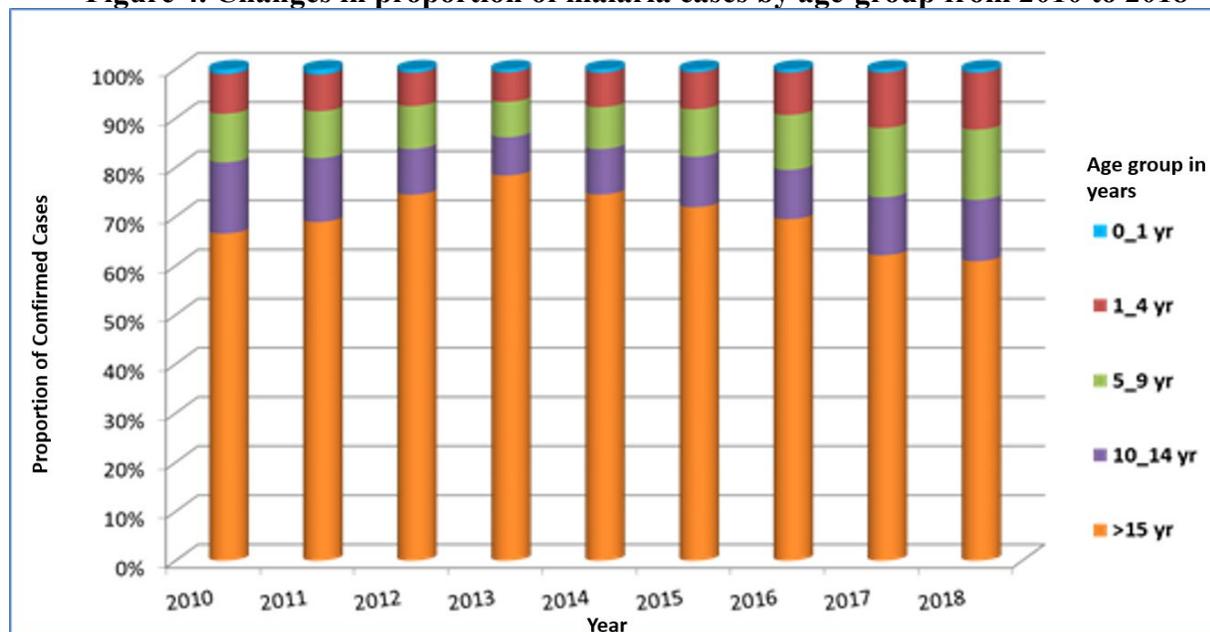
Confirmed malaria cases reported by the NMCP from 2011 to 2018 (Source: NMCP, 2018)

Figure 3. Trends in Plasmodium falciparum and Plasmodium vivax Cases



Monthly *Plasmodium falciparum* (Pf) and *Plasmodium vivax* (Pv) case counts in Burma, 2012-2018 (Source: NMCP, 2018).

Figure 4. Changes in proportion of malaria cases by age-group from 2010 to 2018

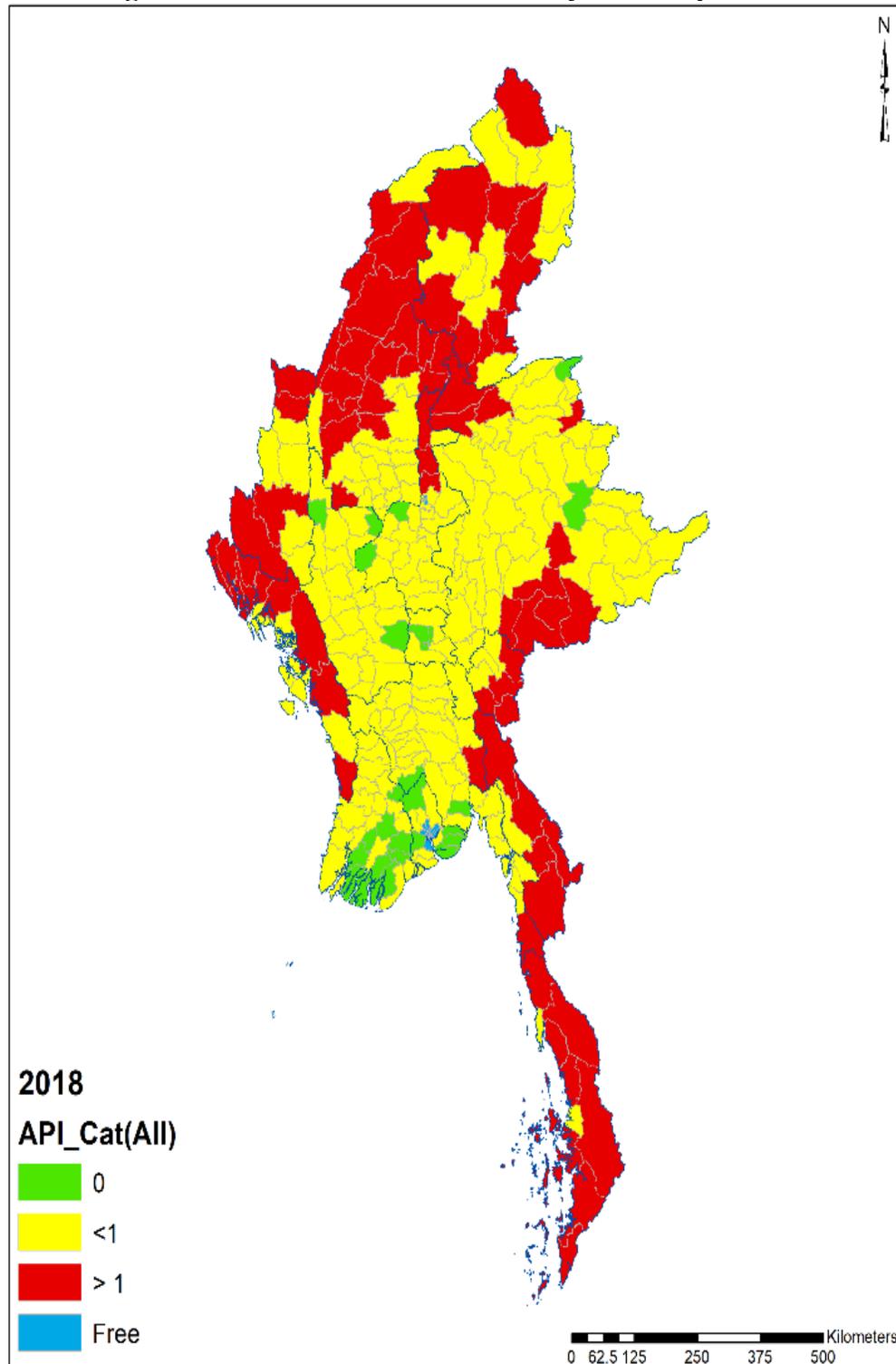


Source: VBDC, 2018

Since 2015, the NMCP has adopted a method for the stratification of transmission intensity at village or sub-centre (group of villages) level based on the API. Three strata have been defined: stratum 1 is malaria-free and has no receptivity; stratum 2 has API = 0 and potential of transmission because of its receptivity; stratum 3 includes three sub-strata that are defined in the inverse order of transmission

intensity: stratum 3a = API >5 has high transmission; stratum 3b = API 5-1 is considered with moderate transmission; stratum 3c = API <1 has low transmission.

Figure 5: Annual Parasite Incidence by Township in 2018



(Source: NMCP, 2018)

Figure 6. Key indicators for malaria prevention and treatment coverage and impact indicators from Demographic Health Surveys (DHS) and Malaria Indicator Surveys (MIS) from 2013-2018

Indicator	2013 CAP Malaria Tanintharyi Rakhine Kayin	2012–14 Global Fund IPs	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%
% Households with at least one ITN for every two people	N/A	N/A	N/A	N/A	14%
% Population with access to an ITN	N/A	N/A	N/A	N/A	N/A
% 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 of age who slept under an ITN the previous night	N/A	2013: 58.5% 2014: 44.6%	N/A	16.0%	18.6%
% Pregnant women who slept under an ITN the previous night	N/A	2013: 56.5% 2014: 42.4%	N/A	17.1%	18.4%
% Children under five years of age with fever in the last two weeks for whom advice or treatment was sought	N/A	2013: 11.6% 2014: 7.5%	N/A	70.5%	65.0%
% Children under five with fever in the last two weeks who had a finger or heel stick	N/A	N/A	N/A	4.3% (all ages)	3%
% Children receiving an ACT among children under five years of age with fever in the last two weeks who received any antimalarial drugs	N/A	N/A	N/A	N/A	N/A
% Women who received two or more doses of IPTp during their last pregnancy in the last two years	N/A	N/A	N/A	N/A	N/A
% Women who received three or more doses of IPTp during their last pregnancy in the last two years	N/A	N/A	N/A	N/A	N/A
Under-five mortality rate per 1,000 live births	N/A	N/A	N/A	N/A	50
% Children under five years of age with parasitemia (by PCR, if done)	N/A	N/A	N/A	<1% (all ages)	N/A
% Children under five years of age with severe anemia (Hb<8gm/dl)	N/A	N/A	N/A	N/A	N/A

*D1: Domain 1 included townships with API>5 and D4: Domain 4 included hard-to-reach townships in the sampling frame

Figure 7. Evolution of key malaria indicators reported through routine surveillance systems

Indicator	2014	2015	2016	2017	2018
# Suspect malaria cases ¹	N/A	N/A	N/A	N/A	N/A
# Patients receiving diagnostic test for malaria ²	1,567,095	2,657,555	3,185,245	3,368,697	3,183,758
Total # malaria cases ³ (confirmed and presumed)	205,658	182,452	110,146	85,019	76,518
# Confirmed cases ⁴	205,658	182,452	110,146	85,019	76,518
# Presumed cases ⁵	N/A	N/A	N/A	N/A	N/A
% Malaria cases confirmed ⁶	100%	100%	100%	100%	100%
Test positivity rate (TPR) ⁷	13.1	6.9	3.5	2.5	2.4
Total # <5 malaria cases ⁸	N/A	N/A	N/A	N/A	N/A
% Cases under 5 ⁹	N/A	N/A	N/A	N/A	N/A
Total # severe cases	N/A	N/A	N/A	N/A	N/A
Total # malaria deaths ¹¹	96	37	21	31	19
# Facilities reporting ¹²	N/A	N/A	N/A	N/A	N/A
Data form completeness (%) ¹³	N/A	N/A	N/A	N/A	N/A

Definitions:

¹ Number of patients presenting with signs or symptoms considered to be possibly due to malaria (e.g., this could be the number of patients presenting with fever or history of fever in the previous 24 or 48 hours)

² Number of patients receiving a diagnostic test for malaria (RDT or microscopy). All ages, outpatient, inpatient

³ Total # cases: Total number of reported malaria cases. All ages, outpatient, inpatient, confirmed and unconfirmed cases.

⁴ # confirmed cases: Total diagnostically confirmed cases. All ages, outpatient, inpatient.

⁵ # presumed cases: Total clinical/presumed/unconfirmed cases. All ages, outpatient, inpatient.

⁶ % Malaria Cases confirmed: # confirmed cases/ Total # cases

⁷ Test Positivity Rate (TPR): Number of confirmed cases/Number of patients receiving a diagnostic test for malaria (RDT or microscopy)

⁸ Total #<5 cases: Total number of <5 cases. Outpatient, inpatient, confirmed, and unconfirmed.

⁹ Total # <5 cases/ Total # of cases

¹¹ Total # Malaria Deaths Reported: All ages, outpatient, inpatient, confirmed, and unconfirmed.

¹² Total # of health facilities reporting data into the HMIS/DHIS2 system for that year.

¹³ Data completeness: Number of monthly reports received from health facilities/Number of health facility reports expected

III. OVERVIEW OF PMI'S SUPPORT OF BURMA'S MALARIA CONTROL STRATEGY

A five-year (2016-2020) National Strategic Plan (NSP) for Intensifying Malaria Control and Accelerating Progress towards Malaria Elimination was developed in 2016. The ultimate goal of the NSP is to eliminate *P. falciparum* malaria by 2025 and all forms of malaria from Burma by 2030.

The NSP has four intermediate objectives:

1. To reduce reported incidence of malaria to less than 1 case per 1,000 population in all states/regions by 2020.
2. To interrupt transmission of *P. falciparum* malaria in at least 5 states/regions by 2020 (Bago, Magway, Mandalay, Mon, and Yangon).
3. To prevent the emergence of multi-artemisinin-based combination therapy (ACT) resistant *P. falciparum*.
4. To prevent the re-establishment of malaria in areas where transmission has been interrupted.

The NSP identifies three key intervention areas with priority activities:

1. Case detection and effective management:

- Provide universal coverage for diagnosis and treatment in health facilities and community;
- Reduce the parasite reservoir through effective radical treatment of all cases;
- Focus on detecting, protecting, and providing access to diagnosis and treatment for priority population groups (e.g. mobile and migrant populations (MMPs))
- Detect and treat asymptomatic parasite carriers by screening appropriate populations using rapid and highly sensitive diagnostic tools;
- Reinforce and scale up quality microscopy and access to quality assured RDTs;
- Strengthen malaria program management to optimize operations at all health system levels;
- Engage formal and informal private sector to improve availability of quality-assured products;
- Strengthen drug regulatory agency functions to eliminate artemisinin monotherapy and prevent the sale of substandard and falsified drugs.

2. Disease prevention

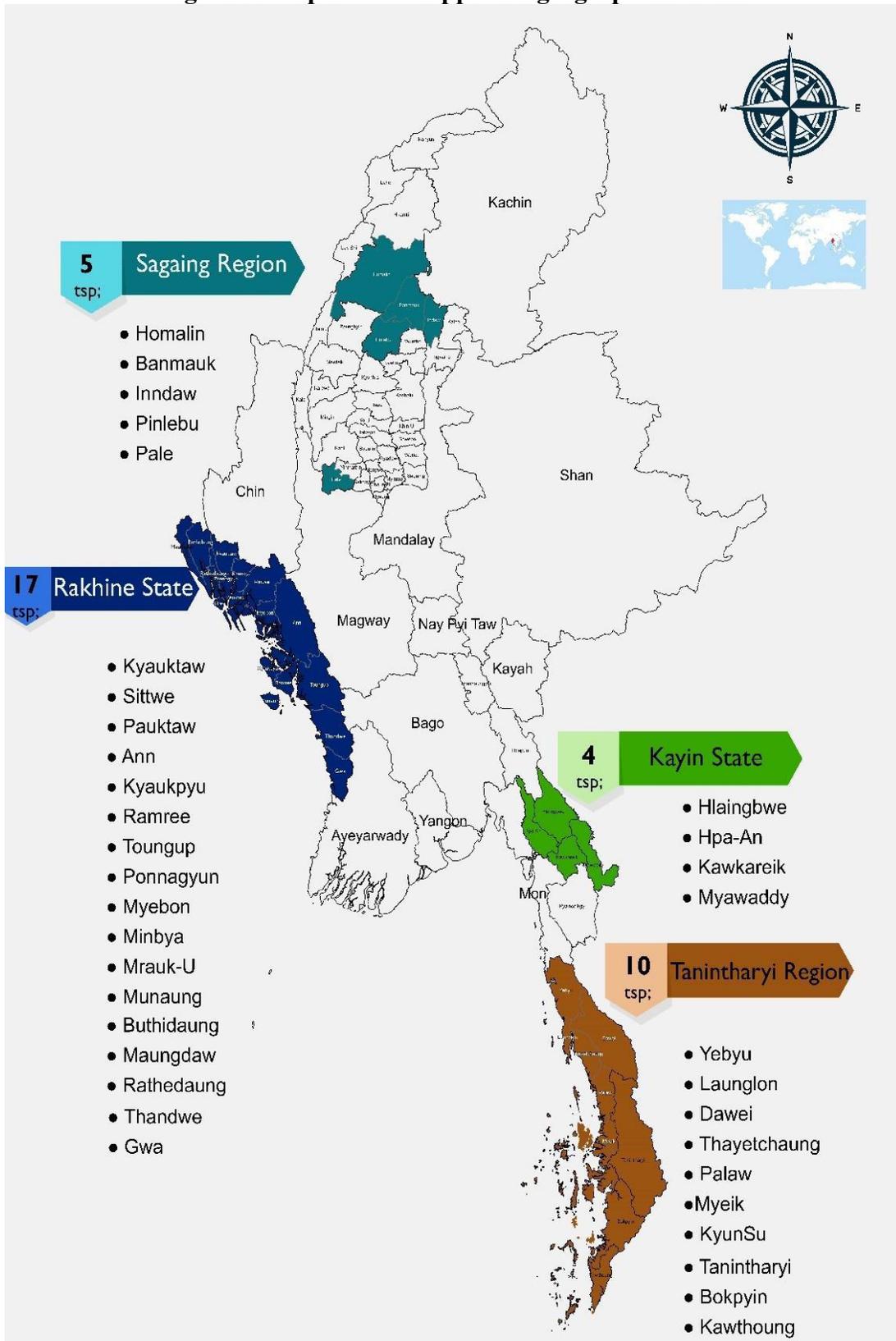
- Universal coverage of at-risk populations with insecticide-treated nets (ITNs) or indoor residual spraying (IRS) and supplementary vector control measures where appropriate;
- Deliver preventive measures appropriate to local vector biology, transmission settings and populations characteristics to accelerate the impact on transmission;
- Empower at-risk populations by ensuring they understand the disease through culturally appropriate and gender sensitive communication;
- Ensure participation of at-risk communities and population groups in malaria prevention activities.

3. Malaria case and entomological surveillance

- Strengthen the malaria case surveillance system as a core intervention to efficiently gather, use, and disseminate data;
- Rapidly detect and treat cases through intensified surveillance and response;
- Maintain adequate epidemiological and entomological capabilities with an effective operational research component, to determine risk and underlying causes of transmission;
- Establish an early warning system to monitor malaria risk factors in terms of vulnerability and receptivity in order to predict and prevent re-establishment of malaria transmission.

The NMCP also developed the National Plan for Malaria Elimination in Burma (2016-2030) and the Monitoring & Evaluation (M&E) Plan. PMI supports the NMCP's strategy, contributing support at national and peripheral levels. At national level, PMI provides support for 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 peripheral level, PMI supports comprehensive, community-based malaria services for at-risk populations with vector control and case management interventions, involving public and private sectors including civil society and ethnic health organizations. With FY2020 funding, PMI will support implementation of community-based malaria services through 2,149 Village Malaria Workers (VMWs) in a total of 36 townships covering a population of 1.6 million in four states and regions: Kayin State (4 townships), Rakhine State (17 townships), Tanintharyi Region (10 townships), and Sagaing Region (5 townships) (Figure 6). PMI implements in close coordination with the NMCP, other partners and donors operating in these areas, to ensure comprehensive coverage of administrative areas. This approach will allow PMI to focus malaria interventions in priority areas and to provide comprehensive assistance at all levels of the health system, as well as expand coverage to more remote communities and to reach at-risk MMPs.

Figure 8: Map of PMI-supported geographical areas



V. PARTNER FUNDING LANDSCAPE

The **Global Fund** is the principal malaria donor in Burma. The Global Fund's Regional Artemisinin-Resistance Initiative 2 Elimination (RAI2E) (2018-2020) grant started its implementation in January 2018 with a total budget of \$97,456,740 allocated to Burma for the 3-year period. The overall RAI2E grant is for \$242 million for all five GMS countries, including a cross-cutting regional component for \$34 million. To maximize efficiencies and to reduce management burden for countries, the management of the regional grant is implemented by the United Nations Office for Project Services (UNOPS). The Burma 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 1 (2014-2016). Several coordination meetings at national and local level were organized among all implementing partners and donors (including with PMI) 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.

Access to Health Fund (formerly 3MDG Fund): The project is a multi-donor grant mechanism with contributions from four donors - Sweden, Switzerland, the United Kingdom and the United States - with an estimated budget of about \$215 million over five years. The Fund started in January 2019 and is managed by UNOPS. Access to Health focuses on:

- i. providing access to vulnerable and underserved populations in conflict-affected and hard-to-reach areas to an essential package of health services,
- ii. strengthening the health system at all levels. USAID contributions are tracked separately and attributed to specific grants and results based on the source of funding.

Japan International Cooperation Agency: A 10-year project which provided funding for health and malaria programs, ended in March 2015. A new five-year malaria project focusing on elimination in Bago Region started in January 2016.

Asian Development Bank: In 2016, the Asian Development Bank began funding a multi-year project for malaria surveillance, laboratory quality assurance, and malaria services for MMPs.

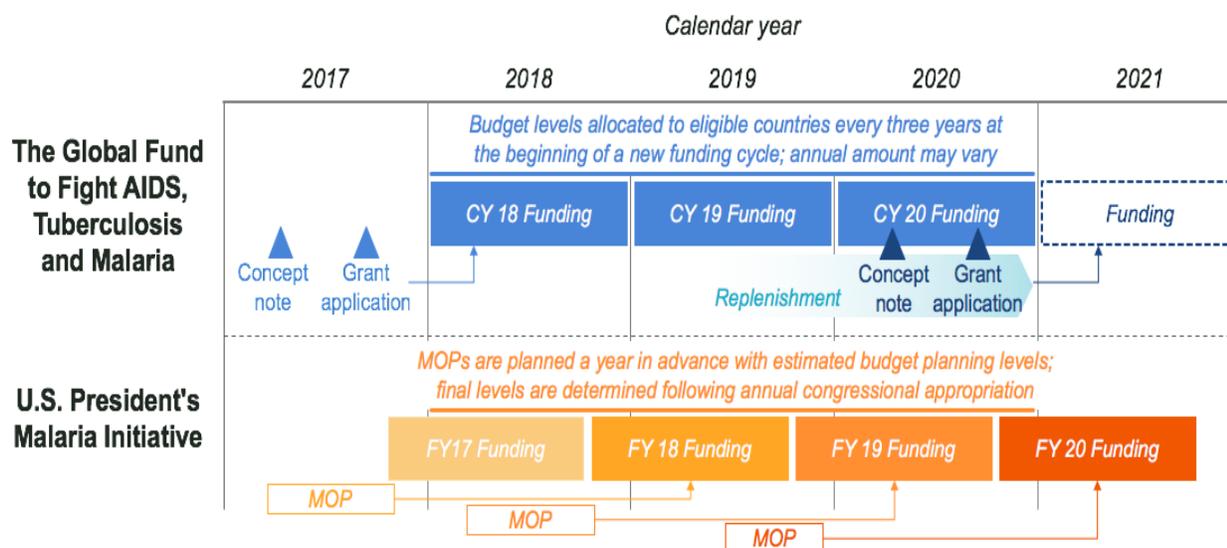
Other donors: Other regional donors supporting malaria activities that impact Burma are Australia's Department of Foreign Affairs and Trade and the BMGF, which jointly support the WHO Mekong Malaria Elimination hub based in Phnom Penh, Cambodia, formerly the Emergency Response to Artemisinin Resistance, that is working towards a regional database to improve case-based surveillance within the GMS. The China International Development Cooperation Agency is also planning to support a malaria project along the Myanmar-Chinese border that is expected to cover 23 townships in Kachin, Northern Shan, and Eastern Shan, as well as 20 counties on the Chinese side of the border. The project value is estimated at US\$13 million over two to three years.

