

PMI

U.S. PRESIDENT'S MALARIA INITIATIVE

LED BY



USAID
FROM THE AMERICAN PEOPLE



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

CAMEROON

Malaria Operational Plan FY 2020

Suggested Citation: U.S. President's Malaria Initiative Cameroon Malaria Operational Plan FY 2020. Retrieved from (www.pmi.gov)

TABLE OF CONTENTS

ABBREVIATIONS	4
I. INTRODUCTION	6
II. MALARIA SITUATION AND MALARIA CONTROL PROGRESS IN CAMEROON	9
III. OVERVIEW OF PMI'S SUPPORT OF CAMEROON'S MALARIA CONTROL STRATEGY	13
IV. PARTNER FUNDING LANDSCAPE	16
V. ACTIVITIES TO BE SUPPORTED WITH FY 2020 FUNDING	22
ANNEX A: INTERVENTION-SPECIFIC DATA	23
1. VECTOR CONTROL	23
1.A. ENTOMOLOGICAL MONITORING	24
1.B. INSECTICIDE-TREATED NETS (ITNs)	32
1.C. INDOOR RESIDUAL SPRAYING (IRS)	41
2. HUMAN HEALTH	43
2.A CASE MANAGEMENT in health facilities and communities	43
2.B. DRUG-BASED PREVENTION	61
2.B.i SEASONAL MALARIA CHEMOPREVENTION (SMC)	64
2.B.ii MALARIA PREVENTION IN PREGNANCY (MIP)	69
3. CROSS-CUTTING AND OTHER HEALTH SYSTEMS	77
3.A. SUPPLY CHAIN MANAGEMENT	77
3.B. SURVEILLANCE, MONITORING & EVALUATION (SM&E)	85
3.C. SOCIAL AND BEHAVIORAL CHANGE (SBC)	95
3.D. PROGRAM EVALUATION AND OPERATIONAL RESEARCH	103
3.E. OTHER HEALTH SYSTEMS STRENGTHENING	105
ANNEX B: COUNTRY PROGRAM INVENTORY	108

ABBREVIATIONS

ACT	Artemisinin-based combination therapy
AL	Artemether-lumefantrine
ANC	Antenatal care
AS/AQ	Artesunate-amodiaquine
BMGF	Bill and Melinda Gates Foundation
CDC	Centers for Disease Control and Prevention
CFA	West African Franc
CY	Calendar year
DHIS2	District Health Information System 2
DHS	Demographic and Health Survey
DQR	Data Quality Review
FETP	Field Epidemiology Training Program
FOCAP	Cameroonian Forum on Psychology, Research, and Social Science Interventions
FY	Fiscal year
GHI	Global Health Initiative
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
HBHI	High Burden to High Impact
HMIS	Health Management Information System
IEC	Information, education, communication
IPTp	Intermittent preventive treatment for pregnant women
IRS	Indoor residual spraying
ITN	Insecticide-treated mosquito net
KAP	Knowledge, attitudes, and practice
LANACOME	National Laboratory for the Control of Medicines
MBS	Malaria Behavior Survey
MIP	Malaria in pregnancy
MIS	Malaria indicator survey
MoH	Ministry of Public Health
MOP	Malaria Operational Plan
NMCP	National Malaria Control Program
NSP	National Strategic Plan
PARMA	PMI-Supported Antimalarial Resistance Monitoring in Africa
PBO	Piperonyl butoxide
PMI	U.S. President's Malaria Initiative
QA/QC	Quality Assurance/Quality Control
RDT	Rapid diagnostic test
SBC	Social and behavior change
SM&E	Surveillance, monitoring, and evaluation
SMETWG	Surveillance, monitoring, and evaluation technical working group

SP	Sulfadoxine/pyrimethamine
TSQ	Training, Supervision, and Quality Assurance
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
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 Cameroon to end malaria. PMI has been a proud partner of Cameroon since fiscal year (FY) 2017, helping to improve access to life saving drugs and services, and key interventions such as the distribution of bed nets through investments totaling almost \$ 65 million through FY 2019.

The proposed PMI FY 2020 budget for Cameroon is \$ 22.5 million. This Malaria Operational Plan (MOP) outlines planned PMI activities in Cameroon for FY 2020. 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 Cameroon as well as other donors and partners.

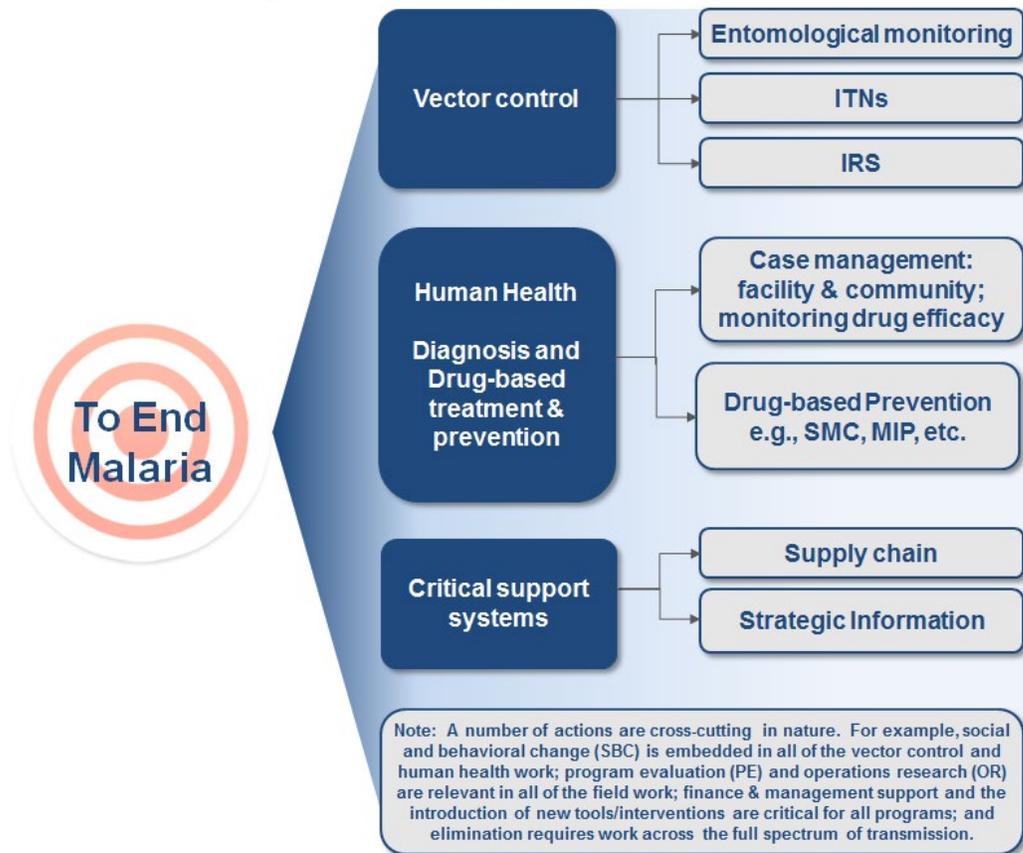
Cameroon at a glance

- **Geography:** Cameroon is located in West-Central Africa along the Atlantic Ocean with its two anglophone regions sharing borders with Nigeria, while the rest of the country is francophone with Chad, the Central African Republic, Equatorial Guinea, Gabon, and Congo as neighbors. The country land area is 475,440 km² and it exhibits all major climates and vegetation of the continent: mountains, rain forest, savanna, desert, and ocean coastland.
- **Climate:** The climate varies with terrain, from tropical along the coast to semiarid and hot in the north. The coastal belt, which is exceedingly hot and humid, includes some of the wettest places on earth (Debundscha has an average annual rainfall of 10,300 millimeters). There are three climate zones in Cameroon: 1) *The equatorial climate* (between 4th and 6th degrees of north latitude) with two climatic nuances: the Guinean type in the south of Cameroon with four seasons; 2 dry seasons (July to August, then December to February) and 2 rainy seasons (March to June, then September to November), characterized by abundant rainfall (more than 1500 mm per year) and the Cameroonian type in the South-West region and the Western Highlands, with a long rainy season (9 months) and a dry season. 2) *The Sudanese tropical climate* (from the 6th to the 10th north parallel) with a rainy season (March to October) and a dry season (November to February). 3) *The tropical sahelian climate* (north of the 10th parallel), where the rainy season is reduced, varying between 3 and 5 months (June to October), with rainfall becoming scarcer towards Lake Chad.

- **Population in 2019:** 25,492,353 (Cameroon National Institute of Statistics projections)
- **Population at risk of malaria:** 25,492,353
- **Malaria incidence per 1000 population:** 86.3 (NMCP 2018 report)
- **Under-five mortality rate:** 79 per thousand (2018 DHS Key Indicators Report)
- **World Bank Income Classification & GDP:** Lower-middle income economy, \$1527 per capita (datahelpdesk.worldbank.org)
- **Political system:** Cameroon is a republic with a presidency. The country has a multiparty system of government.
- **Trafficking in Persons designations, 2016-2018:** 2016-17 Tier 2 Watchlist, 2018-19 Tier 2 (<https://www.state.gov/reports/2019-trafficking-in-persons-report/>)
- **Malaria funding and program support partners include (but are not limited to):**
 - Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM)
 - U.S. President’s Malaria Initiative (PMI)
 - World Health Organization (WHO)
 - UNICEF
 - United Nations Population Fund (UNFPA)
- **PMI Support of National Malaria Control Strategy:** PMI works closely with the NMCP to coordinate support for activities in the National Strategy for malaria control. (See III. Overview of PMI’s support of Cameroon’s Malaria Control Strategy for additional details)
- **PMI Investments:** Cameroon began implementation as a PMI focus country in FY 2017. The proposed FY 2020 PMI budget for Cameroon is \$22.5 million; that brings the total PMI investment to \$87.5 million.

PMI organizes its activities and planning levels around the activities in Figure 1, in line with the national malaria strategy.

Figure 1. PMI’s Approach to End Malaria



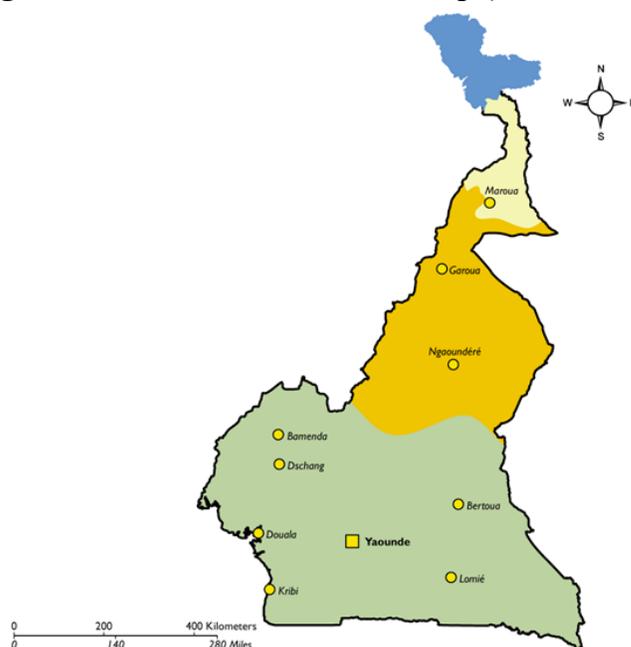
PMI’s approach is both consistent with and contributes to USAID’s Journey to Self-Reliance framework. Building and strengthening the capacity of Cameroon’s people and institutions – from the central level to communities – to effectively lead and implement evidence-based malaria control and elimination activities remains paramount to PMI. As denoted in Table 2 (the budget table), nearly all of PMI’s planned support for FY 2020 in the areas of vector control, human health, supply chain and strategic information contains elements of capacity building and system strengthening. PMI/Cameroon will continue to rely on and engage with local partners such as the Regional Funds for Health Promotion and is expanding its local partner base to reach more health facilities and households.

To accelerate the journey to self-reliance, PMI developed a programmatic inventory to assess the strengths and persistent challenges of Cameroon’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 Cameroon is capable of fully financing its development priorities, PMI will work with other partners (e.g., the Global Fund) to jointly track Cameroon’s funding commitments across the malaria portfolio.

II. MALARIA SITUATION AND MALARIA CONTROL PROGRESS IN CAMEROON

Malaria is the most widespread endemic disease in Cameroon, responsible for greater than 2 million reported cases, and absenteeism from school and work annually. *Plasmodium falciparum* is the predominant species of mosquito responsible for transmission, with *Anopheles gambiae* s.l., the primary vector. At the national level, the number of cases recorded in health facilities stagnant since 2011, has shown an increasing trend since 2017. The number of deaths, after a downward trend over several years, has gone upward since 2017. In response to this increasing burden, the Government of Cameroon has made the fight against malaria a priority, with a highlight in the country's Health Sector Strategy (2016-2027).

Figure 2. Malaria Transmission Map (NMCP, 2011)



Note:

Sahelian zone in Far North region: hot and dry tropical climate and malaria transmission between one to three months with entomologic inoculation rate of 10 infective bites/ person/ month (light yellow).

Tropical/Sudanian zone in Adamawa and northern regions: intense seasonal malaria transmission season of four to six months with entomologic inoculation rate of 10 infective bites/person/month (dark yellow).

Equatorial forest zone in the south: hot and humid climate with abundant precipitation and perennial malaria transmission of seven to twelve months, and entomological inoculation rate of 100 infective bites/person/month (green).

Figure 3. Trends in Malaria Prevalence

Percent of children age 6-59 months who tested positive for malaria by RDT

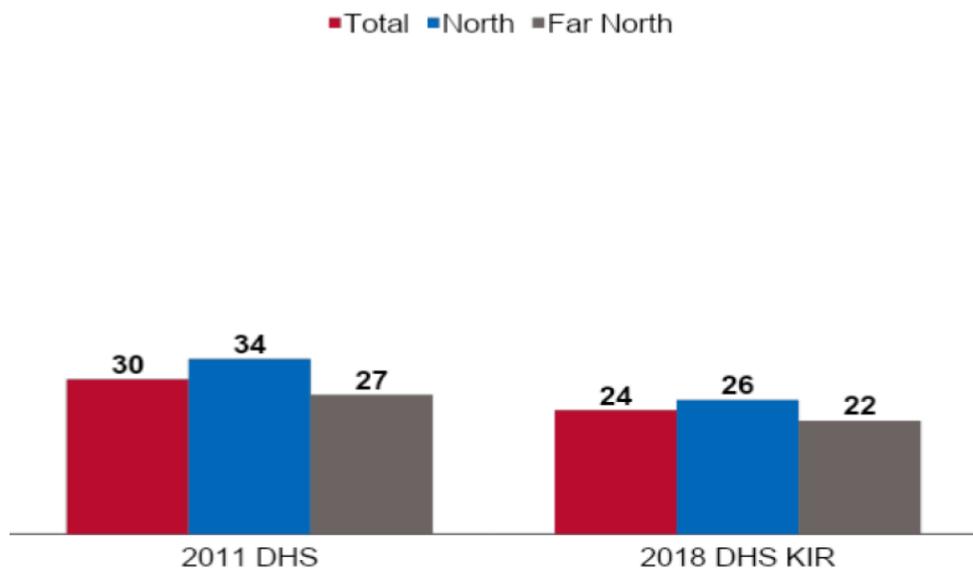
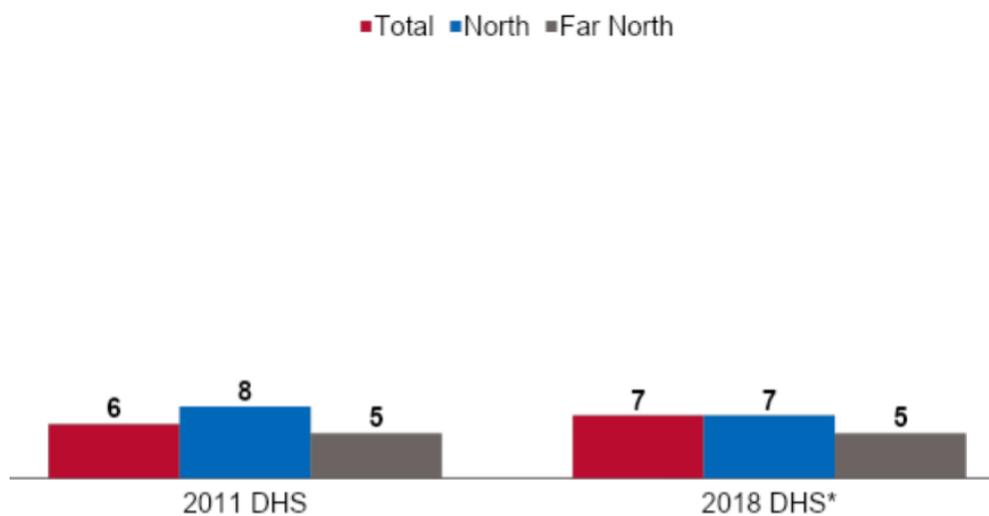


Figure 4. Prevalence of Low Hemoglobin by Age

Percent of children age 6-59 months with moderate-to-severe anemia (hemoglobin < 8.0 g/dl)



*preliminary data

Figure 5. Malaria Parasite Prevalence among Children under Five Years of Age by Region
Percent of children age 6-59 months who tested positive for malaria by RDT, 2018 DHS KIR

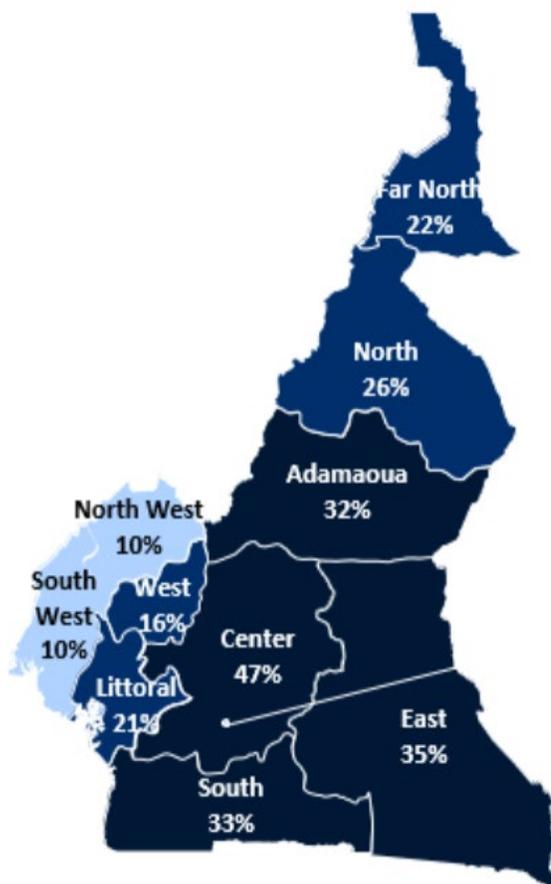


Figure 6. Key Indicators for Malaria Prevention and Treatment Coverage and Impact Indicators from Demographic Health Surveys (DHS) and Malaria Indicator Surveys (MIS) from 2011-2018

Indicator	2011 DHS-MICS	2011 MIS	2014 MICS	2018 DHS KIR
% Households with at least one ITN	36%	36%	71%	73%
% Households with at least one ITN for every two people	9%	n/a	37%	41%
% Population with access to an ITN	n/a	n/a	56%	59%
% Population that slept under an ITN the previous night	15%	15%	48%	54%
% Children under five who slept under an ITN the previous night	21%	21%	55%	60%

Indicator	2011 DHS-MICS	2011 MIS	2014 MICS	2018 DHS KIR
% Pregnant women who slept under an ITN the previous night	20%	20%	52%	61%
% Children under five years old with fever in the last two weeks for whom advice or treatment was sought ²	n/a	67%	33%	61%
% Children under five with fever in the last two weeks who had a finger or heel stick	n/a	n/a	16%	21%
% Children receiving an ACT among children under five years old with fever in the last two weeks who received any antimalarial drugs	3%	13%	15%	21%
% Women who received two or more doses of IPTp during their last pregnancy in the last two years ¹	27%	36%	53%	54%
% Women who received three or more doses of IPTp during their last pregnancy in the last two years	n/a	n/a	26%	32%
Under-five mortality rate per 1,000 live births	122	n/a	103	79
% Children under five with parasitemia (by microscopy, if done)	n/a	n/a	n/a	n/a
% Children under five with parasitemia (by RDT, if done)	30%	33%	n/a	24%
% Children under five years old with severe anemia (Hb<8gm/dl)	6%	n/a	n/a	7%

¹ this indicator has been recalculated according to the newest definition, at least two doses of SP/Fansidar from any source wherever possible

² this indicator has been recalculated according to the newest definition, care or treatment from any source excluding traditional practitioners wherever possible

Figure 7. Evolution of Key Malaria Indicators Reported through Routine Surveillance Systems

	2014	2015	2016	2017	2018
# Suspect malaria cases ¹	1,995,038	2,321,933	2,359,577	3,108,722	3,410,077
# Patients receiving diagnostic test for malaria ^{2,*}	2,315,390	2,827,255	3,114,177	3,575,070	3,652,991
Total # malaria cases³ (confirmed and presumed)	1,995,038	2,321,933	2,359,577	3,068,811	2,551,923
# Confirmed cases ⁴	1,369,512	1,431,000	1,479,345	2,093,009	2,139,482
# Presumed cases ⁵	625,526	890,933	880,232	975,802	412,441
% Malaria cases confirmed ⁶	68.6	61.6	62.7	68.2	83.8

	2014	2015	2016	2017	2018
Test positivity rate (TPR) ^{7,**}	59.2%	50.6%	62.7%	58.6%	59.8%
Total # <5 malaria cases⁸	719,559	825,359	831,093	1,060,589	792,507
% Cases under 5 ⁹	36.1%	35.6%	35.2%	34.6%	31%
Total # severe cases^{10,***}	531,198	543,498	540,517	1,623,396	1,070,005
Total # malaria deaths¹¹	4,398	3,440	2,639	3,195	3,263
# Facilities reporting ¹²	3,492	3,597	4,106	4,418	5846
Data form completeness (%) ¹³	79%	78%	81%	87%	82.2%

Data sources and comments:

*In Cameroon some suspected cases receive both tests (microscopy and RDT) resulting in # diagnostic tests being higher than suspected cases

**Lower than actual situation because of an artificial increase in the denominator (see note above)

***All malaria cases during pregnancy were considered severe cases until 2019, the new policy will be implemented in 2020

Definitions:

1 Number of patients presenting with signs or symptoms considered to be possibly due to malaria

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 (#4 above) / Total # cases (#3 above)

7 Test Positivity Rate (TPR): Number of confirmed cases (#4 above)/Number of patients receiving a diagnostic test for malaria (RDT or microscopy) (#2 above)

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

9 Total # <5 cases (#8 above) / Total # of cases (# 3 above)

10 Total # of hospitalized malaria cases plus all presumed and confirmed cases of malaria during pregnancy

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 (i.e., number of facilities expected to report multiplied by the number of months considered).

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

Cameroon's new National Strategic Plan (NSP) for malaria control covers the period 2019-2023 and is the fifth iteration of a national strategy. Document finalization was delayed following consultations and reviews related to the High Burden to High Impact initiative (HBHI) of the WHO, but will be made available in November 2019. The NSP articulates a vision of a Cameroon free from malaria. The stated mission is to ensure universal access to effective and affordable malaria prevention and treatment interventions for all Cameroonians, especially the most vulnerable and marginalized. The strategic focus is to accelerate intervention scale-up to reach universal coverage of key interventions and achieve a lasting impact on malaria morbidity and mortality. In addition to prioritizing the most vulnerable, interventions will be targeted to zones with high population density, high endemicity, and intense seasonal transmission.

The goal of the 2019-2023 NSP is to contribute to improving the health of Cameroonians by reducing the health and socioeconomic burden of malaria. The objectives are to reduce malaria morbidity and mortality by 60 percent from 2015 levels by 2023; to reduce malaria incidence from 2015 levels by 60 percent by 2023; and to reduce malaria transmission to a very low level (pre-elimination threshold) in some health districts in the Sahelian zone of the country (i.e., Far North region) by 2023.

The NSP outlines specific interventions and activities that fall under six strategic areas. These activities are summarized below along with their associated objectives:

I. Prevention – includes insecticide-treated net (ITN) distribution via mass campaigns and routine channels, promotion of ITN use, intermittent preventive treatment for pregnant women (IPTp), seasonal malaria chemoprevention (SMC) for children aged 3-59 months in the North and Far North regions, and indoor residual spraying (IRS) in 15 districts. The routine ITN distribution strategy will expand beyond distribution to pregnant women through antenatal care (ANC) to include the Expanded Program for Immunization (EPI) platform for children and introduction of Piperonyl butoxide (PBO) ITNs in regions with evidence of vector metabolic resistance to insecticides and low efficacy of currently used ITNs. Larval source management in urban settings such as Yaoundé and Douala is also part of the prevention strategy, with pilot activities to be undertaken to obtain preliminary data on effectiveness.

II. Case management – includes universal diagnostic confirmation of suspect cases, treatment of confirmed cases at health facility and community level according to national guidelines, switch to artemether-lumefantrine (AL) rather than artesunate-amodiaquine (ASAQ) as the first-line ACT in the North and Far North regions due to SMC implementation, pretreatment of severe malaria and referral with rectal artesunate at the community level, scale up of integrated community case management, pharmacovigilance, and supply chain strengthening. A quality assurance/quality control (QA/QC) system will ensure strengthened diagnostics throughout the country.

III. Communication – includes advocacy; behavior change interventions; social mobilization; social marketing and private partnership; and training of health agents, community actors, and journalists.

IV. Training and research – includes training and creation of a critical mass of researchers (epidemiologists, entomologists) and the organization of working sessions on universal health coverage at all levels of the health pyramid.

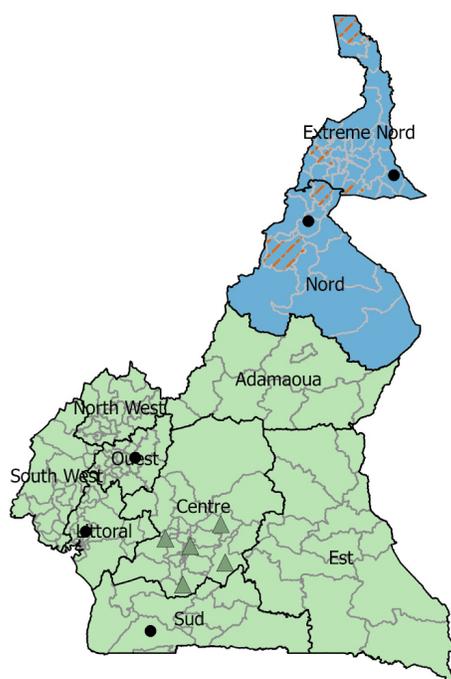
V. Surveillance, monitoring, evaluation and epidemic response – includes monitoring and evaluation (M&E) system strengthening, implementation of M&E, epidemiologic surveillance system strengthening, and epidemic response. The NMCP is elaborating a sentinel surveillance model that will focus on ensuring high-quality data from a

purposefully selected group of health facilities throughout the country. These sites will also serve as research platforms for therapeutic efficacy studies and other operational research questions prioritized by the NMCP.

