

# PMI

# U.S. PRESIDENT'S MALARIA INITIATIVE

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This Malaria Operational Plan has been approved by the U.S. Global Malaria Coordinator and reflects collaborative discussions with the national malaria control programs and partners in country. The funding available to support the plan outlined here is pending finalization of the FY 2020 appropriation. If any further changes are made to this plan it will be reflected in a revised posting.

# **U.S. PRESIDENT'S MALARIA INITIATIVE**

## **NIGERIA**

### **Malaria Operational Plan FY 2020**

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## 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
CY	Calendar year
DRF	Drugs Revolving Fund
FY	Fiscal year
GHI	Global Health Initiative
GoN	Government of Nigeria
Global Fund	Global Fund to Fight AIDS, Tuberculosis and Malaria
HC3	Health Communication Capacity Collaborative
IEC	Information, education, communication
IPTp	Intermittent preventive treatment for pregnant women
IRS	Indoor residual spraying
ITN	Insecticide-treated mosquito net
LGA	Local government area
MIP	Malaria in pregnancy
MIS	Malaria indicator survey
MoH	Ministry of Health
MOP	Malaria Operational Plan
NDHS	Nigeria Demographic and Health Survey
NHLMIS	National Health Logistics Management Information System
NMEP	National Malaria Elimination Program
NMSP	National Malaria Strategic Plan
NSCIP	Nigeria Supply Chain Integration Project
PMI	U.S. President's Malaria Initiative
RDT	Rapid diagnostic test
SBC	Social and behavior change
SM&E	Surveillance, monitoring, and evaluation
SP	Sulfadoxine-pyrimethamine
SP/AQ	Sulfadoxine-pyrimethamine/Amodiaquine
UK-AID	United Kingdom Agency for International Development
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 Nigeria to end malaria. PMI has been a proud partner of Nigeria since 2011, helping to decrease child death rates by 16 percent from 2008 to 2018 according to Nigeria Demographic and Health Survey (NDHS), through investments totaling almost \$546.19 million.

The proposed PMI fiscal year (FY) 2020 budget for Nigeria is \$65 million. This Malaria Operational Plan (MOP) outlines PMI activities in Nigeria planned for FY 2020. Developed in consultation with the National Malaria Elimination Program (NMEP) 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 Nigeria (GoN) as well as other donors and partners.

### Nigeria at a Glance

- **Geography:** Nigeria is on the West coast of Africa with a surface area of 923,708 square kilometers lying between latitudes 4-14°N and longitudes 2-15°E. It borders Cameroon in the east, Benin to the west, Chad to the North-East, Niger to the north, and the Atlantic Ocean to the south.<sup>1</sup>
- **Climate:** The climate varies from arid in the North, with annual rains of 600-1,000 mm lasting for 3-4 months, to predominantly humid climate in the South with an annual average rainfall of 1,300-1,800 mm (and in some coastal areas up to 2,500 mm) lasting for 9-12 months. Rainfall is highest in the Northern parts of the country between the months of June and September and from March to November in the Southern parts, which usually coincides with the peak incidence of malaria.
- **Population in 2019:** Approximately 209 Million<sup>2</sup>
- **Population at Risk of Malaria:** 97 Percent<sup>3</sup>
- **Malaria Incidence per 1000 Population:** 281.1 per 1,000 Population at Risk<sup>4</sup>
- **Under-Five Mortality Rate:** 132 Deaths per 1,000 Live Births<sup>5</sup>

<sup>1</sup> National Malaria Strategic Plan. (2014-2020). Towards a Malaria-Free Nigeria: Nigeria Malaria Strategy 2014-2020. Nigeria Ministry of Health.

<sup>2</sup> National Population Commission, 2006.

<sup>3</sup> National Malaria Strategic Plan. (2014-2020). Towards a Malaria-Free Nigeria: Nigeria Malaria Strategy 2014-2020. Nigeria Ministry of Health.

<sup>4</sup> World Bank Open Data. 2018. Incidence of Malaria per 1,000 Population at Risk. World Bank.