PMI emphasizes the importance of partner alignment on malaria control. With the recognition that each of the agencies emphasizes complementary funding support for the national malaria control effort in a given country, over the last year, PMI, Global Fund, and the BMGF set out to harmonize financial, supply chain, and programmatic data, and this effort remains ongoing as of the time of this MOP. A harmonized financial taxonomy has been developed for PMI and Global Fund (i.e. mapping cost categories across organizations).

The illustrative figure below visualizes the annual cycle of PMI funding and the MOP implementation year. As Figure 7 illustrates, any given FY MOP funds activities that take place during the next FY.

For example, an FY 18 MOP funds implementation during FY 19. Whereas Global Fund funding (and often, other partners and host country governments) is based on a three-year grant cycle on a calendar year (CY) timeframe during which activities were implemented. Annual PMI country budget allocations depend largely on the U.S. Congress' total overall malaria funding appropriation to USAID in a given FY, as well as other considerations (e.g., previous funding levels, activity and program pipelines, other donor contributions, known commodity needs/gaps, progress on ongoing PMI-supported activities, clear evidence of continued government commitment to malaria control).

Figure 7. PMI and Global Fund Funding Cycle Alignment



Footnote: In some cases, Global Fund's funding may come in partway through the calendar year. Funding levels in "Section IV - Partner Funding Landscape" and commodity procurement amounts listed in "Annex A - Intervention Specific Data" may differ given the lag between the year that funding was planned and the year when procurement orders were placed. Differences may reflect timing and/or based on changes in commodity consumption levels at country level, changes in commodity costs, or other donor orders.

Figures 8-11 aim to summarize contributions by external partners and host country government in calendar years 2018-20, with the goal of highlighting total country investments. For Burma, data are available for PMI (FY 2017-2019) and Global Fund (CY 2018-2020). Under the Global Fund RA12E grant proposal for implementation in 2018-2020, Burma has been allocated a total of \$97,456,740 over three years, which supports increased malaria service coverage for at-risk populations and strengthening of national surveillance systems.

In addition, as the Global Fund 2021-23 grant funding cycle is not yet underway at the time of this PMI FY20 MOP development, Global Fund country investments for the 2021 implementation period and beyond are not yet known. Note that the host country government invests substantial funding into the national-to-local infrastructure and service delivery for malaria and many other programs. However, there has not been a standardized method for attributing those investments to malaria specifically.

Figure 8. Non-PMI Funding Landscape in Burma

Funding Source	Total Budget in \$	Duration	Key Implementing Partners	Key Activities
Domestic*	6,780,092	Annual	VBDC	Treatment services
Global Fund RAI2E (country component)	97,456,740	2018-2020	UNOPS	Increased malaria service coverage for at-risk populations and strengthening of national surveillance systems

*Source: World Malaria Report 2019

Figure 9. Annual Budget by Level 1 Category

Year ¹	Funder	Vector Control	Case Management	Drug-Based prevention ²	Supply Chain ³	Monitoring, Evaluation & Research	Other Cross-Cutting and Health Systems Strengthening	Total
FY17	PMI	\$1.7M	\$4.8M	-	\$1.0M	\$1.3M	\$1.3M	\$10.0M
	Total	\$1.7M	\$4.8M	-	\$1.0M	\$1.3M	\$1.3M	\$10.0M
FY18	PMI	\$1.5M	\$5.7M	\$0.1M	\$0.7M	\$1.2M	\$0.9M	\$10.0M
	Total	\$1.5M	\$5.7M	\$0.1M	\$0.7M	\$1.2M	\$0.9M	\$10.0M
FY19	PMI	\$1.1M	\$4.3M	\$0.1M	\$0.9M	\$1.2M	\$1.4M	\$9.0M
	Total	\$1.1M	\$4.3M	\$0.1M	\$0.9M	\$1.2M	\$1.4M	\$9.0M

Footnotes:

¹ PMI budget data accurate as of Sept 1, 2019.

² Drug-based prevention, including SMC and MIP where relevant.

³ Covers management of in-country warehousing & distribution of malaria commodities, except for ITNs which are separately captured under "Vector Control."

Note: Categories shown reflect the harmonized financial taxonomy (Levels 1-3) developed by BMGF, Global Fund, and PMI in 2019, as part of a broader data harmonization initiative; potential for categories to continue to evolve through FY 2020 MOP process, as well as for additional donors and host country governments to adopt and reflect funding using the same categories.

Figure 10. Annual Budget by Level 3 Category, Detailed Breakdown for PMI

Level 1 Category	Level 3 Category	FY 17 ¹	FY 18 ¹	FY 19 ¹
		PMI	PMI	PMI
Vector Control	Procure ITNs for Continuous Distribution	\$1.0M	\$1.4M	\$0.7M
	Distribute ITNs via Continuous Distribution	\$0.4M	-	\$0.3M
	Procure ITNs for Mass Campaigns	-	-	-
	Distribute ITNs via Mass Campaigns	-	-	-
	Other ITN Implementation*	-	-	-
	IRS Implementation ⁴	-	-	-
	Procure IRS Insecticide	-	-	-
	Other IRS*	-	-	-
	Entomological Monitoring	\$0.3M	\$0.1M	\$0.1M
	SBC for Vector Control ⁵	-	-	-
	Other vector control measures	-	-	-
	Removing human rights- and gender-related barriers to vector control programs**	-	-	-
Case Management	Active Case Detection**	-	-	-
	Community-based case management	-	-	-
	Facility-based case management	-	-	-
	Private-sector case management	-	-	-
	Procure ACTs	\$0.0M	\$0.0M	\$0.0M
	Procure Drugs for Severe Malaria	-	-	-
	Procure Other Diagnosis-Related Commodities	-	\$0.1M	\$0.0M
	Procure Other Treatment-Related Commodities	-	-	\$0.0M
	Procure RDTs	\$0.3M	\$0.2M	\$0.3M
	Therapeutic Efficacy	\$0.2M	-	\$0.2M
	SBC for Case Management ⁵	-	-	-
	Other Case Management	\$4.2M	\$5.4M	\$3.7M
Drug-Based Prevention²	Procure SMC-Related Commodities	-	-	-
	SMC Implementation	-	-	-
	Prevention of Malaria in Pregnancy Implementation	-	\$0.1M	\$0.1M
	Procure IPTp-Related Commodities	-	-	-
	IPTi**	-	-	-
	SBC for Drug-Based Prevention ⁵	-	-	-
	Other Prevention**	-	-	-

Level 1 Category	Level 3 Category	FY 17 ¹	FY 18 ¹	FY 19 ¹
		PMI	PMI	PMI
Supply Chain ³	In-Country Supply Chain ³	-	-	\$0.0M
	Supply Chain Infrastructure	-	-	-
	Ensuring Quality	-	-	-
	Pharmaceutical Management Systems Strengthening	\$1.0M	\$0.7M	\$0.8M
	Supply Chain System Strengthening	-	-	-
Monitoring, Evaluation & Research	Reporting, Monitoring, and Evaluation	\$0.9M	\$0.9M	\$0.7M
	Program and data quality, analysis and operations research	\$0.2M	-	-
	Surveys	-	\$0.4M	\$0.3M
	Other Data Sources**	-	-	-
	Support for FETP*	\$0.3M	-	\$0.1M
Other Cross-Cutting and Health Systems Strengthening	Integrated service delivery, quality improvement, and national health strategies**	-	-	-
	Financial management systems**	-	-	-
	Community responses and systems**	-	-	-
	Support for PCV and SPAs*	-	-	-
	Cross-Cutting Human Resources for Health**	-	-	-
	Central and Regional Program management ⁶	\$0.1M	-	\$0.2M
	In-Country Staffing and Administration*	\$1.0M	\$0.6M	\$1.0M
	Other Program Management**	-	-	-
	SBC Unspecified ⁵	\$0.2M	\$0.3M	\$0.3M
Total		\$10.0M	\$10.0M	\$9.0M

Footnotes:

¹ PMI budget data accurate as of Sept 1, 2019

² Drug-based prevention, including SMC and MIP where relevant

³ Covers management of in-country warehousing & distribution of malaria commodities, except for ITNs which are separately captured under "Vector Control"

⁴ May include cost of IRS insecticides if full cost of IRS implementation including commodities was bundled within single line in prior year's Table 2

⁵ SBC was not historically split in the PMI budget across intervention areas, hence the row "SBC (unspecified)" for the FY2020 MOP cycle. Going forward, SBC proposed activities will be categorized across vector control, case management, and prevention (new categories).

⁶ PMI Proposed Activity "National-level support for case management" rolls up under "Case Management" Level 1

Note: Categories shown reflect the harmonized financial taxonomy (Levels 1-3) developed by BMGF, Global Fund, and PMI in 2019, as part of a broader data harmonization initiative; potential for categories to continue to evolve through FY 2020 MOP process, as well as for additional donors and host country governments to adopt and reflect funding using same categories.

* Category currently funded by PMI only

** Category currently funded by Global Fund only

Figure 11. Annual Budget, Breakdown by Commodity

Year ¹	Funder	ITNs for Continuous Distribution	ITNs for Mass Distribution	IRS Insecticide ³	ACTs	RDTs	Severe Malaria	SMC-Related	IPTp-Related	Total
FY17	PMI ²	\$1.0M	-	-	\$0.0M	\$0.3M	-	-	-	\$1.4M
	Total	\$1.0M	-	-	\$0.0M	\$0.3M	-	-	-	\$1.4M
FY18	PMI ²	\$1.4M	-	-	\$0.0M	\$0.2M	-	-	-	\$1.6M
	Total	\$1.4M	-	-	\$0.0M	\$0.2M	-	-	-	\$1.6M
FY19	PMI ²	\$0.7M	-	-	\$0.0M	\$0.3M	-	-	-	\$1.0M
	Total	\$0.7M	-	-	\$0.0M	\$0.3M	-	-	-	\$1.0M

Footnotes:

¹ PMI budget data accurate as of Sept 1, 2019 ;

² PMI commodity costs are fully loaded, including costs for the ex-works price of the commodity, quality control, freight, insurance, and customs.

³ IRS insecticide; for PMI, IRS insecticide commodity costs may be inextricable from IRS implementation costs in historical data – field left blank where this is the case.

Note: Categories shown reflect the harmonized financial taxonomy (Levels 1-3) developed by BMGF, Global Fund, and PMI in 2019, as part of a broader data harmonization initiative; potential for categories to continue to evolve through FY 2020 MOP process, as well as for additional donors and host country governments to adopt and reflect funding using same categories.

VI. ACTIVITIES TO BE SUPPORTED WITH FY 2020 FUNDING

Please see the FY 2020 budget tables (Tables 1 and 2) for a detailed list of activities PMI proposes to support in Burma with FY 2020 funding. Please refer to www.pmi.gov/resource-library/mops for the latest tables. Key data used for decision-making can be found in Annex A.

ANNEX A: INTERVENTION-SPECIFIC DATA

1. VECTOR CONTROL

NMCP objective
<ul style="list-style-type: none"> • Achieve and maintain at least 80% coverage with ITNs in stratum 3a, promoting their continuous use. • Introduce complementary tools (e.g. topical repellent, larval source management, insecticide treated clothes), as elements of a package of integrated vector control and case management interventions, to tackle outdoor and forest-related transmission in foci of residual malaria transmission. • Explore the possibility of re-introducing the treatment of existing conventional nets with long-lasting insecticide products.
NMCP approach
<ul style="list-style-type: none"> • The NMCP uses multiple ITN delivery strategies to maximize coverage in all stratum 3, with a goal of at least 80% coverage. • Regular ITN mass distributions are conducted every 3 years. Full coverage is provided in 3a areas, and targeting is based on the most up-to-date malaria stratification. • For planning purposes, the target coverage rate is 1.8 persons per ITN, whereas at household level, ITNs are distributed to ensure that all sleeping spaces are covered. • Continuous distribution of ITNs is provided through the Village Malaria Worker (VMW) network in order to address any ITN attrition in-between mass distributions. • Additional ITNs are delivered to pregnant women through antenatal care services, and to forest-related workers and communities. • The NMCP will conduct focal responsive IRS in the event of outbreaks, and only non-pyrethroid insecticides will be used for IRS.
PMI objective, in support of NMCP
<p>PMI supports strengthening vector control efforts through building entomological capacity and procuring and distributing of ITNs in the PMI-supported townships. Efforts to strengthen entomological capacity consist of trainings conducted at the central laboratory of Gyogone in Yangon, and field-based activities at sub-national level in PMI-supported states and regions.</p> <p>PMI coordinates closely with other partners supporting entomology in Burma and in the region, including Japan International Cooperation Agency, the Thailand Ministry of Public Health, WHO, and University of California-San Francisco. Even if PMI does not directly support some of the complementary interventions (such as larval source management), PMI supports the NMCP to better target such interventions.</p>

PMI-supported recent progress (past ~12-18 months)
<ul style="list-style-type: none"> • ITNs procured: 352,000 of the 5.4 million ITNs needed for the 2019 mass distribution campaign in collaboration with Global Fund and other donors. • In November 2018, two-week training on entomological surveillance and foci investigation for 12 entomologists and assistant entomologists, 4 health staff, and 6 project staff, conducted by a joint team of U.S. CDC and University of California-San Francisco entomologists. • In May 2019, two week on-the-job training of 11 entomologists and assistant entomologists, from central and regional level, on the performance of the circumsporozoite ELISA test, and technical assistance in insectary maintenance, conducted by two U.S. CDC entomologists. The training included a two-day field assessment in two malaria endemic villages of Tanintharyi Region to better refine, together with local NMCP and project staff, the methodology for comprehensive epidemiological and entomological investigation of malaria foci.
PMI-supported planned activities (next ~12-18 months, supported by currently available funds)
<ul style="list-style-type: none"> • Procure approximately 850,000 ITNs for continuous distribution in 2020 through VMWs and Integrated Community Malaria Volunteers (ICMVs) in support of the NMCP and in PMI-supported areas and non-state actor areas, including MMPs and internally displaced persons. • Support for targeted collection of primary vectors <i>An. minimus</i> and <i>An. dirus</i> in active foci to ensure that actionable insecticide resistance data are collected. • Support for curriculum development for integrated (epidemiological plus entomological) foci investigation in conjunction with Field Epidemiology Training Program (FETP). • Support for molecular entomology to allow quality assurance for taxonomic identification.

1.A. ENTOMOLOGICAL MONITORING

Key Goal
Determine the geographic distribution, bionomics, and insecticide resistance profiles of the main malaria vectors in the country to inform vector control decision-making
Do you propose expanding, contracting, or changing any entomological monitoring activities? If so, why and what data did you use to arrive at that conclusion?
No changes are proposed to entomological monitoring activities. Please see Table 2 for a detailed list of proposed activities with FY 2020 funding.

Key Question 1

Where is entomological monitoring taking place, what types of activities are occurring, and what is the source of funding?

Supporting Data

PMI does not directly support longitudinal entomological monitoring activities. PMI provided support for foci investigation in several areas, where the primary vectors *An. minimus* and *An. dirus* were found in villages in Tanintharyi, but only *An. minimus* was found in Rakhine. In Rakhine, *An. dirus* was likely associated with deep forest illegal logging sites, which PMI cannot access. Foci investigations include integrated epidemiological and entomological aspects, with emphasis on determining the place of transmission, assessing the coverage and quality of existing interventions, and conducting larval habitat surveys to determine the feasibility of larval source management. In large, persistent foci, additional investigations to determine insecticide susceptibility may be conducted.

Conclusion

The primary objective should be development of capacity for integrated focus investigation, which will need to be done in the absence of trained subnational entomological staff. Thus, the approach is to develop this capacity in subnational malaria staff and general public health staff via FETP.

Key Question 2

What is the current insecticide resistance profile of the primary malaria vectors?

Supporting Data

The Global Fund has provided support to the NMCP for resistance mapping in several regions of the country, but mostly in non-endemic areas. None of the data are published, but some are available via the WHO Malaria Threats Database. No data for Burma in primary vectors are available at irmapper.com, which compiles published literature. The WHO database reports susceptibility of *An. dirus* to deltamethrin and permethrin in southern Burma, but in a non-endemic area. For *An. minimus*, there are ten reports from northern and southern Burma of susceptibility to the same compounds, but only one report is from an endemic area. For *An. maculatus*, there are 17 reports, mostly from central Burma of susceptibility to these insecticides, along with one report of reduced susceptibility to deltamethrin in a non-endemic area of central Burma. In contrast, the rice field breeding *An. hyrcanus* (an immensely complex species group, with about 40 sibling species) showed resistance to pyrethroids in 9 of 11 surveys.

Conclusion

Limited data is available for the primary vectors -- *An. dirus* and *An. minimus* -- in areas where transmission remains. PMI will provide technical assistance to the NMCP in order to collect these data in the future.

Key Question 3

Are there any other considerations that impact your funding allocation in this category? N/A

Supporting Data

N/A

Conclusion

No other considerations are noted at this time.

1.B. INSECTICIDE-TREATED NETS (ITNs)

PMI Goal

Achieve high ITN coverage and use of effective nets in endemic PMI-supported areas (in the context of the current insecticide resistance); and maintain high coverage and use with consistent ITN distribution (via campaigns and/or continuous channels in a combination that is most effective given country context).

Do you propose expanding, contracting, or changing any ITN activities? If so, why and what data did you use to arrive at that conclusion?

No changes are proposed from FY2019 activities.

Please see Table 2 for a detailed list of proposed activities with FY 2020 funding.

Key Question 1

How has net ownership evolved since the start of PMI in the country? Are households fully covered?

Supporting Data

Figure A1. Trends in ITN Ownership

Trends in ITN Ownership

Percent of households



Figure A2. LLIN Coverage and Utilization in PMI-Targeted States/Regions (Oct 2018 – Sep 2019)

State/Region	Villages with LLIN Coverage Acceptability			Villages with LLIN Utilization Acceptability		
	#Villages Monitored	# (%) Villages with Acceptable LLIN Coverage	# Villages with Unacceptable LLIN Coverage	# Villages Monitored	# (%) Villages with Acceptable LLIN Use	# Villages with Unacceptable LLIN Use
Tanintharyi	136	110 (81%)	26	112	92 (82%)	20
Rakine (South)	182	136 (75%)	46	218	197 (90%)	21
Rakine (North)	6	5 (83%)	1	5	5 (100%)	0
Kayin	104	73 (70%)	31	95	83 (87%)	12
Grand Total	428	324 (76%)	104	430	377 (88%)	53

Source: Defeat Malaria FY2019

Conclusion

The results of the MIS 2015 showed that household ownership of at least one net of any type, treated and untreated, was very high at 99.6%, and ownership of sufficient nets (1 net per 2 people) of any type was also high at 88%. However, when considering treated nets only, as shown above, household ownership of at least one ITN was only 19%, and ownership of sufficient ITNs was only 11%. The DHS 2015-2016 reported 27% of households nationwide have at least one ITN and only 14% have at least one ITN for every two people in the household. These national estimates do not accurately reflect ITN ownership as ITNs are targeted and distributed to only high-burden malaria areas.

In PMI-targeted areas, ITN ownership and utilization is monitored using a lot quality assurance sampling approach. During FY 2019 (table above), ITN monitoring was conducted at 506 villages of which 428 villages were monitored for ITN coverage and 425 villages assessed for ITN utilization appropriately. ITN monitoring for coverage revealed 324 out of 428 villages (76%) had an acceptable level of coverage (at least 15 out of 21 households monitored owning enough ITNs defined as at least 1 ITN per 2 persons) and 377 out of 430 villages (88%) met the acceptable level of high utilization defined as $\geq 70\%$ utilization.

Key Question 2

What proportion of the population has access to an ITN? In contrast, what proportion of the population reports using an ITN? What is the ratio between access and use? Does it vary geographically?