VI. Program management – includes mobilization of funds, financial management, governance, planning, and partnership coordination.

PMI works closely with the NMCP and other partners to coordinate support for activities to best support the National Strategy for malaria control. PMI and the Global Fund provide the majority of malaria funding to Cameroon. Other development assistance for malaria comes from WHO, UNICEF and United Nations Population Fund (UNFPA). Aside from some central-level activities, the bulk of PMI funding supports NMCP activities in the North and Far North regions of the country, while the Global Fund focus is in the other eight regions.

Figure 8. PMI Intervention Support Map



FY 2020 PMI-Supported Activities

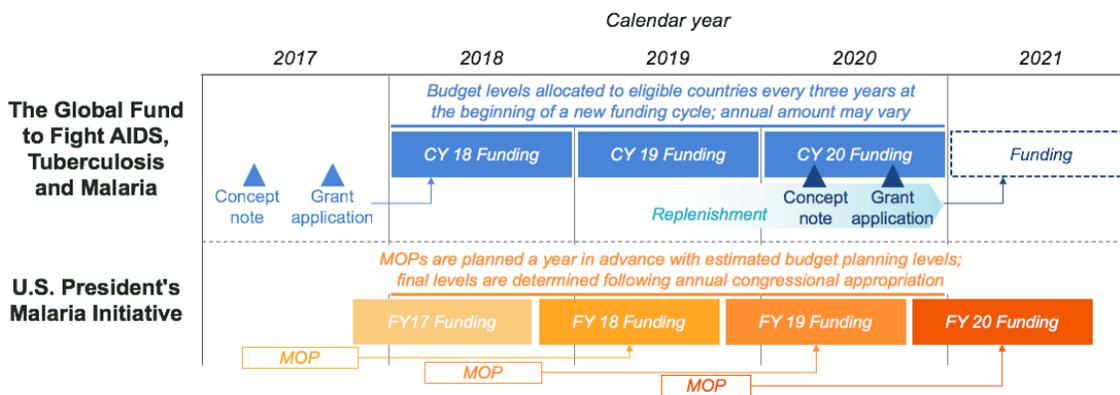
- Focused support: Procure malaria-related commodities; strengthen malaria-related service delivery, supply chain, and routine surveillance; and implement SBC activities.
- Support community health workers
- Entomological monitoring
- Therapeutic efficacy monitoring
- Regional boundary (health district-level boundaries are outlined in gray)

IV. PARTNER FUNDING LANDSCAPE

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 Bill and Melinda Gates Foundation (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 the figure illustrates, any given FY MOP funds activities that take place during the next FY. For example, an FY18 MOP funds implementation during FY19. 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 fiscal year, 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 9. 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 be a reflection of timing and/or based on changes in commodity consumption levels at country level, changes in commodity costs, or other donor orders.

The tables below summarize contributions by external partners and host country government in calendar years 2018-20, with the goal of highlighting total country investments. For Cameroon, data is available for PMI (FY 18) and Global Fund (CY 2018-20). 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. Thus, it may not yet be possible in the FY 2020 MOP cycle to attribute funding from the host country government. There may be similar challenges for other partners.

Figure 10. 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/ CY18	PMI	\$2.6M	\$3.5M	\$7.4M	\$2.8M	\$1.5M	\$2.3M	\$20.0M
	Global Fund	\$19.7M	\$2.1M	\$0.5M	\$0.1M	\$0.6M	\$6.4M	\$29.4M
	Host Gov ⁴	-	-	-	-	-	-	\$6.7M
	Other ⁵	-	-	-	-	-	-	-
	Total	\$22.3M	\$5.6M	\$7.9M	\$2.9M	\$2.1M	\$8.7M	\$49.4M
FY18/ CY19	PMI	\$4.9M	\$3.3M	\$8.0M	\$2.3M	\$2.3M	\$1.7M	\$22.5M
	Global Fund	\$23.1M	\$4.3M	\$0.2M	\$0.1M	\$0.6M	\$5.3M	\$33.6M
	Host Gov ⁴	-	-	-	-	-	-	\$6.4M
	Total	\$28.0M	\$7.6M	\$8.2M	\$2.5M	\$2.9M	\$6.9M	\$56.1M
FY19/ CY20	PMI	\$2.5M	\$4.4M	\$8.9M	\$2.8M	\$1.2M	\$2.8M	\$22.5M
	Global Fund	\$1.1M	\$3.8M	\$2.2M	\$1.1M	\$0.9M	\$5.2M	\$10.4M
	Host Gov ⁴	-	-	-	-	-	-	\$6.5M
	Total	\$2.7M	\$8.2M	\$9.1M	\$2.9M	\$2.1M	\$8.0M	\$32.9M

¹ Each year's figures represent the FY for PMI and CY for GFATM that most closely align. Global Fund budget data accurate as of July 1, 2019.

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 Planned government contributions. Category disaggregation is not available.

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 11. Annual budget by Level 3 category, detailed breakdown for PMI and Global Fund

Level 1 Category	Level 3 Category	FY17/CY18 ¹		FY18/CY19 ¹		FY19/CY20 ¹	
		PMI	Global Fund	PMI	Global Fund	PMI	Global Fund
Vector Control	Procure ITNs for Continuous Distribution	\$0.9M	-	-	-	\$1.0M	-
	Distribute ITNs via Continuous Distribution	\$0.6M	-	-	-	\$0.5M	-
	Procure ITNs for Mass Campaigns	\$0.3M	-	-	-	-	-
	Distribute ITNs via Mass Campaigns	-	\$19.4M	\$4.6M	\$23.0M	-	-
	Other ITN Implementation*	\$0.4M	-	-	-	\$0.4M	-
	IRS Implementation ⁴	-	-	-	-	-	-
	Procure IRS Insecticide ⁴	-	-	-	-	-	-
	Other IRS*	-	-	-	-	-	-
	Entomological Monitoring	\$0.5M	\$0.05M	\$0.3M	\$0.02M	\$0.7M	\$0.045M
	SBC for Vector Control ⁵	-	\$0.2M	-	\$0.1M	-	\$0.1M
	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	-	\$2.1M	-	\$4.3M	-	\$3.8M
	Private-sector case management	-	-	-	-	-	-
	Procure ACTs	\$0.6M	-	\$0.3M	-	\$0.6M	-
	Procure Drugs for Severe Malaria	\$0.8M	-	\$0.5M	-	\$1.7M	-

Level 1 Category	Level 3 Category	FY17/CY18 ¹		FY18/CY19 ¹		FY19/CY20 ¹	
		PMI	Global Fund	PMI	Global Fund	PMI	Global Fund
	Procure Other Diagnosis-Related Commodities	-	-	\$0.04M	-	-	-
	Procure Other Treatment-Related Commodities	-	-	-	-	-	-
	Procure RDTs	\$0.7M	-	\$0.8M	-	\$0.5M	-
	Therapeutic Efficacy	-	\$0.1M	\$0.2M	-	\$0.2M	-
	SBC for Case Management ⁵	-	-	-	-	-	-
	Other Case Management	\$1.4M	-	\$1.5M	-	\$1.5M	-
Drug-Based Prevention²	Procure SMC-Related Commodities	\$3.8M	-	\$3.2M	-	\$4.1M	-
	SMC Implementation	\$3.5M	-	\$4.6M	-	\$4.6M	-
	Prevention of Malaria in Pregnancy Implementation	-	\$0.5M	\$0.2M	\$0.2M	\$0.2M	\$0.2M
	Procure IPTp-Related Commodities	\$0.1M	-	-	-	\$0.1M	-
	IPTi**	-	-	-	-	-	-
	SBC for Drug-Based Prevention ⁵	-	-	-	-	-	-
	Other Prevention**	-	-	-	-	-	-
Supply Chain³	In-Country Supply Chain ³	\$0.5M	-	-	-	\$0.5M	-
	Supply Chain Infrastructure	-	\$0.1M	-	\$0.1M	-	\$0.1M
	Ensuring Quality	-	-	-	-	-	-
	Pharmaceutical Management Systems Strengthening	\$2.3M	-	\$2.3M	-	\$2.3M	-
	Supply Chain System Strengthening	-	-	-	-	-	-

Level 1 Category	Level 3 Category	FY17/CY18 ¹		FY18/CY19 ¹		FY19/CY20 ¹	
		PMI	Global Fund	PMI	Global Fund	PMI	Global Fund
Monitoring, Evaluation & Research	Reporting, Monitoring, and Evaluation	\$1.0M	\$0.2M	\$0.8M	\$0.2M	\$1.0M	\$0.2M
	Program and data quality, analysis and operations research	-	\$0.5M	-	\$0.4M	-	\$0.4M
	Surveys	\$0.3M	-	\$1.4M	-	-	\$0.3M
	Other Data Sources**	-	-	-	-	-	-
	Support for FETP*	\$0.2M	-	\$0.2M	-	\$0.2M	-
Other Cross-Cutting and Health Systems Strengthening	Integrated service delivery, quality improvement, and national health strategies**	-	-	-	-	-	-
	Financial management systems**	-	-	-	-	-	-
	Community responses and systems**	-	\$0.02M	-	\$0.02M	-	\$0.02M
	Support for PCV and SPAs*	\$0.04M	-	-	-	\$0.04M	-
	Cross-Cutting Human Resources for Health**	-	\$4.7M	-	\$3.6M	-	\$3.6M
	Central and Regional Program management ⁶	\$0.1M	\$0.3M	\$0.1M	\$0.2M	\$0.1M	\$0.2M
	In-Country Staffing and Administration*	\$1.4M	-	\$1.4M	-	\$1.9M	-
	Other Program Management**	-	\$1.4M	-	\$1.4M	-	\$1.3M
	SBC Unspecified ⁵	\$0.8M	-	\$0.2M	-	\$0.8M	-
Total		\$20.0M	\$29.4M	\$22.5M	\$33.6M	\$22.5M	\$10.4M

¹ Each year's figures represent the FY for PMI and CY for Global Fund that most closely align. Global Fund budget data accurate as of July 1, 2019. 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 12. Annual budget, breakdown by commodity

Year ¹	Funder	ITNs for Continuous Distribution	ITNs for Mass Distribution	IRS Insecticide ⁴	ACTs	RDTs	Severe Malaria	SMC-Related	IPTp-Related	Total
FY17/ CY18	PMI ²	\$0.9M	\$0.3M	-	\$0.6M	\$0.7M	\$0.8M	\$3.8M	\$0.1M	\$7.0M
	Global Fund ³	-	\$15.4M	-	\$0.2M	\$0.5M	\$0.8M	-	-	\$16.9M
	Total	\$0.9M	\$15.6M	-	\$0.8M	\$1.2M	\$1.6M	\$3.8M	-	\$23.9M
FY18/ CY19	PMI ²	-	-	-	\$0.3M	\$0.8M	\$0.5M	\$3.2M	-	\$4.8M
	Global Fund ³	-	\$13.5M	-	\$0.7M	\$1.2M	\$1.3M	-	\$0.1M	\$16.7M
	Total	-	\$13.5M	-	\$1.0M	\$2.0M	\$1.8M	\$3.2M	-	\$21.5M
FY19/ CY20	PMI ²	\$1.0M	-	-	\$0.6M	\$0.5M	\$1.7M	\$4.1M	\$0.1M	\$7.7M
	Global Fund ³	-	-	-	\$0.5M	\$1.1M	\$1.1M	-	\$0.1M	\$2.7M
	Total	\$1.0M	-	-	\$1.1M	\$1.6M	\$2.7M	\$4.1M	-	\$10.4M

¹ Each year's figures represent the FY for PMI and CY for Global Fund that most closely align. Global Fund budget data accurate as of July 1, 2019. 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 Global Fund commodity costs in table above only include ex-works commodity value in a given year. Additional costs, including quality control, freight, insurance, and customs totaled \$8.6M over the CY2018-2020 period;

⁴ 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.

V. 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 Cameroon 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
<p>By 2023,</p> <ul style="list-style-type: none"> • At least 80 percent of the general population sleeps under an ITN. • At least 80 percent of the at-risk population in the targeted health districts is protected by IRS. • At least 80 percent of the at-risk population in the targeted health districts is protected by larval source management. • Reduce vector resistance to insecticides by at least 60 percent in sentinel sites.
NMCP approach
<ul style="list-style-type: none"> • Achieve and sustain universal coverage of ITNs in the country through mass distribution campaigns carried out every three years; continuous distribution channels in antenatal care (ANC) and Expanded Program on Immunization (EPI); • Use indoor residual spraying (IRS) in targeted areas to reduce the burden of malaria and eventually eliminate malaria in Cameroon. • Use larval source management in targeted areas. • Ensure effective deployment of SBC activities at the community level in order to support the utilization of malaria control interventions, including the use of ITNs. • Conduct entomological surveillance to monitor vector densities and resistance in order to inform decision-making and track progress on key vector control indicators.
PMI objective, in support of NMCP
<ul style="list-style-type: none"> • PMI supports all NMCP strategies for vector control except larval source management. • PMI support for vector control activities is focused in the North and Far North regions, with some central level support for planning and supervision activities.
PMI-supported recent progress (past ~12-18 months)
<ul style="list-style-type: none"> • Support for vector surveillance and insecticide resistance monitoring, including vector-insecticide susceptibility, resistance intensity, vector density, vector population taxonomic status (microscopic, molecular), and vector biting behavior in five entomological sites every month. • Continuation of training programs for 65 Cameroonian entomologists. <ul style="list-style-type: none"> ○ Five individuals to train at <i>Centre de Recherche Entomologique de Cotonou</i> in Benin.

- 60 individuals to train in Cameroun with equal representation from the Far North, North, and South regions.
- Technical assistance and training to the NMCP and implementing partners to ensure routine ITN distribution is strategically planned and executed.
- Support the implementation of the mass ITN campaign in 14 of the 30 districts in the Far North region (planning, enumeration, distribution, supervision, communication, etc.).
- Technical assistance and training to the NMCP and implementing partners to ensure routine ITN distribution is strategically planned and executed.

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

- Support for vector surveillance and insecticide resistance monitoring, including vector-insecticide susceptibility, resistance intensity, vector density, vector population taxonomic status (microscopic, molecular), and vector biting behavior in five entomological sites.
- Regional and district training of approximately 60 staff on vector surveillance to assure routine functioning of surveillance sites.
- Training of up to five Cameroonian entomologists, including from the NMCP, at the *Centre de Recherche Entomologique de Cotonou*.
- Support the update of the national insecticide resistance management plan.
- Support the implementation of the mass ITN campaign in the remaining 16 districts in the Far North region (planning, enumeration, distribution, supervision, communication, etc.).
- Technical assistance and training to the NMCP and implementing partners to ensure routine ITN distribution is strategically planned and executed.

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?

Funding for entomological monitoring activities has been significantly increased. Insufficient funding was allocated in FY 2018 for the current scope of ongoing activities. A more realistic budget has been planned for FY 2020. This does not include expansion of 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

Figure A1. Activity Sites by Region

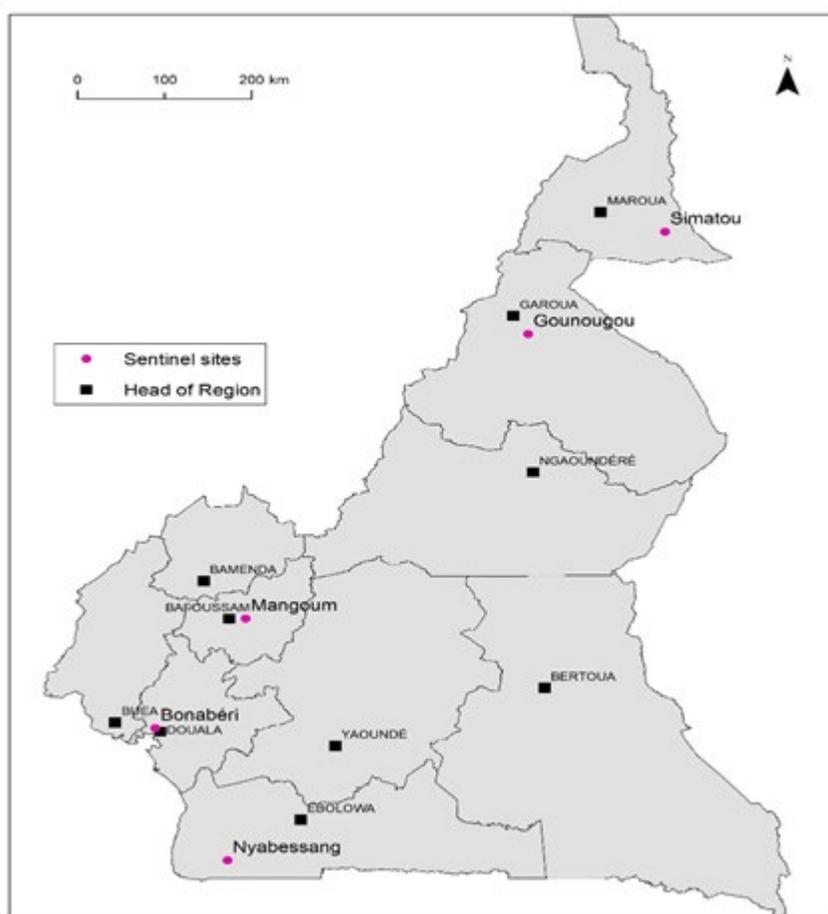


Figure A2. Supported Activities by Region

Region	Total Sentinel Sites	Activities	Supported by
North	Gounougou	Human landing catches (HLCs), pyrethrum spray catches (PSCs), and CDC light traps (CDC LTs), insecticide resistance monitoring	PMI
Far North	Simatou	HLC, PSC, CDC LT, insecticide resistance monitoring	PMI
West	Mangoum	HLC, PSC, CDC LT, insecticide resistance monitoring	PMI

Region	Total Sentinel Sites	Activities	Supported by
South	Nyabessang	HLC, PSC, CDC LT, insecticide resistance monitoring	PMI
Littoral	Bonabéri	HLC, PSC, CDC LT	PMI

Figure A3. Entomological Monitoring

Site	Major Vector	Minor Vector	Peak Abundance	Preferred Biting Location	Preferred Resting Location	Preferred Host	Peak Sporozoite Rate	Monthly EIR Oct 2018 - Apr 2019
Bonabéri	<i>An. gambiae</i> s.l		February	Outdoor	NA	NA	NA	15.39
Gounougou	<i>An. gambiae</i> s.l		February	Indoor	NA	Animal and then human	NA	10.66
		<i>An. funestus</i> s.l	June-December	Indoor	NA	Human	NA	2.29
		<i>An. rufipes</i>	March	Indoor	NA	Animal	NA	NA
Mangoum	<i>An. gambiae</i> s.l		April	Indoor	NA	Human	NA	18.40
Nyabessang	<i>An. gambiae</i> s.l		December	Indoor and outdoor	NA	Human	NA	10.92
		<i>An. moucheti</i>	February	Indoor and outdoor	NA	Human	NA	0.82
Simatou	<i>An. gambiae</i> s.l		June	Indoor and outdoor	NA	Human	NA	5.42
		<i>An. demeilloni</i>	June	Indoor	NA	NA	NA	6.22
		<i>An. rufipes</i>	NA	Indoor	NA	Animal	NA	NA
		<i>An. funestus</i> s.l	NA	Indoor and outdoor	NA	Human	NA	NA

Site	Major Vector	Minor Vector	Peak Abundance	Preferred Biting Location	Preferred Resting Location	Preferred Host	Peak Sporozoite Rate	Monthly EIR Oct 2018 - Apr 2019
		<i>An. pharoensis</i>	April	Indoor and outdoor	NA	Human	NA	6.14
		<i>An. hancocki</i>	NA	NA	NA	Animal	NA	NA
		<i>An. ziemanni</i>	October	Outdoor	NA	NA	NA	0.14

Conclusion

Four sites were surveyed monthly (Gounougou, Simatou, Nyabessang, and Mangoum). The fifth proposed site, Tiko, could not be assessed due to security concerns; it was changed to Bonabéri for bionomic monitoring. Bionomical surveys showed a large diversity of *Anopheles* species across sites. *An. gambiae* s.l., *An. ziemanni*, and *An. funestus* were the most abundant. *An. gambiae* s.l. were collected in all the sites at variable proportions depending on the collection method. Nine *Anopheles* species were found to be involved in malaria transmission at the four sites: *An. gambiae* s.l., *An. funestus*, *An. nili*, *An. moucheti*, *An. demeillonni*, *An. pharoensis*, *An. ziemanni*, *An. multincinctus*, and *An. marshalli*. The infection rates were respectively: Gounougou (2.1%), Simatou (1.1%), Mangoum (2.6%), Nyabessang (1.8 %), and Bonabéri (2.5%). Changes in biting time were observed for *An. gambiae* s.l., *An. funestus* s.l., and *An. moucheti*. Biting by all three species occurred until 8 a.m. in Mangoum, Nyabessang, Simatou, and Bonabéri. This data is based on the entomological progress report that was submitted late summer of 2019, however a final annual report for 2018-2019 data will be made publicly available in early 2020 with the most up to date data.

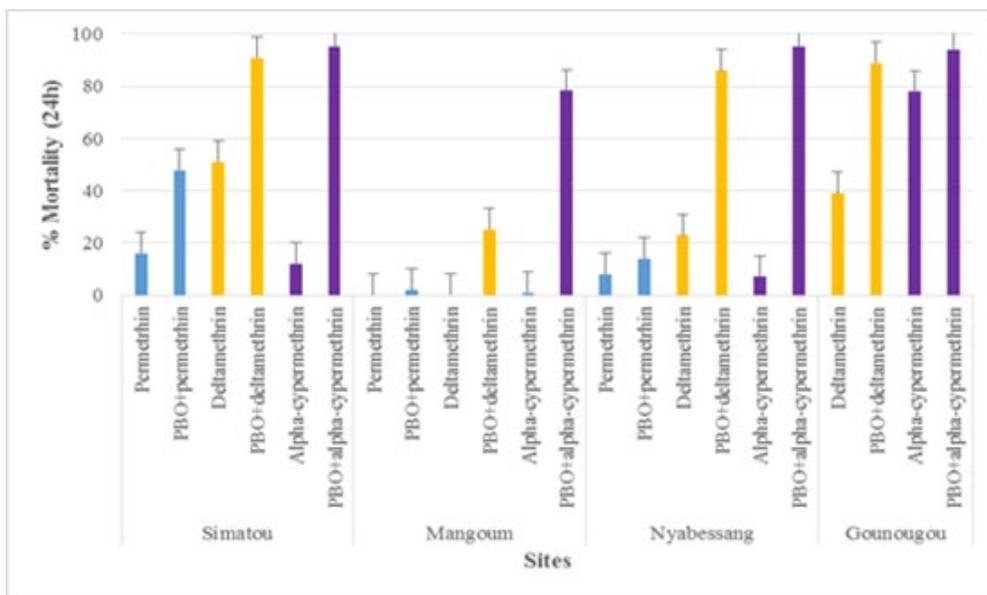
The rich diversity of the mosquito species composition throughout the five sentinel sites highlight the importance of continued monitoring at these sites, and ideally at additional sites if possible. As new vector control tools are introduced into Cameroon, it is essential that the effects on the species community composition and on mosquito behavior continue to be monitored.

Key Question 2

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

Supporting Data

Figure A4. Mortality and Effect of Pre-Exposure to PBO before the Different Pyrethroids in All Sites



In figures A5 – A9, the horizontal dashed red line in the following figures represents the 90 percent threshold for resistance and the green line represents the 98 percent threshold for susceptibility.