<sup>5</sup> Nigeria Demographic and Health Survey 2018 - Key Indicators Report

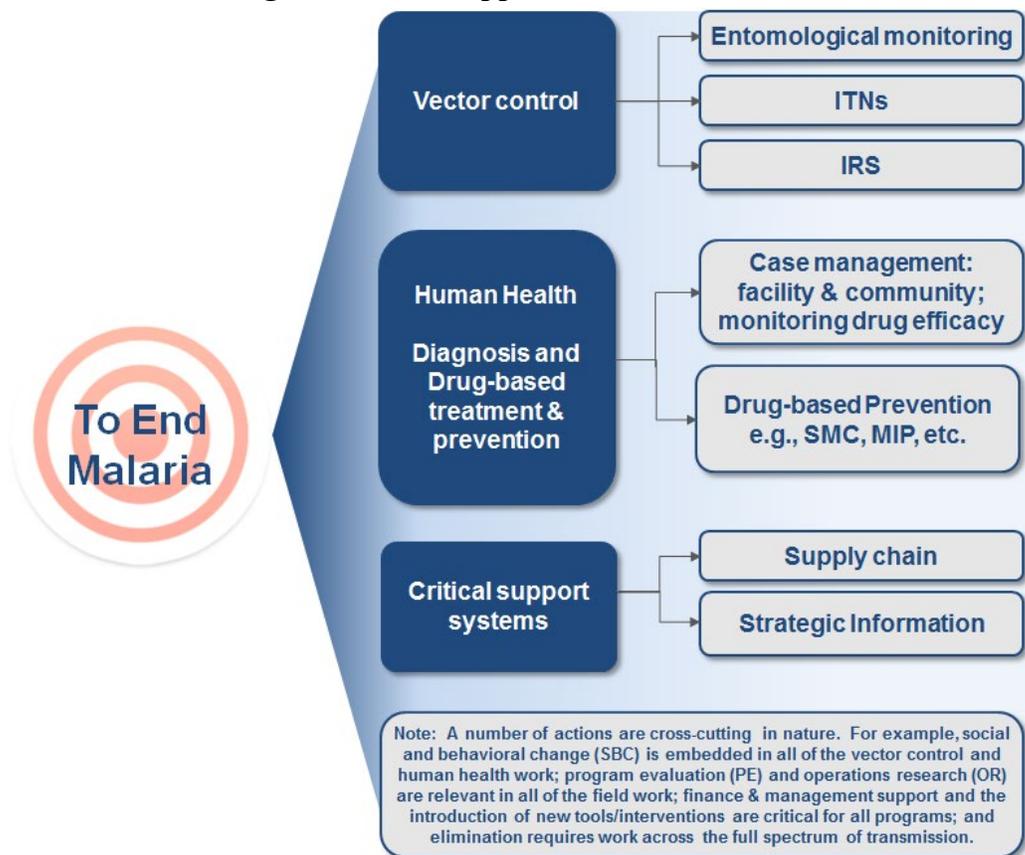
- **World Bank Income Classification & GDP:** Nigeria is a lower middle income country with a GDP per capita of \$2,028<sup>6</sup>
- **Political System:** Federal Republic
- **Trafficking in Persons Designations, 2016-2018:** Tier 2<sup>7</sup>
- **Malaria Funding and Program Support Partners Include (but not limited to):**
  - Global Fund to Fight AIDS, Tuberculosis and Malaria (GF)
  - U.S. President’s Malaria Initiative (PMI)
  - United Kingdom Agency for International Development (UK-AID)
  - World Bank (WB)
  - African Development Bank (ADB)
  - Islamic Development Bank (IDB)
  - The World Health Organization (WHO)
  - United Nations Children’s Fund (UNICEF)
  - Clinton Health Access Initiative (CHAI)
  - GiveWell Community Foundation (GWCF)
  - Nigeria Liquefied Natural Gas Company (NLNG)
- **PMI Support of National Malaria Control Strategy:** PMI prioritizes the areas of Nigeria with the highest burden of malaria to achieve the greatest reduction in malaria morbidity and mortality. As such, PMI support is focused in the eleven states of Akwa Ibom, Bauchi, Benue, Cross River, Ebonyi, Kebbi, Nasarawa, Oyo, Platea, Sokoto, and Zamfara. In other areas of Nigeria, PMI provides support for entomological surveillance and insecticide resistance management in support of the country’s national malaria control strategy through collaborative efforts led by the NMEP and other partners.
- **PMI Investments:** Nigeria began implementation as a PMI focus country in FY 2011. The proposed FY 2020 PMI budget for Nigeria is \$65 million, bringing the total PMI investment to date to nearly \$611.19 million.