Figure A3. Trends in ITN Access and Use
Trends in ITN Access and Use

Percent of household population with access to an ITN and who slept under an ITN the night before the survey

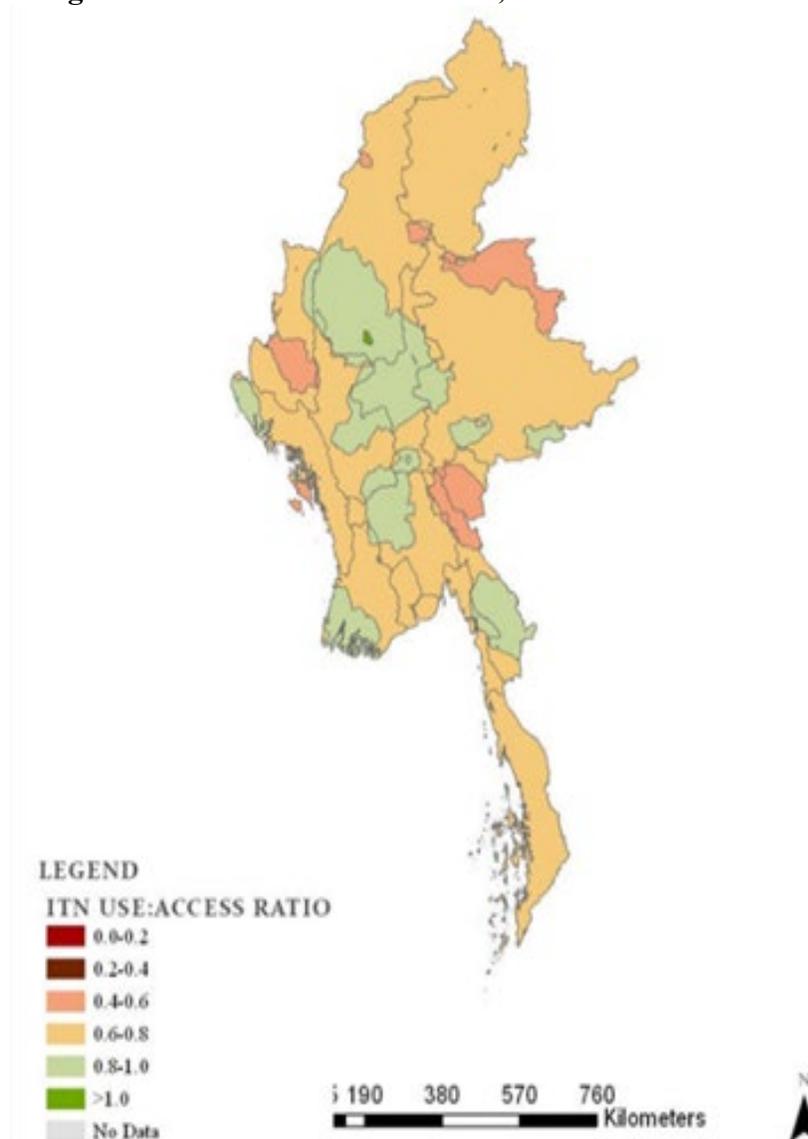


Figure A4. Populations with ITN Access

Indicator	MIS: 2015	DHS:2016
% Households with at least one net of any type	99.6%	97%
% Households with sufficient nets of any type (1 net/2 people)	88.26%	N/A
% Households with at least one ITN	18.8% (D1:52% D4:65%)*	26.8%
% Children under five who slept under an ITN the previous night	16%	18.6%
% Pregnant women who slept under an ITN the previous night	17.1%	18.4%
% Population that slept under an ITN the previous night	10.4% (D1:31% D4:42%)*	15.6%

* The townships included in the 2015 MIS sampling were categorized into four strata, termed domains²⁷. Domain 1: API>5; Domain 2: API 1-5; Domain 3: API<1; Domain 4: hard-to-reach areas

Figure A5. ITN Use: Access Ratio, from DHS 2015 - 2016



Conclusion

Household survey data do not reflect accurately ITN access in targeted malaria-endemic areas. The 2015 MIS aimed to assess indicators for various domains taking into account malaria burden in their sampling frame. Furthermore, household data do not accurately reflect ITN needs in Burma, where the main population at malaria risk are those working for various periods and for various reasons in forests and forest fringe areas. Data from PMI-targeted areas show much higher ITN ownership and utilization (see above).

Key Question 3

In areas where ITN access is high but use is low, what is known about the key barriers and facilitators to use?

Supporting Data

In Burma, there is a long tradition of conventional net use. The results of both the DHS (2016) and the MIS (2015) showed that 97% and 99% of households had at least one net of any type, respectively, and the MIS reported that 88% of households have sufficient nets of any type (1 net per 2 persons). Long lasting insecticidal nets (LLINs) have to therefore compete with conventional nets, whose fabrics, sizes, colors, and shapes are frequently preferred to the LLINs. The MIS showed that in areas with LLIN mass distribution aiming at universal coverage, the proportion of people who slept under an LLIN the previous night ranged from 31% to 42%. The recent LLIN durability monitoring, concluded in December 2018, reported that 56% of households were using conventional untreated nets.

Figure A6. Key Barriers and Facilitators to ITN Use

Facilitator	Factor	Data Source	Evidence
Tradition and Culture of Net Use	Social	Nyunt MH et. al., Malaria Journal (2015). 14:522	99.8% of the 832 interviewed households in four states/regions had bed nets, and 62% of these nets were used the previous night. Among the nets, 46% were ITN/LLIN and 54% conventional untreated nets.
Consumer Preferences	Internal and social	NetWorks/Malaria Consortium Partner report (2014)	A qualitative study assessing consumer preferences and barriers to use LLINs was conducted among 339 participants (FGD and KII) in three States/Regions. It showed that the majority of participants were using LLINs, some of whom also owned or preferred ordinary nets that they had purchased.
Effective Programmatic Interventions	Environmental	CAP-Malaria/URC Partner Report (2015)	The results of a LLIN utilization survey conducted in 8 townships covered by a PMI-supported project showed that in 6 of them the % of household members who slept under a LLIN the previous night ranged from 74% to 83%, and in 2 from 51% to 55%.
Effective Programmatic Interventions	Environmental	Liu H. et.al., Malaria Journal (2015) 14:212	A survey conducted after a LLIN distribution in 668 households in an area of Kachin State bordering China showed that 99.7% of households owned nets, of whom 77% were LLINs. 97% of household members slept under nets the previous night, and 76% of them under LLINs.
Preference for Conventional Nets	Internal	VectorWorks/PSI Partner report (2019)	The baseline survey of a three-year durability monitoring showed that 36% of the cohort LLINs were still in package six months after their distribution, and only 56% were used the previous night, whereas 41% of the owned nets were conventional untreated nets.
Barrier	Factor	Data Source	Evidence
Inconvenience of Net Use in Forest Areas	Internal	NetWorks/Malaria Consortium Partner report (2014)	A qualitative study assessing consumer preferences and barriers to LLIN use was conducted among 339 participants in three states/regions. It showed that migrant workers and forest goers commonly resorted to using bonfire smoke to deter mosquitoes as opposed to bednets, which some considered to be inconvenient to carry and hang when sleeping in the forest.

Conclusion

The high use of and preference for conventional nets is the main barrier to ITN utilization. The various social and behavior change (SBC) approaches deployed since 2012 (start of Global Fund and PMI support) by the NMCP and its partners have achieved mixed results. For this reason, the Malaria Program Reviews conducted in 2016 and 2019 have both recommended the insecticidal treatment of conventional nets for people who prefer their use. The new National Strategic Plan (2021-2025) under preparation foresees the provision of this insecticidal treatment service for communities where conventional net ownership exceeds 20%. Forest-going populations are the target of intensified efforts to ensure that ITNs are available for families left behind in the village as well as the forest-goer. In addition, evaluation of the use of topical repellents by forest goers is being undertaken.

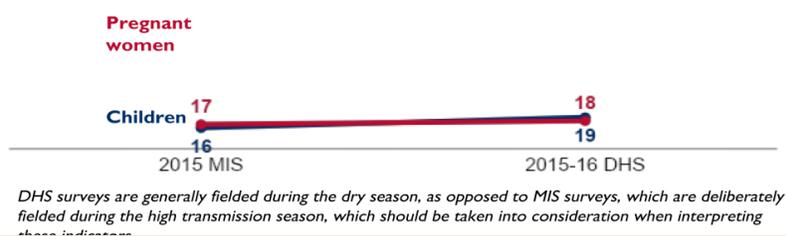
Key Question 4

What percent of pregnant women and children under 5 report sleeping under an ITN?

Supporting Data

Figure A7. Trends in ITN Use Among Children and Pregnant Women

**Trends in ITN Use among
Children and Pregnant Women**
*Percent of children under 5 and pregnant women age 15-49
who slept under an ITN the night before the survey*



Conclusion

In Burma where malaria elimination is the aim, all members of at risk populations, whatever their age, are targeted. The low utilization of ITNs is similar across all age groups and resident populations stated above.

Key Question 5

What channels are used to distribute ITNs?

Supporting Data

ITNs are continuously distributed via VMWs as needed and also via periodic mass campaigns, in coordination with the NMCP and the Global Fund.

Figure A8. ITN Distribution Channels

Channel	2015	2016	2017	2018	2019	2020	2021
EPI							
ANC							
Schools							
Community		X	X	X	X	X	X
Mass Campaign					X		

Conclusion

PMI supports continuous distribution channels through VMWs to PMI-supported townships and villages. In 2019, the NMCP conducted a mass ITN distribution campaign reaching all households in Burma. PMI contributed 352,000 of the 5.4 million ITNs needed for the 2019 mass distribution campaign in collaboration with Global Fund and other donors.

Key Question 6

What was the estimated need for ITNs during calendar year 2019 (and were those needs met? If not, why not)? What are the estimated ITN needs over calendar years 2020 and 2021? What volume of ITNs are available from partners and the public sector for the next three calendar years?

Supporting Data

Figure A9. Gap Analysis Tables for ITNs

Calendar Year	2019	2020	2021
Total Targeted Population	17,120,328	17,293,244	17,467,905
Continuous Distribution Needs			
Channel #1: ANC ¹	273,925	276,692	279,486
Channel #2: Mobile Migrant Populations ²	599,211	605,264	611,377
Estimated Total Need for Continuous Channels	873,137	881,955	890,863
Mass Campaign Distribution Needs			
2019 mass distribution campaign	5,349,566		
Estimated Total Need for Campaigns	5,349,566	0	0
Total ITN Need: Routine and Campaign ³	6,222,703	881,955	890,863
Partner Contributions			
ITNs carried over from previous year	84,874	452,253	740,777
ITNs from MOH			
ITNs from Global Fund ⁴	5,938,082	320,479	
ITNs from other donors			
ITNs planned with PMI funding ⁵	652,000	850,000	150,000
Total ITNs Available	6,674,956	1,622,732	890,777
Total ITN Surplus (Gap)	452,253	740,777	-86

Footnotes:

¹ ANC was estimated as 1.6% of targeted population

² Mobile and migrate population is estimated as 7% of targeted population, 50% replenished each year.

³ Buffer stock or pipeline is not included in the needs

⁴ The Global Fund contribution for 2021 is unknown. The current grant ends in December 2020.

⁵ 2020 ITN procurements supported with FY18 pipeline and FY19 funds.

Conclusion

PMI will procure approximately 150,000 ITNs for targeted community-based distribution to PMI focus areas and newly expanded townships.

Key Question 7

What is the current status of durability monitoring?

Supporting Data

A prospective 3-year study monitoring the physical and insecticidal durability and mean survival of two ITN brands (PermaNet 2.0 and DawaPlus 2.0) was conducted in the same socio-ecological environment of Tamu township, Sagaing Region. After a mass distribution campaign of 14,000 ITNs (7,000 for each brand) in 32 villages in December 2015, a baseline assessment was conducted in June 2016, and the following yearly assessments were conducted in December 2016, December 2017, and December 2018.

Figure A10. Durability Monitoring in Tamu at 12-, 24, and 36-months

Campaign Date	Sites	Brands	Baseline	12-month	24-month	36-month
December 2015	Tamu	PermaNet 2.0	June 2016	Dec. 2016	Dec. 2017	Dec. 2018
December 2015	Tamu	DawaPlus 2.0	June 2016	Dec. 2016	Dec. 2017	Dec. 2018

Key results: Additionally, the ITNs collected 36 months after the 2015 mass campaign were submitted to chemical residue analysis. The mean deltamethrin content found in DawaPlus nets was 1.10 g/kg, representing 55.0% of the initial loading dose of 2.0 g/kg. For the PermaNet samples, the mean deltamethrin content was 0.97 g/kg, representing 69.3% of the initial loading dose of 1.4 g/kg. The estimated median survival of PermaNet 2.0 was 4.2 years and of DawaPlus was 3.9 years. The final report is available at this link: [https://www.pmi.gov/docs/default-source/default-document-library/pmi-reports/durability-monitoring-of-llin-in-burma-final-report-after-36-months-follow-up-\(2019\).pdf?sfvrsn=4](https://www.pmi.gov/docs/default-source/default-document-library/pmi-reports/durability-monitoring-of-llin-in-burma-final-report-after-36-months-follow-up-(2019).pdf?sfvrsn=4)

Figure A11. Chemical Residue Analysis in Tamu 36-Months after the 2015 Campaign

Survey and time since distribution (months)	Attrition wear and tear (%)	Remaining nets in serviceable condition (%)	Remaining nets hanging over sleeping space (%)		Optimal insecticidal effectiveness in bio-assay (%)
			Campaign	Other	
12m Permanet	21.7%	97.6%	52.8%	36.2%	73.3%
12m Dawa Net	22.3%	95.5%	47.9%	34.6%	50%
24m Permanet	26.7%	91.4%	51.5%	42.8%	40%
24m Dawa Net	29.1%	87.4%	41.1%	44.7%	13.3%
36m Permanet	33.4%	84.8%	47.2%	41.2%	10%
36m Dawa Net	35.2%	77.6%	31.9%	38.2%	3.3%

Conclusion

As noted in the report, the key implication is that a 3-year cycle of net replacement is appropriate for Burma.

Key Question 8

Are there any other considerations that impact your funding allocation in this category?

Supporting Data

N/A

Conclusion

No other considerations are noted at this time.

2. HUMAN HEALTH

2.A CASE MANAGEMENT

NMCP objective
Ensuring universal diagnostic testing of suspected malaria cases and effective treatment of confirmed cases with quality assured drugs through three channels of service delivery: public, community-based, and private.
NMCP approach
<ul style="list-style-type: none">The detection of malaria infections is based on blood examination by RDTs or microscopy. Quality-assured microscopy is made available at township hospitals in endemic areas and at state/region levels nationwide, whereas RDTs are used by basic health staff in health centers and by VMW at community level.Three ACTs are recommended for the treatment of uncomplicated <i>P. falciparum</i> malaria: artemether-lumefantrine, artesunate plus mefloquine, and Dihydroartemisinin-piperaquine. Additionally, primaquine single-dose is recommended for <i>P. falciparum</i> to prevent transmission. Chloroquine is used for the treatment of <i>P. vivax</i> malaria, together with 14-day primaquine for radical cure of hypnozoites without G6PD testing.The emergence and spread of artemisinin-resistant <i>P. falciparum</i> parasites is of great concern in all Southeast Asia countries. However, even if genetic markers of drug resistance have been also detected in Burma, the annual therapeutic efficacy studies (TES) show that the recommended antimalarials are still efficacious in more than 93% of patients.Since 2011, with Global Fund and PMI support, a large network of VMWs has been developed providing diagnostic and treatment services to nearly 18,000 communities located outside the catchment area of public health services. In 2018, many of the VMWs were renamed as ICMVs and trained in the control of other communicable diseases (TB, HIV, dengue, filariasis, etc.).

PMI objective, in support of NMCP

- PMI contributes to Burma's malaria case management strategy supporting a large network of 2,138 community-based VMWs covering 2,932 villages and worksites in 36 townships of four States/Regions. VMWs provide early diagnosis and effective treatment with RDTs and ACTs to hard-to-reach communities, usually located outside the catchment areas of public health services, and to MMPs.
- Since 2018, PMI is supporting the development of the national malaria elimination strategy. Testing of elimination tools and approaches in three pilot townships has included case-based surveillance and investigations to classify cases as local or imported.
- PMI continues to support TES sites throughout the country to monitor first-line and potential second-line antimalarials.

PMI-supported recent progress (past ~12-18 months)

- PMI has expanded its community case management coverage to five additional Townships in Sagaing Region reaching a total of ~3,000 villages in 36 townships of four States/Regions (Rakhine and Kayin States and Tanintharyi and Sagaing Regions), and providing diagnostic and treatment services to approximately 1.6 million people via 2,149 community-based VMWs.
- PMI supported initial and refresher trainings for 1,817 VMWs and 123 private providers. The VMWs and mobile teams tested 269,019 people of which 3,872 positive cases were detected and 3,826 treated according to national treatment guidelines, whereas the remaining 46 cases were referred to health facilities for further appropriate treatment. A total of 2,844 (74%) of treated cases were enrolled for directly observed therapy and 2,785 (98%) of them fully completed the treatment courses.
- In 2018–2019, two TES sites tested artesunate-pyronaridine, two sites tested artemether-lumefantrine and Dihydroartemisinin-piperaquine against *P. falciparum* and one site tested artesunate-pyronaridine and two sites chloroquine against *P. vivax*.

PMI-supported planned activities (next ~12-18 months, supported by currently available funds)

- PMI plans to consolidate the network of VMWs and mobile malaria workers (MMWs) to ensure full coverage of case management services in all communities and to reach MMPs at malaria risk in 36 townships of four States/Regions, in coordination with other partners involved in malaria activities.
- PMI will scale up elimination activities extending support to 14 additional townships in addition to the original three pilot areas.
- PMI will continue to procure RDTs, ACTs, and antimalarials for *P. vivax* treatment to meet the needs of PMI focus and non-state actor areas, implement community case management in approximately 3,000 villages and work sites, continue TES monitoring at 3-4 sites, and strengthen national and sub-national quality assurance and quality control for malaria diagnosis.

PMI Goal

Improve access to and utilization of timely, quality, and well-documented malaria testing and treatment by providing community-based health workers with training, supervision, and malaria commodities to be able to provide high quality, effective care.

Do you propose expanding, contracting, or changing any Case Management activities? If so, why and what data did you use to arrive at that conclusion?

No changes are proposed for case management activities.
Please see Table 2 for a detailed list of proposed activities with FY 2020 funding.

Key Question 1

What is the status of care-seeking?

Supporting Data

Figure A12. Trends in Care-Seeking for Fever

Among children under 5 with fever in the 2 weeks before the survey for whom:

■ Care or treatment was sought*



*Note: This indicator has been recalculated according to the newest definition, care of treatment from any source, excluding traditional practitioners.

Treatment seeking as evaluated in the 2015 MIS and the 2015/2016 DHS were fairly high among those reporting fever in the two weeks preceding the survey.

In 2017, the MOHS and the World Bank conducted the "Myanmar Poverty and Living Conditions Survey." The assessment of the care seeking behavior among those who fell ill in the preceding 30 days showed that the rural population is more likely to visit a public provider than the urban population (28% vs 9%). According to the wealth quintiles, those among the poorest quintile are more likely to seek care from a public provider as compared to those in the wealthiest quintile (27% vs 14%).

Conclusion

The population living in rural and malaria endemic areas primarily seek care for febrile illness from public health facilities. To increase utilization, PMI will continue our approach of providing free malaria testing and treatment services through community-based VMWs.

Key Question 2

What is known about the major barriers and facilitators to care-seeking?

Supporting Data

Figure A13. Key Barriers and Facilitators to Care Seeking

Facilitator	Factor	Source	Evidence
Increased access to community-based malaria services	Environmental	NMCP, Global Fund, PMI, Partner Reports	Since 2011, the malaria program has developed an extensive network of malaria workers providing preventive, diagnostic, and treatment services to underserved communities that, because of their geographical or political remoteness, are outside the catchment areas of public health facilities. As of 2019, this network is composed of about 18,000 workers detecting, treating and reporting more than 68% of the total malaria cases.
Barrier	Factor	Source	Evidence
Geographical, socio-economic, and political barriers	Environmental	NMCP, Global Fund, PMI, Partner Reports	High population mobility, persistent conflicts in several non-state actor areas, and reluctance to seek assistance by those involved in illegal activities are among the main barriers for the utilization of freely available malaria services.
Limited knowledge of malaria signs and symptoms as transmission declines	Internal	MIS 2015	Of those who had heard of malaria, most named ‘chills’ as a main symptom (58.7%). Knowledge of fever as a symptom was significantly higher in domains targeted for malaria interventions compared to the other domains with less malaria.
		Hein KT et al., Malaria Journal (2018) 17.396	Survey of migrants showed that the mean knowledge score (maximum score 11) for malaria was 5.2 and only 23% underwent malaria blood testing within 24 hours.

Conclusion

The introduction of VMWs embedded among the mobile and recalcitrant high-risk groups, and the possibility to provide integrated health services when the RDT test is negative are two measures by the MOHS and PMI to facilitate the uptake of community-based services and increase the motivation of VMWs in the context of decreasing malaria burden. The introduction of sustainable approaches such as integrating malaria services into the primary health care system supports the overall framework of Burma’s Universal Health Coverage strategy. Innovative SBC approaches that can be tailored to different risk contexts and delivered by peer groups (e.g. MMWs) will be needed to access the high-risk populations that are often difficult to reach.

Key Question 3

How have malaria testing and treatment practices evolved over time?