Figure A5. Susceptibility Test Results of *An. gambiae* s.l. Collected in Gounougou

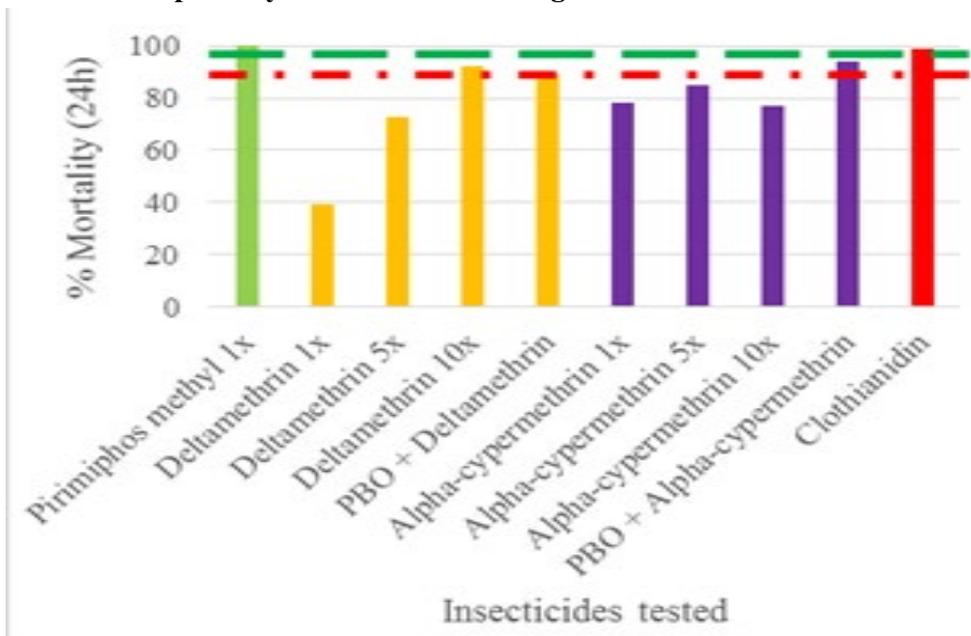


Figure A6. Susceptibility Test Results of *An. gambiae* s.l. Collected in Simatou

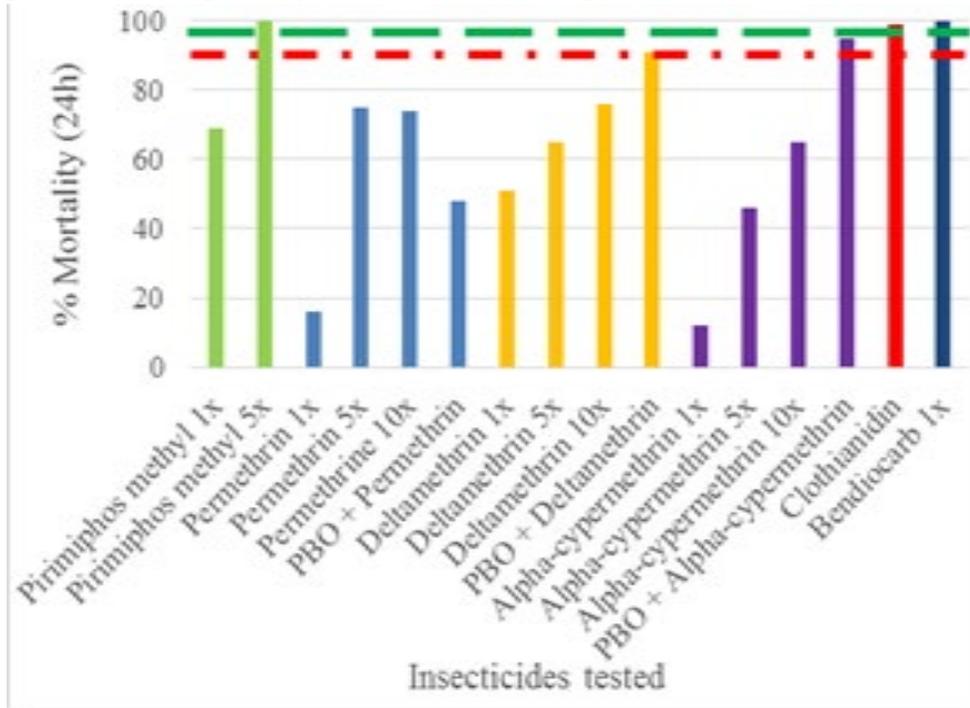


Figure A7. Susceptibility Test Results of *An. gambiae* s.l. Collected in Mangoum

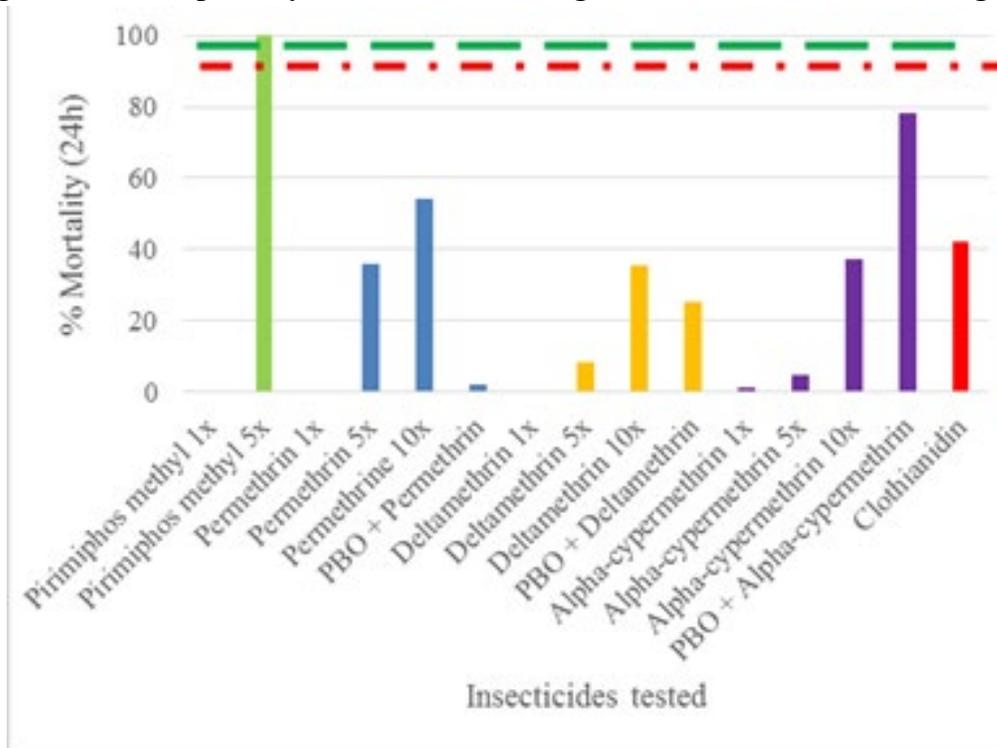


Figure A8. Susceptibility Test Results of *An. gambiae* s.l. Collected in Nyabessang

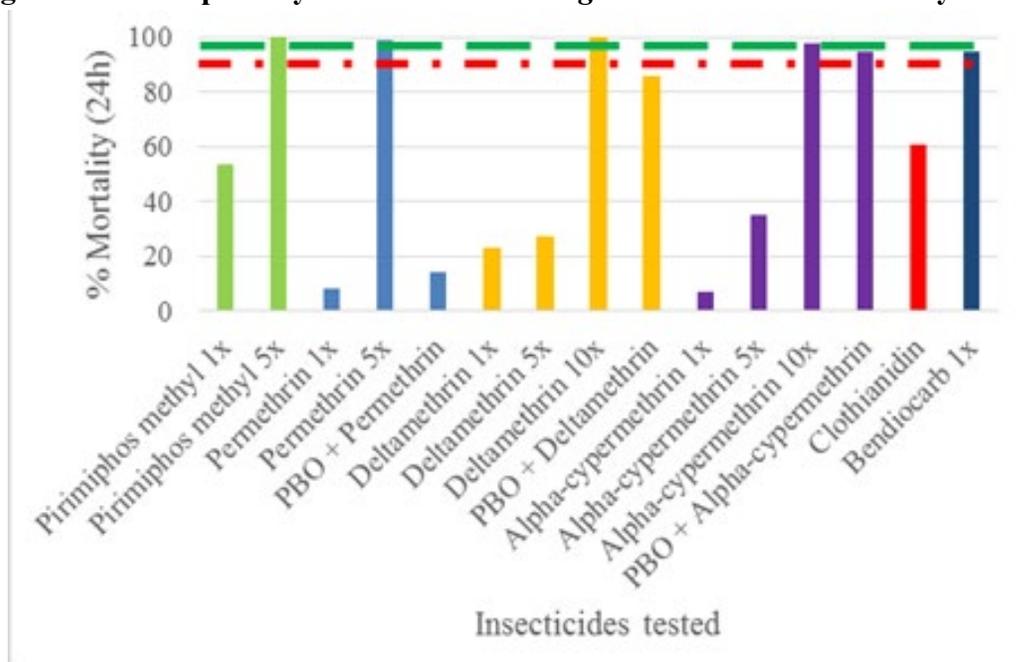
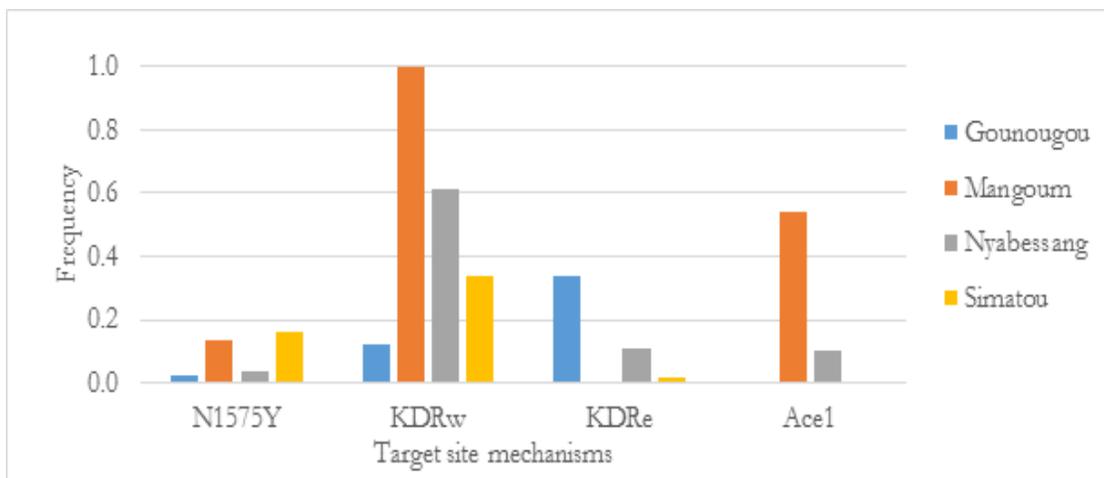


Figure A9. Frequency of target site mechanisms involved in the resistance of *An. gambiae* s.l.



Conclusion

Resistance was observed to the diagnostic dose of all pyrethroids at all sites. Resistance to pirimiphos-methyl was also observed in three of sites and susceptibility was recorded in Gounougou. Bendiocarb showed susceptibility in Simatou, and resistance is suspected in Nyabessang (95 percent mortality). The remaining two sites could not be tested for bendiocarb due to a limited number of mosquitoes. High intensity pyrethroid resistance (less than 98 percent mortality at 10x the diagnostic dose) to deltamethrin, permethrin, and alpha-cypermethrin was

observed in Gounougou, Simatou, and Mangoum. Moderate resistance (below 98 percent mortality at 5x or greater than 98 percent at 10x the diagnostic dose) was observed at Nyabessang. Resistance to pirimiphos-methyl was low in Simatou, Nyabessang, and Mangoum.

Pre-exposure of mosquitoes to PBO before deltamethrin, permethrin, or alpha-cypermethrin yielded partial increase in mortality, but did not lead to full susceptibility in all sites surveyed. Mortality varied from 2.4 percent to 48.4 percent for PBO+permethrin, 25.2 percent to 91.4 percent for PBO+deltamethrin, and 78.5 percent to 95.3 percent for PBO+alpha-cypermethrin. Partial restoration of susceptibility was more significant in Simatou, Gounougou, and Nyabessang; clothianidin susceptibility was seen in Gounougou and Simatou with 99 percent mortality 24 hours post-exposure.

The high resistance observed for all pyrethroids indicates that standard pyrethroid ITNs are not ideal as a vector control tool in Cameroon. PBO and next generation nets should be selected for all future distributions (mass and continuous distribution). More data will need to be collected to determine where PBO vs next generation nets should go in future nationwide net distributions.

Key Question 3

What are the in-country considerations that impact your funding allocation in this category?

Supporting Data

PMI originally planned to support entomological monitoring in 10 sites throughout the country. The available funding did not permit this level of support and the number of sites has been scaled back to five. Monthly collections will be necessary to ensure that the full transmission period is captured with all entomological indicators. The location of the sites selected for monitoring was partially influenced by security concerns, as the SouthWest and NorthWest regions are currently not safe for field teams. One of the five initially identified field sites had to be changed for this reason. In addition, the cost of activities in the North and Far North regions may be higher than elsewhere due to insecurity; however, PMI programming focuses in these regions, so the elevated costs are necessary in order to have the required data.

GFATM has expressed interest in supporting the NMCP to expand entomological monitoring to additional sites. This will help generate evidence needed for the development of an insecticide resistance monitoring plan.

Initial results from the entomological monitoring activities suggest that conventional pyrethroid nets are not the best option in the North and Far North regions of Cameroon. The NMCP has asked PMI to procure PBO or next generation nets, where appropriate, for routine distribution.

Conclusion

Sustained funding will be necessary to continue to support entomological monitoring for at least five sentinel sites, and monthly collections will be crucial to provide evidence to identify the regions where PBO vs next generation nets should go.

PBO and next generation nets are currently more expensive than standard pyrethroid nets, which will have a significant impact on the required level of funding needed to cover the procurement of these nets.

1.B. INSECTICIDE-TREATED NETS (ITNs)

PMI Goal

Achieve high ITN coverage and usage 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). Determine the geographic distributions, 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 ITN activities? If so, why and what data did you use to arrive at that conclusion?

Beginning with FY 2019 funding, PMI will be procuring PBOs for routine distribution in the North and Far North. This decision was made using data on insecticide resistance profiles from entomological monitoring sites. Both FY 2019 and FY 2020 funding will be used to procure nets for the next mass campaign, currently planned for 2022. This is due to the delays in receipt of funding and the long lead times for net procurement. The quantity of nets PMI will procure will not meet the needs of the North and Far North. However, the NMCP has identified national ITN campaigns as a priority.

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

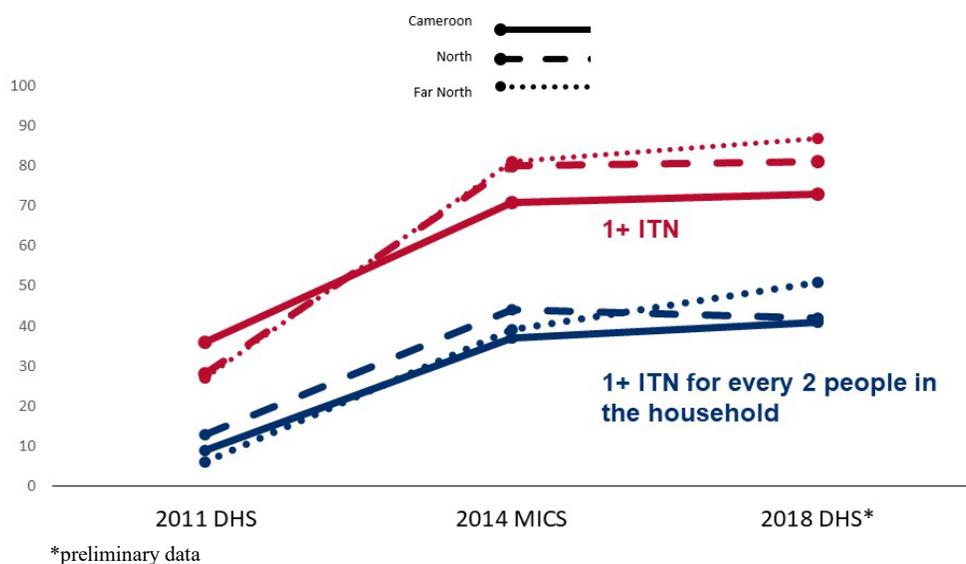
Key Question 1

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

Supporting Data

Figure A10. Trends in ITN Ownership

Percent of households



Conclusion

ITN ownership has been improving over time, with the percentage of households owning ITNs slightly higher in the PMI focus regions compared to the national average. Fewer than half of all households have enough ITNs to cover all household members. It should be noted that a national ITN mass distribution campaign was being implemented in phases at the time of MOP writing. Future estimates of ITN ownership via household surveys should reflect additional improvements in coverage.

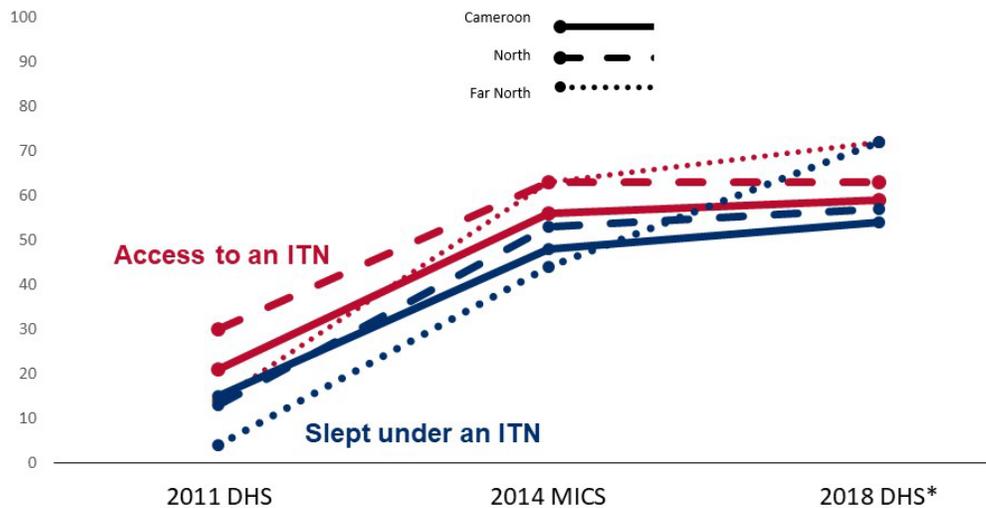
Key Question 2

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?

Supporting Data

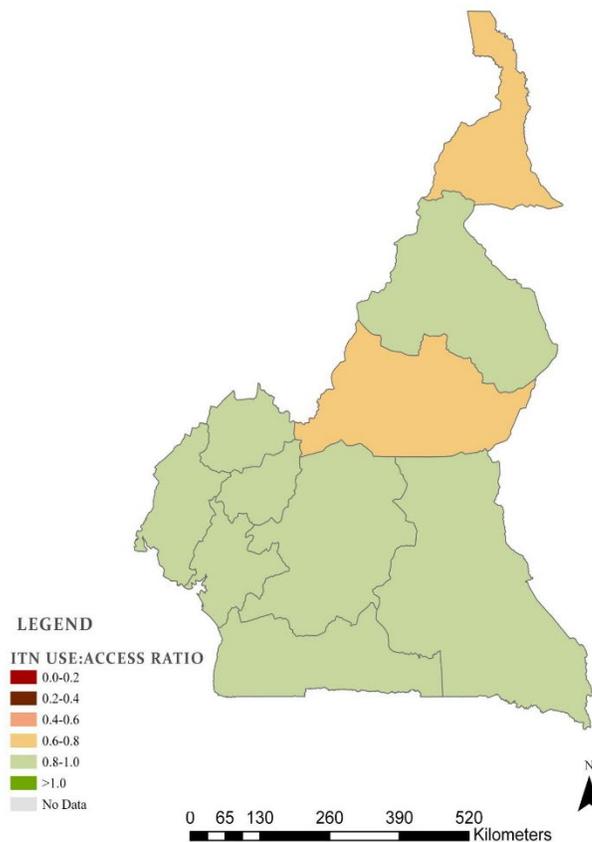
Figure A11. Trends in ITN Access and Use

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



*preliminary data

Figure A12. Cameroon ITN Use: Access Ratio from MICS 2014



Conclusion

Although there is room for improvement in the proportion of the population with access to an ITN, the trend from 2011 to 2018 shows progress. ITN access in the Far North has surpassed the national average. Trends in population use of ITNs mirror those of access, suggesting that where ITNs are available they are being used.

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

Historical household data reflected in the ITN use: access report (using MICS 2014 data) show that the Far North and Adamawa regions have the lowest net use: access ratios compared to other regions in the country. An updated use: access ratio map using 2018 DHS should be available soon. The currently available data from the 2018 DHS Key Indicator Report show that those the North and Far North regions have the highest population access out of all ten regions, and

preliminary data do not indicate concerns about net use given access in either region. While the gap between access and use may not be an overriding concern based on household data, it is still important to ensure consistent net use in the context of highly seasonal malaria transmission and an intense hot season. A literature review on malaria behaviors in the North and Far North regions identified discomfort/heat and low perceived mosquito density as barriers to net use (data cited from a KAP study completed in 2012 by Malaria No More). Outdoor sleeping is another potential factor to consider.

Figure A13. Barriers and Facilitators to ITN Use

Facilitator	Type of Factor	Data Source	Evidence
Access	Environmental	2018 DHS	Cameroon data are consistent with other published analyses showing that when people have access to nets, they tend to use them. Population access in the North and Far North are the highest out of all ten regions.
Barrier	Type of Factor	Data Source	Evidence
Seasonality	Environmental/Internal	2012 Cameroon KAP survey; also supported in other research in SSA	The perception of low mosquito density is documented as an important barrier to net use. This perception either links to low perceived risk of malaria (assuming people link presence of mosquitoes to risk of malaria) or low perceived need for interventions to prevent nuisance mosquitoes from disrupting sleep. [It's not clear which is the main driver.]
Discomfort	Internal	2012 Cameroon KAP survey; also supported in other research in SSA	Discomfort due to heat is cited as the second most-cited reason for non-use of nets after lack of access. This is particularly pronounced in the Far North. This may also be linked to the seasonality factor cited above since there is a distinct hot season that affects both regions. This factor may also be tied to outdoor sleeping habits which can pose logistical issues to net use.

Conclusion

Given adequate access to nets, survey data show that there do not seem to be behavioral gaps in net use. Seasonal malaria transmission is still an important factor to consider with respect to encouraging consistent net use in the PMI-supported regions. With the recent/ongoing mass distribution campaign, we can expect access to increase further, but the timing of the distribution puts new nets in households after the high transmission season when there is the risk of reduced net use due to lower perceived mosquito density. Currently, ITNs are the sole vector control activity in the PMI focus regions.

The Malaria Behavior Survey is a standardized cross-sectional population-based survey designed to identify the sociodemographic and ideational factors associated with key malaria behaviors. It

was fielded in North and Far North regions of Cameroon in September 2019. It collects a substantial amount of data on net access, use, and determinants of use within the household. These data will be available in the last quarter of 2019 and will allow for refinement of the SBC strategy for net use. In addition to net use, net care is another key behavior that needs to be considered to increase the longevity of these recently distributed nets.

Key Question 4

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

Supporting Data

Figure A14. 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

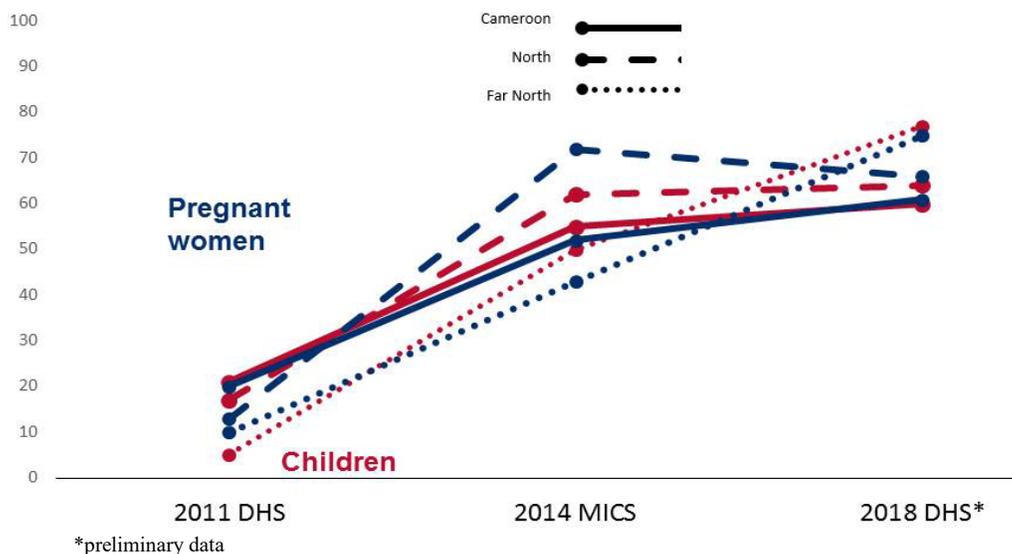
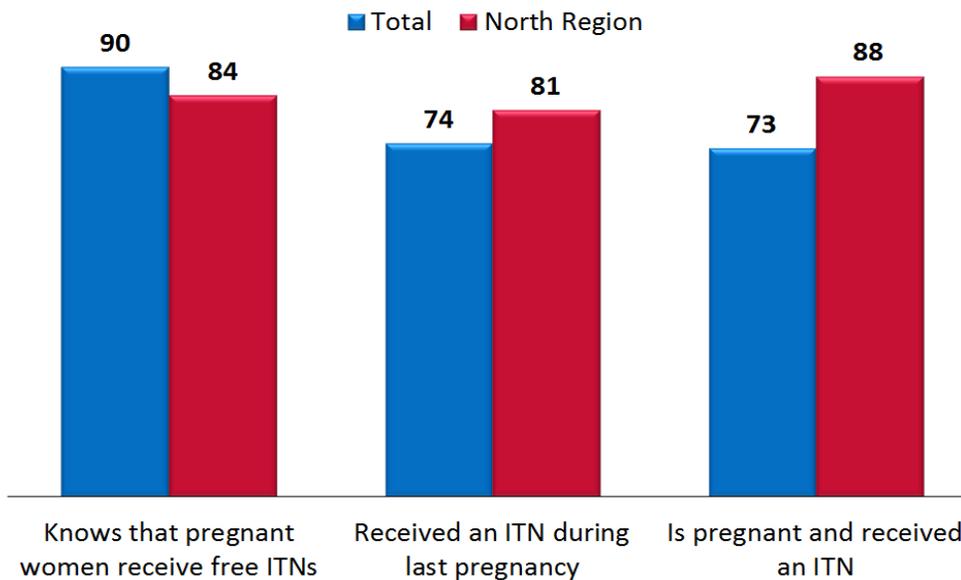


Figure A15. Malaria Prevention through ITN Use
Percent of respondents, NMCP gratuity study



*NMCP Gratuity Study: Data collection July-August 2018

Conclusion

Substantial increases in ITN use by children under five and pregnant women occurred between 2011 and 2018 in Cameroon. When net use by children under five and pregnant women is considered in households with at least one net, these use figures increase to 75 percent and 80 percent in the North, and 85 percent and 92 percent in the Far North. The ITN use: access report also indicates that children under 5 and women of reproductive age are prioritized for net use when there are insufficient nets in the household. With the recently-available 2018 DHS data, it will be important to understand net use patterns for age groups that tend to be neglected when there are insufficient nets in the household (school-aged children, especially males). Increasing access through routine channels will help to ensure adequate numbers of nets in households for all target groups. Nationally, and in the North region, the increases in net use slowed between 2014 and 2018; however, net use in the Far North continued to climb, suggesting prioritization of net use by pregnant women and children under five in the Far North. PMI will continue to focus on routine net distribution to targeted populations and SBC activities focused on pregnant women in the region to encourage pregnant women to obtain a net at first ANC visit and consistent use of that net during pregnancy and beyond. Further analyses of the 2018 DHS data will help inform whether additional focus on other vulnerable groups such as school-aged children is necessary.

Key Question 5

What channels are used to distribute ITNs?

Supporting Data

Figure A16. ITN Distribution Channels

	2015	2016	2017	2018	2019	2020	2021
EPI							
ANC		931,106	953,170	975,561	223,397	247,522*	267,561*
Schools							
Community							
Mass Campaign		12,616,607			Phase I 1,314,433 Phase II 1,350,000*		

* Planned numbers

Conclusion

Although the National Strategic Plan includes EPI distribution of ITNs, this is not yet operational. The NMCP plans to begin ITN distribution to children during EPI, SMC or MCH campaigns in the future. PMI has not planned support for this with FY 2019 or FY 2020 funding. PMI provides support to the routine distribution of ITNs at ANC, and has been supporting an ongoing mass distribution campaign. Unfortunately, delays have led to the current campaign being implemented in multiple phases. Planning for procurement of ITNs for the next mass campaign will begin with FY 2020 funding due to long lead times for ITNs and the timing of the USG funding cycle.