<sup>6</sup> World Bank Open Data. 2018. GDP Per Capita in Current US Dollars. World Bank.

<sup>7</sup> United States Department of State, 2018 Trafficking in Persons Report - Nigeria, 28 June 2018

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 Nigeria’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/Nigeria will continue to rely on and engage with local partners such as the Nigerian Institute of Medical Research (NIMR), for continued entomological surveillance and insecticide resistance management and efficacy monitoring of recommended antimalarials, and the National Agency for Food and Drug Administration and Control (NAFDAC), for supply chain and quality of antimalarials in the private sector. Finally, PMI/Nigeria will continue to leverage private sector partnerships for the management of the two public health central warehouses in Abuja and Lagos.

To accelerate the journey to self-reliance, PMI developed a programmatic inventory to assess the strengths and persistent challenges of Nigeria’s program. The activities proposed in this

MOP draw on these strengths and address 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 Nigeria is capable of fully financing its development priorities, PMI will work with other partners (e.g., the Global Fund) to jointly track Nigeria's funding commitments across the malaria portfolio.

## II. MALARIA SITUATION AND MALARIA CONTROL PROGRESS IN NIGERIA

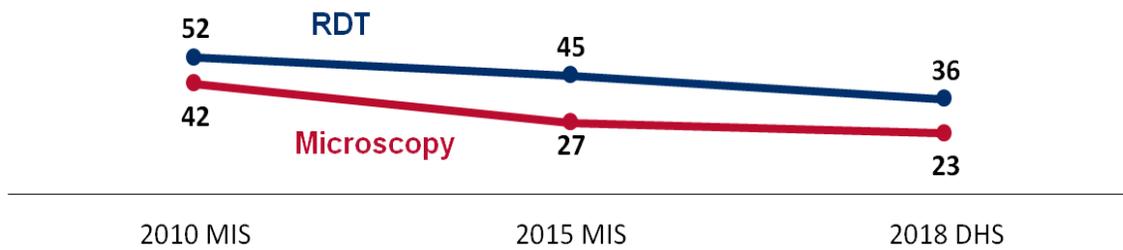
Malaria is transmitted throughout Nigeria, with 76 percent of the population living in high transmission areas and 24 percent in low transmission areas.<sup>8</sup> Five ecological zones define the intensity and seasonality of transmission and mosquito vector species: mangrove swamp, rainforest, Guinea-savannah, Sudan-savannah, and Sahel-savannah. These various ecological zones with transitional mosaics are distinguished by rainfall and other climatic conditions. The rainfall duration ranges from about three months in the Sahel-savannah to nine months in the mangrove swamps and rainforest. These climatic patterns affect vegetation and most flora and fauna are differentiated across the ecological zones. Nigeria's National Malaria Strategic Plan (NMSP) recommends at least three entomological sentinel sites in each of the ecological zones, which will generate data on vector bionomics, while insecticide resistance monitoring is recommended to be carried out in each state. The duration of the transmission season ranges from year-round transmission in the south to three months or less in the north. *Plasmodium falciparum* is the predominant malaria species. The primary vector across most of the country is *Anopheles (An.) gambiae s.s.* The data from the 2018 Nigeria Entomology Report showed that *An. gambiae s.s.* was the predominant member of the *An. gambiae* complex accounting for 54.7 percent of all the *An. gambiae s.l.* collected, with *An. coluzzii* a significant vector in the south of Nigeria.