Supporting Data

Figure A14. Trends in Diagnosis and Treatment of Children with Fever

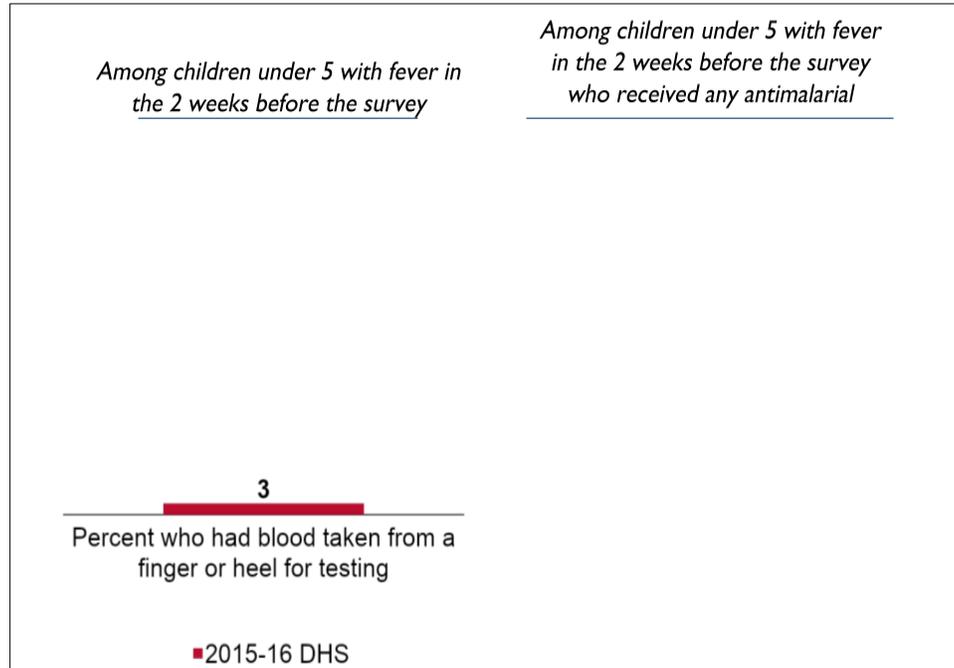


Figure A15. National ABER, API, TPR, 2005–2018

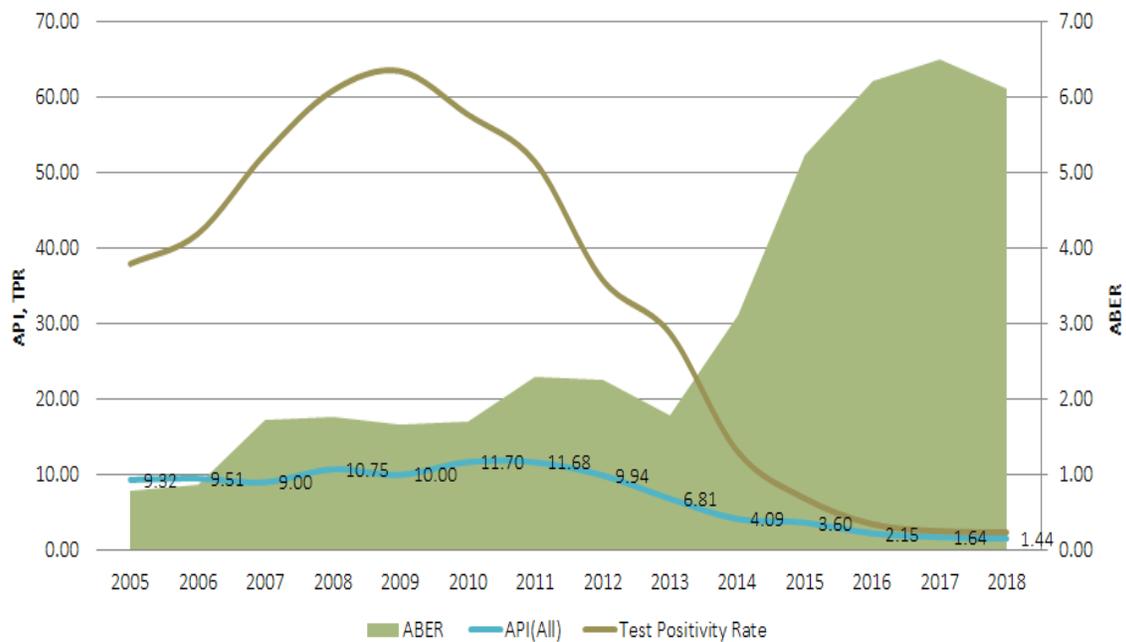
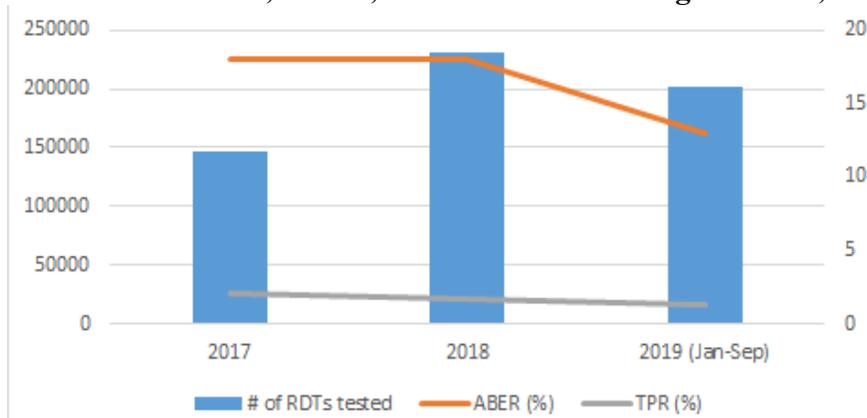


Figure A16. RDTs Tested, ABER, and TPR in PMI-Targeted S/Rs, 2017-2019



Conclusion

Although national surveys show very low testing rates, national annual blood examination rates (ABER) have been continuing to increase despite decreasing number of cases as well as TPR. In PMI-targeted villages of the four States and Regions, ABER have been maintained above 10% with test positivity rates continuing to decline from 2.1% in 2017 to 1.3% in 2019 (Jan-Sep).

Key Question 4

What is known about provider behavior in relation to testing and treatment practices?

Supporting Data

Figure A17. Key Barriers and Facilitators to Appropriate Testing and Treatment Practices

Facilitator	Type of Factor	Data Source	Evidence
No Known Facilitators			
Barrier	Type of Factor	Data Source	Evidence
Additional Provider Burden Associated with Testing in Low Endemic Areas	Environmental	Malaria Journal (2018) 17:396	The results of a quantitative and qualitative study of 3,230 households of migrant population showed that despite the fact that 76% of those with fever in the previous three months sought care from appropriate health providers, only 36% were tested for malaria. The main reasons for the lack of testing were lack of practice, afraid of paperwork load, and waste of test kits in areas with low/no malaria burden.

Conclusion

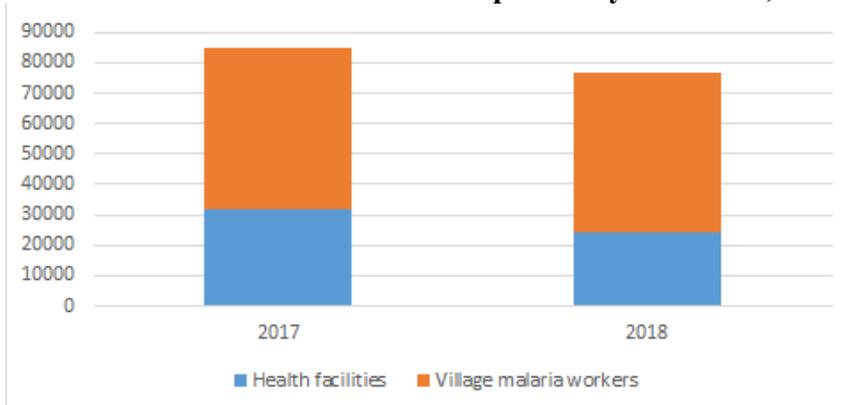
Ongoing supervision and monitoring of health workers and volunteers in low endemic areas will need to continue to raise the importance of rapid testing if malaria is to be eliminated. Tracking indicators, e.g., ABER will identify areas where testing rates have fallen too low.

Key Question 5

What is the current and planned support for case management at health facilities and in the communities by CHWs?

Supporting Data

Figure A18. Number of Malaria Cases Reported by Providers, 2017 - 2018



Conclusion

Considering that in recent years more than 60% of malaria cases have been detected by community-based services usually located in villages outside the catchment area of public health facilities and this trend is expected to further increase, the main efforts will be focused on ensuring that VMWs continue to provide good quality services, including accurate and timely reporting, particularly among mobile population, forest-related workers, and in non-state actor areas through ethnic health organizations. PMI will support with continuous provision of commodities, training, and regular supervision of a network of VMWs/ICMVs reaching 1.6 million people living in underserved areas of 36 townships of 4 States/Regions as well as additional remote and conflict-affected villages. Coordination amongst donors and partners at the national and local levels ensures full coverage of malaria services in all endemic communities to prevent gaps or duplication of support.

Key Question 6

What was the estimated need for RDTs during calendar year 2019? What are the estimated RDT needs over calendar years 2020 and 2021?

Supporting Data

Figure A19. Gap Analysis Tables for RDTs

Calendar Year	2019	2020	2021
RDT Needs			
Total country population ¹	54,339,766	54,817,919	55,305,798
Population at risk for malaria ¹	23,225,581	23,460,159	23,697,107
PMI-targeted at-risk population	1,589,000	1,690,000	1,690,000

Calendar Year	2019	2020	2021
Total number of projected fever cases	4,640,516	4,687,387	4,732,565
Percent of fever cases tested with an RDT	98%	98%	98%
Total RDT Needs ²	4,547,706	4,593,639	4,637,914
Partner Contributions			
RDTs carried over from previous year	601,625	802,709	886,833
RDTs from Government			
RDTs from Global Fund ³	3,664,898	4,108,657	
RDTs from other donors ⁴	243,892	169,106	
RDTs planned with PMI funding	840,000	400,000	400,000
Total RDTs Available	5,350,415	5,480,472	1,286,833
Total RDT Surplus (Gap)	802,709	886,833	-3,351,081

¹ Source: Ministry of Labour, Immigration and Population. Population at risk for malaria includes people living in malaria epidemiological strata 3a, 3b, 3c, and is estimated 43% of country population

² Buffer stock or pipeline is not included in the needs

³ Global Fund's contribution for 2021 is unknown. The grant ends in December 2020.

⁴ 2019: 3MDG=143,012 and PSI=100,880; 2020: Access to Health=169,106

Conclusion

PMI will procure ~400,000 RDTs for use in our target villages in four States/Regions.

Key Question 7

What was the estimated need for ACTs during calendar year 2019? What is the estimated need for ACTs over calendar years 2020 and 2021?

Supporting Data

Figure A20. Gap Analysis Tables for ACTs

Calendar Year	2019	2020	2021
ACT Needs			
Total country population ¹	54,339,766	54,817,919	55,305,798
Population at risk for malaria	23,225,581	23,460,159	23,697,107
PMI-targeted at-risk population	1,589,000	1,690,000	1,690,000
Total projected number of malaria cases	50,042	29,191	16,930
Total ACT Needs ²	32,527	18,974	11,005
Partner Contributions			
ACTs carried over from previous year	126	108,691	191,806
ACTs from Government			
ACTs from Global Fund ³	89,819	68,583	
ACTs from other donors ⁴	4,473	6,506	
ACTs planned with PMI funding	46,800	27,000	0
Total ACTs Available	141,218	210,780	191,806
Total ACT Surplus (Gap)	108,691	191,806	180,801

¹ Source: Ministry of Labour, Immigration and Population. Population at risk for malaria includes people living in malaria epidemiological strata 3a, 3b, 3c, and is estimated 43% of country population

² Pf is estimated as 65% of malaria cases. Buffer stock is not included in the needs.

³ The Global Fund contribution for 2021 is unknown. The current grant ends in December 2020.

⁴ The data are estimated number of cases to be treated by 3MD and PSI in 2019, and by A2H in 2020.

Conclusion

PMI will not procure ACTs with FY2020 funds as a surplus of ACTs previously procured by the Global Fund are anticipated in light of decreasing *P. falciparum* cases.

Key Question 8

What was the estimated need for severe malaria treatment and any other treatments as applicable during calendar year? What is the estimated need for calendar years 2020 and 2021?

Supporting Data

Figure A21. Gap Analysis Tables for PQ

Calendar Year	2019	2020	2021
PQ Needs			
Total country population ¹	54,339,766	54,817,919	55,305,798
Population at risk for malaria	23,225,581	23,460,159	23,697,107
PMI-targeted at-risk population	1,589,000	1,690,000	1,690,000
Total projected number of malaria cases	50,042	29,191	16,930
Total projected number of malaria cases to be treated by PQ 14 days	17,515	10,217	5,926
Total projected number of malaria cases to be treated by PQ single dose	32,527	18,974	11,005
Total PQ tablet (7.5mg) Needs 2	685,575	399,917	231,941
Partner Contributions			
PQ tablets carried over from previous year	116,000	1,860,696	2,681,584
PQ tablets from Government			
PQ tablets from Global Fund 3	1,900,271	1,164,805	
PQ tablets from other donors			
PQ tablets planned with PMI funding	530,000	56,000	56,000
Total PQ tablets Available	2,546,271	3,081,501	2,737,584
Total PQ tablets Surplus (Gap)	1,860,696	2,681,584	2,505,643

¹ Source: Ministry of Labour, Immigration and Population. Population at risk for malaria includes people living in malaria epidemiological strata 3a, 3b, 3c, and is estimated 43% of country population

² Pf is estimated as 65% of malaria cases. Buffer stock is not included in the needs. Assuming 7.5mg tablets. Vivax dosing is 15mg/day x 14 days and falciparum is 45mg once. One adult Tx of PQ for vivax= 28 tablets and pf=6 tablets

³ The Global Fund contribution for 2021 is unknown. The current grant ends in December 2020.

Figure A22. Gap Analysis Tables for CQ

Calendar Year	2019	2020	2021
CQ Needs			
Total country population ¹	54,339,766	54,817,919	55,305,798
Population at risk for malaria	23,225,581	23,460,159	23,697,107
PMI-targeted at-risk population	1,589,000	1,690,000	1,690,000
Total projected number of malaria cases	50,042	29,191	16,930
Total projected number of malaria cases to be treated by CQ	17,515	10,217	5,926
Total CQ tablet Needs 2	175,150	102,170	59,260

Calendar Year	2019	2020	2021
Partner Contributions			
CQ tablets carried over from previous year	498,000	898,130	1,135,742
CQ tablets from Government			
CQ tablets from Global Fund 3	448,280	319,782	
CQ tablets from other donors			
CQ tablets planned with PMI funding	127,000	20,000	20,000
Total CQs Available	1,073,280	1,237,912	1,155,742
Total CQ Surplus (Gap)	898,130	1,135,742	1,096,482

¹ Source: Ministry of Labour, Immigration and Population. Population at risk for malaria includes people living in malaria epidemiological strata 3a, 3b, 3c, and is estimated 43% of country population

² Pf is estimated as 65% of malaria cases. Buffer stock is not included in the needs. One adult Tx of CQ= 10 tablets

³ The Global Fund contribution for 2021 is unknown. The grant ends in December 2020.

Conclusion

PMI will procure ~2,000 adult treatment doses of primaquine and chloroquine for *P. vivax* for use in our target villages in four States/Regions.

Key Question 9

Are the first-line ACTs effective and monitored regularly?

Supporting Data

Figure A23. Most recently completed and ongoing antimalarial therapeutic efficacy studies

Year	Sites	Treatment Arms	PCR-corrected ACPR>90%	Work Location
2017	Moe Hnyin, Kachin State	AL	94%	Molecular assays and PCR were done at Dept of Medical Research (DMR), Yangon; - All results are PCR-corrected ACPR
	Naung Cho, North Shan State	AL	94%	
	Buthidaung, Rakhine State	DP	100%	
	Moe Hnyin, Kachin State	AS-PYR	100%	
	Naung Cho, North Shan State	AS-PYR	100%	
2018	Kawthaung-Mawthaung, Thanintharyi Region	AS-PYR	100%	Molecular assays and PCR were done at Dept of Medical Research (DMR), Yangon; - All results are PCR-corrected ACPR
	Myawaddy, Kayin State	AS-PYR	100%	
2019	Tamu, Sagaing Region	AL,DP	On-going	Molecular assays and PCR will be done at Dept of Medical Research (DMR), Yangon
	Buthidaung, Rakhine State	AL,DP		
	Kawthaung-Mawthaung, Thanintharyi Region	AS-PYR (Pv)		

Footnotes

ACPR: adequate clinical and parasitological response; AL: artemether-lumefantrine; ASAQ: amodiaquine-artesunate; AS-Pyr: artesunate-pyronaridine; DP: dihydroartemisinin-piperaquine;

Conclusion

Although Kelch 13 mutations (e.g., C580Y and F446I) have been identified in Myanmar, ACT efficacy results for *P. falciparum* have remained above 90 percent to date. AL efficacy, despite being above 90 percent for now, appears to be decreasing with increased prevalence of resistance markers. Continued monitoring along with testing of alternative regimens, e.g., Dihydroartemisinin-piperaquine and artesunate-pyronaridine, are being or have been recently conducted. Chloroquine efficacy for *P. vivax* is also monitored annually and efficacy has remained above 90 percent.

Key Question 10

Are there other key items, such as lab strengthening, private sector support, etc. that should be considered?

Supporting Data

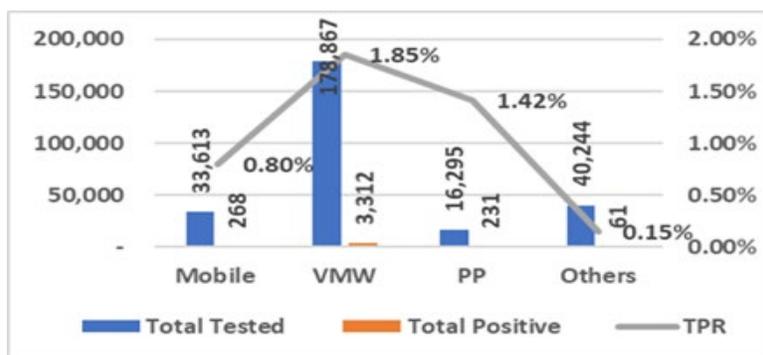
In the 2015 MIS, of the 612 fever cases, the proportion that sought advice and treatment from various private sector health providers ranged from 16% to 41% in the four sampling domains of the survey. In Domain 4 with the highest malaria burden, the proportion attending all types of private providers was 27%.

Figure A24. Proportion of Fever Cases Seeking Treatment

Indicator	Domain 1 (API>5)	Domain 2 (API 1–5)	Domain 3 (API<1)	Domain 4 (hard-to-reach areas)
Prevalence of Plasmodium infection as detected by usPCR	3.4%	1.2%	0.2%	10.9%
Proportion of fever cases in previous 2 weeks seeking advice/treatment from all types of private providers: private hospital/clinic, registered drug store, unregistered pharmacy/shop /market, traditional practitioners.	29%	41%	16%	27%
Proportion of fever cases in previous 2 weeks seeking advice/treatment from public health providers: hospitals, rural health centers, midwife	64%	56%	76%	52%

Similarly, the DHS conducted in 2015-2016 found that the proportion of children under age five with a fever in the two weeks preceding the survey for whom advice/treatment was sought from private providers (e.g., private doctor, private hospital/clinic, private pharmacy, shop, traditional practitioner, market) was 29.9%.

Figure A25. Testing and Diagnosis of Malaria Cases by Provider in PMI-supported Community-Based Services, FY2019



Conclusion

To ensure access to quality malaria services in the private sector, PMI engages private providers in our targeted villages in the four States/Regions as well as private companies to improve access to worksite malaria services. Test positivity rates amongst the private sector continue to be relatively higher than amongst other providers. Furthermore, PMI will reinvest in expanding the coverage of private sector providers through an established network as well as ensuring comprehensive reporting into the malaria information system.

Key Question 11

Are there any other considerations that impact your funding allocation in this category?

Supporting Data

Figure A26. Malaria Case Burden in Priority Areas

SR	Township	Tested	Positive	Pf	Pv	Mix	Other
Chin	Paletwa	102236	16991	12300	4425	266	0
Kayin	Hpapun	60653	11870	3253	8558	59	0
Rakhine	Buthidaung	58601	3023	2546	411	66	0
Kayin	Myawaddy	39963	2969	27	2937	5	0
Kayin	Kyainseikgyi	88460	2798	1507	1216	74	1
Rakhine	Kyauktaw	37109	2091	1526	520	45	0
Kayin	Hlaingbwe	57234	1740	368	1329	43	0
Sagaing	Banmauk	30479	1574	1231	301	42	0
Rakhine	Minbya	20319	1495	1227	240	28	0
Sagaing	Pinlebu	28513	1486	1264	191	31	0

Conclusion

Ten townships in four States/Regions now account for 61% of all malaria cases. These townships are mostly hard-to-reach and conflict-affected. Scaling up services in these townships is a strategic priority for the NMCP and the Global Fund. In addition, PMI will expand support to ethnic health organizations to reach more of these high-burden communities.

2.B. DRUG-BASED PREVENTION

NMCP objective
<p>Malaria prevention is identified as a key intervention in the current NSP (2016-2020) which calls on the scaling up of effective prevention and curative interventions to achieve universal coverage in areas with malaria transmission. Given the low prevalence of malaria in Burma, intermittent preventive treatment for pregnant women (IPTp) is not part of the national strategy. Instead, the MOHS and PMI support promotion of universal ITN coverage and prompt diagnosis and treatment of clinical cases of malaria in pregnant women as they remain a vulnerable group. The NMCP does not implement SMC.</p>
NMCP approach
<ul style="list-style-type: none">• Because of the low prevalence of malaria as measured nationally, IPTp is not part of any national strategy in the GMS, including Burma.• The NMCP strategy supports free distribution of ITNs to all households in areas of high and moderate risk. Although ITNs have not traditionally been distributed through ANC in Burma, the NSP mentions ANC as a possible strategy for continuous distribution in order to improve access and ensure high ITN coverage.• Burma's national malaria treatment policies for pregnant women follow WHO recommendations: quinine is used in the first trimester (which may be combined with clindamycin) and ACTs in the second and third trimester (as stated in the national treatment guidelines). Treatment for severe malaria is with IV or IM artesunate.• Although <i>P. vivax</i>-infected women should receive weekly chloroquine during pregnancy and radical cure after delivery, this is not yet policy in Burma.• While the NSP (2016-2020) recommends introducing quarterly RDT-based malaria screening for pregnant women at ANC in stratum 3a (API>5) communities, implementation of this approach has not been consistently applied in practice and there is little data reported on results of the RDT screening tests.• The MOHS has adopted the new WHO ANC guidelines including the recommendation of eight ANC contacts during pregnancy.

PMI objective, in support of NMCP
In Burma, PMI supports a two-pronged approach to reduce the burden of malaria infection among pregnant women including: 1) provision of ITNs and 2) effective case management of malaria, especially amongst the most vulnerable populations, including migrant workers, refugees, and other hard-to-reach populations.
PMI-supported recent progress (past ~12-18 months)
<ul style="list-style-type: none"> • Support to the MOHS on updating of ANC and malaria in pregnancy (MIP) guidelines and development of performance standards for health facility providers reflecting the new national ANC guidelines. • Strengthen case management of malaria in pregnancy at the basic health and community level through supportive supervision and training of midwives, auxiliary midwives, and VMWs. • Distributed 2,888 ITNs to pregnant women at first ANC visit in PMI focus areas.
PMI-supported planned activities (next ~12-18 months, supported by currently available funds)
<ul style="list-style-type: none"> • Continue to support training for public health facility midwives and nurses and mobile outreach teams in PMI focus areas to strengthen MIP prevention and case management services. • Distribute ITNs to pregnant women at first ANC visit in high transmission areas to ensure coverage of newly formed households and newly pregnant women.

2.B.i MALARIA PREVENTION IN PREGNANCY (MIP)

PMI Goal
Support the national strategy for MIP, which includes provision of ITNs through mass campaigns reaching at-risk households and pregnant women at first antenatal care (ANC) visit, and effective case management of malaria, in accordance with WHO recommendations.