Key Question 6

What is the estimated need for ITNs over the next three calendar years? What volume of ITNs are available from partners and the public sector for the next three calendar years?

Supporting Data

Figure A17. Gap Analysis Table for ITNs

Calendar Year	2019	2020	2021
Total Targeted Population (projected # pregnant women in the 10 Cameroonian Regions) ¹	933,071	938,556	944,093
Total PMI Targeted Population (projected # pregnant women in the North and Far North)	356,087	358,676	360,788
Continuous Distribution Needs			
Channel #1: ANC (# pregnant women projected to be seen in ANC1 and receive an ITN in North and Far North) ²	220,774	240,313	259,768

Security Stock for routine ANC distribution	3%	3%	3%
<i>Estimated Total Need for ANC Continuous Channels</i>	227,397	247,522	267,561
Mass Campaign Distribution Needs			
<i>Estimated Total Need for Campaigns (Far North - PMI targeted region for 2019 mass campaign support)</i>	0	0	0
Total ITN Need: Routine and Campaign	227,397	247,522	267,561
Partner Contributions			
ITNs carried over from previous year ³	0	1,500	4,633
ITNs from MOH	0	0	0
ITNs from Global Fund	0	0	0
ITNs from other donors	0	0	0
ITNs planned with PMI funding ⁴	255,749	250,656	262,927
Total ITNs Available	255,749	252,156	267,561
Total ITN Surplus (Gap)	28,352	4,633	0

¹ Data source: "PROJECTIONS DEMOGRAPHIQUES ET ESTIMATIONS DES CIBLES DES PROGRAMMES", National Institute of Statistics, 2016.

² Target for percentage of pregnant woman attending ANC1 per year in North and Far North: 62% (2019) and 67% (2020) and 72% (2021), based on current quantification exercise taking into consideration the historic program data per region. The assumption is that 100% pregnant women attending ANC1 will receive an ITN. For 2020 (FY 2019 funds), requesting to introduce PBO ITNs (based on supporting data)

³ Carry over from 2019 to 2020: the 1500 ITNs are the actual left over quantity after the routine distribution. The surplus of 28,352 could be due to that the distribution was based on estimated number of pregnant women and rounded up by number bales, instead of number of nets.

⁴ In FY18, no ITNs were received, however PMI procured 255,749 ITNs for North and Far North, which arrived in November 2018, thus they contributed to FY19.

Conclusion

We used entomological monitoring data to determine the need for PBO nets for routine distribution. Next generation nets might be preferable in some locations, but we are not yet able to procure these nets at an affordable price. As planning for the next mass campaign will need to begin in 2021, discussions of net type, availability and costs are essential.

Key Question 7

What is the current status of durability monitoring?

Supporting Data

N/A

Conclusion

The ongoing mass campaign is distributing conventional pyrethroid nets in all but a few districts in the East region where PBO nets are being distributed. As entomological monitoring activities have shown significant pyrethroid resistance and restoration of susceptibility with PBO in most sites, future PMI procurements will be for PBO nets. Durability monitoring of the current campaign nets was determined not to be a good use of resources as these nets will not be procured in the future.

Key Question 8

What are the in-country that impact your funding allocation in this category?

Supporting Data

The insecticide resistance profile in Cameroon suggests that conventional pyrethroid nets are not the best option. However, PBO and Next Generation nets are more costly.

Conclusion

Securing sufficient funding for the next mass campaign may prove to be challenging given the elevated costs of the PBO/Next Generation nets. PMI will continue to work with the NMCP and Global Fund to strategize for the next mass campaign as they develop their concept note for the next round of funding . We will also consider whether other donors may also be able to contribute to procuring nets.

1.C. INDOOR RESIDUAL SPRAYING (IRS)

Key Goal

Ensure high spray coverage, with an appropriate insecticide, in targeted endemic PMI-supported areas

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

NMCP and PMI have identified the North and Far North regions as promising targets for IRS. Seasonal rainfall in these regions result in an abbreviated malaria transmission period that should be impacted by one round of IRS, assuming that entomologic factors such as indoor biting and insecticide susceptibility remain constant. Collection of meaningful entomological data (e.g., confirmation that vectors are fully susceptible to the IRS insecticide and that the females bite and rest indoors) is crucial to this effort and to allow prioritization of districts within the regions. PMI initiated support for entomologic and insecticide resistance monitoring in FY 2018 and will continue in FY 2019 and FY 2020 to ensure adequate epidemiological and entomological data for feasibility assessment of a potential IRS program. At this point no IRS activities are planned and these will only be considered once baseline data have been adequately analyzed and the long-term sustainability of an IRS program has been assessed.

Key Question 1

What areas are targeted for IRS and why?

Supporting Data

N/A

Conclusion

N/A

Key Question 2

In PMI-supported areas, what spray coverage rates have been achieved in the past 5 years?

Supporting Data

N/A

Conclusion

N/A

Key Question 3

What is the residual efficacy of the insecticides used for IRS in PMI-supported areas?

Supporting Data

N/A

Conclusion

N/A

Key Question 4

What is the plan for insecticide rotation? What insecticide will be used next in PMI-supported areas?

Supporting Data

N/A

Conclusion

N/A

Key Question 5

Are any PMI-supported areas considering withdrawing IRS? If so, what programs are in place to cover anticipated increases in malaria cases and promote consistent net use and care-seeking behaviors?

Supporting Data

N/A

Conclusion

N/A

Key Question 6

What are the in-country considerations that impact your funding allocation in this category?

Supporting Data

N/A

Conclusion

N/A

2. HUMAN HEALTH

2.A CASE MANAGEMENT in health facilities and communities

NMCP objective
By 2023 <ul style="list-style-type: none">At least 80 percent of suspected cases of malaria seen in health facilities and in the community are tested by RDT or microscopyOne hundred percent of confirmed cases of malaria are treated in accordance with national guidelines, in both health facilities and in the communityCommodities are permanently available in 100 percent of health facilities and in the community

NMCP approach

Cameroon's strategy for case management for 2019-2023 includes:

- An intensification of trainings/refreshers for health personnel on updated national case management guidelines;
- Sensitization of both public and private sector providers on national guidelines;
- Reinforcement of scale-up of universal diagnostic testing (RDT and microscopy);
- Assurance of supervision and commodities for community health workers;
- Extend integrated community case management (iCCM) to all health districts (including 22,000 CHWs in 109 districts not currently covered) to assure good geographic coverage of the population;
- Revitalization of the pharmacovigilance system;
- Reinforce supportive supervision;
- Implement quality control of commodities: The 2019-2023 National Strategic Plan states that a strategy must be developed by the *National Laboratory for the Control of Medicines* (LANACOME).

PMI objective, in support of NMCP

PMI supports the NMCP in meeting its case management objectives through central support for NMCP case management activities and through support in the North and Far North for training and supervision of health providers at the facility and community level.

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

- Procured commodities for malaria diagnosis and treatment including RDTs, microscopes, AL, and injectable artesunate to meet the needs of the North and Far North regions.
- Assisted in the development and validation of a new National Strategic Plan for Malaria Control as well as the development of new case management national guidelines including case management quality assurance.
- Identified and trained 24 TSQ (Training, supervision and quality assurance) experts.
- TSQ experts conducted baseline assessments of 100+ health facilities in 3 districts.
- Conducted QA/QC assessment of malaria diagnostics.
- Therapeutic Efficacy Study (TES) protocol developed and submitted to local IRB.

Due to the almost one-year delay in the finalization and validation of the new National Strategic Plan for Malaria Control, many of the planned training and supervision activities were delayed allowing for updated training curricula. TES activities were also planned to begin during this timeframe but were pushed back due to slow contracting processes.

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

- Procure RDTs, ACTs and injectable artesunate in quantities that will cover the need in the North and Far North regions.
- Implementation of the TES in 2 surveillance sites and planning for the next TES in two additional sites in the North and Far North (for a total of 4 TES sites).
- PARMA capacity building and training for antimalarial resistance monitoring (travel for training at CDC Atlanta).
- Implementation of a comprehensive QA/QC plan for malaria diagnostics in public and non-profit health facilities in the North and Far North. This includes continued support for the microscopy QA/QC system using the lab technicians already trained in expert microscopy to expand training to additional lab technicians at district and health facility level with a target to train 100 lab technicians. Training will focus on parasite detection, species identification, parasite counting, and use of RDTs. Training will be reinforced through the implementation of supportive outreach and supervision by laboratory supervision teams using malaria slide proficiency testing panels.
- Training and supervision for health service providers at public and non-profit health facilities in 18 of the 45 districts in the North and Far North regions to effectively deliver routine case management and MIP services.
- Support for the community health worker program in 6 of 45 districts in the North and Far North regions to effectively deliver routine case management services to hard-to-reach populations.
- Inclusion of a service communication module for both the facility-based and community-based training to improve patient-provider interactions, encourage care-seeking, and leverage existing platforms of service delivery for behavior change interventions.
- Support for NMCP supportive supervision activities (from central level and regional level) including field visit logistics and communication support. Included annual refresher training for central level supervisors.
- Support for development, production and dissemination of case management guidelines and data collection tools (registers).

PMI Goal

Improve access to and utilization of timely, quality, and well-documented malaria testing and treatment by providing facility- and 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?

Planned malaria case management activities have not changed significantly. Due to the delay in implementation of many of the planned FY 2018 activities, pipeline funding should be available to be applied to subsequent fiscal year activities. Expansion of the CHW program is a priority of the NMCP and PMI will support this expansion where it is sustainable.

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

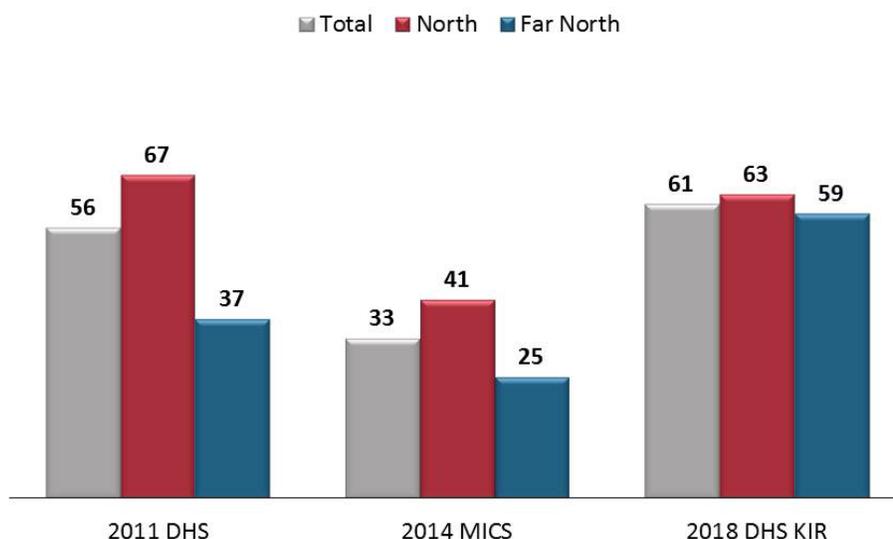
Key Question 1

What is the status of care-seeking?

Supporting Data

Figure A18. Trends in Care-Seeking for Fever

Among children under 5 with fever in the 2 weeks before the survey, percent for whom advice or treatment was sought



*Excludes treatment or advice from a traditional practitioner

Conclusion

According to the most recent nationally-representative household survey data, care was sought for approximately 60 percent of children under five years of age with fever. The prevalence of care seeking for fever in children in the North and Far North is similar to that in the country as a whole (while a smaller study on the policy of free malaria treatment found that care seeking for fever is in fact the lowest in the North). With respect to prompt care-seeking, only 32 percent of caretakers reported seeking care for fever on the same or next day in both the North and Far North (34 percent for the whole country). Care-seeking is also lower in the lower wealth

quintiles and in rural areas, suggesting economic and more general access barriers. SBC efforts will be designed to increase prompt care seeking for fever, and PMI will continue to support community health workers to diagnose and treat fever in the community, reducing barriers to access in rural areas where care seeking is also lower.

Key Question 2

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

Supporting Data

According to the most recent household data, care-seeking for fever in children has improved from 2014 to 2018, but still shows room for improvement. Increasing opportunities for service provision by expanding the CHW program removes access barriers related to logistical and cost constraints to travel for care. In addition, an active CHW program increases opportunities for interpersonal communication, or service communication, that can target a range of behaviors. A study conducted on the national protocol to provide malaria services free of charge to children under five provides insights on potential barriers to care-seeking. CHWs provided messaging about ITN use and IPTp, but only 7 percent addressed care seeking, and virtually none addressed the importance of diagnostic confirmation and that malaria treatment is free for children under five (see figure below). Prompt care-seeking is even more problematic and will need to be emphasized in SBC activities. Additional barriers to care-seeking are highlighted in the table below; these were drawn from a recent PMI-supported literature review and virtually all are somehow tied to cost barriers.

Figure A19. Subjects Covered by CHWs during Home Visits
Percent of respondents, NMCP gratuity study

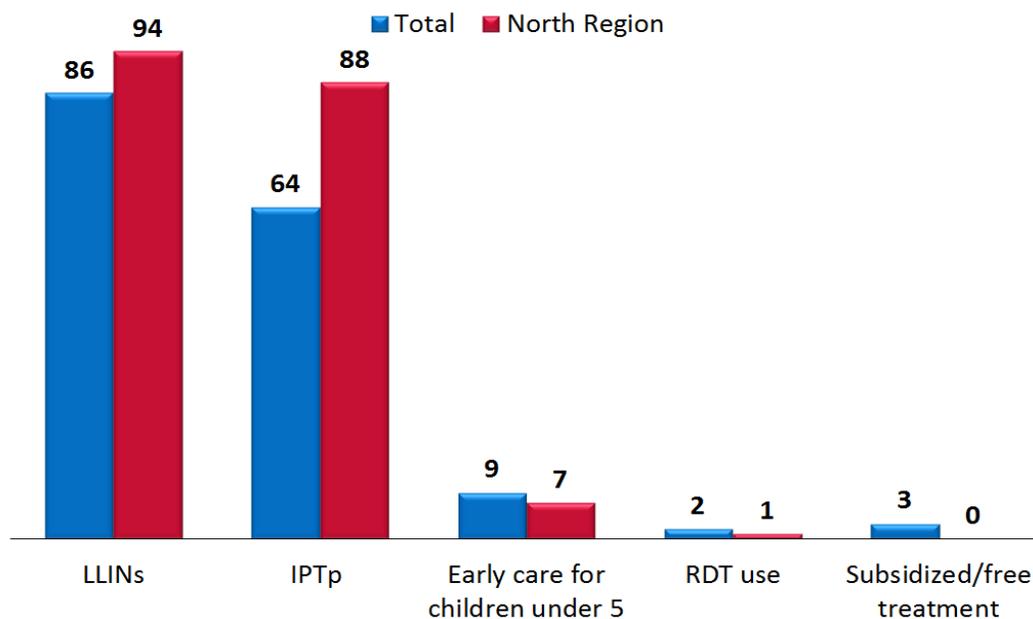


Figure A20. Facilitators and Barriers to Care-Seeking

Facilitator	Type of Factor	Data Source	Evidence
Expansion of CHW program	Environmental	Littrell et al. (2013). Narrowing the treatment gap with equitable access: Mid-term outcomes of a CCM program in Cameroon	<p>Increased access to care through community-based providers can facilitate timely care-seeking. A study conducted in the East region of Cameroon showed that children in a CHW intervention arm were nine times more likely to receive an ACT for malaria than those in the comparison area.</p> <p>CHWs also seem to apply the principle of free treatment more consistently than health facilities resulting in greater acceptability of their services by the community (NMCP Gratuity study).</p>

Barrier	Type of Factor	Data Source	Evidence
Cost	Environmental	NMCP Gratuity Study, 2018	Although treatment for children under five is free according to national policy, in practice it is inconsistently implemented. Due to high rates of poverty in the North and Far North, there is little disposable income available to spend on healthcare.
Lack of awareness of free malaria services(for children under 5)	Internal	NMCP Gratuity Study, 2018	58% of surveyed caregivers were not aware that per national policy, malaria treatment for children under five years of age is free.
Norm of self-diagnosing, self-treating	Social	2012 Cameroon KAP survey	Cost barriers associated with seeking care at a public facility may result in a tendency to self-treat. The majority of survey respondents (41%) tend to self-diagnose and self-treat with drugs they have on hand or that they purchase.

Conclusion

There are clear access issues that negatively impact timely care-seeking for fever in children. Cost barriers are a challenge requiring systems-level policy actions at higher levels of government. PMI can be an advocate in this arena, but more immediately, there is a need to make case management services in the public/non-profit sector more accessible and appealing. Service communication interventions targeted to providers at both community and facility levels have the potential to impact care-seeking behaviors in a positive way. The expansion of the CHW program is also an opportunity to improve care-seeking, overall access to care, and malaria outcomes for the population, particularly since CHWs may mitigate logistical and cost barriers and be better accepted by the communities they serve.

Key Question 3

How have malaria testing and treatment practices evolved over time?

Supporting Data

Figure A21. Trends in Diagnosis of Children with Fever

Among children under 5 with fever in the 2 weeks before the survey, percent who had blood taken from a finger or heel for testing

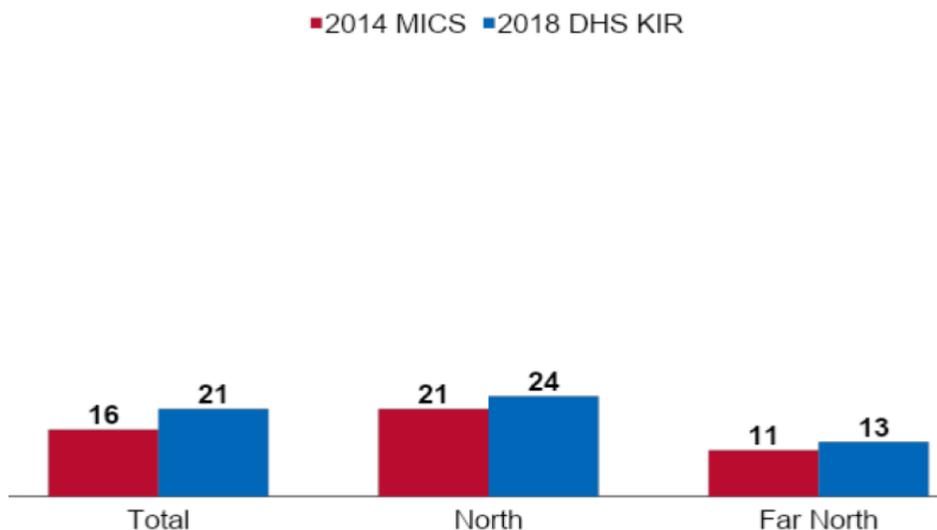
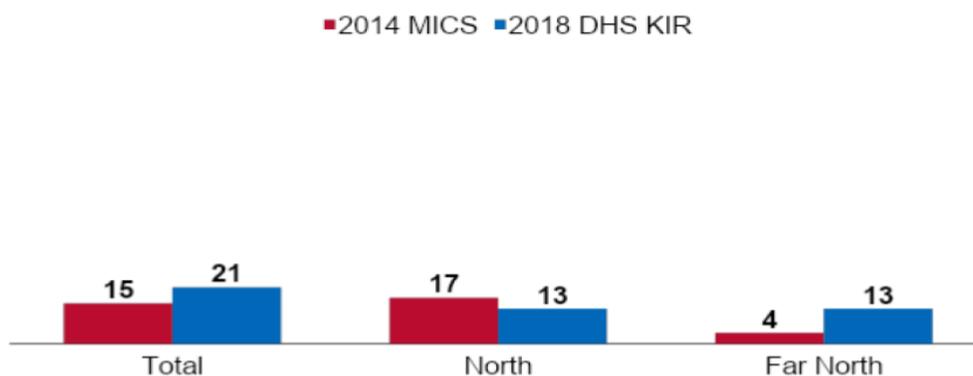


Figure A22. Trends in Treatment of Children with Fever

Among children under 5 with fever in the 2 weeks before the survey who received any antimalarial, percent who received an ACT



Baseline assessments of case management practices were conducted in 135 health facilities in 13 districts in the North and Far North in September 2019. Conclusions from the assessment included the following:

- 70 percent of facilities performed diagnostic tests (RDTs or microscopy) before providing treatment for malaria.
- Uncomplicated malaria cases were treated with AL in 67 percent of health facilities.

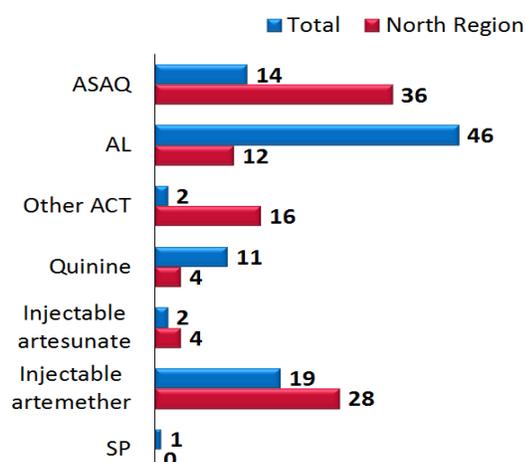
- Fifty-three percent of health providers had not received training in case management for malaria.
- 81 percent of confirmed severe malaria cases were treated with injectable artesunate, artemether or injectable quinine. All cases of malaria in pregnant women are treated as severe.
- Case management of uncomplicated and complicated malaria in children under five was free in only 39 percent of health facilities.

The NMCP conducted a study on the policy of free diagnosis and treatment of uncomplicated and severe malaria in Cameroon from July-August 2018. Results included conclusions on diagnostic and treatment practices:

- Only 64 percent of children under five received a diagnostic test for malaria and only 67 percent were given an official diagnosis
- Only 60 percent of cases of uncomplicated malaria were correctly treated according to national protocol
- In the North region, only 12 percent of uncomplicated malaria cases in children under five were treated with the appropriate first line medication (AL). Thirty-six percent received ASAQ, 16 percent received a different ACT and 28 percent received injectable artemether (see figure below).
- National treatment guidelines were respected for only 39 percent of severe malaria cases
- Significant overuse of severe malaria medications to treat uncomplicated cases is evident
- IV quinine is a common treatment given for treatment of severe malaria

Figure A23. Antimalarials Prescribed for Uncomplicated Malaria

Percent distribution of children under 5 who received any antimalarial for last episode of malaria, NMCP gratuity study



Conclusion

Improvements are needed in diagnosis and treatment of malaria. According to 2018 DHS data, only a fifth of children with fever were reported to have received a finger or heel stick (presumably for malaria testing) and only 20 percent of children who received an antimalarial were reported to have taken an ACT. Diagnosis and treatment practices in the Far North appear to be underperforming compared to the national average. Approximately half of all malaria cases reported to the HMIS in Cameroon are diagnosed as severe malaria, which likely influences the ACT indicator. Baseline case management supervision data collected in a subset of facilities in the North and Far North in late 2019, as well as data from an NMCP gratuity study from 2018 indicate an immediate need for training in diagnosis and treatment of malaria and for encouragement of rational use of severe malaria drugs. PMI is supporting training, supervision and SBC activities to improve provider behaviors around correct diagnosis and treatment practices.

Key Question 4

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

Supporting Data

Based on the data shown in Figure A24, there are clear challenges with respect to provider diagnostic testing and treatment practices in accordance with national guidelines for both uncomplicated and severe malaria. A recent PMI-supported literature review provides some information on factors that may be influencing health worker case management behaviors, but many of the cited studies are outdated and not regionally-specific to the North and Far North. Nevertheless, they provide some contextual insights primarily related to an interesting dynamic between patients and providers (e.g., demand for certain products or services), as well as the more complex issue of financial incentives that work against health worker adherence to case management guidelines.

Figure A24. Facilitators and Barriers to Testing and Treatment

Facilitator	Type of Factor	Data Source	Evidence
Provider preferences and client preferences	Internal	Mangham-Jefferies et al. (2014). What determines providers' stated preference for the treatment of uncomplicated malaria?	Data suggest that providers prescription practices are influenced by what they perceive to be patient preferences. This study found a positive association between providers who stated a preference for ACTs and those who said their patients stated a preference for ACTs. [Note these data are from the Center and Northwest regions and may not be generalizable to other regions.]

Perceptions of drug efficacy		NMCP Gratuity Study, 2018	73% of survey respondents think that antimalarial treatments for children under five are very efficacious and the same percentage think that these medications are always available.
Barrier	Type of Factor	Data Source	Evidence
Financial incentives	Environmental	NMCP Gratuity Study, 2018	Cameroon's cost recovery system incentivizes prescription practices that favor unsubsidized rather than subsidized diagnostic tests and antimalarials. Another study also suggests that provider prescription practices are influenced by pharmaceutical marketing agents (Achonduh et al., 2014).
Lack of training/knowledge for malaria case management	Internal	Mbachem et al. (2014). Basic or enhanced clinician training to improve adherence to treatment guidelines.	This study, conducted in the Central and Northwest regions, found that providers were inadequately trained to conduct diagnostic tests. Data from a recent PMI-supported baseline assessment in the North and Far North showed that over half of all health workers surveyed had not been trained in malaria case management.
Distrust of RDTs	Internal	Mbachem et al, 2014.	The same study found that distrust of negative RDT results impacted provider case management behaviors.

Conclusion

Though much of the data collected on determinants of health worker behaviors may be considered slightly outdated and may not be representative of the North and Far North regions, the cost recovery issues that compel providers to favor income generating diagnosis and treatment practices over best practice per NMCP guidelines has been a recurrent theme since PMI started working in Cameroon. While that particular issue requires a larger health system reorientation, there are clearly opportunities to influence health worker behaviors through training, supervision, and service communication activities. The Malaria Behavior Survey will provide additional insights on patient perspectives of service delivery. PMI will also be supporting qualitative research focused on provider behaviors in the North and Far North. These formative data will help further refine approaches to health worker behavior change activities.

eligible for additional performance-based financing. CHWs in UNICEF-supported districts do not receive monthly stipends.

In some areas CHWs keep 10 percent of the money that they generate through the fees charged for diagnosis and treatment of malaria in adults and children over five. World Bank supported performance-based financing nation-wide which included payments of 100CFA to CHWs for every case referred to health centers. This practice did not encourage community-based case management and has led to a somewhat fractured approach to the role of CHWs for malaria service delivery. Maintaining sufficient supplies of malaria commodities is an additional challenge for CHWs.

Key Question 6

What is the estimated need for RDTs for FY 2020?