According to the WHO World Malaria Report 2018, Nigeria contributed to 25 percent of global malaria burden in 2017 and accounts for 19 percent of the global estimated malaria deaths. The 2018 Nigeria Demographic and Health Survey (NDHS) reported a fever prevalence of 24 percent in children in the two weeks before the survey. Of those with fever, 72 percent sought advice or treatment. Microscopy data from the 2018 NDHS show that the prevalence of malaria parasitemia in children under five years of age is 23 percent, with regional differences, ranging from 16 percent in the South South and South East Zones to 34 percent in the North West Zone. The prevalence of malaria parasitemia in rural populations is 2.4 times that in urban populations (31 percent vs. 13 percent) and when compared to the highest socioeconomic group, the prevalence among children in the lowest socioeconomic group is seven times higher (38 percent vs. 6 percent).

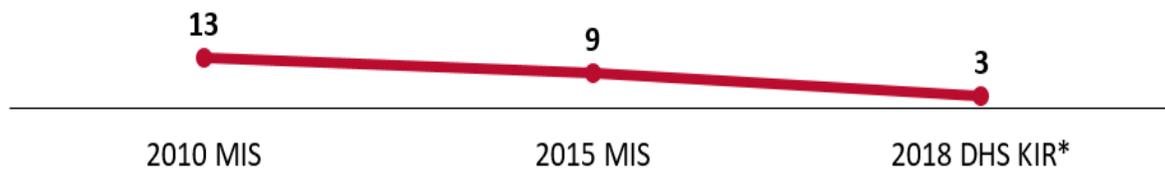
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<sup>8</sup> World Malaria Report 2018, Geneva, WHO 2019

**Figure 2. Trends in Malaria Prevalence, Percent of Children age 6-59 Months Who Tested Positive for Malaria by RDT or Microscopy (2018 DHS)**



**Figure 3. Trends in Prevalence of Low Hemoglobin, Percent of Children age 6-59 Months With Moderate-to-Severe Anemia (hemoglobin < 8.0 g/dl)**



\*Preliminary report for 2018 only includes nutrition cutoff for severe anemia (hemoglobin <7.0 g/dl). Estimate for hemoglobin <8.0 g/dl is forthcoming



**Figure 6. Key Malaria Indicators from Demographic Health Surveys (DHS) and Malaria Indicator Surveys (MIS) from 2008-2018**

Indicator*	2008 NDHS	2010 NMIS	2011 MICS	2013 NDHS	2015 NMIS	2016 MICS	2018 DHS KIR
% Households with at least one ITN	8%	42%	41%	50%	69%	65%	60%
% Households with at least one ITN for every two people	n/a	14%	n/a	22%	35%	32%	30%
% Population with access to an ITN	6%	29%	n/a	36%	55%	50%	47%
% Population that slept under an ITN the previous night*	5%	23%	n/a	13%	37%	41%	43%
% Children under-5 who slept under an ITN the previous night*	n/a	29%	16%	17%	44%	49%	52%
% Pregnant women who slept under an ITN the previous night*	n/a	34%	17%	16%	49%	40%	58%
% Children under-5 years old with fever in the last two weeks for whom advice or treatment was sought <sup>2</sup>	33%	83%	n/a	73%	66%	63%	70%
% Children under-5 with fever in the last two weeks who had a finger or heel stick	n/a	5%	8%	11%	13%	14%	14%
% Children receiving an ACT among children under-5 years old with fever in the last two weeks who received any antimalarial drugs	2%	12%	n/a	18%	38%	21%	28%
% Women who received two or more doses of IPTp during their last pregnancy in the last two years <sup>1</sup>	5%	15%	20%	17%	41%	31%	40%
% Women who received three or more doses of IPTp during their last pregnancy in the last two years <sup>1</sup>	2%	6%	n/a	7%	21%	15%	17%
Under-5 mortality rate per 1,000 live births	157	n/a	158	128	n/a	120	132
% children under-5 with parasitemia (by <b>microscopy</b> , if done)*	n/a	42%	n/a	n/a	27%	n/a	23%
% children under-5 with parasitemia (by <b>RDT</b> , if done)*	n/a	52%	n/a	n/a	45%	n/a	36%
% Children under five years old with severe anemia (Hb<8gm/dl)**	n/a	13%	n/a	n/a	9%	n/a	3%

\*DHS/MICS surveys are generally fielded during the dry season, whereas MIS surveys are deliberately fielded during the high transmission season, which should be taken into consideration when interpreting these indicators.