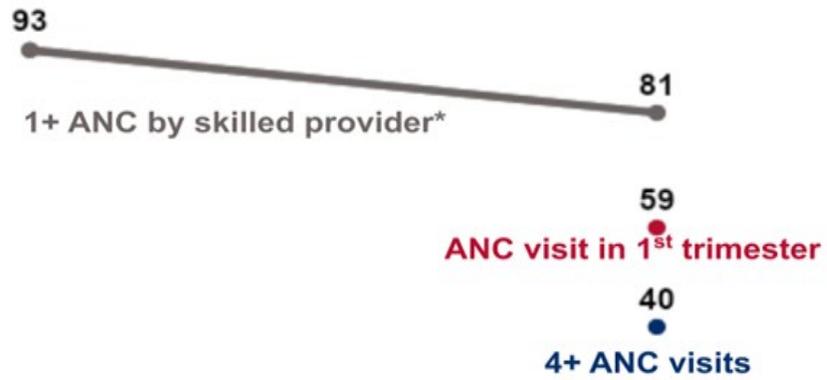
Do you propose expanding, contracting, or changing any MIP activities? If so, why and what data did you use to arrive at that conclusion?
<p>No changes are proposed for MIP activities.</p> <p>Please see Table 2 for a detailed list of proposed activities with FY 2020 funding.</p>

Key Question 1

What proportion of pregnant women are receiving ANC early and frequently (as recommended by national and/or WHO strategies) during their pregnancy?

Figure A27. Trends in ANC Coverage

Percent of women age 15-49 with a live birth in the 5 years before the survey for most recent birth



MICS 2009-2010

DHS 2015-2016

*Skilled provider includes doctor, nurse, midwife or physician assistant.

Figure A28. Key Barriers and Facilitators to ANC Attendance

Facilitator	Factor	Source	Evidence
Improved Quality of Care Due to Strong Collaboration Among Reproductive Health and Malaria Personnel	Environmental	Rapid Assessment of MIP in the Greater Mekong Sub-Region Cambodia, Thailand and Burma; Malaria Consortium, March 2013	In Myanmar, where midwives take a major role in delivering outreach to remote communities, there is a lot of informal contact between reproductive health and infectious disease control personnel at director level and a yearly meeting of the Technical Advisory Group. The NMCP regularly trains midwives in malaria prevention and control. The coordination and collaboration between these groups helps to strengthen the quality of care provided to women, which, in turn, facilitates ANC attendance.
Barrier	Factor	Source	Evidence
Provider Bias Against Certain Populations	Social	Same as above	Ethnic minority communities may be excluded from services due to cultural and language barriers as well as, in some areas, by conflict and discrimination.
Limited Access to ANC	Environmental	Same as above	Access to ANC, disease prevention services and safe delivery, especially for vulnerable populations, is often limited geographically, financially, culturally, and linguistically. Many communities are cut off from services especially during the rainy season due to poor infrastructure and lack of transport. Transport designed to take pregnant women in trouble or seriously ill to hospital is especially limited.
Social and Gender Norms Around Accessing Care	Social	Same as above	In some communities, permission needs to be obtained from husbands, mother in laws and even village elders before care can be accessed.
Increased Participation in Migrant Workforce	Environmental	Same as above	Women are increasingly taking part in the migrant workforce: as rubber tappers, in fruit plantations and even in construction work, often without access to basic health care services, let alone ANC. Women often accompany their husbands when they migrate for labor, meaning they are vulnerable to malaria yet without access to ANC or malaria diagnosis and treatment.

Conclusion

In Burma, most pregnant women attend ANC at least once: the 2015-16 DHS revealed that four in five women age 15-49 (81%) received at least one ANC visit with skilled providers during their pregnancy and many pregnant women complete the recommended four visits (40%). Most women (59%) attend their first ANC visit during their first trimester. The MOHS has adopted the 2016 WHO ANC guidelines and is in the process of disseminating its national ANC guidelines to health providers including auxiliary midwives and health facility staff. Evidence from assessments show that access to timely basic health care services including ANC is a challenge for pregnant women living in remote, isolated and conflict-affected areas and for those among MMPs who are accompanying their husbands and families when they migrate for work.

Key Question 2

What proportion of pregnant women are receiving the recommended doses of IPTp?

Supporting Data

N/A

Conclusion

N/A

Key Question 3

What is the gap between ANC attendance and IPTp uptake (e.g. missed opportunities for providing IPTp at ANC)? What barriers and facilitators exist, especially among providers?

Supporting Data

N/A

Conclusion

N/A

Key Question 4

What proportion of pregnant women with fever and malaria infection are getting diagnosed and treated?

Supporting Data

Data on the burden of MIP in the region is limited. A 2002 review of 17 studies on malaria during pregnancy in Burma reported a low prevalence of clinically suspected malaria among pregnant women (1-2% of total outpatient and inpatient burden). A separate 2005 study found that 11% of pregnant women attending ANC and 12% of all women delivering in Eastern Shan State and Mon State were infected with malaria. Data on the critical outcomes of maternal anemia, placental parasitemia, and low birth weight associated with malaria infection in pregnancy are not available for Burma. The states/regions reporting the highest incidence are Rakhine, Kachin, and Kayah. Wide variations in prevalence of malaria parasitemia in women attending ANC services were reported, ranging from 3% in Tanintharyi Division to 37% elsewhere along the Thai-Burma border, where the majority of women were asymptomatic and infected with *P. falciparum*. The role of female migrants may also be underestimated in the region; small studies conducted by PMI partners in Burma found that more than 50% of migrants in their catchment areas are women.

Conclusion

Currently the routine reporting does not disaggregate confirmed malaria cases treated by pregnancy status. With limited data available, there is a need to capture information on treatment of MIP.

Key Question 5

What was the estimated need for IPTp commodities during calendar year 2019? What is the estimated need for IPTp commodities over calendar years 2020 and 2021?

Supporting Data

N/A

Conclusion

N/A

Key Question 6

Are there any other considerations that impact your funding allocation in this category?

Supporting Data

No other considerations are noted.

Conclusion

N/A

3. CROSS-CUTTING AND OTHER HEALTH SYSTEMS

3.A. SUPPLY CHAIN

NMCP objective
The NSP emphasizes strengthening the enabling environment including health systems to facilitate elimination and providing comprehensive services to meet the needs of all at risk populations, including mobile populations and migrants. The NSP also supports addressing inappropriate counterfeit and substandard antimalarials, with special emphasis placed on the border areas. Activities mentioned in the NSP include enforcing the MOHS decision on banning distribution and sale of inappropriate antimalarials and replacement of oral artemisinin-based monotherapy.
NMCP approach
Ensuring the availability and use of antimalarial medicines, diagnostics, and preventive commodities is a high priority for the NMCP and PMI. As malaria cases continue to decline rapidly in many areas in Burma, forecasting of antimalarial supply needs requires careful monitoring and adjustment to avoid oversupply and waste. Ensuring functional national supply chain systems that can assure last-mile product availability is vital as Burma moves toward elimination, and malaria services become increasingly integrated into primary health care. All procurement of malaria products is currently funded and executed by donors. UNOPS-PR conducts all the procurement process for the sub-recipients including the NMCP. The NMCP with funding from the Global Fund picks up medical supplies from Yangon at the Central Program

warehouse. Malaria health commodities for government sites supported by NMCP are distributed in Burma from the NMCP to the Vector Borne Disease Control (VBDC), State/Regional-level and township medical stores, and then to site level. The national supply chain system is highly fragmented across different vertical programs.

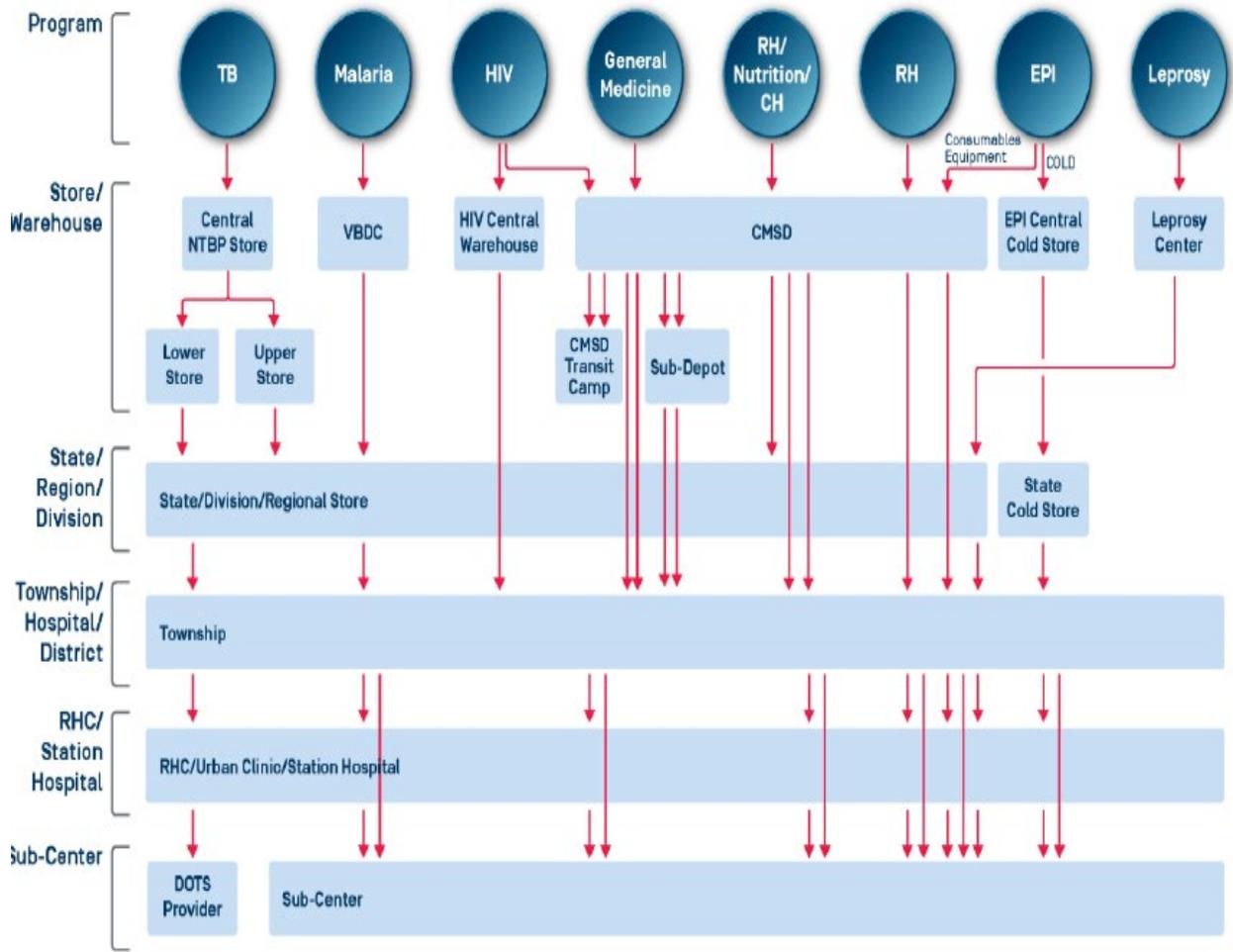
Figure A29 depicts the extent of fragmentation of Burma's health supply chain and the potential for efficiency gains from greater consolidation. The lack of integration has restricted the opportunities to fully optimize the supply chain and medicine budgets, resulting in inefficient use and allocation of resources, and poor quality control in storage conditions. To address this situation, the MOHS developed and launched, with PMI support, a National Supply Chain Strategy in 2016, which set the goal of developing a more integrated and capable national supply chain. With PMI support, the MOHS developed the National Supply Chain Operational Plan (2019-2021) in 2019 to accelerate implementation of key reforms and enable the MOHS to better coordinate investments across partners and MOHS departments.

NMCP's approach to strengthen the supply chain system has been to focus on ensuring last mile product availability, while advocating for reforms in line with country strategic approach and vision defined under the National Supply Chain Strategy and operational plan, the latter of which is based on the National Health Plan (2017-2021). The National Supply Chain Operational Plan emphasizes the following key approaches:

- a) Strengthening of governance, leadership and coordination through creation of supply chain conducting division and para-public agency for effective and efficient supply chain management of health commodities.
- b) Scaling up and consolidation of electronic logistics management information system (eLMIS) for data visibility of health products in Burma to support forecasting, procurement accuracy, supply planning and stock management.
- c) Strengthening warehousing via an integrated and mechanized central warehouse in Yangon at an optimized location/space equipped with a proper warehouse management information system.
- d) Gradual integration of supply chain of various health products at central, regional warehouses, township stores along with establishment of efficient and integrated transport system.
- e) Improve supply chain human resource availability & capacity at all tiers of health system.

The Department of Food and Drug Administration (DFDA) is also a key player in ensuring quality of commodities and in addressing counterfeit and substandard drugs. The DFDA takes responsibility for monitoring drug quality, as well as upgrading its quality assurance laboratory and building the capacity of inspectors. The DFDA currently has offices in Nay Pyi Taw, Yangon and Mandalay and plans to establish branch offices in 14 districts as well as set up laboratories in 14 border trade zones over the next few years. Moreover, the MOHS has banned the import, manufacture, export, registration, re-registration, distribution and sale of artemisinin monotherapy through DFDA, and promoted replacement of oral artemisinin-based monotherapy with quality assured ACT through the private sector in partnership with Population Services International.

Figure A29. Warehousing and Distribution in Burma's Public Health Supply Chain



Source: Myanmar logistics management information system harmonization and mapping report, SCMS, July 2014.

PMI objective, in support of NMCP

PMI support for pharmaceutical management in Burma has primarily consisted of monitoring availability of commodities (medicines, diagnostics, and ITNs) in the target areas, and supporting the procurement and distribution of PMI-funded commodities to PMI sites, as well as to strategically complement procurements by Global Fund and other donors to ensure full supply of products. At the same time, PMI invests in strengthening of national systems and capacity to ensure the availability of and accountability for antimalarial products across the supply chain. PMI supports the broader USAID/Mission efforts in the following supply chain focus areas:

1. Strengthening and institutionalization of forecasting, supply planning, and stock monitoring methodology, practices and tools at all levels.
2. Expansion and strengthening of integrated eLMIS systems up to all warehouses, townships and management levels for data availability, visibility and use.
3. Strengthening leadership and management in line with national goals of an integrated national supply chain, including strengthening supply chain workforce capacity, strategic and operational planning, improving the management of warehousing and distribution, and improving key policies such as waste management of antimalarials.

In addition, similar to the vision of the DFDA and NMCP, PMI also supports improving the quality of antimalarial drugs and has contributed to building the country's capacity to monitor drug quality and curtail the availability of substandard or counterfeit drugs.

PMI-supported recent progress (past ~12-18 months)

- PMI supported the newly-established Procurement & Supply Division of MOHS for enhanced coordination among NMCP and malaria partners on commodities and to ensure an uninterrupted supply of malaria commodities, particularly in the PMI focus areas.
- PMI procured 587,500 RDTs and 22,150 ACTs for PMI focus areas and 230,000 Primaquine tablets and 127,000 Chloroquine tablets for treatment of *P. vivax* in PMI focus areas.
- PMI procured 650,000 ITNs: 350,000 ITNs contributed to the nationwide mass ITN distribution campaign conducted in 2019 and an additional 300,000 ITNs were distributed in PMI focus areas reaching at-risk populations.
- PMI supported technical assistance in supply chain system strengthening including forecasting annual malaria commodities, completing a warehouse assessment at central and regional levels for malaria, TB and HIV, and developing guidelines for managing expired and damaged pharmaceuticals and supplies at health facility and warehouse levels.
- PMI supported expansion of relevant malaria stock management indicators in the eLMIS at township level to an additional seven States/Regions with Global Fund resources. The system currently collects LMIS data from over 9,000 facilities in 212 townships in 10 States/Regions. In FY19, the LMIS achieved 70% on time reporting rate, 97% of data visibility from all 19 central and regional NMCP warehouses.

- PMI supported the re-accreditation of the DFDA’s Pharmaceutical Chemistry Laboratory ensuring that it meets the global standards for laboratory testing and calibration.

PMI-supported planned activities (next ~12-18 months, supported by currently available funds)

- PMI will procure approximately 350,000 ITNs for continuous distribution through VMWs and ICMVs in PMI-supported areas and non-state actor areas including migrants and mobile populations, internally displaced persons.
- PMI will procure RDTs and ACTs for use by community-level VMWs in PMI focus areas and non-state actors’ areas.
- PMI will continue to support national- and township-level supervision, forecasting, and implementation of the eLMIS, and technical assistance through secondment of national staff to the central Supply Chain Unit to leverage and coordinate assistance from Global Fund and other donors to further develop national supply chain systems in line with the National Supply Chain Strategy.
- PMI will continue to provide technical assistance and support to strengthen the national DFDA quality control laboratory and maintenance of ISO accreditation.

PMI Goal

Ensure continual availability of quality products needed for malaria control and elimination (ACTs, RDTs, SP, Art. Inj., and ITNs) at health facilities and community level.

Do you propose expanding, contracting, or changing any supply chain activities? If so, why and what data did you use to arrive at that conclusion?

No changes are proposed related to supply chain activities.

Please see Table 2 for a detailed list of proposed activities with FY 2020 funding.

Key Question 1

Has the central level, been stocked according to plan for ACTs and RDTs over the last year? If not stocked according to plan, have they been under, over or stocked out?

Supporting Data

Figure A30. Act Stock Level at Central Stores

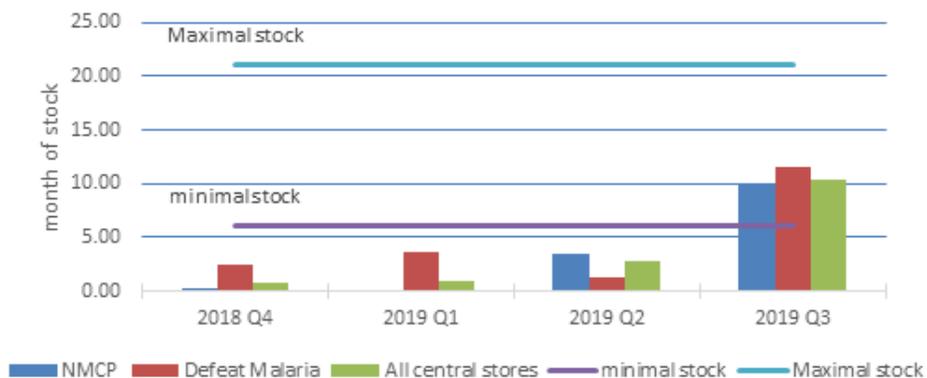


Figure A31. RDT Stock Level at Central Stores



Conclusion

Central level stocks have fluctuated based on the timing and arrival of PMI and Global Fund commodity procurements in-country.

The above graph (*ACT stock level at central stores*) shows the stock status of ACTs was below minimum threshold for PMI's implementing partner supply as well as at the national central stores in Q4-2018 and Q1, Q2- 2019. NMCP warehouse was out of stock and borrowed from PMI's implementing partner's stocks during that time period. In Q3-2019, all warehouses were at optimal stock level. This illustrates how closely PMI coordinates with NMCP and Global Fund on ensuring sufficient stocks of commodities in-country.

The stock status of RDTs was below minimum threshold for PMI implementing partner in Q4-2018 to Q1, Q2-2019; however, upon arrival of an RDT procurement order in Q3-2019, optimal level threshold was achieved in Q4-2019. Both central store and NMCP warehouses were below minimum threshold in Q4-2018, but achieved optimal level stock status in Q1, Q2 and Q3-2019.

Key Question 2

What are the trends in facility- and community health worker-level stock out rates for ACTs (including AL ability to treat), RDTs, Art. Inj., and SP over the last year (if tracked)? Is there a seasonal or geographic difference in stock out rates?

Supporting Data

PMI monitors community health worker (VMWs, ICMVs, and private providers) stock levels in PMI-supported focus areas in 36 townships in four states/regions.

Figure A32. Monitoring of RDT Stocks, FY 2019

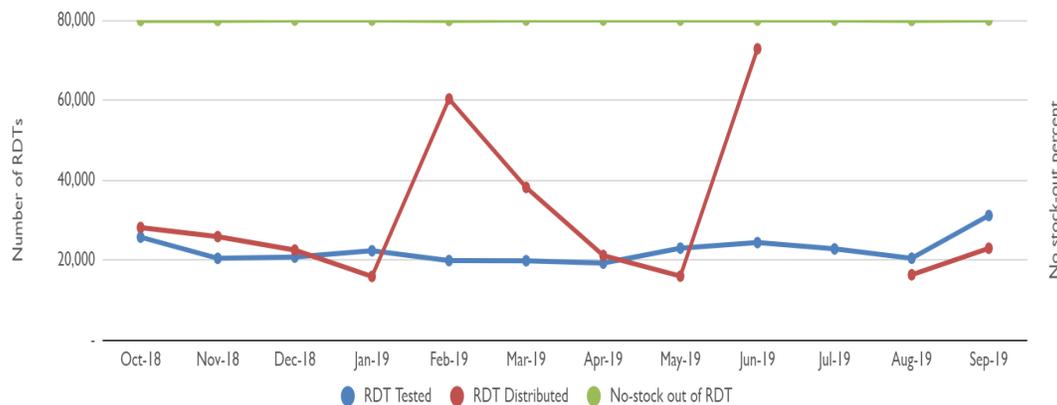
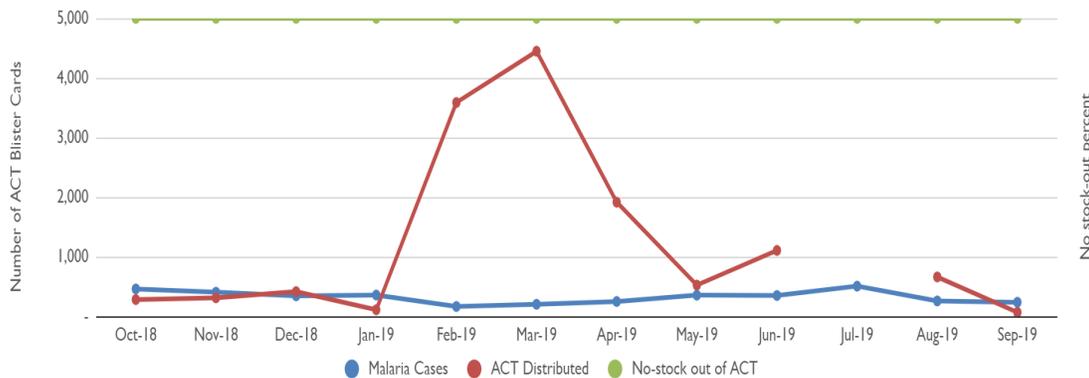


Figure A33. Monitoring of ACT Stocks, FY 2019



Conclusion

PMI and its implementing partner monitor and supervise the commodity stocks among the project’s community health workers in PMI-supported focus areas. Over the last year, there were no stockouts reported at the community health worker level as a result of adequate buffer stock maintained among the VMWs and in the project’s township stores. PMI supports monthly meetings of VMWs at the township level where the stock can be replenished and VMWs can place emergency orders at any time between the monthly meetings.