Supporting Data

Figure A26. Gap Analysis Table for RDTs

Calendar Year	2019	2020	2021
RDT Needs (North and Far North Regions, PMI targeted Regions)			
Total country population	25,492,353	26,133,035	26,765,522
Population at risk for malaria	25,492,353	26,133,035	26,765,522
PMI-targeted population at-risk for malaria (North and Far North) ¹	7,452,541	7,699,643	7,948,629
Total number of projected fever cases ²	3,492,414	3,599,079	3,734,078
Total number of fever avoided with prevention interventions ³	1,267,364	1,542,759	1,611,327
Total number of expected fever cases in North & Far North ⁴	2,225,050	2,056,320	2,122,751
Total number of expected fever cases in health facilities in North & Far North	1,112,525	1,069,286	1,103,830
Total number of expected fever cases in communities in North & Far North	222,505	205,632	212,275
Total number of expected fever cases in health facilities and communities in North & Far North ⁵	1,335,030	1,274,918	1,316,106
Percent of fever cases tested in health facilities and communities ⁶	90%	90%	90%
Percent of fever cases tested with an RDT in health facilities ⁶	75%	76%	77%
Percent of fever cases tested with an RDT in Communities ⁶	100%	100%	100%
Total number of fever cases tested with RDT in the health facilities in the North and Far North Regions	750,954	731,392	764,954

Calendar Year	2019	2020	2021
Total number of fever cases tested with RDT in the communities in the North and Far North Regions	200,255	185,069	191,048
RDT Needs	951,209	916,461	956,002
Security Stock ⁷	50%	0%	0%
Total RDT Needs	1,426,813	916,461	956,002
Partner Contributions (to PMI target population if not entire area at risk)*			
RDTs carried over from previous year	159,420	558,211	548,587
RDTs from Government	0	0	0
RDTs from Global Fund (to North and Far North)	0	0	0
RDTs from other donors	0	0	0
RDTs planned with PMI funding	1,350,000	906,837	407,415
Total RDTs Available	1,509,420	1,465,048	956,002
Total RDT Surplus (Gap)	558,211	548,587	0

¹ PMI targeted regions in Cameroon are North and Far North (2/10 Regions representing approximately 29% of the country's population). Data source: "PROJECTIONS DEMOGRAPHIQUES ET ESTIMATIONS DES CIBLES DES PROGRAMMES", National Institute of Statistics, 2016. Quantification for these 2 PMI regions was made as part of the National Quantification, for all Country Regions.

² Total number of projected fever cases are calculated by applying a factor of 1.06 for number of fever episodes per year for children under 5 years of age, and a factor of 0.2974 fever episodes per year for people over 5 years of age.

³ Based on NMCP reports, the number of fever cases reduced with prevention interventions was calculated using a projection of 3.3% in 2019, 10% in 2020 and 2021 using methods to break vector transmission. Based on epidemiological data from previous SMC campaigns, the assumption is there is a 65% morbidity reduction.

⁴ The total number of fever cases was calculated by subtracting the projected number of reduced fever cases through prevention from the total number of projected fever cases.

⁵ This represents the number of fever cases estimated that will access HFs or communities (the difference between total fever cases and fever cases accessing health facilities and community health workers would be treated elsewhere either in traditional healers or stay at home)

⁶ 90% of fever cases will be tested in health facilities and in the communities. The target for the fever cases to be tested using RDT is 75% in 2019, 76% in 2020 and 77% in 2021 in health facilities, the rest would be tested by microscope. It is assumed all the fever cases tested in the community (100%) will be done using RDT.

⁷ It is assumed that the security stock would be carried over if the actual consumption would be similar to the projected needs. However, it would be reviewed and adjusted in the next quantification exercise.

Conclusion

PMI will procure sufficient quantities of RDTs to meet the projected needs of the North and Far North regions. Cameroon had been procuring *Pf-Pan* RDTs through GFATM support. Through unified policy changes at PMI and GFATM, *Pf*-only RDTs are now the only option (following WHO recommendations). This shift has caused some concern at the NMCP and it remains to be seen if this change will have an impact on RDT use. Baseline assessments recently conducted in 135 facilities in 13 districts in the North and Far North indicated RDT stock outs in 39 percent of health facilities visited suggesting room for improvement in stock management/supply chain.

Key Question 7

What is the estimated need for ACTs for FY 2020?

Supporting Data

Figure A27. Gap Analysis Table for ACTs

Calendar Year	2019	2020	2021
ACT Needs for the North and Far North (AL)			
Total country population	25,492,353	26,133,035	26,765,522
Population at risk for malaria	25,492,353	26,133,035	26,765,522
PMI-targeted at-risk population (North and Far North Regions) ¹	7,452,541	7,699,643	7,948,629
Total number of projected fever cases accessing HFs and communities (Source: NMCP)	1,335,030	1,274,918	1,316,106
Malaria positivity rate (Source: NMCP)	59%	59%	59%
Total projected number of malaria cases treated with 1st line ACT according to the national guidelines (North & Far North) ²	787,668	752,202	776,502
Additional 10% for presumptive cases	10%	10%	10%
Security Stock ³	50%	25%	25%
Total Needs of AL	1,260,268	1,015,472	1,048,278
Partner Contributions (to PMI target population if not entire area at risk)			
AL carried over from previous year (PMI) ⁴	541,890	0	59,528
ACTs from Government	0	0	0
AL from Global Fund	0	0	0
ACTs from other donors	0	0	0
AL planned with PMI funding	90,060	1,075,000	988,750
Total ACTs Available	631,950	1,075,000	1,048,278
Total ACT Surplus (Gap)	-628,318	59,528	0

¹ PMI targeted regions in Cameroon are North and Far North (2/10 Regions representing approximately 29% of the country's population). Data source: "PROJECTIONS DEMOGRAPHIQUES ET ESTIMATIONS DES CIBLES DES PROGRAMMES", National Institute of Statistics, 2016. Quantification for these 2 PMI regions was made as part of the National Quantification, for all Country Regions.

² Programmatic data was used to inform actual number of cases treated in public and private health facilities as well as in the communities according to the national guidelines. The estimates also include the ACTs for follow-on treatment of severe cases that start with injectable artesunate and conclude with a course of oral ACTs. The North and Far North regions are the regions in Cameroon switching (from 2018) to AL as first line of treatment for uncomplicated malaria, due to SMC implementation in these regions.

Conclusion

PMI will procure sufficient quantities of AL to meet the projected needs of the North and Far North regions. Although ASAQ had been the recommended first-line treatment for uncomplicated malaria in the last National Strategic Plan for malaria control, AL was required in the North and Far North which are SMC zones (ASAQ is contraindicated in SMC zones which treat prophylactically with SPAQ). The new National Strategic Plan, which is currently being validated, will officially include DHA-PQ and AL as recommended first line drugs for uncomplicated malaria diagnosed at the facility level in the North and Far North. In the other 8 regions, DHA-PQ, AL and ASAQ are included as recommended first line drugs for

uncomplicated malaria at the facility level. At the community level, AL is the recommended drug in the North and Far North and AL and ASAQ are recommended in the other 8 regions. Baseline assessments recently conducted in 135 facilities in 13 districts in the North and Far North indicated AL stock outs in 44-70 percent of health facilities visited, depending on the formulation, suggesting room for improvement in stock management/supply chain.

Key Question 8

What is the projected need for severe malaria treatment and any other treatments as applicable?

Supporting Data

Figure A28. Gap Analysis Table for Injectable Artesunate

Calendar Year	2019	2020	2021
Expected Number of malaria cases	787,668	752,202	776,502
% severe malaria cases (within all malaria cases) ¹	48%	15%	15%
% Expected severe malaria cases	378,626	112,830	116,475
Percentage of severe cases estimated to be treated with injectable artesunate	60%	80%	80%
Number of severe malaria cases treated with Artesunate injectable	227,175	90,264	93,180
<i>Distribution of Severe malaria cases by age groups</i>			
% of under 5 severe malaria cases (within all severe malaria cases)	18%	18%	18%
% of 6-14 years old (25-50 kg) severe malaria cases (within all severe malaria cases)	23%	23%	23%
% of 15 years old and older (over 50 kg) severe malaria cases (within all severe malaria cases)	59%	59%	59%
Number of malaria cases in children under five years of age	40,892	16,247.56	16,772.45
Number of malaria casts in people over 14 years old	52,159	20,725	21,394
Number of malaria cases in people over 15 years old	134,124	53,292	55,014
Number of vials needed to treat a severe malaria case in children under 5 years of age	4	4	4
Number of vials needed to treat a severe malaria case in children 6-14 years old	8	8	8
Number of vials needed to treat a severe malaria case in over 15 years old	12	12	12
Total number of vials needed for children under 5	163,566	64,990	67,090
Total number of vials needed for children 6-14 years	417,276	165,797	171,154
Total number of vials needed for over 15 years old	1,609,492	639,504	660,164
Number of vials needed	2,190,335	870,291	898,407
Security Stock 2	0%	40%	0%
Total number of injectable artesunate needed	2,190,335	1,218,408	898,407
<i>Partner Contributions (to PMI target population if not entire area at risk)¹</i>			
Art inj. carried over from previous year	0	0	0

Calendar Year	2019	2020	2021
Art inj. from Government	0	0	0
Art inj. from Global Fund	0	0	0
Art inj. from other donors	0	0	0
Art inj. planned with PMI funding	486,555	681,818	898,407
Total Art inj. Available	486,555	681,818	898,407
Total Art inj. Surplus (Gap)	1,703,780	536,590	0

¹ The PNLP's severe malaria report is at 48% (2019), and the following years the estimations are aligned with the proposed targets of 15% in 2020 and 15% in 2021. (MOP19)

² Security stock was not added in 2019, however, it is considered in 2020. It is assumed that the security stock would be carried over if the actual consumption would be similar to the projected needs. However, it would be reviewed and adjusted in the next quantification exercise.

Conclusion

The quantity of injectable artesunate needed in the North and Far North according to the NMCP quantifications far exceeds the available budget and is based on data reported to the HMIS in which ~50 percent of all malaria cases are diagnosed as severe. PMI and GFATM have both agreed that their procurement of this expensive commodity will be limited to the estimated need based on an assumption that a maximum of 15 percent of all cases are severe.

Key Question 9

Are the first-line ACTs effective and monitored regularly?

Supporting Data

Figure A29. Most Recently Completed and Ongoing Antimalarial Therapeutic Efficacy Studies

Year	Sites	Treatment arms	PCR-corrected ACPR>90%?	Where molecular resistance work was completed or the plan, if any, for molecular resistance work
<i>No results in the past five years</i>				
Planned				
2019	Center Region	AL, ASAQ	Study in planning phase	CDC Atlanta (PARMA)

Conclusion

A recently published meta-analysis of antimalarial therapeutic efficacy trials in Cameroon¹ concludes that ACTs are safe and effective but that the existing evidence is limited, and more studies are needed. It should be noted that the studies included in this publication are dated (the most recent from 2013) No current data are available to determine whether ACTs are currently efficacious in Cameroon. However, PMI-supported TES studies are planned.

Key Question 10

Are there other key items, that should be considered?

Supporting Data

- Private sector support - this is a focus of the new National Strategic Plan for malaria control; however, with limited resources and much work to be done to strengthen case management practices in the public sector, PMI hopes to identify other partner support for private sector activities.
- Laboratory strengthening - needs identified through a recently conducted QA/QC assessment.
- Ensuring drug quality - need for improved monitoring and regulation of malaria drugs identified through a recent NMCP evaluation of the policy on free treatment for uncomplicated and severe malaria.

Conclusion

- PMI plans to support the development of a national strategy for private sector engagement for malaria case management using FY19 funds but will attempt to leverage other partner funding for any additional private sector support.
- PMI will provide laboratory strengthening support through refresher trainings for at least 50 lab technicians in health facilities offering microscopy testing and through the launch of a QA/QC system for malaria lab microscopy testing.
- PMI will support the national laboratory (LANACOME) to work on accreditation and pharmaceutical registration processes as a first step in monitoring and improving malaria drug quality.

¹ Whegang Youdom, S., Chiabi, A., & Basco, L. K. (2019). Monitoring the Efficacy and Safety of Artemisinin-Based Combination Therapies: A Review and Network Meta-analysis of Antimalarial Therapeutic Efficacy Trials in Cameroon. *Drugs in R&D*, 19(1), 1–14. doi:10.1007/s40268-018-0259-3

Key Question 11

What are the in-country considerations that impact your funding allocation in this category?

Supporting Data

- The NMCP and PMI have a desire to expand support for training and supervision of health providers and for the CHW program in the North and Far North, however resources are limited.
- Cameroon is moving towards a Universal Health Coverage system. Beginning January 2020, the government will standardize existing free and subsidized programs to pregnant women and children under five, including the World Bank's Performance-based Financing, the French- and German-supported Cheque-Sante, GFATM and PMI. UHC will expand in 2022 to offer universal access to care for pregnant women and children under five years of age with no user fees.
- This is a welcomed initiative that will help improve access to health services particularly for pregnant women and children under five. Donors will continue to work with the MoH to help facilitate the system transition to UHC.
- Security concerns are a factor in the Far North and in border regions of both the North and Far North.

Conclusion

PMI will continue to assess the available resources and will prioritize expansion of case management support in the North and Far North when possible and provided expansion is sustainable. PMI is actively engaged in national discussions of universal health coverage and is liaising with GFATM to make sure policies are aligned. Costs and logistical complexity of implementing malaria activities in the PMI-supported regions are higher than elsewhere due to security concerns. PMI takes this into account in planning and budgeting activities.

2.B. DRUG-BASED PREVENTION

NMCP objective

Under the 2019-2023 NSP, the NMCP objective is to have:

- Comprehensive coverage of interventions to prevent malaria in pregnancy including:
 - At least 80 percent of pregnant women protected by IPTp3 in accordance with national guidelines by 2023.
 - At least 80 percent of pregnant women protected by ITNs.

- Prompt diagnosis of at least 80 percent of malaria infections in pregnant women, and 100 percent treatment of confirmed cases according to national guidelines.
- At least 95 percent of children aged 3-59 months protected from malaria with four cycles of SP+AQ in health districts eligible for SMC in the North and Far North regions.

NMCP approach

Current IPTp policy:

- IPTp with SP administered at ANC was adopted in 2007. The policy was updated in 2012 to increase the number of doses of SP administered during pregnancy from at least two doses total to at least three doses total, one dose at each ANC beginning at 16 weeks and continuing monthly until birth.
- The current NSP (2019-2023) includes guidance for free distribution of SP for IPTp beginning in the second trimester with doses administered at least one month apart.
- Within the context of integrated malaria prevention and case management, and in order to reverse the malaria burden trend, community health workers will start providing IPTp from the second dose onwards, at the community level in 2020.
- Awareness for early ANC attendance and IPTp and ITN uptake will also be raised during educational talks conducted by CHWs during home visits. In districts with no CHWs, the mentorship approach will select women role models (community champions) who successfully attended ANC, received ITN early and completed IPTp3 to sensitize women in their community.

Current status of SMC implementation:

- Cameroon introduced SMC in 2016 with Sulfadoxine/pyrimethamine and amodiaquine (SPAQ) to roughly 1.1 M children of eligible age (children 3-59 months old) living in the 45 health districts of the North and Far North regions, with a coverage of 86 percent.
- The distribution was conducted over three days, between July and September, with three cycles of SPAQ administered. Implementation was door-to-door, with a fixed point as follow-up for households that were absent during the first attempted visit.
- Initially, mobilisers moved door-to-door to do an enumeration of all children between 3 and 59 months. On the day of distribution, agents went to the same households (door-to-door) to administer the first dose of SPAQ and demonstrate to caregivers how to properly administer the second and third doses of each cycle.
- In 2017, SMC campaign provided four cycles of SPAQ to 1.5M children 3-59 months old, with a coverage of 94.5 percent.

PMI objective, in support of NMCP

- PMI supports the national strategy for free distribution of SP for IPTp at ANC beginning at 16 weeks with doses administered at least one month apart. Support to MIP also includes provision of ITNs at first ANC visit, and effective case management of malaria during pregnancy. Coverage is provided in the North and Far North regions.
- Starting in 2018, PMI provided full support for SMC planning and implementation, with activities covering the North and Far North. SMC implementation in Cameroon covers children 3-59 months with four SPAQ cycles during the rainy season (July-October) using a door-to-door strategy.

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

- Planned support for training and supportive supervision of ANC providers (including IPTp implementation) and up to 100 midwives has been postponed to 2020 due to the delayed completion and validation of the National Strategic Plan.
- A baseline assessment of case management and ANC practices (including IPTp) was completed in 135 facilities in 13 districts in the North and Far North.
- PMI support for the 2018 and 2019 SMC campaigns provided more than 1,000 training sessions for over eighteen thousand actors including 5,264 SPAQ mobilisers, 11,380 distributors, and 822 proximity supervisors trained annually for the campaign. PMI procured annually around 7.5M SPAQ doses and all material and tools for the campaigns. Several challenges including absence of micro-planning in 2018, and delayed mobile payment of actors in 2019 affected implementation.

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

- Training and supportive supervision of health providers in at least 18 districts in the North and Far North including provision of IPTp and ITNs at first ANC.
- Training of up to 100 midwives from the 45 districts and reference hospitals in the Far North and North regions on malaria case management in pregnancy and provision of IPTp and ITNs.
- IPTp outreach activity - community health worker training for sensitization of pregnant women in households on early ANC attendance and use of ITNs.
- Data cleaning for 2019 SMC campaign, payment of actors, and evaluation to validate coverage estimates and discuss challenges and lessons learned.
- 2020 SMC campaign planning and implementation, including review and modification of the strategy, procurement and distribution of SPAQ, material and tools, and training of all actors.

2.B.i SEASONAL MALARIA CHEMOPREVENTION (SMC)

PMI Goal

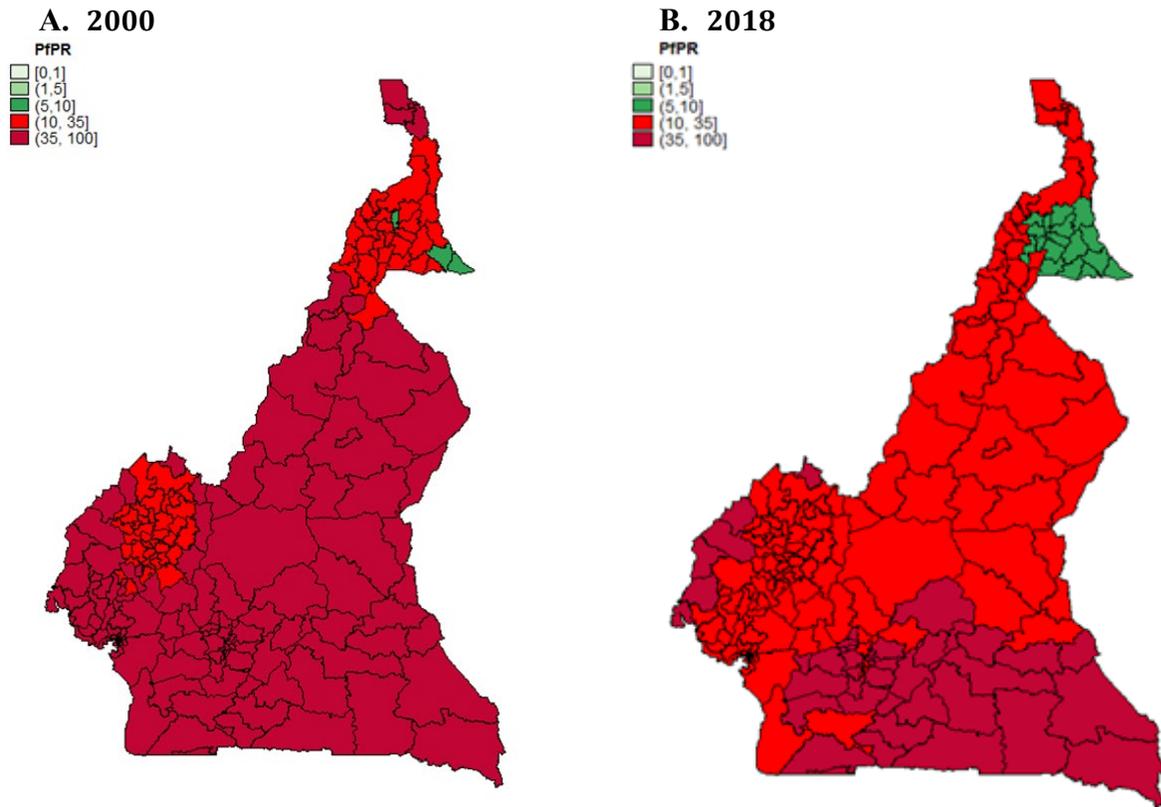
Support the national strategy for SMC addressing relevant geographic areas and age groups, which includes 4 rounds, 3 to 59 months, in accordance with WHO recommendations.

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

PMI will continue to support the SMC campaign in the 45 health districts of the North and Far North regions. As part of the HBHI initiative, the WHO Global Malaria Program recently conducted a stratification to identify districts targeted for SMC. Monthly rainfall data from online sources were extracted for each district. The number of 4 consecutive months that accounted for 60 percent of the rainfall out of any 12 consecutive months since January 2014 were computed. Districts where at least 75 percent of the 4 monthly blocks accounted for 60 percent of total rainfall in 12 months were identified. Among these districts, those with *falciparum* parasite prevalence above 5 percent in the age group 2-10 years of age ($PfPR_{2-10} > 5\%$) in 2018 were identified as suitable for SMC, and these were the 45 districts in the North and Far North regions. (WHO Stratification Report, October 9, 2019).

Stratification data also showed a decrease in *PfPR* in most districts throughout the country, including districts where SMC is being implemented as part of the intervention package. The maps below show *PfPR* estimates standardized to the age group 2-10 years of age, the peak age range for infection.

Figure A30. A Comparison of District *Pf*PR₂₋₁₀ from 2000 and 2018



A - The 2000 map is a proxy measure of pre-intervention transmission.

B- The 2018 map includes the effects of interventions on parasite prevalence, after adjusting for the effects of climatic covariates.

PMI will continue to work with the NMCP to closely monitor malaria data from these districts to assure adjustments in SMC planning if needed (eligibility of districts, season of the campaign, number of cycles, etc.) and to monitor SP resistance. SP resistance monitoring will begin with FY 2020 funds.

PMI will procure SPAQ to meet the needs for all children 3-59 months of age in the North and Far North regions, and will support all elements of campaign implementation including procurement of material and tools for the campaign, training and supervision of mobilisers, distributors and supervisors, and community and interpersonal communication for adherence.

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

Key Question 1

What is the estimated need for SMC commodities over the next three years and what proportion of this need will PMI support?

Supporting Data

Figure A31. Gap Analysis Table for SPAQ

Calendar year	2019	2020	2021
SMC drug (SP+AQ) Needs			
Population targeted for SMC in Cameroon (North and Far North regions) ¹	1,706,783	1,751,159	1,796,690
PMI-targeted population for SMC ²	1,706,783	1,751,159	1,796,690
Total SP+AQ Needs	6,827,132	7,004,637	7,186,758
Total SP+AQ Needs + 10% buffer	7,509,845	7,705,101	7,905,434
Total SP+AQ 1 (75mg) Needs	1,351,772	1,386,918	1,422,978
Total SP+AQ 2 (150mg) Needs	6,158,073	6,318,183	6,482,456
Partner Contributions (to PMI target population if not entire area at risk)			
SP+AQ 1 carried over from previous year ³	617,280	180,508	163,590
SP+AQ 2 carried over from previous year ³	1,355,155	315,082	236,899
SP+AQ from Government	0	0	0
SP+AQ from Global Fund	0	0	0
SP+AQ from Other Donors	0	0	0
SP+AQ 1 planned with PMI funding (blister of 4 tablets) ⁴	915,000	1,370,000	1,422,978
SP+AQ 2 planned with PMI funding (blister of 4 tablets) ⁴	5,118,000	6,240,000	6,482,456
Total SP+AQ 1 Available (blister 4 tablets each)	1,532,280	1,550,508	1,586,568
Total SP+AQ 2 Available (blister 4 tablets each)	6,473,155	6,555,082	6,719,355
Total SP+AQ 1 Surplus (Gap)	180,508	163,590	163,590
Total SP+AQ 2 Surplus (Gap)	315,082	236,899	236,899

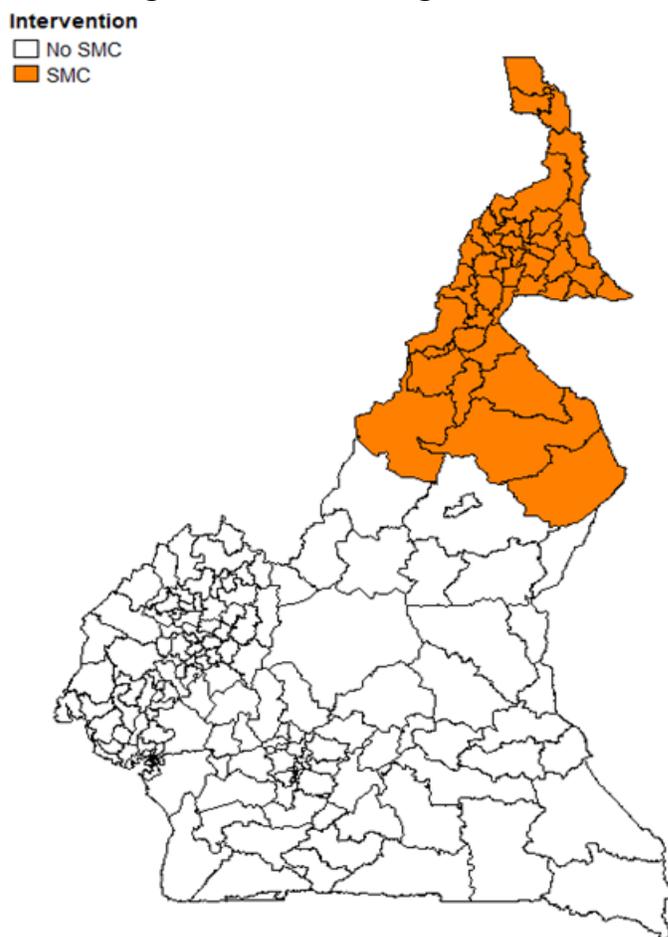
¹ The targets are calculated based on actual number of children mobilized during the 2018 SMC campaign. The "PROJECTIONS DEMOGRAPHIQUES ET ESTIMATIONS DES CIBLES DES PROGRAMMES", National Institute of Statistics, 2016, were applied to calculate the progression for 2019 - 2021.

² Geographic coverage: Since 2018, PMI has been covering all needs for SMC in Cameroon. Only the North and the Far North regions (total of 45 health districts) are eligible for SMC and these are the PMI focus regions.