Key Question 3

What is the difference between quantities for ACTs consumed and malaria cases, and RDTs consumed and numbers tested? What is driving any differences seen?

Supporting Data

Data reported by a PMI implementing partner is based on distribution data collected from the project's PMI-focus areas. See figures in supporting data for key question 2.

Conclusion

- Through close supervision and monthly stock monitoring, RDT and ACT consumption usually mirrors number of cases tested and number of *P. falciparum* cases treated, respectively.
- In June, sufficient RDTs/ACTs for 3 months were distributed to prevent stockouts during a period of delayed funding availability.
- As cases continue to decrease, the quantification of RDTs and ACTs will need to shift away from morbidity or consumption data to maintaining a minimum stock on hand at all service points. In PMI focus areas, VMWs are provided with a minimum stock of 25 RDTs; VMWs covering a larger population within their catchment areas, are provided with additional tests. Nationally, the number of RDTs quantified and procured will be based on population figures and achieving a targeted Annual Blood Examination Rate (ABER) of 10% of the population.
- In addition, the number of ACTs consumed will increasingly not align with the number of malaria cases treated because each community health worker (VMW, ICMV, private provider) will receive at least three ACT treatments even if no malaria cases were recently reported in their catchment area. Stocks of ACTs and RDTs are resupplied at the monthly monitoring meeting, held at the township level, as needed.

Key Question 4

What are the trends in LMIS reporting rates?

Supporting Data

Figure A34. LMIS Reporting Rate, NMCP Malaria Central Warehouse

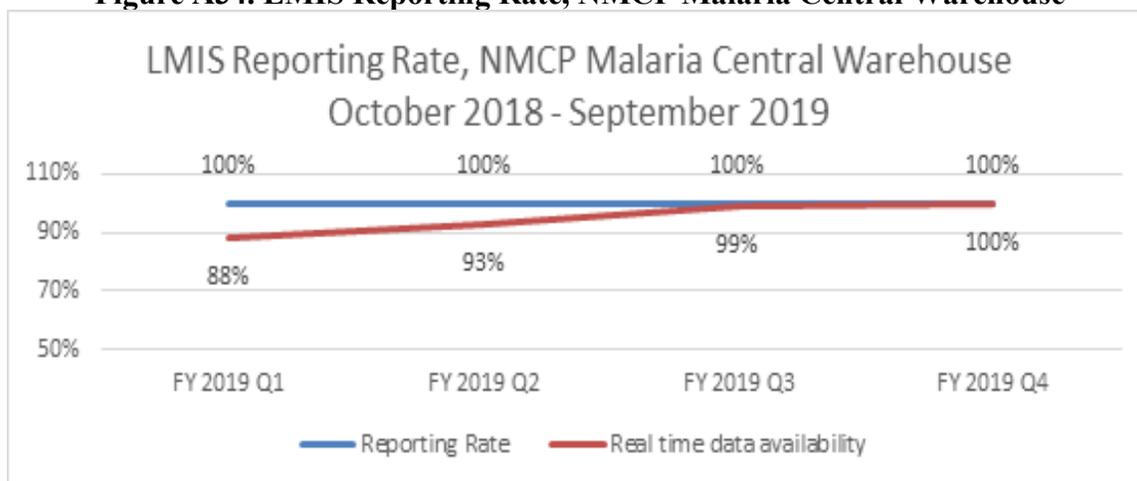
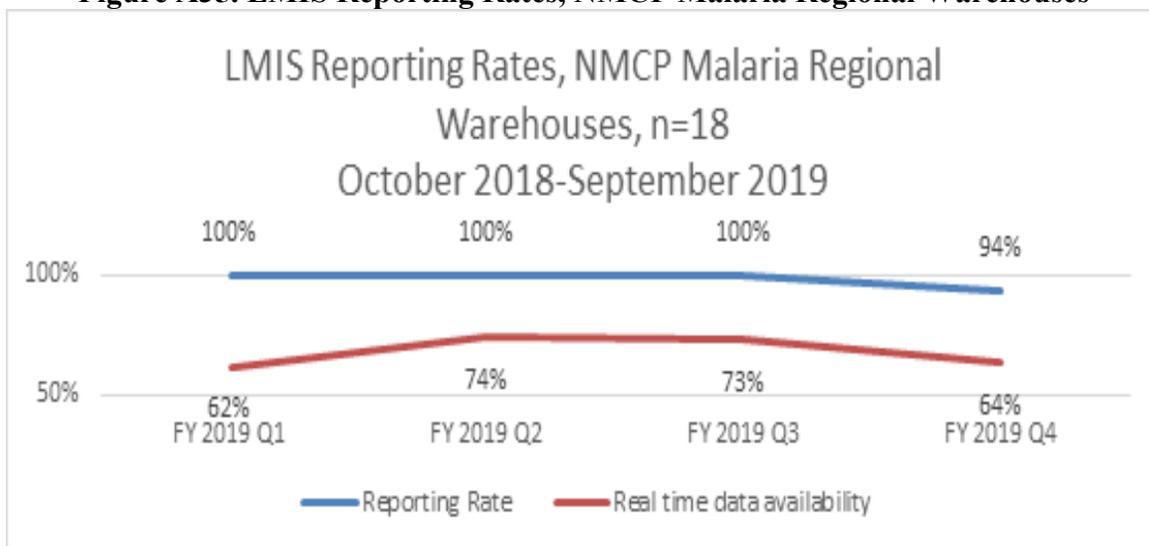


Figure A35. LMIS Reporting Rates, NMCP Malaria Regional Warehouses



Conclusion

In FY 2019, the NMCP central malaria warehouse maintained 100% on-time reporting rate as per defined reporting timelines. The real time data availability improved from 88% to 100% in the first quarter of FY 2019 to fourth quarter of FY 2019.

At subnational level, the reporting rate was also maintained at 100% during the first three quarters of FY 2019 but dropped to 94% in the fourth quarter of FY 2019 due to connectivity and other IT-related issues at one of the sub-national warehouses. Similarly, real time data visibility of transactions at subnational level improved from 62% to 74% in the first two quarters, but dropped again to 64% in the last quarter of FY 2019.

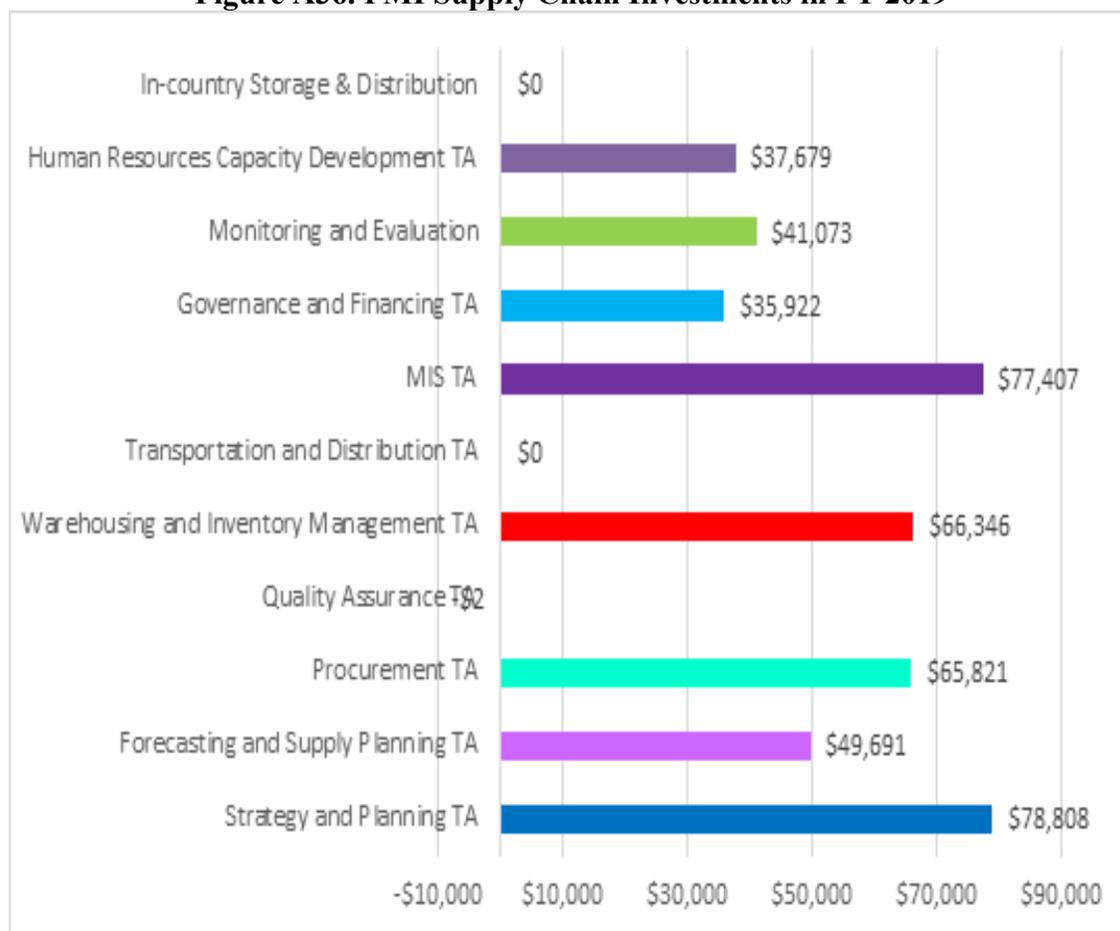
PMI continues to monitor reporting rates with NMCP and is providing technical assistance and support to strengthening supply chain systems to achieve similarly high reporting rates in other states/regions. PMI supports expanding malaria supply chain indicators as part of the phased-roll out of an eLMIS to the township level in ten states/regions.

Key Question 5

What are the main supply chain functions supported by PMI?

Supporting Data

Figure A36. PMI Supply Chain Investments in FY 2019



Conclusion

PMI predominantly supports technical assistance for the LMIS and strategic planning as part of the overall supply chain system strengthening efforts supported by USAID. PMI will continue to support national- and township-level supervision, forecasting, and implementation of the LMIS, and technical assistance to the central Supply Chain Unit to ensure commodity procurements and forecasting are coordinated among the MOHS and other donors.

Key Question 6

Are there any other considerations that impact your funding allocation in this category? If there is a specific budget line item in Table 2 that is not covered by the above questions, please address here

Supporting Data

N/A

Conclusion

No other considerations are noted at this time.

3.B. SURVEILLANCE, MONITORING & EVALUATION (SM&E)

NMCP objective
Expand, modernize and strengthen the national malaria information system to allow accurate and timely identification of cases, reporting, and geographical presentation of results to guide appropriate response.
NMCP approach
<ul style="list-style-type: none"> • In transmission-reduction areas, facility-level and community-based reporting units send their reports to higher levels on a monthly basis. Reports of unusual increases of cases are submitted immediately by phone, followed by paper reports. • In elimination areas, a case-based surveillance and response system is being scaled up, and reporting units are required to notify to higher levels of any confirmed malaria cases by phone or email within 24 hours. The township focal points together with VBDC staff are required to conduct case investigations, and, if appropriate, focus investigations and response within 7 days of notification. • The vision is to integrate the current Malaria Information System into a District Health Information System 2 (DHIS2) system for HIV, TB and Malaria over the next several years.
PMI objective, in support of NMCP
<ul style="list-style-type: none"> • Strengthen the malaria surveillance systems at national, state/region, township, and community levels towards an integrated system that includes data from public, private, and community sectors to comprehensively monitor progress and inform the deployment and targeting of appropriate responses and strategies. • Support scaling up the national web-based system used by the MOHS for broader health information management to include malaria, and strengthen NMCP capacity for data management and use. • Support NMCP transition from the current Access-based database to the DHIS2 platform. • In elimination areas, continue collaborating with the NMCP to improve case-based surveillance and implementation of case/foci investigations and response appropriate to the local epidemiological and programmatic context.
PMI-supported recent progress (past ~12-18 months)
<ul style="list-style-type: none"> • In 2018, PMI developed, and field tested in three townships some tools and approaches for malaria elimination. After one year of field implementation, the PMI-supported pilot project was largely adopted by NMCP as a model for scale-up to other parts of the country. • Thirty-six PMI-supported project staff were trained on GIS and the Open Data Kit mHealth application to improve data management, to strengthen VMW supervision, and to monitor progress through spatial-temporal analysis, including analyses of the distribution of malaria cases and ITN utilization.

PMI-supported planned activities (next ~12-18 months, supported by currently available funds)

- Continue to support village-based stratification with yearly updates using geotags of malaria cases with ArcGIS to monitor malaria endemicity and foci of malaria transmission, to target appropriate interventions, and to assess program effectiveness.
- Improve capacity to conduct routine data quality assessments comparing data from different sources e.g. mHealth and registrars through training and on-site supervision.
- In elimination areas, further develop and scale-up case-based surveillance for rapid detection, notification, and investigation of malaria cases and foci, simplifying the existing approach and tools, for prompt deployment of appropriate interventions.
- Strengthen and expand the already established system for early detection of and response to malaria epidemics by continuous review of village-level data and timely alerting of township-level malaria staff on any unusual increase of malaria incidence to conduct joint assessments and appropriate responses.

PMI Goal

To support the NMCP to build their capacity to conduct surveillance as a core malaria intervention using high-quality data from both surveys and routine health information systems.

Do you propose expanding, contracting, or changing any SM&E activities? If so, why and what data did you use to arrive at that conclusion?

Case-based surveillance, investigation, and response activities will be expanded from 3 to 14 townships.

Please see Table 2 for a detailed list of proposed activities with FY 2020 funding.

Key Question 1

Which sources of data are available to inform estimates of intervention coverage, service availability and readiness, and morbidity and mortality?

Supporting Data

Figure A37. Data Sources Informing Intervention Coverage, Service Availability and Readiness, Morbidity, and Mortality

Data Source	Data Collection Activities	Year								
		2015	2016	2017	2018	2019	2020	2021	2022	2023
Household Surveys	Demographic Health Survey (DHS)		X				(X)	(X)		
	Malaria Indicator Survey (MIS)	X								
	Multiple Indicator Cluster Survey (MICS)									
	EPI survey									
	National Population & Housing Census						(X)*			
Health Facility Surveys	Service Provision Assessment (SPA)									
	Service Availability Readiness Assessment survey (SARA)									
	Other Health Facility Survey									
Other Surveys	EUV									
	School-based Malaria Survey									
	Other (Knowledge, Attitudes and Practices Survey, Malaria Behavior Survey)									
	Other (Malaria Impact Evaluation)				X					
Malaria Surveillance and Routine System Support	Support to Parallel Malaria Surveillance System	X	X	X	X	X	(X)	(X)	(X)	(X)
	Support to HMIS							(X)	(X)	(X)
	Support to Integrated Disease Surveillance and Response (IDSR)									
	Other (Electronic Logistics Management Information System (eLMIS))				X	X	(X)	(X)	(X)	(X)
	Other (Malaria Rapid Reporting System)				X	X	(X)	(X)	(X)	(X)

* non-PMI funded activities,

x completed activities and (x) denotes planned activities.

Conclusion

With the remarkable progress seen in recent years, increasing heterogeneity in transmission and incidence rates have become apparent across the country. Many areas are rapidly progressing towards elimination, whereas some other areas and population groups are still characterized by persistent pockets of higher transmission. Considering this highly focal and rapidly evolving epidemiological situation, the focus of SM&E in Burma has shifted to heightened routine and real-time surveillance, providing continuous and granular information, rather than periodic nationwide surveys.

Key Question 2

What HMIS activities have been supported in your country? What current priorities will be supported with this MOP funding?

Supporting Data

Figure A38. HMIS-Supported Activities

Intervention	PMI-Funded			Does Global Fund plan to fund this?	Does another donor plan to fund this?
	FY 18	FY 19	FY 20		
Central Level					
Register, tools (e.g. checklists, indicator glossary), job aids (design, indicators, data dictionary, system support)	X	X	X	X	
Data quality assessments (separate from supervision – funding for travel to lower levels)				X	
Program monitoring and technical assistance (funding for travel to lower levels)			X		
Training (funding for central level to conduct training at lower levels, capacity building, i.e. on the job training for central staff)	X	X	X	X	
Human Resources (secondment of person in NMCP for SM&E, office/team for SM&E)			X	X	
Data Use (analysis, interpretation, visualization (dashboards, bulletins, dissemination/feedback to lower levels, decision-making)			X	X	
Policy guidelines and coordination (updating policies, guidelines, supporting sub-committee meetings, supporting participation in sub-committee meetings)	X	X	X	X	
External relations/Communications/Outreach (support travel to international meetings and publications)	X	X	X	X	
Support to annual operational plans for national malaria program	X	X	X	X	
Desk review to catch “logic errors system” (provide TA to catch logic errors)					

Intervention	PMI-Funded			Does Global Fund plan to fund this?	Does another donor plan to fund this?
	FY 18	FY 19	FY 20		
Admin 1 Level (State/Region). PMI supports activities in 4 States/Regions while Global Fund supports activities in all other regions.					
Registers (warehousing, printing, distribution)				X	
Data quality assessments (separate from supervision – funding for travel to lower levels)				X	
Program monitoring and technical assistance (funding for travel to lower levels)				X	
Training (funding for Admin 2 staff to conduct training at lower levels, capacity building (i.e. on the job training for Admin 2 staff)	X	X	X	X	
Human Resources (secondment of person for malaria SM&E, office/team for SM&E)				X	
Data Use (analysis, interpretation, visualization (dashboards, bulletins), dissemination/feedback, decision-making)				X	
Adaptation of national policy guidelines and coordination (adapting policies, guidelines, supporting sub-committee meetings, supporting participation in sub-committee meetings)				X	
Adaptation of checklists and job-aides					
Participation in national meetings (support for travel costs)	X	X	X	X	
Support to Annual Operational Plans for Admin 1 Malaria Program				X	
Admin 2 Level (Township)					
Data entry, summary, and transmission (training, re-training, computers, internet, tools)	X	X	X	X	
Supervision (training, traveling, supervision tools/checklists, create/design system for organized/methodical supervision)	X	X	X	X	
Data validation (data validation activities before monthly data submission - organize health facilities)				X	
Monthly/Quarterly data quality review meetings (venue, meeting support)	X	X	X	X	
Data Use (analysis, interpretation, visualization (i.e. dashboards), dissemination/feedback to facilities, decision-making)	X	X	X	X	
Human Resources (secondment of person for malaria SM&E, office/team for SM&E)				X	
Annual planning with Admin 1 (support travel)					

Intervention	PMI-Funded			Does Global Fund plan to fund this?	Does another donor plan to fund this?
	FY 18	FY 19	FY 20		
Facility Level					
Data collection/entry, summary, and transmission (training, re-training, computers, internet, tools)	X	X	X	X	
Supervision of CHWs (training, traveling, administering supervision tools/checklists of community health workers)	X	X	X	X	
Data use (analysis, interpretation, visualization (dashboards), dissemination/feedback to CHWs, decision-making)	X	X	X	X	
Monthly/Quarterly data quality review meetings (support for travel)	X	X	X	X	
Community Level					
Data collection/entry and transmission (training, re-training, tools)	X	X	X	X	
Data use (analysis, interpretation, decision-making)	X	X	X	X	
Monthly/quarterly data quality review meetings (support for travel)	X	X	X	X	

Conclusion

PMI along with substantial investment from other donors, e.g. Global Fund, have robustly invested in a full range of SM&E activities at all levels of the health system in Burma.

Key Question 3

What are the outcomes of HMIS strengthening efforts?

Supporting Data

Figure A39. Reporting Performance, FY 2017 - 2019

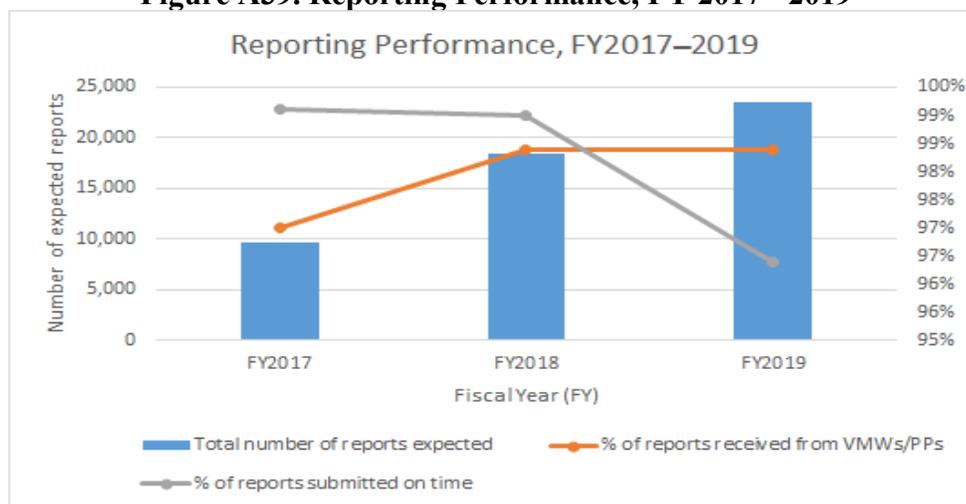
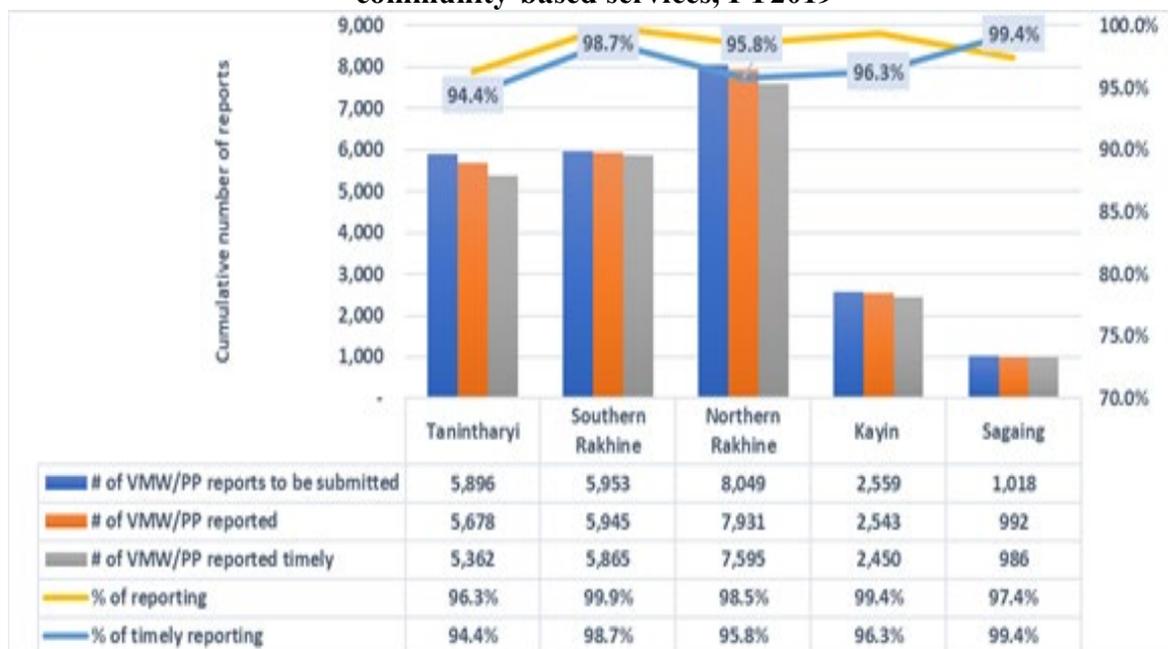


Figure A40. Reporting performance of VMWs and Private Providers in PMI-supported community-based services, FY2019



Conclusion

Reporting performance has been high and maintained in the PMI-supported areas since FY2017 despite ongoing expansion of service providers/number of villages covered. The reporting performance in the last 12 months of the PMI-supported VMWs/PPs have been extremely high across all targeted States and Regions, with reporting completeness at 98% and timeliness at 96%.