³ Carry over in 2020: The carry-over entered is theoretical since the actual leftover stock will be known after the reverse logistics at the end of cycle 4 of the SMC.

⁴ The contributions for 2021 are proposed to cover the needs

Figure A32. SMC-Targeted Districts



Conclusion

As the population of children eligible for this intervention continues to grow, the funding need to procure SMC drugs and to support implementation is also increasing. Currently, PMI is planning to cover all of the SMC costs for 2020 and 2021.

Key Question 2

What are the estimated non-commodity resource needs to properly deliver SMC over the next 3 years?

Supporting Data

PMI will continue to support all aspects of the campaign including planning meetings, procurement and distribution of materials and tools, training of actors, implementation, and supervision. PMI will also support data collection, entry and review with DHIS2. One accent will also be put on technical assistance for adherence messaging at the community and interpersonal level, to improve second and third SPAQ doses uptake.

Conclusion

Support for implementation will continue to increase as the population grows, so priorities will be put on improving efficiency and reducing activities cost through evidence-based strategies. As additional guidance is provided by the WHO, the country will also consider routinizing this intervention.

Key Question 3

What does the data show about SMC refusal rates? How do refusal rates change from round to round? What barriers are contributing to SMC refusal rates?

Supporting Data

Figure A33. SMC Rates 2016 - 2019

Calendar Year	Number of districts targeted for SMC	Number of children Under 5 targeted	Coverage Rate ¹ (from program records)
2016	45	1,267,044	86%
2017	45	1,336,274	95%
2018 ²	45	1,641,743	96%
2019 ²	45	1,684,428	>90% ³

¹Coverage rate represents the percentage of children within the age group that received the four cycles of SPAQ

²PMI-supported SMC activities.

³Final rate pending

Data do not suggest that refusal rates are a concern. However, operational logistics, including security concerns, can pose a threat for successful implementation.

Figure A34. Barriers and Facilitators to

Facilitator	Type of Factor	Data Source	Evidence
Access	Environmental	SMC national strategic document	Door-to-door distribution of SPAQ and observance of first dose administration
Barrier	Type of Factor	Data Source	Evidence
Security concerns	Environmental	Government	Violence from extremist groups in parts of the Far North region since 2014
Delayed payment of SMC actors	Programmatic	Partner report	Mobilisers and SPAQ distributors experienced significant payment delays throughout the campaign in both regions

Conclusion

Refusal rates are not necessarily a concern for SMC in Cameroon. Communities recognize the importance of this intervention and value the impact it has had on reducing malaria cases among small children. There are more questions around adherence to the full treatment regimen (i.e., those that are not directly observed on days two and three by the distribution teams). No data are available to quantify this potential issue, but because it has been identified as a concern, PMI is proposing to support more targeted SBC for the next campaign. The specific activities will be informed by data collected in the Malaria Behavior Survey (results forthcoming well in advance of the next campaign).

Key Question 4

What are the in-country considerations that impact your funding allocation in this category?

Supporting Data

As noted above, the NMCP is concerned about adherence to second and third doses of SPAQ during each cycle of the 2019 campaign. While distribution teams went door-to-door and directly observed the first dose of the 3-day regimen, there were not sufficient funds to provide systematic follow-up visits on days two and three for all households; it is estimated that roughly half of households received a follow-up visit by a social mobilization team. Additional analyses to examine epidemiologic trends during the 2019 campaign will provide more information on whether or not adherence to the full SPAQ regimen impacted the success of the campaign.

Conclusion

Although the SMC campaigns have observed a high coverage rates over the years, adherence to the second and third doses of SPAQ remains an outstanding question. PMI will augment implementation support for the campaign with this year's funding, including SBC related activities to strengthen advocacy and awareness of adherence to second and third doses. PMI will continue to work with the NMCP and modify its SMC implementation strategy if appropriate based on additional WHO recommendations.

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

PMI Goal

Support the national strategy for MIP, which includes provision of ITNs at first antenatal care (ANC) visit, intermittent preventive treatment for pregnant women (IPTp) to all pregnant women in malaria endemic area starting at 13 weeks gestational age, for a minimum of 3 doses, and effective case management of malaria, in accordance with the 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?

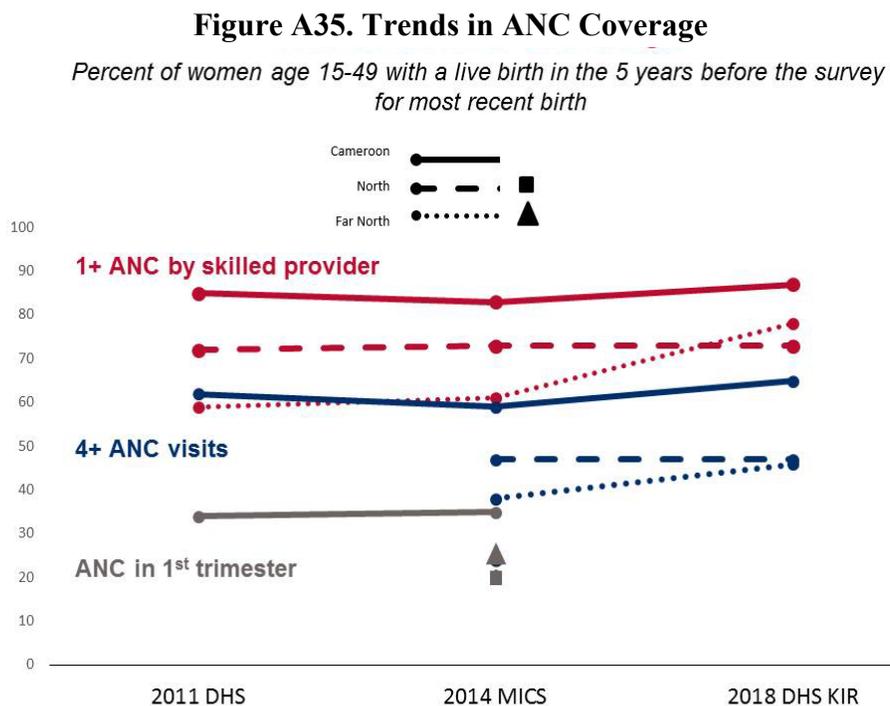
PMI Support for MIP activities will continue at the same level covering the same geographic scope (currently 18 of 45 districts in the North and Far North). PMI will continue to support training of health facility staff in provision of IPTp and ITNs, and training for midwives in malaria case management during pregnancy and provision of IPTp and ITNs. PMI will also continue to support CHW integrated training and supervision for household sensitization of pregnant women on early and consistent ANC attendance and use of ITNs. PMI will continue to explore how to expand the geographic scope of MIP activities within the limited resource envelope available, including supporting training of community champions for peer awareness of early ANC attendance and IPTp and ITN use.

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

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?

Supporting Data



Conclusion

ANC attendance has remained relatively steady in Cameroon. Fewer women attend any ANC in the North and Far North compared to the national average. Similarly, fewer women attend 4 or

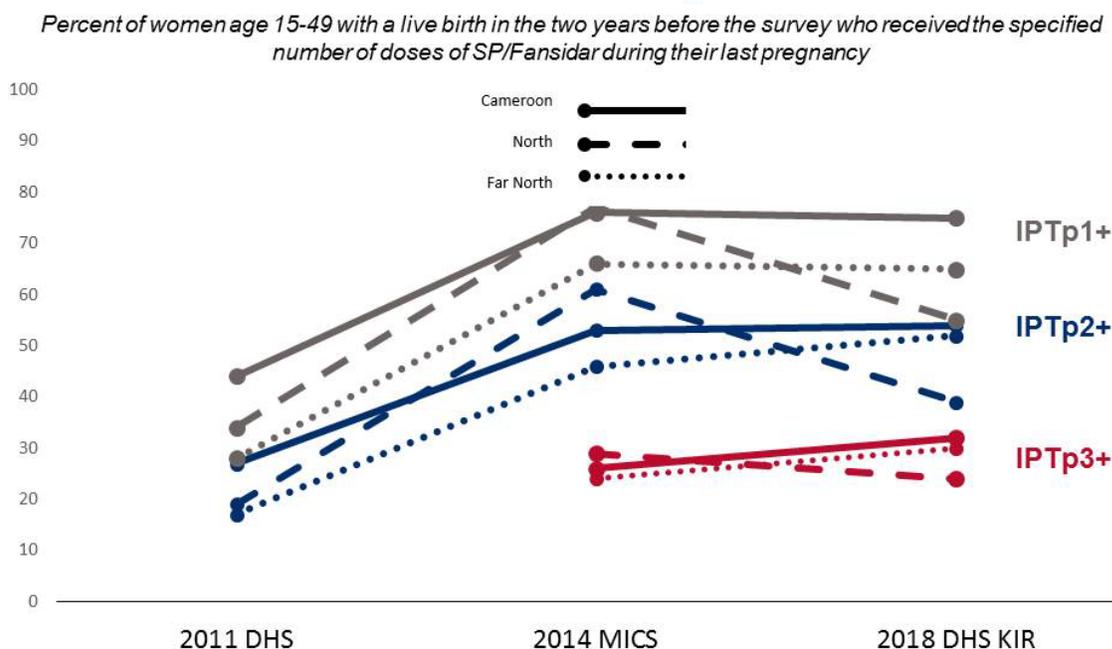
more ANC visits in these regions compared to the country as a whole. These data suggest that there may be contextual barriers to ANC attendance that are specific to these regions. PMI is supporting the implementation of a coordinated SBC campaign targeted to community members and health workers to increase ANC attendance. Cameroon has adopted the 2016 WHO ANC guidance. Although creative register adaptations have been made to report 4 or more ANC visits, the standard registers have not yet been appropriately edited. The national policy on IPTp delivery specifies that the first dose be given at 16 weeks.

Key Question 2

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

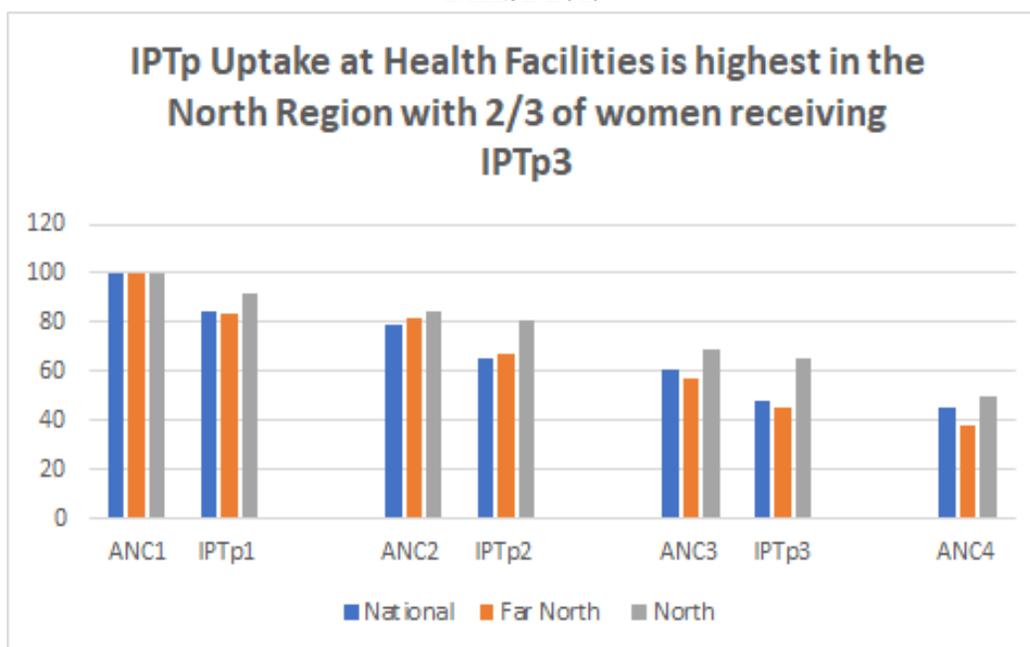
Supporting Data

Figure A36. Trends in IPTp



Note: These indicators have been recalculated according to the newest definition (at least the specified number of doses of SP/Fansidar from any source) wherever possible.

Figure A37. Proportion of Pregnant Women Attending ANC Who Received IPTp3, from DHIS2 2019



NB: IPTp4 is not systematically reported in registers.

Conclusion

According to the latest DHS survey, less than 30 percent of women in both regions received IPTp3 during their pregnancy, with the North region lagging behind the Far North throughout by almost 10 percentage points for IPTp uptake. However, most recent data from registers show that uptake of IPTp3 at health facilities is significantly above the national average in the North region (66 percent of pregnant women attending ANC), suggesting better health facility provider behavior in that region in 2019. The population level uptake in those regions, particularly the North, also suggests that fewer women have access to ANC services compared to elsewhere. PMI will continue to support the procurement of IPTp commodities to cover needs in the North and Far North, along with training and supervision of malaria in pregnancy services, including IPTp. A targeted training of midwives operating at regional and district hospitals is also planned. A coordinated SBC campaign targeted to community members and health workers will aim to increase ANC attendance and ensure adherence to national MIP policies and high-quality service provision.

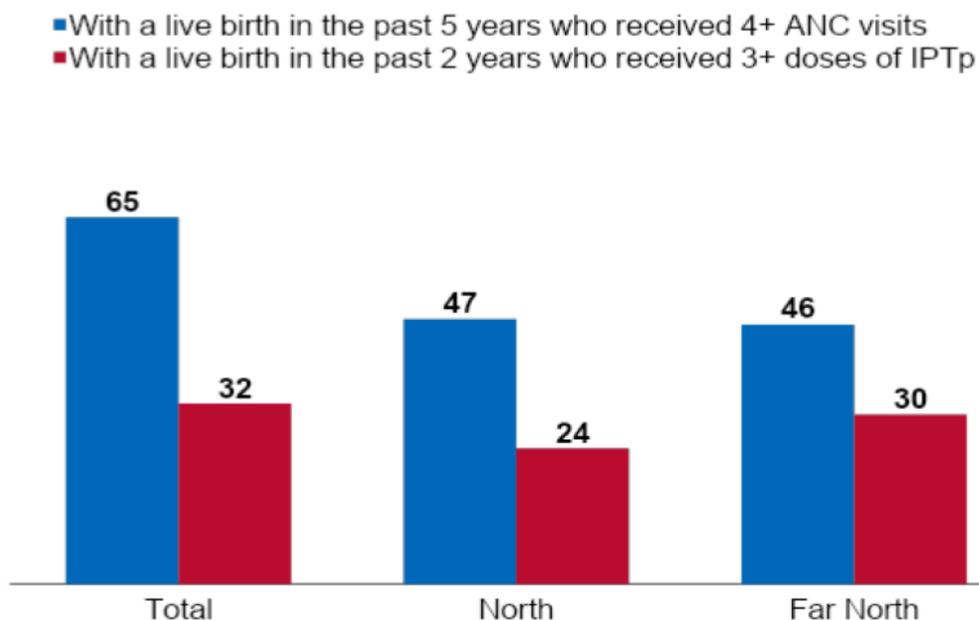
Key Question 3

What is the gap between ANC attendance and IPTp uptake? What barriers and facilitators exist, especially among providers?

Supporting Data

Figure A38. Missed Opportunities for IPTp

Percent of women age 15-49, 2018 DHS KIR



In addition to the DHS data illustrating the missed opportunities for IPTp delivery, baseline assessments conducted in 135 health facilities in 2019 in 13 districts in the North and Far North regions showed that only 45 percent of health facilities visited had providers that gave IPTp to the pregnant woman under direct observation. In addition, malaria prevention awareness was only shared by providers in 42 percent of the health facilities visited. Providers gave ITNs to pregnant woman who came for ANC in only 56 percent of the health facilities visited. Some missed opportunities for IPTp and ITN provision were related to a requirement that clients provide national identity cards in order to be given an ITN. Limited facility register reporting columns for IPTp and ITN were also barriers.

Figure A39. Facilitators and Barriers to IPTp Uptake

Facilitator	Type of Factor	Data Source	Evidence
Subsidy for ANC services (Check Sante)	Social	Ministry of Health	Select districts in North and Far North regions have access to free ANC services from pregnancy to birth after payment of a one-time fee.
Access to CHWs	Environmental	2018 NMCP Gratuity Study	>80% of CHWs provide household awareness on early ANC attendance and free IPTp and ITN

Barrier	Type of Factor	Data Source	Evidence
Providers adherence to IPTp administration guidelines	Internal	2019 DHIS2 2019 Baseline Assessment	Data above suggest that only 92% and 83% of providers in North and Far North, respectively provide IPTp1 during ANC1 Only 45% of health facilities visited had providers that gave IPTp to the pregnant woman under direct observation Systematic reviews in sub-Saharan Africa highlight barriers related to providers' understanding of dosing regimens (due to unclear policy, inadequate training, supervision, etc.).
Financial incentives	Environmental	NMCP Gratuity Study, 2018	Cameroon's cost recovery system incentivizes prescription practices that favor unsubsidized rather than subsidized products. As a result, providers have little incentive to provide SP since it does not generate income for the facility.
Access	Environmental	DHS2018 KIR	A smaller proportion of women attend any ANC in the North and Far North compared to the national average.
Pregnant women ANC attendance linked with access, and educational level	Environmental, social, internal	NMCP Gratuity Study, 2018	Only 59% of women nationally are aware that SP is free during pregnancy A smaller proportion of women who are uneducated or have a lower socioeconomic status receive IPTp3

Conclusion

While gaps exist nationwide, the data show that the gaps between attendance at four or more ANC visits and the receipt of three or more doses of IPTp in the North and Far North are smaller than the national average. The percentage of women going to the recommended number of ANC visits is lower in the North and Far North compared to the national average. The 2018 DHS data highlight an improvement in ANC attendance in the Far North but a troubling decline in the North. These data emphasize the need for SBC to encourage ANC attendance in this region. Evidence from an NMCP study on the policy of free malaria treatment show that most women perceive IPTp as being effective but that costs being charged for ANC services may be a deterrent. Results from the MBS will provide additional insights on factors associated with ANC attendance and IPTp uptake and will help to shape the SBC interventions developed in the North and Far North. With the basis for UHC implementation being put in place in the coming months, it is expected that early and frequent ANC attendance as well as health worker adherence to MIP guidelines for provision of SP will improve. Community based efforts to encourage ANC attendance will be complemented by provider-level interventions to support adequate training, supervision, and positive patient-provider interactions.

Key Question 4

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

Supporting Data

HMIS data on malaria cases disaggregated by pregnancy status are not available currently. The national HMIS system was recently updated to collect that data but the quality of the data are not yet up to par. Training of health facility and district level staff is under way to collect and report on these indicators.

Figure A40. Barriers and Facilitators to Diagnosis and Treatment of Pregnant Women

Facilitator	Type of Factor	Data Source	Evidence
Subsidy for ANC services (Check Sante)	Social	Ministry of Health	Malaria case management provided to subsidized program
Barrier	Type of Factor	Data Source	Evidence
Previous policy on treatment for malaria in pregnancy	Environmental	Registers	The policy has only been recently changed from systematic treatment of malaria in pregnancy as severe malaria to the standard treatment of simple and severe malaria as in the general population.

Conclusion

The new national policy for malaria case management during pregnancy and access to free ANC services starting in the coming year will help improve access and appropriate management of malaria in pregnancy. With support from PMI in the two regions, emphasis will be put on refresher training of health providers, including midwives, and supportive supervision. Support for training and supervision of health workers also includes guidance on improved data reporting including tracking malaria indicators disaggregated by pregnancy status.

Key Question 5

What is the estimated need for IPTp commodities over the next three years and what proportion of this need will PMI support?

Supporting Data

Figure A41. Gap Analysis Table for SP

Calendar Year	2019	2020	2021
Total Targeted Population (projected # pregnant women in the 10 Cameroonian Regions) ¹	933,071	938,556	944,093
Total PMI Targeted Population (projected # pregnant women in the North and Far North) ¹	356,087	358,676	360,788
ANC1 (# pregnant women projected to be seen in ANC1 in North and Far North)	220,774	240,313	259,768
SP Needs for North and Far North Regions (PMI targeted Regions)²			
Total number of pregnant women receiving IPT1	202,266	224,973	249,377
Total number of pregnant women receiving IPT2	165,790	192,478	220,802
Total number of pregnant women receiving IPT3	113,366	145,867	184,435
Total number of pregnant women receiving IPT4	44,155	72,094	77,930
Total SP Need (# of treatments)	525,576	635,412	732,545
Partner Contributions			
SP carried over from previous years	103,944	0	628,466
SP from Government	0	0	0
SP from Global Fund	0	546,592	0
SP from Other Donors	0	0	0
SP planned with PMI funding (North and Far North)	0	717,286	105,000
Total SP Available (treatments - blisters of 3 pills)	103,944	1,263,878	733,466
Total SP Surplus (Gap)	-421,632	628,466	922

¹ "PROJECTIONS DEMOGRAPHIQUES ET ESTIMATIONS DES CIBLES DES PROGRAMMES", National Institute of Statistics, 2016.

² Calculated based on projected number of pregnant women attending ANC *and* receiving IPTp: some woman do refuse IPTp and some health professionals do not comply with national guidelines. Projections adjusted based on historical program data. Projections are to improve coverage considering programmatic activities being implemented.

Conclusion

The country recently loaned a large stock of SP that was in the process of expiring, to a neighboring country. Those quantities will be returned in 2020 and carried over.

Key Question 6

What are the in-country considerations that impact your funding allocation in this category?

Supporting Data

PMI and the NMCP are working together to address the serious ANC access gap and improve IPTp uptake. Priorities will be put on training aimed at building capacity at health facilities for malaria case management during pregnancy and provision of IPTp and ITNs, particularly with

the potential influx of clients accessing free health care starting in January 2020. PMI support to CHW integrated training and supervision will also contribute to improving household sensitization of pregnant women on early ANC attendance and use of ITNs.

Conclusion

PMI will continue to support the following activities:

- Training and supportive supervision of health providers in districts in the North and Far North including provision of IPTp and ITNs at first ANC.
- Training of additional midwives from the 45 districts and reference hospitals in the Far North and North regions on malaria case management in pregnancy.
- IPTp outreach activity - community health worker training for sensitization of pregnant women in households on early ANC attendance and use of ITNs, in additional districts in the 2 regions as part of expansion of CHW network.

3. CROSS-CUTTING AND OTHER HEALTH SYSTEMS

3.A. SUPPLY CHAIN MANAGEMENT

NMCP objective
By 2023, antimalarial commodities are permanently available in 100 percent of health facilities and in the community.
NMCP approach
<ul style="list-style-type: none"> • Reinforcement of an integrated logistics management information system (to render the system functional and modernize it) • Reinforcement of supply chain logistics, including regular update of guidelines and data collection tools to allow for real-time monitoring of key indicators • Reinforcement capacity of supply chain actors in collaboration with the Care Organization and Health Technology Unit (DOSTS), including regular trainings and refreshers
PMI objective, in support of NMCP
<ul style="list-style-type: none"> • At the central level, PMI supports supply chain coordination and governance in order to ensure an efficient management of malaria commodities at lower levels • Contributes to the establishment of a national electronic logistics management information system will enhance data visibility for decision making and increase accountability • Procures treatment and logistics support for the Seasonal Malaria Chemoprevention in North and Far North regions thereby helping to prevent resurgence of malaria cases during the

transmission season, during which malaria accounts for more than 50 percent of all hospitalization cases

- Reinforces capacity of central and regional staff to efficiently manage malaria commodities and providing support to district level and facility level staff

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

- Conducted a human resource assessment of the health supply chain to identify HR strength and weaknesses and propose an HR development plan
- Provided support to 15 MOH staff for training in supply chain management
- Conducted a landscape analysis to gather country opportunities for the operationalization of an eLMIS for malaria commodities, document stakeholders' expectations on the design, assess interconnectivity and interoperability with existing systems
- Identify possible system function requirements
- Propose an implementation road map towards the adoption, design and roll out of an eLMIS
- Conducted two end user verification exercises in 196 sites across 8 regions focusing on supportive supervision and supply chain strengthening for anti-malaria commodities, assessing efficient implementation of standard treatment guidelines and product availability
- Supported the revision of standard operating procedures for pharmaceutical management in health facilities and development of job aids
- Conducted data quality assessment (DQA) in North, Far North, Center and Littoral regions
- Provided logistical support for Sulfadoxine/Pyrimethamine stock transfer totaling 4,061,130 anti-malaria treatment from Cameroon to DRC to avoid expiries on one hand the potential occurrence of stock out on the other
- Provided support to two senior MOH staff to attend the GS1 summit in Lagos to learn about track and trace to improve visibility of antimalarial supplies and explore possibilities of adopting GS1 standards in health care
- Capacitated the RFHP in North and Far North to provide logistical support for the distribution of LLINs to health areas in both regions
- Trained storekeepers on the Lean concept of 5S (a system for organizing spaces so work can be performed efficiently, effectively, and safely) to improve warehousing best practices and inventory management accuracy
- Acquired PPE and material handling equipment for the regional warehouse in North and Far North

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

- Procure malaria commodities such as RDTs, ACTs, injectable artesunate, and SPAQ
- Distribute 1,311,136 nets in the Far North region for the campaign
- Support the implementation of the 4th and final cycle of the SMC and distribution of 7,626,500 SPAQ treatment reaching 1,060,813 children aged 3 to 59 months old.
- Continue to provide supply chain management technical assistance and improved data visibility.

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 management activities? If so, why and what data did you use to arrive at that conclusion?

Some reduction in supply chain management activities has occurred to better align with PMI priorities and make use of limited resources.

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

Key Question 1

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

Supporting Data

Figure A42. Central Stock Levels for AL



Figure A43. Central Stock Levels for AS/AQ

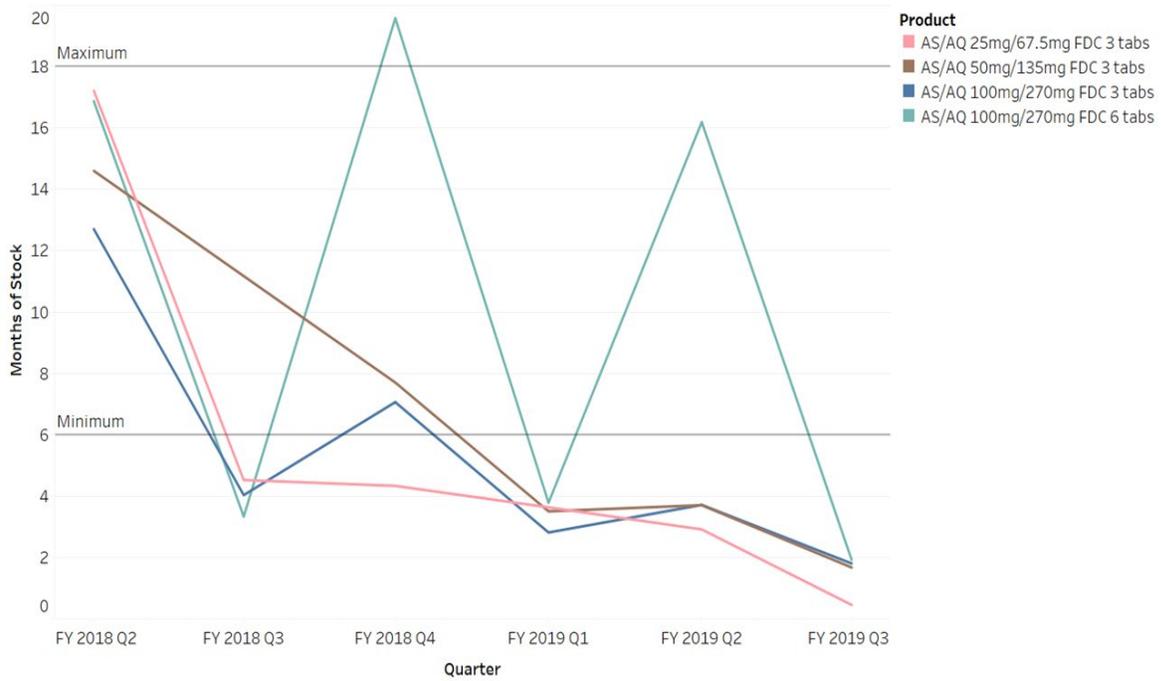
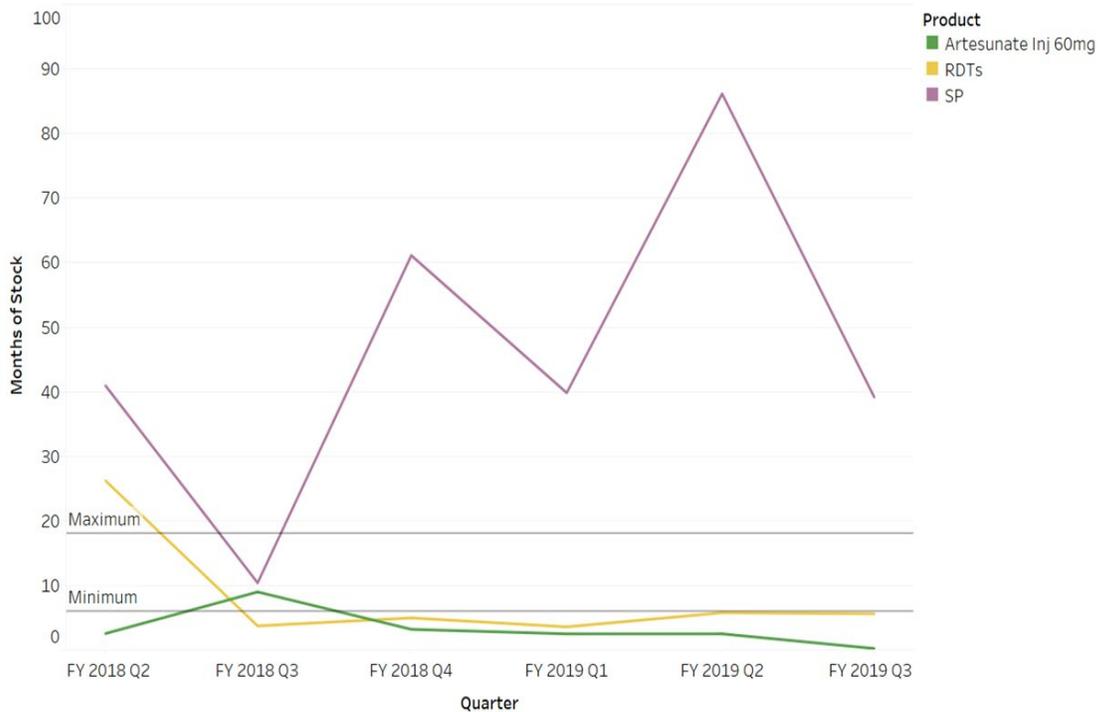


Figure A44. Central Stock Levels for RDTs, SP and Injectable Artesunate, 60mg



Conclusion

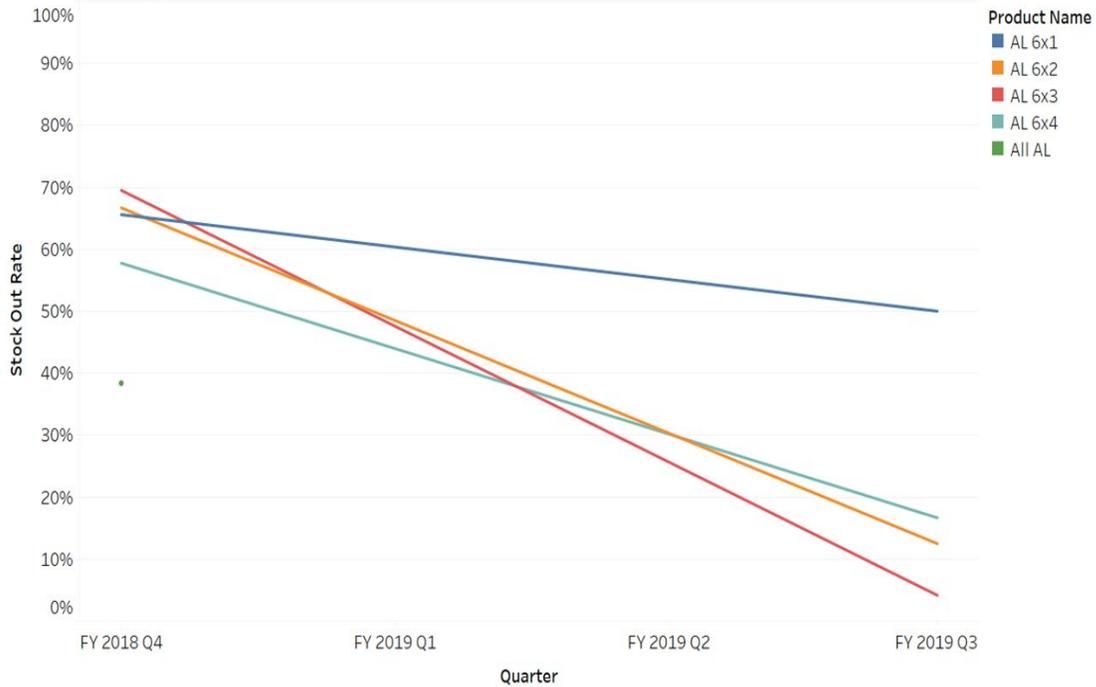
These graphs represent central level stocks at the Central Medical Store (CENAME) and across the regional warehouses. PMI-procured commodities do not currently pass through CENAME but are delivered directly to the regional warehouses in the North and Far North regions. The picture of overall stocks provided here is therefore a bit difficult to interpret for the purposes of PMI planning. For example, PMI does not procure ASAQ as AL is the recommended first-line drug for uncomplicated malaria in the SMC zones (North and Far North) where PMI works. The figures show low levels nationally of AL stocks. PMI is moving an order forward to address the need for AL. Historically, as indicated by the wide fluctuates in stock levels quarter to quarter, Cameroon has struggled with estimating average monthly consumption that provides sufficient time to adjust upcoming procurements as needed in order to maintain systems at stocked according to plan levels.

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 and SP over the last year (if tracked)? Is there a seasonal or geographic difference in stock out rates?

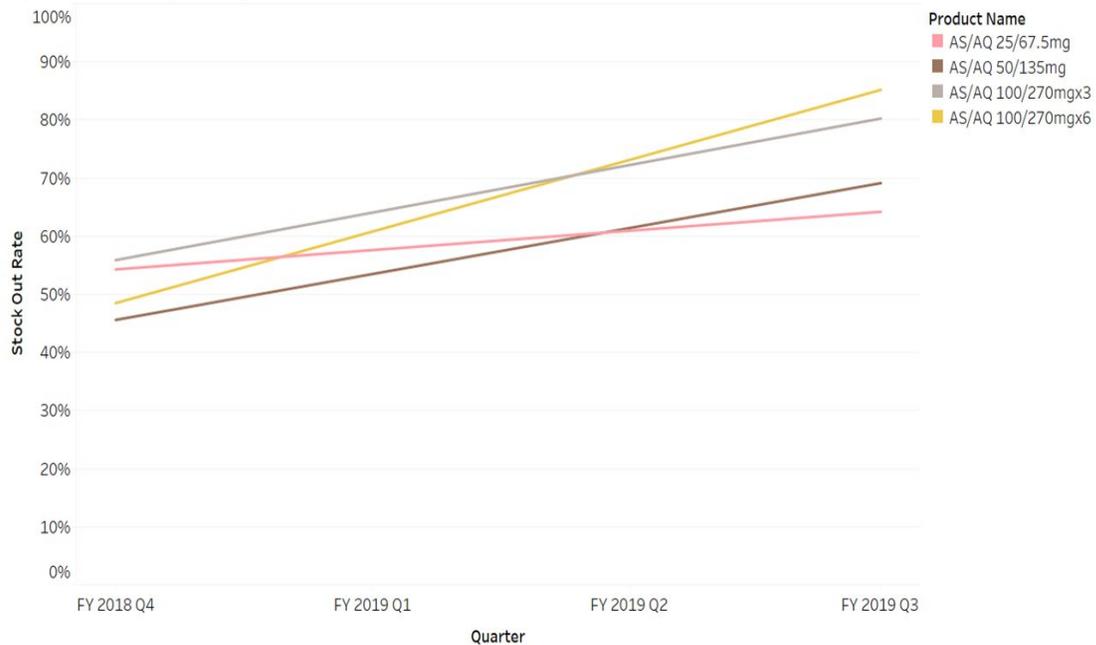
Supporting Data

Figure A45. AL Stockout Rates (EUV Data)



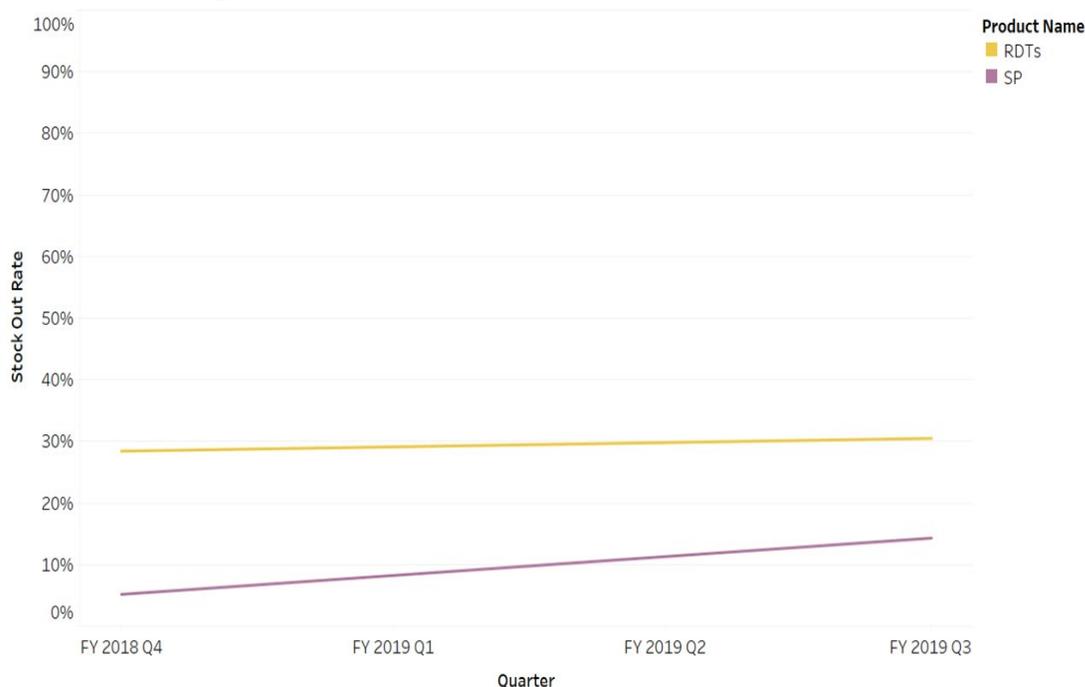
*Due to the poor quality of LMIS data, this graph is reporting EUV data from two time periods; Q4 2018 and Q3 2019.

Figure A46. AS/AQ Stockout Rates (EUV Data)



*Due to the poor quality of LMIS data, this graph is reporting EUV data from two time periods; Q4 2018 and Q3 2019.

Figure A47. SP and RDT Stockout Rates (EUV Data)



*Due to the poor quality of LMIS data, this graph is reporting EUV data from two time periods; Q4 2018 and Q3 2019.

Conclusion

Reductions in AL stockouts over the time period reported are evident. PMI does not procure ASAQ so those stockout rates are beyond our control. More work is needed to ensure consistent supplies of RDTs and SP at health facilities.

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

N/A

Conclusion

ACT and RDT consumption data are not available therefore the requested indicators cannot be graphed. PMI is currently providing support for integration of the LMIS module into DHIS2. Once the LMIS module is fully integrated and health facility and district level staff trained into commodity management and reporting of consumption data, the indicators will be entered into DHIS2 and reported.

Key Question 4

What are the trends in LMIS reporting rates?

Supporting Data

N/A

Conclusion

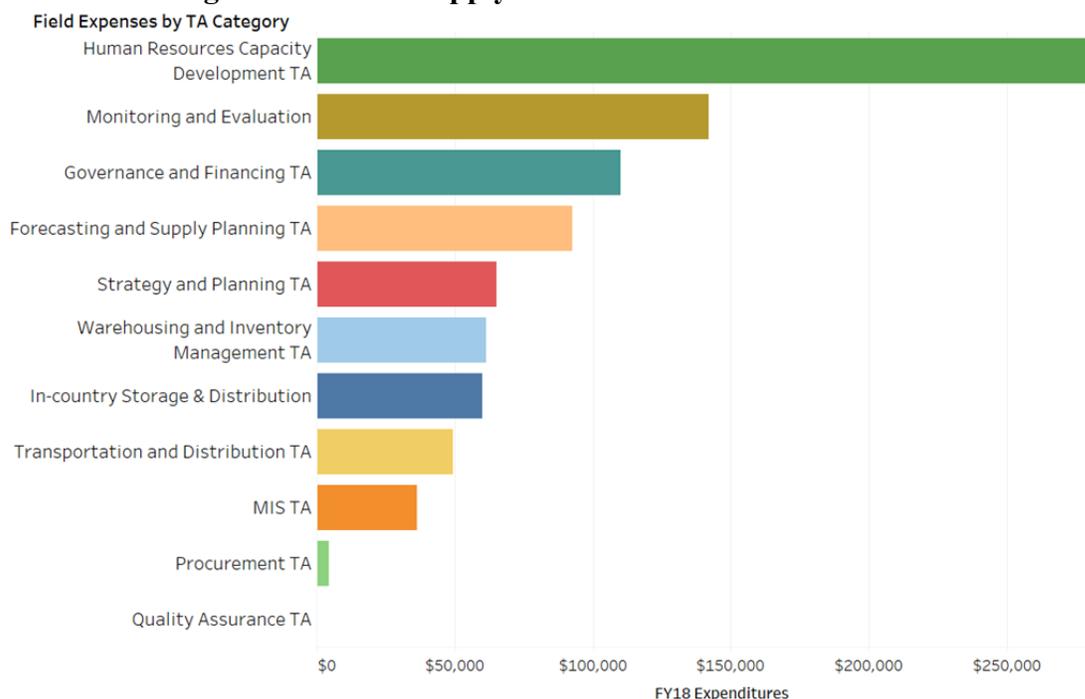
Due to the multiple systems in country per donor and per health area, this indicator (LMIS reporting rate) is just beginning to be reported. No trends are available. The country is working on migrating towards using DHIS2 for LMIS reporting but it is a work in progress. In Q3, a 46.6 percent LMIS reporting rate was noted (2246 reported out of 4821 facilities expected to report).

Key Question 5

What are the main supply chain functions supported by PMI? For areas that are not as strong is there additional investment that PMI should make? In areas performing well, is it dependent on PMI/donor and so should be maintained?

Supporting Data

Figure A48. PMI Supply Chain Investments in FY 2018



Conclusion

Figure A48 reflects FY 2018 expenditures which were made during the launch of PSM field office activities and is therefore does not represent a normal distribution of spending. The top 3 spending categories in FY 2019 to date are in-country storage & distribution, management information systems (MIS) TA and human resources capacity development. Due to weak warehousing and distribution systems in country, PMI plans to continue to provide financial support to ensure PMI procured commodities are properly warehoused and distributed. In addition, much of the human resources capacity development has focused at the warehousing level to improve the supply chain management system in to reduce future stockouts. MIS TA will also continue to be a focus in order to improve the data visibility at site level to provide the data required for decision making to address stockouts.

Key Question 6

What are the in-country considerations that impact your funding allocation in this category?

Supporting Data

As cited in the case management annex, results from recent studies such as the NMCP gratuity study and baseline case management assessment in the North and Far North indicate a widespread issue of irrational use of antimalarials. This includes over diagnosis of severe malaria with over-prescription of severe malaria medications and use of non-approved drugs for treatment of uncomplicated malaria. One approach to address this problem is through reinforcement of critical elements of pharmaceutical legislation and quality assurance. Contributing to the reduction of the volume number of substandard products will be achieved through reinforcing the existing system for reporting suspect or substandard products.

Conclusion

As a first step in pharmaceutical quality assurance, PMI plans to support the *Laboratoire National de Contrôle de Qualité des Médicaments et d'Expertise* (LANACOME) towards achieving its accreditation status and improving its pharmaceutical registration process.

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

NMCP objective
By 2023: <ul style="list-style-type: none">● One hundred percent of health districts use good quality information resulting from routine malaria surveillance to improve decision making● One hundred percent of sentinel sites conduct complementary malaria surveillance activities

- One hundred percent of malaria epidemics and emergency situations are controlled within 2 weeks
- One hundred percent of planned malaria control activities including studies and evaluations are implemented in time

NMCP approach

1. Health Systems Strengthening:

- a. Use DHIS2 to obtain essential malaria surveillance data;
- b. Use available opportunities to update the DHIS2 tools to strengthen data collection and standardize information collected nationwide by all health facilities;
- c. Strengthen data collection, transmission and storage systems and provide logistic support to the roll out of the DHIS2 by procuring ICT materials, and internet connection in facilities and providing incentives to the staff in charge of data entry to the DHIS2;
- d. Strengthen strategic information production and analysis capacities of all actors involved in malaria surveillance as well as increase analysis and use of malaria data for decision making;
- e. Ensure the quality of routine data through data quality audits and organize data validation meetings to improve the system.

2. Conduct sentinel epidemiological surveillance:

- a. Strengthen institutional and operational capacities of sentinel sites; conduct entomological surveillance;
- b. Monitor the therapeutic efficacy of antimalarials; monitor the prevalence of plasmodium species in sentinel sites; and
- c. Conduct weekly surveillance of malaria in sentinel sites and specific targeted health districts.

3. Strengthen malaria epidemic preparedness and response (EPR)

- a. Develop guidelines for malaria surveillance including epidemics management
- b. Train health personnel on malaria surveillance in epidemic-prone health districts including setting thresholds for monitoring upsurges in malaria cases
- c. Develop EPR plans
- d. Assess the preparedness of targeted areas

- e. Consistently analyze surveillance data to detect, manage and evaluate possible emergency situations or malaria epidemics

4. Monitor and evaluate mass campaigns and other routine interventions

- a. Conduct household surveys (MIS, DHS, MICS) to measure malaria indicators
- b. Conduct post campaign surveys to assess the effectiveness of mass campaigns (SMC campaigns, ITN campaigns)

PMI objective, in support of NMCP

PMI supports the NMCP's SME objectives through periodic support of household surveys and continuous support of routine surveillance systems (both at the national level and with focused support at the district level in the North and Far North regions), and through support to the FETP program (focused on the North and Far North regions).

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

- **Strengthened Country Malaria Technical Working Groups:** Working with partners and the NMCP, PMI supported the formation of a malaria surveillance and M&E technical working group (SMETWG) by developing the terms of reference for the SMETWG and supporting quarterly meetings during which recommendations were made for data use.
- **Support for the development 2019-2023 National Strategic Plan (NSP):** PMI provided technical support for the drafting of 2019-2023 NSP.
- **Building M&E leadership competencies and capacity of NMCP, MOH staff at national and regional levels:** PMI conducted Monitoring and Evaluation Capacity Assessment (MECAT) of NMCP staff at national level and in the North and Far North regions and developed a capacity strengthening plan that is being implemented.
- **Development of the Data Quality Module in DHIS2:** PMI trained NMCP and Health Information Unit staff of the MOH on the implementation of DQR in the DHIS 2, developed an SOP for DQR and malaria dashboard to display malaria data quality indicators in DHIS2.
- **Support for data analysis and use:** Implement partner staff are supporting NMCP staff and other partners at the central level and in the North and Far North in the coordination of regular data review meetings and in the development of bulletins and dashboards for data review and analysis.
- **Support FETP malaria-specific Advanced training programs:** PMI currently supports 2 Advanced FETP trainees.

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

- **Continue central-level support for DHIS2:** PMI will continue to support routine health information system strengthening, scale up of DHIS-2 and ensuring quality of malaria data under that system in partnership with NMCP and the MOH Health Information Unit.
- **Support to the NMCP for central level SME activities:** Continued support for the SMETWG. Support for the development and dissemination of a five-year national M&E manual.
- **Pilot a malaria surveillance assessment tool:** Using a standardized toolkit developed by global malaria partners conduct a malaria surveillance assessment.
- **Building M&E leadership competencies and capacity of NMCP, MOH staff at national and regional levels:** Training at the central and regional levels (in the North and Far North) focused on the needs identified in the MECAT.
- **Capacity strengthening support in the North and Far North:** This support will be in line with the national scale up of the DHIS-2 and will include equipment, training, intensive supervision, data review meetings and data quality monitoring.
- **Improving the Quality and Use of Malaria Data:** Continued support for the implementation of the data quality module in DHIS2. Continued support for rapid data quality audits at the district level in the North and Far North to ensure high-quality data to monitor routine malaria service provision and epidemiological impact of PMI-supported comprehensive package of interventions.
- **Support FETP malaria-specific Advanced and Frontline training programs:** The Frontline training will include support for 2 cohorts of trainees, one each in the North and Far North. Training will be targeted to Chiefs of Health Areas and malaria surveillance focal points in the districts (see also Section 3.E. General Infrastructure and Additional Health System Strengthening).

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?

Support for routine SME activities remains steady, however, a new malaria-specific surveillance assessment activity has been added using FY 2019 reprogramming. This activity will leverage available core funds to conduct a comprehensive assessment of the national surveillance system

including an audit of data quality components. The resulting data will serve as a baseline from which to measure progress in malaria surveillance systems and data quality.

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 A49. Data Sources and Collection Activities 2015 - 2023

Data Source	Data Collection Activities	Year								
		2015	2016	2017	2018	2019	2020	2021	2022	2023
Household Surveys	Demographic Health Survey (DHS)				x					
	Malaria Indicator Survey (MIS)						(x)			
	Multiple Indicator Cluster Survey (MICS)									
	EPI survey									
Health Facility Surveys	Service Provision Assessment (SPA)									
	Service Availability Readiness Assessment (SARA) survey									
	Other Health Facility Survey (Service Delivery Indicator)				x*					
Other Surveys	EUV				x	x	(x)			
	School-based Malaria Survey									
	Other (Post-ITN campaign survey)			x*			(x*)			
	Other (Malaria Impact Evaluation)									
	Support to Parallel Malaria Surveillance System	x*	x*	x*	x*	x*				

Data Source	Data Collection Activities	Year								
		2015	2016	2017	2018	2019	2020	2021	2022	2023
Malaria Surveillance and Routine System Support	Support to HMIS	x*	x*	x*	x*	x	(x)			
	Support to Integrated Disease Surveillance and Response (IDSR)									
	Other (Electronic Logistics Management Information System (eLMIS))									
	Other (Malaria Rapid Reporting System)									

*Asterisk denotes non-PMI funded activities, x denotes completed activities and (x) denotes planned activities.

Conclusion

PMI will continue to support the HMIS and the DHIS2 platform, dashboard use and updating, and ensure reporting on malaria indicators through the revised data collection forms. An MIS and EUV are planned in 2020. These surveys and assessment results will be used to inform programmatic decisions and monitor performance.

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 A50. HMIS-Supported Activities

Intervention	PMI-Funded? (X)			Does Global Fund plan to fund this? (X)	Does another donor plan to fund this? (X)
	FY 18	FY 19	FY 20		
Central Level					
Register, tools (e.g. checklists, indicator glossary), job aids (design, indicators, definition of data elements, data dictionary, system support)				X	X (MOH)
Data quality assessments (separate from supervision – funding for travel to lower levels)	X	X	X		

Intervention	PMI-Funded? (X)			Does Global Fund plan to fund this? (X)	Does another donor plan to fund this? (X)
	FY 18	FY 19	FY 20		
Program monitoring and technical assistance (funding for travel to lower levels)	X	X	X		
Training (funding for central level to conduct training at lower levels, capacity building, i.e. on the job training for central level staff)	X	X	X	X	
Human Resources (secondment of person in NMCP for SM&E, office/team for SM&E)	X	X	X		
Data Use (analysis, interpretation, visualization (dashboards, bulletins, dissemination/feedback to lower levels, decision-making)	X	X	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	
Support to annual operational plans for national malaria program	X	X	X		
Desk review to catch “logic errors system” (provide TA to catch logic errors)	X	X	X		
Admin 1 Level (Region/Province/State). PMI supports activities in [#] regions while Global Fund supports activities in [#] regions.					
Registers (warehousing, printing, distribution)					
Data quality assessments (separate from supervision – funding for travel to lower levels)	X	X	X		
Program monitoring and technical assistance (funding for travel to lower levels)	X	X	X		
Training (funding for Admin 2 staff to conduct training at lower levels, capacity building (i.e. on the job training for Admin 2 level staff)	X	X	X		
Human Resources (secondment of person for malaria SM&E, office/team for SM&E)	X	X	X		

Intervention	PMI-Funded? (X)			Does Global Fund plan to fund this? (X)	Does another donor plan to fund this? (X)
	FY 18	FY 19	FY 20		
Data Use (analysis, interpretation, visualization (dashboards, bulletins), dissemination/feedback to lower levels, decision-making)	X	X	X		
Adaptation of national policy guidelines and coordination (adapting policies, guidelines, supporting sub-committee meetings, supporting participation in sub-committee meetings)	X	X	X		
Adaptation of checklists and job-aides					
Participation in national meetings (support for travel costs)	X	X	X		
Support to Annual Operational Plans for Admin 1 Malaria Program	X	X	X		
Admin 2 Level (District)					
Data entry, summary, and transmission (training, re-training, computers, internet, tools)	X	X	X		
Supervision (training, traveling, supervision tools/checklists, create/design system for organized/methodical supervision)	X	X	X		
Data validation (data validation activities before monthly data submission - organize health facilities)		X	X		
Monthly/Quarterly data quality review meetings (venue, meeting support)		X	X		
Data Use (analysis, interpretation, visualization (i.e. dashboards), dissemination/feedback to facilities, decision-making)	X	X	X		
Human Resources (secondment of person for malaria SM&E, office/team for SM&E)					
Annual planning with Admin 1 (support travel)					
Facility Level					
Data collection/entry, summary, and transmission (training, re-training, computers, internet, tools)		X	X		

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

Conclusion

PMI continues to strengthen the HMIS system including data collection, validation, quality assessment and use at the national, regional, health district, and facility levels (at select high burden facilities). Most PMI support is focused in the North and Far North regions. GFATM is planning to provide registers and tools to health facilities and some trainings as well as support to data use at national level.