Key Question 4

Are there any other considerations that impact your funding allocation in this category?

Supporting Data

None.

Conclusion

There are no other considerations at this time.

3.C. SOCIAL AND BEHAVIORAL CHANGE (SBC)

NMCP Objective
According to the NSP (2016-2020), the malaria elimination objectives are supported through comprehensive SBC, community mobilization, and advocacy.
NMCP Approach
<ul style="list-style-type: none">• Burma’s NSP places priority on educating and raising awareness of the target population for malaria prevention and control interventions. The national strategy calls for an SBC approach that works with health authorities and implementing partners to educate target groups on malaria and ensure adequate malaria case management for migrant populations visiting endemic areas on arrival, during their stay, and on their return.• With the increased availability of ITNs, RDTs, and ACTs at the health facility and community levels, SBC activities are relied upon to motivate targeted at-risk populations to access and utilize these interventions. Special high-risk populations targeted with SBC messages include local forest dwelling residents, new settlers, internal and external migrant workers, and people crossing the national border areas.• A cadre of 18,000 VMWs nationwide utilizes interpersonal communication (IPC) to emphasize prevention activities and treatment compliance at the community level (at least one VMW per village). The VMWs assist with extending the reach of malaria services and messages to MMPs in endemic areas, either by stationing a VMW near at-risk groups or by identifying a volunteer from among the mobile population who is trained and supplied to provide malaria case management services on-site.• Key behaviors that are targeted include: use of ITNs, prompt diagnosis and treatment of fever, adherence to treatment, and avoidance of monotherapies and counterfeit drugs.• Some of the challenges for SBC activities include the diversity of the targeted population, which includes more than 135 ethnic groups and more than 100 languages and dialects. Traditional beliefs related to causes of and remedies for malaria and the mobility of key target groups also present challenges.• The NMCP, in collaboration with WHO and in consultation with agencies working in malaria control, developed “Communication and Social Mobilization for Malaria Prevention and Control in Burma,” which serves as the framework for SBC activities. While a formal SBC working group has not been established at the national level, SBC activities are discussed in the national malaria Technical Steering Group within the Program Implementation Working Group. A preliminary draft of the new NSP (2021-2025) calls for the formation of an SBC technical working group to meet regularly with key stakeholders.

PMI Objective in Support of NMCP

- PMI supports SBC activities through a network of 2,149 VMWs/ICMVs covering about 3,000 villages in 36 townships in Kayin, Rakhine, Sagaing, and Tanintharyi States/Regions. These efforts reach local residents in rural, remote villages with malaria interventions (ITNs, RDTs, and ACTs).
- PMI supports mobile malaria outreach activities to migrant workers and their families with group health talks (SBC sessions), provides screening for malaria and treating identified cases, and distributes ITNs to new migrants.
- PMI's support for SBC is focused on the PMI implementation areas and complements the more comprehensive support and investments provided by other donors such as the Global Fund.

PMI-Supported Recent Progress *(Past 12-18 Months)*

- PMI continued to ensure SBC materials and messages are standardized, harmonized, and disseminated at the community level to support IPC approaches through VMWs, ICMVs, and private providers.
- At the community level, PMI utilized several communication channels to reach the most vulnerable communities through IPC, and printed materials. A total of 169,088 people (48% male; 52% female) were reached through IPC including 22,203 migrants. A total of 1,935 group health talks were conducted, which reached 32,507 (45% male; 55% female) people including 6,601 migrants in targeted areas. SBC activities were also provided through worksite talks reaching 5,761 people.

PMI-Supported Planned Activities *(Next 12-18 Months Supported by Currently Available Funds)*

- PMI will continue to support effective SBC approaches, in particular through IPC and community engagement with VMWs, with careful consideration given to special and high-risk target groups, focused on improving knowledge about malaria transmission, coverage and use of malaria prevention measures (e.g., ITNs), and increasing awareness of MIP, dangers of counterfeit drugs, as well as prompt diagnosis and effective treatment.
- PMI will help to support updating SBC materials to ensure malaria prevention and control interventions are harmonized and comprehensively addressed as the MOHS and NMCP transition to a more integrated service delivery approach through VMWs and other integrated community health volunteers.
- With the recent expansion to additional townships in Sagaing Region, PMI will train VMWs and private providers on key malaria messages, including ITN use and care, obtaining a diagnosis within 24-hours of fever from qualified providers, and treatment adherence for the prevention of drug-resistance malaria.

PMI Goal

Through the use of SBC interventions and in alignment with a country's national malaria control communication strategy, PMI supports the uptake and correct and consistent use of malaria interventions, thereby improving the overall quality of malaria control efforts that will contribute to reductions in malaria morbidity and mortality.

Do you propose expanding, contracting, or changing any SBC activities? If so, why and what data did you use to arrive at that conclusion?

No changes are proposed for SBC activities.

Please see Table 2 for a detailed list of proposed activities with FY 2020 funding.

Key Question 1

What behaviors is PMI proposing to prioritize through its SBC programming? Will support be geographically targeted or at national scale? What data support this prioritization?

Supporting Data

Two priority target behaviors that PMI will address through its SBC programming are:

1. ITN use and care, and
2. prompt care-seeking for febrile illness.

These behaviors were selected because of evidence from the MIS 2015, which indicated areas for improvement for these key behaviors. With the extensive network of VMWs and ICMVs based at the community level, PMI will prioritize a strong emphasis on ITN use and care and ensuring prompt care-seeking practices (within 24 hours upon the onset of fever) for SBC programming, so as to closely align with the country's elimination objectives.

Conclusion

Figure A41. Prioritized Behaviors with FY2020 Funds

Behavior	Target Population	Area	Justification
ITN Use and Care	Forest Goers, Vulnerable and High Risk Populations, including Migrant and Mobile Populations	PMI Focus Areas	According to 2015 MIS, increasing access to nets is not an issue, since ownership of nets in general was very high. However, the majority of nets surveyed were conventional, untreated nets, mostly bought from private sector markets. There is also a need for improved behavior change communication to address the remaining 30% of the surveyed population who do not use an ITN. PMI's efforts will focus on this gap in order to promote the use of treated nets among targeted populations in PMI-supported areas.
Prompt Care Seeking for Febrile Illness	Forest Goers, Vulnerable and High Risk Populations, including Migrant and Mobile Populations	PMI Focus Areas	According to the 2015 MIS, 67% of those surveyed sought advice and treatment for their fever, and 46% sought advice and treatment within 24 hours of onset.

Key Question 2

Given the priority behaviors identified, what data are available to better understand the factors influencing low uptake? What are the behavioral determinants of the prioritized behaviors? Are there gaps in understanding the barriers to uptake?

Supporting Data

Figure A42. Summary of Determinants and Gaps for FY2020 Prioritized Behaviors

Behavior	Key Facilitators	Key Barriers	Knowledge Gaps
ITN Use	Targeted distribution campaigns support high rate of net ownership	Use of conventional untreated nets by general population; the use of ITNs by forest goers and MMPs	ITN use among forest goers
Prompt Care Seeking for Febrile Illness	Extensive national network of community health workers	Access to basic health services by vulnerable populations such as ethnic minority groups, forest goers and MMPs	Care seeking behaviors among forest goers

Conclusion

While important progress has been made with the overall reduction in malaria burden in Burma, key malaria behaviors such as ITN use and care-seeking are still considered priorities for ensuring progress is maintained and that national elimination targets are met. PMI will continue to support SBC activities through VMWs and ICMVs in PMI focus areas in order to improve the delivery and appropriate use of malaria prevention and treatment services, but will specifically target these behaviors among the populations identified above based on the local epidemiological context.

Key Question 3

What activities are needed to bolster the country's capacity for SBC? Are these activities needed at the national or sub-national level?

Supporting Data

N/A

Conclusion

Strong capacity and recognition exists among the NMCP and implementing partners in support of SBC activities. The extensive network of VMWs facilitate IPC interventions at the community level on malaria prevention and control and have been a key component in improving accessibility of malaria services, as well as access to information on appropriate prevention and treatment behaviors. While there is no formal national malaria SBC working group yet (and is being considered in the revision to the NSP), an SBC strategy exists and is used from time-to-time to guide design and implementation, but PMI will consider further support needed to improve the quality and align with the key elements of the RBM SBC Working Group.

Key Question 4

Are there any other considerations that impact your funding allocation in this category?

Supporting Data

No further considerations are noted.

Conclusion

N/A

3.D. PROGRAM EVALUATION AND OPERATIONAL RESEARCH

NMCP objective
The NSP promotes the development of research capacity, and the improvement of its quality and relevance to address bottlenecks in operations, to find innovative ways to tackle residual malaria transmission, and effectively deliver services to hard-to-reach populations.
NMCP approach
NMCP plans to review research priorities annually and revise them as necessary. The list of priority topics proposed for initial investigation includes new diagnostic technologies, new antimalarial drugs, validation of the G6PD test kit used at community level, new vector control methods including insecticide-treated clothing, larval source management, the role of sub-patent asymptomatic parasitemia in malaria transmission, and barriers to access for high-risk groups.
PMI objective, in support of NMCP
<ul style="list-style-type: none">• PMI follows evolving country operational research (OR) priorities, OR results from studies in the region, and development of promising highly-sensitive point-of-care diagnostics, G6PD point of care tests, new antimalarials, or outdoor transmission interventions to plan accordingly.• PMI participates in the Global Fund’s RAI2E OR Committee to guide their OR investment decisions for the region including Burma.
PMI-supported recent progress (past ~12-18 months)
<ul style="list-style-type: none">• All field data collection and laboratory analysis for the “Evaluation of the performance of a highly-sensitive RDT versus conventional RDT, compared with polymerase chain reaction as the gold standard, in reactive case detection of malaria in a low transmission area in Rakhine State” have been completed. Preliminary results noted that among 1,990 contacts tested during reactive case detection, hsRDTs identified 2.8-fold more positives than conventional RDTs (78 versus 28). The results were presented at the annual American Society of Tropical Medicine and Hygiene meeting in 2018. A draft manuscript is under preparation.• The concept note and protocol for the “Impact of mosquito topical repellents and extended standard interventions on malaria control and elimination in Myanmar“ study have been reviewed and approved by the PMI OR Committee.

PMI-supported planned activities (next ~12-18 months, supported by currently available funds)

- PMI will support the finalization of the manuscript for the highly-sensitive RDT study and its submission to a peer-reviewed journal.
- The topical repellent study is currently under review by respective national and institutional ethical review committees. The field activities are currently planned for the end of 2019.

PMI Goal

PMI will conduct OR/PE that helps: to evaluate coverage of population at-risk, quality of intervention(s), and efficiency in intervention delivery, or study reducing remaining malaria transmission and disease burden, test effectiveness of new or evolved priority interventions and strategies, or explore new metrics and mechanisms to assess the impact of interventions. Please see Table 2 for a detailed list of proposed activities with FY 2020 funding.

Do you propose expanding, contracting, or changing any program evaluation and operational research activities? If so, why and what data did you use to arrive at that conclusion?

Key OR questions for Burma are currently funded with previous MOP funding as well as supported through Global Fund’s RAI2E and Gates funding.

Please see Table 2 for a detailed list of proposed activities with FY 2020 funding.

Key Question 1

Have technical challenges or operational bottlenecks that require operations research or program evaluation been identified in consultation with the NMCP? How have they been prioritized?

Supporting Data

Figure A43. PE/OR currently conducted in country with USG, GF, multilaterals or other major donors

Source of Funding	Implementing institution	Research Question/Topic	Status
NIH ICEMR	Duke Global Health Institute	To integrate clinical and field research findings, including molecular surveillance, genomic epidemiology and geospatial mapping and modeling of malaria risk	On-going
NIH ICEMR	University of South Florida, Tampa	To improve understanding of how mobile human populations, parasite drug resistance, and mosquito biology contribute to continuous malaria transmission at international borders	On-going
BMGF	Duke Global Health Institute	Evaluate performance characteristics of a highly sensitive RDT (hsRDT) for elimination	On-going

Source of Funding	Implementing institution	Research Question/Topic	Status
BMGF	Shoklo Malaria Research Unit	Malaria Elimination in 4 townships of Eastern Kayin State	On-going
RAI2E	Population Sciences International	Assessing the relationship between LLIN material and LLIN usage in Myanmar and Cambodia	Completed
RAI2E	Macfarlane Burnet Institute for Medical Research and Public Health	Producing a community-delivered malaria elimination model that is acceptable, operational, pragmatic, effective and cost-effective across GMS countries	On-going
RAI2E	Shoklo Malaria Research Unit	Improving the understanding of environmental conditions which influence malaria transmission in Eastern Kayin State, Myanmar	On-going

Conclusion

No OR studies are proposed for FY2020 funding.

Key Question 2

In the technical areas covered above, are there specific issues in any of the intervention areas that merit further exploration, in anticipation of establishing intervention strategies that are or could become available in the future that could be applied?

Supporting Data

Highly-sensitive combo RDTs, G6PD qualitative and quantitative tests, tafenoquine, various chemoprevention approaches, spatial repellents and ivermectin are either new or soon to be available interventions that can be evaluated in Myanmar in the future.

Conclusion

PMI will continue to support optimizing our core interventions and evaluating new interventions where needed to address recalcitrant foci of transmission as the country progresses toward elimination.

Key Question 3

Are there any other considerations that impact your funding allocation in this category? If there is a specific budget line item in Table 2 that is not covered by the above questions, please address here.

Supporting Data

N/A

Conclusion

There are no other in-country considerations at this time.

3.E. OTHER HEALTH SYSTEMS STRENGTHENING

<p>NMCP objective</p> <ul style="list-style-type: none"> • The MOHS has focused on rebuilding the NMCP’s health workforce with different skill sets to improve management at various levels of field operations, and increasingly grappling with the challenge of sustaining a cadre of malaria volunteers in the face of declining incidence and increased need for integration with other services. • Additionally, it aims to improve health staff capacity in 284 malaria-endemic townships on planning, implementation, and M&E of malaria control activities.
<p>NMCP approach</p> <ul style="list-style-type: none"> • The Government of Burma created a Department of Public Health under the MOH in 2015, employing an increased public health workforce with additional needed skills in coming years. • The Field Epidemiology Training Program (FETP) in Thailand has graduated a number of trainees from Burma strengthening national and regional epidemiology and surveillance skills. • The MOHS has plans to strengthen and expand their in-country FETP training of the frontline 1-2 month basic course as well as an intermediate 9-month training.
<p>PMI objective, in support of NMCP Infrastructure</p> <p>PMI will support efforts to address the objectives of the broader NHP by expanding malaria control services to reach hard-to-reach and under-served regions including conflict-affected areas through training a cadre of community health and public health workers. PMI aims to strengthen malaria technical and management capacity of the malaria focal points/supervisors at all levels of the system as well as ensure that the general public health staff are trained on a minimum set of malaria activities that they can support in conducting malaria elimination and outbreak response activities.</p>
<p>PMI-supported recent progress (past ~12-18 months)</p> <ul style="list-style-type: none"> • PMI is currently supporting two IFETP fellows. One fellow is currently the Assistant Director for Vector Borne Disease Control in Kayin State • In March-April 2016, PMI supported an in-country Management of Malaria Field Operations course to train 23 township malaria supervisors on epidemiology and program management.
<p>PMI-supported planned activities (next ~12-18 months, supported by currently available funds)</p> <ul style="list-style-type: none"> • Recognizing that human capacity is lacking in Burma and well-trained staff are critical for successful malaria control and eventual elimination, PMI will continue to support Burma MOHS staff to participate in the IFETP training in Bangkok, Thailand. • PMI will continue to support building in-country capacity for data collection and epidemiology by training public health staff at state and township level via in-country training courses led by the Central Epidemiology Unit. Additional technical assistance will be provided by CDC FETP and PMI to support the curriculum refinement and inclusion of a level-appropriate training on malaria elimination and outbreak responses encompassing epidemiology and entomology.

PMI Goal

Building capacity and strengthening health systems is identified in the PMI Strategy 2015-2020 as a core area of strategic focus, which states that successful country-owned and country-lead malaria control programs are only possible when country programs possess appropriately-skilled human resources and the necessary infrastructure to plan, implement, and monitor progress of their malaria control activities.

Key Question 1

What support would address emergencies, or which engages FETP or Peace Corps programs.

Supporting Data

PMI will continue our multi-tiered support to develop a cadre of advanced epidemiologists at the national level as well as lower level intermediate and frontline public health supervisors at the state/regional and township levels able to engage in malaria elimination and outbreak response activities. Although plans are still tentative, the Central Epidemiology Unit's 5-year strategy aims to train 25 advanced, 118 intermediate, and 990-1,650 frontline staff. The cadre of eight advanced IFETP trainees thus far with PMI support have formed the foundation of mentors and supervisors for the intermediate and frontline trainees.

The Peace Corps program in Burma is focused only on education currently. If there is an expansion of their program into health, PMI will explore opportunities to engage them in malaria activities.

Conclusion

PMI will support the vision of the MOHS and its Central Epidemiology Unit in developing a cadre of epidemiologists at all levels of their system. Their engagement and role will be critical as malaria becomes a notifiable illness and more and more integrated into the general health system in the long-term.

Key Question 2

Are there any other considerations that impact your funding allocation in this category?

Supporting Data

Other donors e.g. Australia's Department of Foreign Affairs & Trade and BMGF have conducted scoping visits to assess the possibility of supporting an Emergency Operations Center. Ensuring that a cadre of skilled epidemiologists and public health staff are available at all levels will be critical to the success of any Emergency Operations Center.

Conclusion

There are no other in-country considerations at this time.

ANNEX B: COUNTRY PROGRAM INVENTORY

The MOP seeks to facilitate a consultative, collaborative process between PMI, the NMCP, and other partners, where relevant. This section outlines a high-level program inventory along key intervention areas, and is intended to structure discussions around the relative strengths and challenges facing a program, as well as prioritization and opportunities to drive catalytic impact with specific investments.