Key Question 3

What are the outcomes of HMIS strengthening efforts?

Supporting Data

Figure A51. HMIS Strengthening Efforts 2017 - 2018

		2017	2018
Timeliness	% of reports received on time	71%	60%
Completeness	"Confirmed malaria cases for children under 5 years of age" was reported in X% of facility-months	87%	81%
Accuracy	Populate with most recent DQA data	N/A	87%

Conclusion

The process of rolling-out reporting HMIS data on the DHIS2 platform is still quite new in Cameroon. Parallel reporting is ongoing for multiple health programs which places a huge reporting burden on health providers. While malaria data is integrated into the HMIS which is reported on the DHIS2 platform, there is still a separate reporting process. With ongoing support, the reporting completeness, timeliness and accuracy should continue to improve. PMI plans to support a national malaria surveillance assessment with FY 2019 funds that will provide a baseline measure from which to measure progress.

Key Question 4

What are the in-country considerations that impact your funding allocation in this category?

Supporting Data

Support for malaria surveillance monitoring and evaluation activities should be viewed through the lens of the ongoing roll-out and transition of the routine HMIS and malaria data to the DHIS2 platform. Currently health providers are being asked to fill out multiple parallel reporting forms which likely leads to compromised completeness, timeliness and accuracy.

Conclusion

Given the nascent roll-out of DHIS2 as a platform for reporting for integrated HMIS in Cameroon the need for SM&E support is great.

3.C. SOCIAL AND BEHAVIORAL CHANGE (SBC)

NMCP Objective
<p>The updated National Strategic Plan lays out the following objectives that have direct implications for behaviors by community beneficiaries and by service providers:</p> <ul style="list-style-type: none">● At least 80 percent of pregnant women receive at least three doses of IPTp in line with national guidelines;● At least 95 percent of children aged 3-59 months are protected from malaria by four cycles of SP + AQ in health districts eligible for SMC;● At least 80 percent of the general population sleep under long-lasting insecticide-treated mosquito nets;● At least 80 percent of suspected malaria cases seen in health facilities or by community health workers receive a diagnostic test (RDT or microscopy);● One hundred percent of confirmed malaria cases are treated in accordance with national guidelines in health facilities and in the community; (The NSP also includes objectives for IRS and larviciding, but these are not currently implemented.) <p>The NSP specifies two communication objectives:</p> <ul style="list-style-type: none">● Sensitize at least 80 percent of the population (including special populations) on the availability and use of malaria control services and products;● At least 80 percent of health workers adopt behaviors, attitudes, and practices in support of malaria control.
NMCP Approach
<p>Once the new NSP is validated, PMI will support the NMCP to develop an updated national communication strategy to complement the NSP. The NSP does state that the NMCP must reinforce and implement its communication strategy with a particular focus on the role of political and religious leaders and community health workers in the sensitization of communities for uptake of malaria behaviors. PMI is currently supporting the revitalization of an SBC technical and coordinating committee at both national and regional levels in the North and Far North. The first national coordination meeting will take place in October 2019. One function of this group is to validate standard messages on behalf of the national program so that communication efforts are harmonized. At the local level, community animators, based with community-based organizations (CBOs), work with the CHWs to further refine and tailor the messages for the local population, time of year, and target behavior of interest.</p> <p>The SBCC unit within the NMCP embraces the “Communication for Development” (C4D) approach, a social process based on dialogue, debate and open exchange among stakeholders that involves applying a wide range of tools and methods, including five specific C4D strategies:</p>

- Advocacy (e.g., for political support at multiple levels, resource mobilization)
- Social mobilization targeted to civil society organizations (to encourage community ownership and accountability)
- SBCC through mass media and interpersonal communication
- Capacity building (e.g., targeted to journalists, CHWs, and health promotion agents)
- Social marketing (not currently planned or implemented)

Focusing on SBCC, intervention approaches include mass media and interpersonal communication. Mass media includes traditional channels such as community and national radio, local and national print media, national television, and billboards, as well as social media and mobile phone networks. The purpose of mass media is to raise the public's awareness of key malaria interventions or events (e.g., launch of ITN mass distribution campaign), increase knowledge about transmission, and enhance the image of the NMCP. The role of interpersonal communication, through home visits, educational discussions and counseling, is to go beyond knowledge and influence behavior change. Per the NSP, CBOs (there should be one per community) are charged with conducting one home visit per quarter and educational discussions covering at least 30 percent of their target population based on an agreed-upon work-plan; additionally, they should conduct regular supervision and provide capacity building.

PMI Objective in Support of NMCP

PMI contributes to Cameroon's SBC strategy with support for national coordination and capacity building and regional focus in the North and Far North for direct implementation of SBC activities. SBC implementation focuses on improved uptake of key malaria behaviors in communities by effectively targeting relevant behavioral determinants, and improved health worker behaviors supportive of effective malaria service delivery.

One important activity conducted this past year was an NMCP SBC capacity assessment that identified specific gaps, specifically around use of current SBC best practices and techniques. A resulting activity currently under development is a Cameroonian Leadership in Strategic Communication Workshop for NMCP and other partners implementing malaria activities. With respect to direct implementation of SBC activities, PMI has balanced the need for formative research to ensure high-quality and impactful activity design and implementation with more rapid implementation focused on known behavioral challenges related to quality of service delivery in health facilities. PMI also continued support for radio programming in the North and Far North, including message harmonization and strengthening the network of community radio stations that can serve as a basis for future PMI-supported SBC programming. As the results of primary formative data collection become available, these activities will be adjusted as needed to incorporate the insights gained from the quantitative and qualitative data collection. PMI implementing partners are also encouraged to share data with one another to leverage existing resources. For example, data

from supportive supervision visits provide insights into health worker behaviors that would benefit the design of SBC activities. As PMI-supported activities continue in the North and Far North, particularly service delivery activities in health facilities and community level, PMI will support the NMCP's emphasis on the role of community leaders as change agents. We will look for all opportunities to leverage existing platforms that can be used for effective communication and social influence including those organized around religion, education, and community health workers.

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

- PMI has supported the design and implementation of the Malaria Behavior Survey conducted in the North and Far North regions to provide formative and baseline data on determinants of key malaria behaviors in these two regions. Data collection was completed in October 2019, and preliminary results are expected in November with additional dissemination activities planned to examine programmatic implications of results.
- A literature review was also undertaken to ensure existing data are adequately examined to provide more immediate insights on ideational factors that may influence behavior uptake among the target populations in the North and Far North for both community and provider behaviors.
- PMI has supported community radio programming in the North and Far North, including a message validation workshop to engage the stations as key partners in malaria SBC. Radio spots and programs have been defined along with a broadcasting schedule. Data on media habits will be examined in the MBS and will provide additional insights on how best to use community radio to reach target populations for future programming.
- PMI supported the design and printing of posters targeted to health facility-based service providers to encourage adherence to national case management guidelines and encourage service communication. High-quality posters are in the process of being printed and will be disseminated to facilities in the North and Far North.
- PMI's SBC implementing partner has coordinated with the service delivery partner to design a service communication training module that will be included in the broader training plan for facility-based and community-based providers to be implemented in the last quarter of 2019.
- An SBC capacity assessment of the NMCP has been completed and will guide capacity building activities going forward. PMI has also supported training and workshop participation for NMCP staff including the Roll Back Malaria SBC Working Group Annual Meeting.

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

- Analysis of the Malaria Behavior Survey results and dissemination of results
- Qualitative data collection to better understand health worker behaviors
- Service communication training targeted to both facility and community levels
- Continued support for radio programming
- Planning and implementation of the Cameroonian Leadership in Strategic Communication Workshop
- National Malaria Communication Plan development as an extension of the revised NSP
- Support to continue to engage with global RBM network (quarterly calls)
- Support for national and regional (North and Far North) SBC technical coordination groups
- Technical assistance for the design of SBC for the next SMC campaign to focus on 2nd and 3rd dose adherence
- Development of a community champions approach targeted to pregnant women to improve prevention of malaria in pregnancy (ITN use, ANC attendance, IPTp adherence)

Note: all implementation activities are targeted to the North and Far North

PMI Goal

Through the use of social and behavior change 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?

PMI support for malaria SBC activities will remain at the same intensity with the same general focus of ongoing support for capacity building and coordination support as well as direct implementation in the North and Far North. However, with the completion of the Malaria Behavior Survey, activities will shift with more focus on implementation based on insights gained from data collection. In addition, PMI will support more targeted SBC for the SMC campaign (focused on adherence to the full 3-day regimen), as well as a community champions approach targeted to pregnant women to improve ANC attendance and general demand for malaria in pregnancy services.

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

Figure A52. PMI-Proposed Prioritized Behaviors

Behavior	Target Population	Geographic Focus	Justification
Consistent year-round ITN use and net care	Household decision-makers about who uses nets	North and Far North regions	While the most recent data do not suggest major behavioral issues related to non-use of existing nets, encouraging consistent net use (including during low transmission season) and care of nets is a priority behavior for the North and Far North. With the recent/ongoing mass distribution campaign, we can expect access to increase further, but the timing of the distribution puts new nets in households after the high transmission season when there is the risk of reduced net use due to lower perceived mosquito density. Currently, ITNs are the sole vector control activity in the PMI focus regions. With the arrival of new nets, it is important to establish a culture and practice of consistent net use and appropriate net care in these areas with highly seasonal transmission. The Malaria Behavior Survey will provide important insights to guide activity design.
Prompt care-seeking at qualified service providers (Public/confessional facilities and CHWs)	Household decision-makers about when and where care is sought	North and Far North regions	The most recent household survey data show that only 60% of children sought care for fever in the North and Far North, but more concerning is that only 32% of them sought care the same or next day. This care-seeking figure also includes treatment provided by private pharmacies, unregulated medicine vendors, and markets, so we can assume that services sought at regulated establishments are even lower. Data collected in a PMI-supported literature review highlighted self-diagnosis and self-treatment as normal practices within the community with 41% of respondents identifying as self-treating for malaria. Almost 60% of respondents in another study were not aware that treatment for children under five is supposed to be free. To improve outcomes for malaria, it is imperative that communities have confidence in malaria services provided in their catchment areas and that they are motivated to access them.

Behavior	Target Population	Geographic Focus	Justification
Health worker adherence to case management guidelines for testing and treatment	Service providers in the public/ non-profit sector Care-takers/ patients seeking services	North and Far North regions	The most recent household survey data show that 24% and 13% of children with fever in the North and Far North, respectively, received a finger/heel stick. Of those receiving antimalarials, only 13% received an ACT. Another survey found that only 60% of patients with uncomplicated malaria and only 39% of severe cases were managed appropriately. At the same time, there was evidence of major overtreatment with severe malaria medications. A PMI-supported baseline survey in the North and Far North found that over half of health workers surveyed had not been trained in malaria case management and free treatment for children under five was only offered in 39% of health facilities. If care-takers are expected to bring their ill children to qualified providers at the first signs of fever, it is essential to ensure that those providers are equipped, trained, supervised, and regulated to provide services per the national guidelines, and to treat their patients with care and respect.

Conclusion

The priority behaviors described above are the behaviors that are considered most critical to the success of malaria efforts in the North and Far North. They have been identified through discussions with the NMCP and partners, and based on review of existing data from a variety of sources, including: the most recent DHS survey; a 2018/19 study conducted on the existing policy of free malaria services for children under five; a recent baseline health facility assessment; and a comprehensive literature review focused on the status of key malaria behaviors and their determinants (in the northern PMI focus regions, all of Cameroon, and in sub-Saharan Africa more generally). While there are still data gaps on the determinants of key behaviors, the behaviors themselves are the ones we feel can and should be improved if a coordinated strategy is clear and specific activities are based on formative data specific to the North and Far North are collected. With the MBS results and additional insights that will be generated through qualitative data collection in early 2020, we anticipate movement for these priority behaviors.

Note that prevention of malaria in pregnancy will also be emphasized and leveraged through the care-seeking and health worker interventions. In order to improve care-seeking, which is basically an effort to increase demand for services, access issues will be addressed through expansion of the CHW program. A focus on strengthening the role of CHWs in community health will also expand opportunities for service communication and health promotion for ITN use and ANC attendance. Especially for facility-based providers, emphasis will be placed on

improving the patient-provider interaction to foster positive relationships between communities and their healthcare professionals.

SBC activities will also leverage existing community-based platforms (e.g., school and religious) to expand the reach of interventions through trusted sources.

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 A53. Summary of Determinants and Gaps for FY2020 Prioritized Behaviors

Behavior	Key Facilitators	Key Barriers	Knowledge Gaps
Consistent year-round ITN use and net care	Access	Discomfort; seasonality/low perceived mosquito density	More data are needed on determinants associated with use and non-use, as well as usage patterns associated with age and seasonality.
Prompt care-seeking at qualified service providers (Public/confessional facilities and CHWs)	Expanded access via the CHW program	Cost; lack of awareness of free services for children under five; norm of self-diagnosing and self-treating	More data are needed on determinants of prompt care-seeking and the factors that lead to seeking care from one type of provider to another (e.g., CHW, pharmacy, traditional practitioner, faith-based).
Health worker adherence to case management guidelines for testing and treatment	Provider and client preferences	Financial incentives; lack of health worker training/knowledge; distrust of RDTs	More data are needed to understand the complex behavioral determinants that influence provider adherence to national case management and MIP guidelines.

Conclusion

Much of the data summarized in this section on key facilitators, barriers, and behavioral determinants are from a recent literature review or other stand-alone studies that may not be geographically representative of the North and Far North, and may be outdated. In addition, most of them do not tie behaviors to specific determinants. The Malaria Behavior Survey, implemented in the North and Far North, will provide valuable insights on the drivers associated with these priority behaviors. These data will be complemented by additional qualitative data that will be collected to better understand the determinants of health worker behaviors in the service delivery sphere. Another important data source that should be leveraged to inform SBC

activities are supervision reports and documents derived from case management activities conducted with CHWs and facility-based providers.

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

There is a need to support the NMCP's SBCC technical unit to ensure it is providing leadership and playing a coordinating role for implementing partners and donors developing SBC activities throughout the country. In addition to national-level coordination, regional coordination groups would strengthen SBC implementation at the peripheral levels to ensure that activities are coordinated and in harmony with the NMCP's objectives and priorities. In particular, the program inventory noted a deficiency in the category of high quality formative assessments being used to inform intervention design. The MBS and other qualitative data collection supported by PMI will improve the availability of such data; of utmost importance is ensuring those opportunities are seized to improve the national and regional programs' ability to contribute to data collection, analysis, interpretation, and resulting activity design.

Conclusion

PMI will continue to support the NMCP to coordinate technical partners through routine meetings of the national SBCC technical working group. It will also support similar groups in both the North and Far North, and identify capacity building opportunities targeted to SBC focal points in the two regions. PMI will also support NMCP SBCC focal point participation in global meetings and trainings, including the RBM SBC Working Group, to ensure they have opportunities to engage in global exchange of ideas, best practices, and lessons learned for malaria SBC. There will also be a strong emphasis on capacity building to analyze and interpret the MBS results once they are available.

Key Question 4

What are the in-country considerations that impact your funding allocation in this category?

Supporting Data

There is great potential in improving access to prompt care and the quality of malaria services through the community health worker program. While PMI is certainly investing in that sector and coordinating this work with the strategic vision of the national program, there are many actors (beyond malaria) involved and there is a level of complexity to contend with in the context of performance-based financing, universal health coverage, and the sheer resources

required to fully scale up the program. The issues around health financing are also extremely complex and have a direct impact on both care-seeking and service delivery behaviors.

Conclusion

PMI and its implementing partners are actively engaged in higher level discussions around the community health worker program and universal health coverage and will adapt activity implementation as needed to remain aligned with the national strategy.

As formative data are collected and PMI-supported SBC activities are designed and implemented, it is essential to monitor and evaluate them to ensure outcomes are as anticipated to course-correct as needed. The MBS will provide baseline measures for key behaviors and determinants; additional reflection is needed to ensure service delivery baseline data are sufficient. PMI will support data collection for routine monitoring and evaluation of its SBC activities.

3.D. PROGRAM EVALUATION AND OPERATIONAL RESEARCH

NMCP objective
<ul style="list-style-type: none"> • At least 80 percent of identified research projects are completed. • By 2023, obtain and promote at least 80 percent of results from operational research on the implementation of interventions in different thematic domains
NMCP approach
NMCP priorities include: Epidemiologic research, human behavior research, vector research, reinforcements of partnerships for research
PMI objective, in support of NMCP
PMI is not currently supporting OR activities
PMI-supported recent progress (past ~12-18 months)
N/A
PMI-supported planned activities (next ~12-18 months, supported by currently available funds)
N/A

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.

PMI is not currently planning support for any OR/PE activities.

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

No PE/OR activities are currently planned.

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

N/A

Conclusion

N/A

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

N/A

Conclusion

N/A

Key Question 3

What are the in-country considerations that impact your funding allocation in this category?

Supporting Data

N/A

Conclusion

N/A

3.E. OTHER HEALTH SYSTEMS STRENGTHENING

Ministry of Health Objectives
<ul style="list-style-type: none"> ● The Government of Cameroon is working to implement a phased strategy designed to move the country towards Universal Health Coverage over the next five years. ● USAID/Cameroon is supporting the development and implementation of the strategy through non-COP PEPFAR funding provided by the Sustainable Financing Initiative within the Office of HIV/AIDS. ● The first phase of the UHC strategy, which will begin in 2020, seeks to build on and standardize existing structures offering free or subsidized care, particularly to pregnant women and children under five, including the World Bank’s Performance-based Financing and the French and German supported Cheque-Sante. ● PMI investments including SMC, IPT, clinical and community service delivery strengthening directly contribute to this effort. ● At the same time, PMI will benefit from increased coordination and harmonization as some of the unintended incentives created by the different funding mechanisms are addressed (e.g., concentrating treatment in facilities instead of the community, or over-prescribing certain medications).
NMCP objective
<p>By 2023:</p> <ul style="list-style-type: none"> ● Bring at least 80 percent of health personnel to implement activities against malaria in accordance with national directives ● Respect management procedures in the implementation of 100 percent of planned activities ● Mobilize at least 80 percent of the necessary funds to implement the national strategic plan ● Activate at least 95 percent of mobilized resources at all levels of the health system
NMCP approach
<ul style="list-style-type: none"> ● Provide working sessions on universal health coverage at all levels of the health pyramid ● Strengthen refresher trainings and integrated supportive supervision for implementation of planned activities at all levels of the health system ● Build NMCP national and regional capacity to provide support for program implementation, including communication, governance and financial management.
PMI objective, in support of NMCP Infrastructure
<p>PMI goal is to continue to support capacity building activities to strengthen not just health service providers, but also NMCP staff in the implementation of the NSP.</p>

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

- PMI conducted an NMCP capacity assessment that will guide capacity building activities in coordination and communication activities at the NMCP.
- PMI has also supported training and workshop participation for NMCP and MoH staff including the Roll Back Malaria SBC Working Group Annual Meeting, a regional Monitoring and Evaluation workshop, and the 2019 ASTMH conference.
- PMI supported two MoH staff as FETP residents participating in the Advanced training program and engaged in malaria-specific projects.

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

- Support to the NMCP to assist them in their role of coordinating technical and implementation partners, as well as opportunities to build capacity via conference and workshop attendance (national or international) to improve program management. Office management support is included.
- Support small project grants for which Peace Corps volunteers can submit applications and potential support for a third year malaria volunteer.
- Support FETP malaria-specific Frontline Training programs and residents participating in the Advanced training cohort. The Frontline Training will include support for 2 cohorts of trainees, one each in the North and Far North. Training will be targeted to Chiefs of Health Areas and malaria surveillance focal points in the districts. Advanced training support will be directed to two residents engaged in malaria projects and mentored by NMCP staff.

PMI Goal

Continue to support capacity building for NMCP and MoH staff in the implementation of the National Strategic Plan.

Key Question 1

What infrastructure support can PMI offer that would address human resource needs in Cameroon?

Supporting Data

PMI has supported FETP residents in the Advanced training program, a regional program including Chad, CAR and Cameroon. This program includes training in response activities, database analysis and surveillance system evaluations. The two residents supported by PMI focus their field experience on malaria topics and are mentored by staff at the NMCP. Residents

who have benefited from this training include regional staff from 9 of 10 regions in Cameroon and central level staff, including one NMCP employee. As a lack of skilled human resources has been a clearly identified need by the NMCP, PMI will continue to fund participation of residents in this program. PMI will also continue to support two additional cohorts of the malaria-specific FETP Frontline training program to expand coverage of this program in the North and Far North and further improve capacity of front-line health professionals and the public health workforce.

Conclusion

- Continue support for FETP malaria-specific Frontline training program. This will include support for two cohorts of trainees, one each in the North and Far North. Training will be targeted to Chiefs of Health Areas and malaria surveillance focal points in the districts.
- Continue support for two FETP residents participating in the Advanced training program to be engaged in malaria-specific projects.

Key Question 2

What are the in-country considerations that impact your funding allocation in this category

Supporting Data

- Current Health sector is 5 percent of annual government budget, below Abuja Declaration pledge of 15 percent.
- The country phased approached for Universal Health Coverage in the next five years will potentially increase health sector financing.

Conclusion

Health sector financing continues to remain low but the initiation of UHC in 2020 through standardization of free and subsidized services and free access to services for pregnant women and children under five in the coming years may help strengthen the country's effort to fight malaria.

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

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
	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
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

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
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

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
	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
SMC (where applicable)	Geographic scope	No eligible districts receiving SMC		50% eligible districts receiving SMC		All eligible districts receiving SMC
	Coverage in targeted areas (% of eligible children 3-59 months who received complete SMC courses for all 4 rounds)	<60%	60-69%	70-79%	80-89%	90%+
	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
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
	Routine SP resistance monitoring via biomarkers conducted	No SP resistance monitoring conducted	SP resistance monitoring conducted in the last 6-10 years	SP resistance monitoring conducted in the last year 4-5 years	SP resistance monitoring conducted in the last year 3 years	SP resistance monitoring conducted in the last 3 years and results published or being published.

Figure B5. Category: Supply Chain

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
Supply Chain	Forecasting and Procurement Planning	<p>Ad hoc forecasting based on poor, inadequate, or inaccessible data</p> <p>Insufficient skills for selecting and implementing appropriate forecasting methodologies.</p> <p>Procurement plans are not developed from forecasts</p> <p>No coordination among procurers</p>	<p>Annual forecasting and supply planning done but is based on poor, inadequate, or inaccessible data</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>Annual forecasts incorporate service and/or/consumption data</p> <p>Supply plans updated semi-annually 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) and among procurers</p>	<p>Semi-annual forecasts incorporate service and/or/consumption data, account for seasonality</p> <p>Supply plans updated 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>Near real-time demand/consumption, enhanced with additional programmatic contributions, drives monthly forecasting</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>

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
	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 maintenance budgeted for and institutionalized</p> <p>Storage capacity is logically located and can be effectively scaled with 3PLs</p>

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
	Routine distribution/ resupply between stock holding levels	No routine requisition and resupply schedule between stock holding levels No resources routinely available and allocated for transportation from higher to lower stock holding levels	Routine requisition and resupply between at least two stock holding levels according to a schedule Resources for transportation from higher to lower stock holding levels provided on ad hoc basis	Routine resupply between all stock holding levels according to a schedule Allocated resources for transportation from higher to lower stock holding levels provided on an irregular basis and resupply often achieved through unplanned means Resupply performance monitored post-activity	Routine resupply between all stock holding levels according to a schedule shared with all levels and informed by accurate demand signals Allocated resources for transportation provided on a regular basis and augmented with 3PLs Resupply performance monitored real-time	Routine resupply between all stock holding levels according to a schedule shared with all levels and informed by accurate, timely, demand signals Robust emergency and inter-facility resupply mechanisms are in place Allocated resources for transportation available internally or outsourced with 3PLs. Resupply transaction data is digitized for all stock transfers Near real-time visibility into upstream and downstream activities Resupply operations adhere to GDP and or meet in-country compliance standards for maintaining quality during distribution

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
	Logistics Management Information System	<p>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 followed</p> <p>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>Stand-alone, program specific LMIS processes and structures defined but no formal or ongoing monitoring or measurement protocol exists.</p> <p>Some visibility of facility level inventory and consumption, low reporting rates, mostly paper-based</p>	<p>The country has documented LMIS processes and structures. The structures are functional. Metrics for performance monitoring, quality improvement, and evaluation are systematically used.</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>Government and stakeholders use the national LMIS systems for key performance monitoring and follow standard practices.</p> <p>Facility inventory and consumption data is 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>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 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>

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
	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>No approved supply chain strategic plan</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 management system in place to support interface of product licensing, registration, manufacturing, post-marketing surveillance.</p> <p>Approved (and up to date) supply chain strategic plan. Partially implemented</p>	<p>Strong policy and strategic leadership by government, with a firm grasp of budgets and financial sustainability 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 structure for pharmacovigilance events in place, not fully functional.</p> <p>Approved (and up to date) supply chain strategic plan (contains clear roles and responsibilities, stakeholder mapping, costs).</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>

Figure B6. Category: Strategic Information

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%+
	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.

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
	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.
	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

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
	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
	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

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
	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

B7. 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.
	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.

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
	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	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
General Infrastructure	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)