Key:

Example score

Figure B1. Category Vector Control

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
Entomological Monitoring	Insecticide Resistance monitoring	No insecticide resistance monitoring conducted	Limited insecticide resistance monitoring conducted on an ad-hoc basis	Insecticide Resistance monitoring conducted on an annual basis in a limited number of sites, not covering all administrative units. Occasional monitoring of molecular mechanisms	Insecticide resistance monitoring conducted in a greater number of sites on an annual basis with some collaboration with other partners, routine monitoring of some resistance mechanisms	Regular high quality insecticide resistance monitoring done in multiple sites per administrative division, consideration of molecular mechanisms and bioassay data, collaboration with other partners and NMCP
	Insectary	No functioning insectaries in country	Insectary present, but frequent ruptures in rearing and contamination of strains, frequent challenges in meeting needs	Insectary present, full-time staff present, some capacity for strain verification, sometimes challenges to get enough mosquitoes, occasional contamination	One or more insectary present, regular verification, rare challenges in getting sufficient mosquitoes, some capacity for strain verification	Highly functioning insectaries with verification of strains, capacity for rearing wild strains, quality controls in place
	Data-based vector control decision making	No consideration of entomological data when making decisions	Limited review of data, reliance on outdated data, uncoordinated analysis of data with limited collaboration with partners	Irregular and incomplete review of data from multiple partners, sometimes in collaboration with research and funding partners	Collaborative but irregular review of entomological data, sometimes providing timely evidence for decisions	Collaborative regular review of entomological data from multiple sources when making decisions about vector control
	Vector bionomics monitoring or research	No research or longitudinal monitoring done in country	Limited longitudinal monitoring and research done in country	Regular vector bionomics monitoring, and vector control research done in country, but generally not having an important role in decision making	Regular vector bionomics and vector control research conducted in country but not sufficient to respond to all major needs of the national program	Regular monitoring driven by program priorities conducted alongside research done in country to provide timely data on the best malaria vector control
	Institutionalization of funding	No resources	Only supported by external partners, no host government funding	Some host country government funding	>50% funded by host country government	Fully funded by host country government

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
ITNs	Consistent distribution channels, in accordance with national strategy	Infrequent campaigns with no continuous distribution	Regular (e.g., every 3 years) campaigns, no continuous distribution	Regular campaigns, inconsistent continuous distribution	Regular campaigns, plus at least 1 well- managed continuous distribution channel	Regular, well- executed campaigns and well- managed continuous distribution channels
	Regular supervision of routine ITN distribution (e.g. HFs)	No HFs regularly supervised in ITN distribution	0-25% of HFs regularly supervised in ITN distribution	25-50% of HFs regularly supervised in ITN distribution	50-75% of HFs regularly supervised in ITN distribution	75-100% of HFs regularly supervised in ITN distribution
	ITN distribution reporting capabilities	Quantities of ITNs distributed not reported at all into LMIS (or other system)	Some quantities of ITNs distributed reported routinely	Some quantities of ITNs distributed reported routinely but cannot be disaggregated by channel	Quantities of ITNs distributed reported routinely and disaggregated by channel	All ITNs distributed captured routinely, disaggregated, and reported electronically
	Capacity to use data to appropriately target and rotate new types of nets	N/A	No capacity	Limited capacity	Some capacity	Good capacity
IRS	Host country government's IRS implementation capacity	N/A, no host country government implemented spray campaign	Host country government has very limited capacity to implement minor aspects of spray campaign	Host country government has capacity to implement some aspects of spray campaign	Host country government has capacity to implement most aspects of spray campaign	Host country government implements independent spray campaign
	Institutionalization of funding	N/A, no IRS conducted in country	No host country government funding, only supported by external sources (e.g. PMI, GF, mining companies)	Limited host country government funding in addition to external sources	>50% funded by host country government in addition to external sources	Fully funded by host country government, no external sources
	Coverage of Government-Implemented Spray Campaign	N/A, no government- implemented spray campaign	Spray coverage not reported	85+% coverage in some government-sprayed areas	85+% coverage in most government-sprayed areas	85+% coverage in all government-sprayed areas

Figure B2. Category: Case Management

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
Community-based CM, if in national strategy	Coverage of CHWs trained in and providing CM (geographic or numerical target)	No CHWs conducting CM	0-25% of national target met	25-50% of national target met	50-75% of national target met	75-100% of national target met
	Regular supervision of CHWs in CM (regular defined as per national QA/QC guidelines)	No CHWs regularly supervised in CM	0-25% of CHWs regularly supervised in CM	25-50% of CHWs regularly supervised in CM	50-75% of CHWs regularly supervised in CM	75-100% of CHWs regularly supervised in CM
	CHW reporting capabilities	CHW-managed cases not reported into HMIS	Some CHW-managed cases routinely reported into HMIS	Cases routinely reported into HMIS but cannot be disaggregated from HF-reported cases	Cases routinely reported into HMIS and can be disaggregated from HF-reported cases	All CHW case data routinely captured and reported electronically
	Institutionalization of funding (salaries and/or other support)	No resources	Only supported by external partners, no host government funding	Some host country government funding	>50% funded by host country government	Fully funded by host country government
Facility based CM	Access to HF-based care (within 5 km of a health facility or as per national definition)	0-20% of population has access to HF	20-40% of population has access to HF	40-60% of population has access to HF	60-80% of population has access to HF	>80% of population has access to HF
	Regular* supervision of public HFs in CM	No HFs regularly supervised in CM	0-25% of HFs regularly supervised in CM	25-50% of HFs regularly supervised in CM	50-75% of HFs regularly supervised in CM	75-100% of HFs regularly supervised in CM
	Drug resistance monitoring	No TES performed in last 3 years	TES performed in last 3 years but results not available	Recent TES results available (within last 3 years) but no training in molecular testing	Recent TES results available (within last 3 years) and in-country staff trained in molecular testing	Recent TES results available (within last 3 years) and in-country capability for molecular testing

Figure B3. Category: Drug-Based Prevention

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
MIP	National policy exists for malaria prevention in pregnancy	No policy	Policy exists but is not comprehensive (does not cover all aspects of MIP: ITN, IPTp and case management)	Comprehensive policy exists for prevention (ITNs, IPTp) and case management but not all WHO recommendations are included	Policy meets current WHO recommended MIP prevention	Comprehensive, WHO-aligned policy is actively implemented
	Country policy adoption/adaptation of ANC guidelines with at least 4 recommended contacts	No policy	Country has started discussions and consultations for adopting the new ANC guidelines and recommendations	Country has policy specifying ANC contacts but no provision for early delivery of IPTp and is not able to systematically track ANC visits in HMIS	Country policy specifies ANC contacts and has provision for delivery of IPTp at 13-16 weeks but cannot track all ANC visits in HMIS	Country policy specifies the number of contacts to be delivered during pregnancy and has a provision for delivery of IPTp at 13-16 weeks and is able to track ANC visits in HMIS.
	National MIP working group established and coordinating effectively	No working group established	Working group formed and meets on an ad hoc basis, TORs are established	Working group engages in regular coordination but does not have mechanisms to ensure programmatic integration across technical areas	Working group coordinates at the national level only with Malaria and Maternal Health and has limited mechanisms for ensuring programmatic integration across technical areas	Working group engages in regular coordination at national and sub-national level with Malaria and Maternal Health and has mechanisms to ensure programmatic integration across technical areas.
	Supportive MIP supervision conducted	No HFs regularly supervised in MIP	0-25% of HFs regularly supervised in MIP	25-50% of HFs regularly supervised in MIP	50-75% of HFs regularly supervised in MIP	75-100% of HFs regularly supervised in MIP

Figure B4. Category: Supply-Chain

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
Supply Chain	Forecasting and Procurement Planning	Ad hoc forecasting based on poor, inadequate, or inaccessible data Insufficient skills for	Annual forecasting and supply planning done but is based on poor, inadequate, or inaccessible data	Annual forecasts incorporate service and/or/consumption data Supply plans updated semi-annually and incorporate	Semi-annual forecasts incorporate service and/or/consumption data, account for seasonality Supply plans updated	Near real-time demand/consumption, enhanced with additional programmatic contributions, drives monthly forecasting

		<p>selecting and implementing appropriate forecasting methodologies.</p> <p>Procurement plans are not developed from forecasts</p> <p>No coordination among procurers</p>	<p>Locally based skills in quantification are developing</p> <p>Review of procurement plans is irregular.</p> <p>Coordination among procurers is limited</p>	<p>review/revisions of available funding</p> <p>Coordinated procurement planning done at the national level (and regional level, if the health system is decentralized) and among procurers</p>	<p>quarterly and incorporate review/revisions of available funding</p> <p>Coordinated procurement planning done at the national level (and regional level, if the health system is decentralized). Identified commodity gaps effectively communicated to stakeholders for purposes of resource mobilization</p>	<p>Forecasting and supply planning-specific software used and outputs visible across networks.</p> <p>Supply plans updated monthly and incorporate review/revisions of available funding</p> <p>Coordinated procurement planning done at the national level (and regional level, if the health system is decentralized). Identified commodity gaps effectively communicated to stakeholders for purposes of resource mobilization. Outputs shared through global platforms</p>
	Warehousing/Storage	<p>Quality of infrastructure and operations at all stock holding levels (Central, Sub-central/facility) compromises ability to ensure commodities are adequately protected from damage, deterioration and loss.</p> <p>Unable to locate stock by batch in central/mid-level stores/warehouses.</p>	<p>Quality of infrastructure and operations in at least one stock holding level (Central, Sub-central/facility) ensures that commodities are adequately protected from damage, deterioration and loss.</p> <p>Paper-based inventory management system.</p> <p>No SOPs.</p>	<p>Quality of infrastructure and operations in at least two stock holding levels (Central, Sub-central/SDP) ensures that commodities are adequately protected from damage, deterioration and loss. Warehousing SOPs exist. Able to track inventory level with central level WMS but information is not routinely shared across warehouses.</p> <p>Some maintenance occurring</p> <p>Limited ability to scale storage capacity</p>	<p>Quality of infrastructure and operations at all stock holding levels (Central, Sub-central/SDP) ensures that commodities are adequately protected from damage, deterioration and loss</p> <p>Stock data is digitized in at least two stock holding levels</p> <p>Some routine maintenance occurring</p> <p>Storage capacity scaled through contracting of third party logistics providers (3PLs)</p>	<p>Quality of infrastructure and operations at all stock holding levels (Central, Sub-central/SDP) ensures that commodities are adequately protected from damage, deterioration and loss.</p> <p>Storage infrastructure and operations adhere to Good Warehousing Practices and/or meet in-country compliance standards</p> <p>Stock data is digitized at all stock holding levels and near real-time stock visibility available across networks</p> <p>Routine and predictive</p>

						<p>maintenance budgeted for and institutionalized</p> <p>Storage capacity is logically located and can be effectively scaled with 3PLs</p>
	Routine distribution/resupply between stock holding levels	<p>No routine requisition and resupply schedule between stock holding levels</p> <p>No resources routinely available and allocated for transportation from higher to lower stock holding levels</p>	<p>Routine requisition and resupply between at least two stock holding levels according to a schedule</p> <p>Resources for transportation from higher to lower stock holding levels provided on ad hoc basis</p>	<p>Routine resupply between all stock holding levels according to a schedule</p> <p>Allocated resources for transportation from higher to lower stock holding levels provided on an irregular basis and resupply often achieved through unplanned means</p> <p>Resupply performance monitored post-activity</p>	<p>Routine resupply between all stock holding levels according to a schedule shared with all levels and informed by accurate demand signals</p> <p>Allocated resources for transportation provided on a regular basis and augmented with 3PLs</p> <p>Resupply performance monitored real-time</p>	<p>Routine resupply between all stock holding levels according to a schedule shared with all levels and informed by accurate, timely, demand signals</p> <p>Robust emergency and inter-facility resupply mechanisms are in place</p> <p>Allocated resources for transportation available internally or outsourced with 3PLs. Resupply transaction data is digitized for all stock transfers</p> <p>Near real-time visibility into upstream and downstream activities</p> <p>Resupply operations adhere to GDP and or meet in-country compliance standards for maintaining quality during distribution</p>
	Logistics Management Information System	System to aggregate, analyze, validate and display data (from all levels of the logistics system) that can be used to make logistics decisions and manage the supply chain not institutionalized or	Stand-alone, program specific LMIS processes and structures defined but no formal or ongoing monitoring or measurement	The country has documented LMIS processes and structures. The structures are functional. Metrics for performance monitoring, quality improvement, and evaluation are systematically used.	Government and stakeholders use the national LMIS systems for key performance monitoring and follow standard practices. Facility inventory and consumption data is	<p>Near real time visibility into inventory and consumption data at all levels, data from multiple systems feed into common platform/control tower (automated process), predictive analytics.</p> <p>The government and</p>

		<p>followed No facility level records or not maintained. Low reporting rates. No visibility into CHW supplies. No visibility by central level on facilities and none by facility level on central level.</p>	<p>protocol exists. Some visibility of facility level inventory and consumption, low reporting rates, mostly paper-based</p>	<p>Migration of data collection and reporting from a paper system to an electronic system at the district level and above. A documented mechanism is in place for maintaining data quality throughout the data supply chain.</p>	<p>digital at facility level, upstream data available to facilities, System alerts for low stock/expiry, use of master product list and master facility list</p> <p>Interoperability with other information systems (e.g., warehouse management, medical records, laboratory management, enterprise resource planning systems, and health information management systems)</p>	<p>stakeholders routinely review interoperability activities and modify them to adapt to changing conditions.</p> <p>Compliance with standards for data exchange, messaging, and security is regularly reviewed. The regulatory framework is reviewed and updated to reflect best practices for data exchange, messaging, and systems security.</p>
	Regulatory, Policy and Governance	<p>Legal basis to enable a medicines (and related health commodities - e.g., devices, vaccines, etc.) regulatory agency to function is absent or inappropriate</p> <p>Formal organizational structure regarding in-country stakeholders and relevant agencies to whom authority is delegated, is absent or inadequate (e.g., up-to-date organogram of MOH).</p> <p>Human and financial capacity to enable regulatory functionality, weak or absent</p>	<p>Medicines framework exists and is sufficient to support basic regulatory functions including clinical dossier review (licensing) and marketing authorization with registration.</p> <p>Documented domestic financial support to enable regulatory activities - including human resources</p> <p>Approved supply chain strategic plan but not updated recently. Poorly implemented strategic plan</p>	<p>All SDP levels have in place policies that address STG, quality assurance and HR.</p> <p>Management policies for the supply chain system are in place at the MOH level.</p> <p>Policy and strategic leadership is not always translated into robust implementation plans, and supportive supervision, capacity building and guidance to managers within the system.</p> <p>No consistent approach to pharmacovigilance or a standard reporting structure for pharmacovigilance events</p> <p>Overall quality</p>	<p>Strong policy and strategic leadership by government, with firm grasp of budgets and financial sustainability</p> <p>Robust implementation plans, and supportive supervision, capacity building and guidance to managers within the system.</p> <p>Regulatory and policy bodies in alignment to support quality product availability</p> <p>National and standardized Pharmacovigilance or a standard reporting</p>	<p>The MOH leads strategic functions such as, policy formulation, quality assurance and overseeing the funds required for policy implementation.</p> <p>Ability to ensure product quality, automated drug registration process, clear/transparent importation process, robust post-market surveillance system and, track and trace regulations developed and/or in the process of implementation.</p> <p>Approved (and up to date) supply chain strategic plan (contains clear roles and responsibilities, stakeholder mapping, costs). Includes risk mitigation plan.</p>

		No approved supply chain strategic plan		management system in place to support interface of product licensing, registration, manufacturing, post-marketing surveillance. Approved (and up to date) supply chain strategic plan. Partially implemented	structure for pharmacovigilance events in place, not fully functional. Approved (and up to date) supply chain strategic plan (contains clear roles and responsibilities, stakeholder mapping, costs).	
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Figure B5. Category: Strategic Management

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
Data, Surveillance, Monitoring & Evaluation	Overall HMIS reporting rate (CY 2018)	<60%	60-69%	70-79%	80-89%	90%+
	Element specific reporting rate: “Confirmed malaria cases among children under 5” (CY 2018)	<60%	60-69%	70-79%	80-89%	90%+

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
	HMIS data quality assurance and quality control	Few standards exist for data collection, assembly, & analysis. Data quality reviews and audits are ad hoc for specific data needs. No data-quality assurance plan and national coordinating body exist.	Standards used for data collection, assembly & analysis in limited settings. Some electronic tools used for data quality review and audit. Data-quality assurance plan is available.	Standards defined and implemented for data collection, assembly, analysis, and used nationally. Data quality reviews and audits scheduled and include a remediation process to address identified issues. SM&E staff are seconded to NMCP	Data reviews and audits are integrated in strategic plans, conducted on a regular schedule. Regular meetings held by national data-quality governing body; issues identified are addressed through an established remediation process.	Continuous review and auditing through automated and manual processes, to ensure defined levels of data quality. Data quality metrics are used for continuous improvement. The data-quality assurance plan is reviewed periodically by a national coordinating body and appropriate stakeholders.
	Reporting Systems	Data collection tools are not standard, and procedures are not consistently followed; data are collected and stored in an unstructured format. NMCP does not have access to malaria data from HMIS.	Data systems support longitudinal health data (clinical, surveillance, M&E) in limited settings. The data are available for centrally mandated reporting. A parallel malaria reporting system may exist.	Most data platforms/applications ensure data availability at all levels for decision support and M&E for authorized users. No parallel malaria reporting system exists. NMCP has access to malaria data from HMIS.	The data systems in use ensure reliable and appropriate access to data at all levels for authorized users. Changes in reporting requirements are accommodated with minimal disruption to data availability. Data systems support secondary use of data and NMCP has access.	Data availability is monitored for continuous improvements and to meet emerging health sector needs. Reporting is available from private facilities and community-level providers and can be disaggregated.

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
	Data collection	Data collection is not done at the most peripheral level (CHWs) and is irregular and inaccurate at rural and more central health facilities. System is entirely paper based, but registers may be absent	Data collection is well managed at HF level, but incomplete at community level (CHWs); most collection is paper based, and aggregation is paper based; registers generally available; timeliness and completeness remain challenges	Data collection is well managed at HF level and at community level (CHWs); most collection is paper based, aggregation is electronic; registers available; timeliness and completeness >80%, feedback to collectors limited	Data collection at all levels); collection is electronic and sometimes paper based, aggregation is electronic; registers include all program-critical data; timeliness and completeness >80%, feedback to collectors is standardized	Data collection occurs at all levels, is transmitted in real time with timely feedback to those collecting and those using the data; data checks exist at point of collection; electronic transmission is the norm, including to data collectors
	Data use	Activities (analysis, interpretation, visualization) to ensure data use are rarely implemented	Limited data use activities are implemented (bulletin has been developed but analysis and interpretation for decision-making needs to be strengthened)	Country conducts regular data use activities (review meetings, bulletin at least quarterly, at least at the central level).	Country conducts regular data use activities at all levels (review meetings, bulletins, dashboard at least quarterly).	Country has developed their own high- quality dashboard to facilitate data use, and data-informed decision making is evident at all levels, on a frequent basis.
OR/PE	PMI in-country OR experience	No previous PMI OR experience in country	PMI team has prepared concept notes (CNs) but has not completed protocols or conducted OR	PMI team has completed protocols and received approval for OR; studies in planning, underway, or recently completed	PMI team and/or other country partners have completed a OR study and prepared and shared reports	Multiple OR studies completed in country that address malaria program implementation bottlenecks with publication and sharing of results, with involvement from MOH co-investigators

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
	Country mechanisms for OR/PE review	No in-country process for research review, determination or IRB processes	Limited in-country processes for research review, determination and IRB oversight	Processes in place for research and IRB review with federal-wide assurance approval; no previous PMI in-country OR experience	Processes in place for research and IRB review with federal-wide assurance approval; previous PMI in-country OR experience	Full complement of research review, approval, oversight processes including data safety and monitoring boards and systems for results sharing
	In-country partnerships for OR	No in-country partners (academic, NGO, or other) with OR experience	1-2 in-country partners with OR experience, but no malaria specific experience	3+ in-country partners with OR experience; 1+ with some malaria expertise; no current PMI-linked OR work	3+ in-country partners with OR experience; 1+ with malaria expertise; current or recent work with PMI OR	Multiple in-country partners with specific malaria experience in PMI OR, including completed past work and reporting on malaria OR
	Conceptualization of problems needing scientific evaluation	No experience	Some but limited experience in identifying programmatic problems and prioritization	Experience with identifying program problems and prioritizing PE and OR	Experience with identifying problems needing PE or OR and developing study approaches with partners	Extensive experience with problem identification, prioritization, proposal development and conducting PE or OR

Figure B6. Category: Support Systems

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
SBC	National Malaria SBCC Strategy used to guide design and implementation of malaria SBC activities	No strategy exists.	Strategy exists but there is no evidence that it has been used to guide design or implementation.	Strategy exists and is used from time-to-time to guide design and implementation, but is of poor quality and does not include any of the key elements identified in the RBM SBCC Working Group National Malaria SBCC Strategy Template.	Strategy is used from time-to-time to guide design and implementation, but lacks alignment with the broader National Malaria Strategy and only incorporates a couple of the key elements identified in the RBM SBCC Working Group National Malaria SBCC Strategy Template.	Strategy is well aligned with the broader National Malaria Strategy, includes the key elements identified in the RBM SBCC Working Group National Malaria SBCC Strategy Template, and is used to guide design and implementation.

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
	SBC Technical Working Group coordinates effectively	No technical working group exists.	The SBC Technical Working Group exists on paper, but has not been operationalized.	The SBC Technical Working Group has significant resource and staffing gaps and does not have clear pathways for coordination.	The SBC Technical Working Group lacks some needed resources/staff and generally only coordinates at the national level only.	The SBC Technical Working Group is well resourced and staffed and engages in regular coordination at both the national and sub-national level.
	High-quality formative assessments used to inform intervention design	No high-quality, formative assessment conducted in the last five years.	Formative assessment conducted, but significant quality issues in the design and no evidence that data was used to inform intervention design.	High-quality, formative assessment conducted, but no evidence that data was used to inform intervention design.	Data from prior projects used exclusively to guide intervention design; no new data collected.	High-quality, formative assessment conducted, and data used to inform intervention design.
Elim (relevant only for countries actively pursuing elimination)	Elimination planning to implementation	No elimination or pre-elimination targets in the national strategic plan	Risk stratification conducted using latest incidence data and interventions targeted	Readiness assessment/ capacity inventory conducted	Capacity built and systems in place to initiate elimination activities	Elimination activities implemented fully in targeted areas
	Surveillance system readiness to track all cases	Monthly, aggregate data from public sector only	At least monthly, aggregate data from public, private, and community levels	Case-based reporting initiated	Real-time, case-based surveillance inclusive of all sectors and levels in targeted areas	Real-time, case-based reporting and response activities implemented
Additional Health Systems Strengthening	Staffing	No staff	Manager and a few technical staff; not all intervention areas are covered	Manager and technical staff for each intervention area; many staff have limited training and experience ; limited program support staff	Full staffing of program areas and support systems but some staff need further training to optimize their effectiveness; limited plans and opportunities for such training	Fully staffed with personnel with relevant training and experience; complete plan for professional development

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
Office space, transport	Office space, transport	No office space or transport	Office space exists but is insufficient for staff; Transport available at intervals but limited for program needs	Office space adequate for current staff but no growth possible; office not well positioned for access to MOH leadership. Transport available but not covering all needs and not well managed/maintained	Office space adequate for current staff and some technical areas (e.g., lab) but not fully adequate for growth and all technical services. Transport covers most needs.	Office space is fully adequate for current staff and technical needs (lab, insectary, meeting space, etc.) and some growth and well positioned in the MOH; Transport is fully available for needed purposes -- trucks and 4-wheel drive vehicles where needed - all maintained and managed.
	Internet connectivity	No Internet connectivity	Intermittent connectivity; poor bandwidth; challenging maintenance; very little budget	Mostly connected with some outages; ok but not ideal bandwidth; irregular maintenance; modest budget	Generally stable connections, adequate bandwidth for most work, fair to good maintenance and sufficient budget	Fully connected, maintained, good bandwidth for all needs, and sufficient budget including all needed hardware and software
	NMCP placement within Ministry of Health	NMCP exists but is barely visible in the MOH structure	NMCP is visible in the MOH structure but NMCP manager reports to supervisor who is still low in the MOH system	NMCP is visible and manager reports to high level leader in MOH (e.g., Director of Public Health or Permanent Secretary for Health)	NMCP (or NMEP) is highly visible and reports at a high level in MOH and has some access to other ministry leadership (e.g., education, agriculture, community development)	NMCP (or NMEP) is highly visible within MOH and with all other relevant ministries and has ready access to country leadership (e.g., the president/prime minister; and parliament)