\*\*Preliminary report for 2018 only includes nutrition cutoff for severe anemia (hemoglobin < 7.0 g/dl). Estimate for hemoglobin <8.0 g/dl is forthcoming.

<sup>1</sup>Note that this indicator has been recalculated according to the newest definition, at the specified number of doses of SP/Fansidar from any source, wherever possible.

<sup>2</sup>Note that this indicator has been recalculated according to the newest definition, care or treatment from any source excluding traditional practitioners, wherever possible.

**Figure 7. Changes in Key Malaria Indicators Reported through Routine Surveillance Systems from 2014 to 2018.**

<b>Indicator</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>2017</b>	<b>2018</b>
# Suspect malaria cases <sup>1</sup>	21,285,296	23,938,584	18,530,219	21,797,297	23,431,139
# Patients receiving diagnostic test for malaria <sup>2</sup>	10,881,498	11,387,845	15,221,965	18,640,349	20,450,528
Total # malaria cases <sup>3</sup> (confirmed and presumed)	16,115,850	14,733,292	15,935,066	18,118,061	19,042,032
# Confirmed cases <sup>4</sup>	8,239,134	8,216,722	10,719,693	13,170,255	14,810,847
# Presumed cases <sup>5</sup>	7,876,716	6,516,570	5,215,373	4,947,806	4,231,185
% Malaria cases confirmed <sup>6</sup>	51%	56%	67%	73%	78%
Test positivity rate (TPR) <sup>7</sup>	72%	72%	72%	72%	72%
Total # <5 malaria cases <sup>8</sup>	6,953,305	6,460,393	6,535,939	7,224,489	7,727,256
% Cases under 5 <sup>9</sup>	43%	44%	41%	40%	41%
Total # severe cases <sup>10</sup>	398,971	278,075	251,124	276,425	273,003
Total # malaria deaths <sup>11</sup>	n/a	n/a	n/a	n/a	n/a
# Facilities reporting <sup>12</sup>	19,752	20,780	24,908	27,961	28,646
Reporting Rate (%) <sup>13</sup>	53%	56%	67%	75%	79%

N/A = not available

Definitions:

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

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

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

<sup>4</sup> # confirmed cases: Total diagnostically confirmed cases. All ages, outpatient, inpatient.

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

<sup>6</sup> % Malaria Cases confirmed: # confirmed cases (#4 above) / Total # cases (#3 above)

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

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

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

<sup>10</sup> As there may not be a standard definition across countries, please specify if there is such a variable available and the definition that is used; if “severe malaria” is not used or collected but “hospitalized for malaria” is a standard in the country, please insert that label and the relevant data by year.

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

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

<sup>13</sup> Reporting Rate: 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 NIGERIA'S MALARIA CONTROL STRATEGY**

The current 2014-2020 NMSP is based on the vision of achieving a malaria-free Nigeria with an interim goal of reducing malaria burden to very low levels and bringing malaria-related mortality to zero. The objectives of the NMSP 2014-2020 are to:

- Provide at least 80 percent of targeted populations with appropriate preventive measures by 2020.
- Test all care-seeking persons with suspected malaria using rapid diagnostic tests (RDTs) or microscopy by 2020.
- Treat all individuals with confirmed malaria seen in public or private facilities with effective antimalarial drugs by 2020.
- Provide adequate information to all Nigerians such that at least 80 percent of the population habitually takes appropriate malaria preventive and treatment measures as necessary by 2020.
- Ensure the timely availability of appropriate antimalarial medicines and commodities required for the prevention and treatment of malaria in Nigeria wherever they are needed by 2018.
- Ensure at least 80 percent of health facilities in all local government areas ( LGAs) report routinely on malaria by 2020, that progress is measured, and that evidence is used for program improvement.

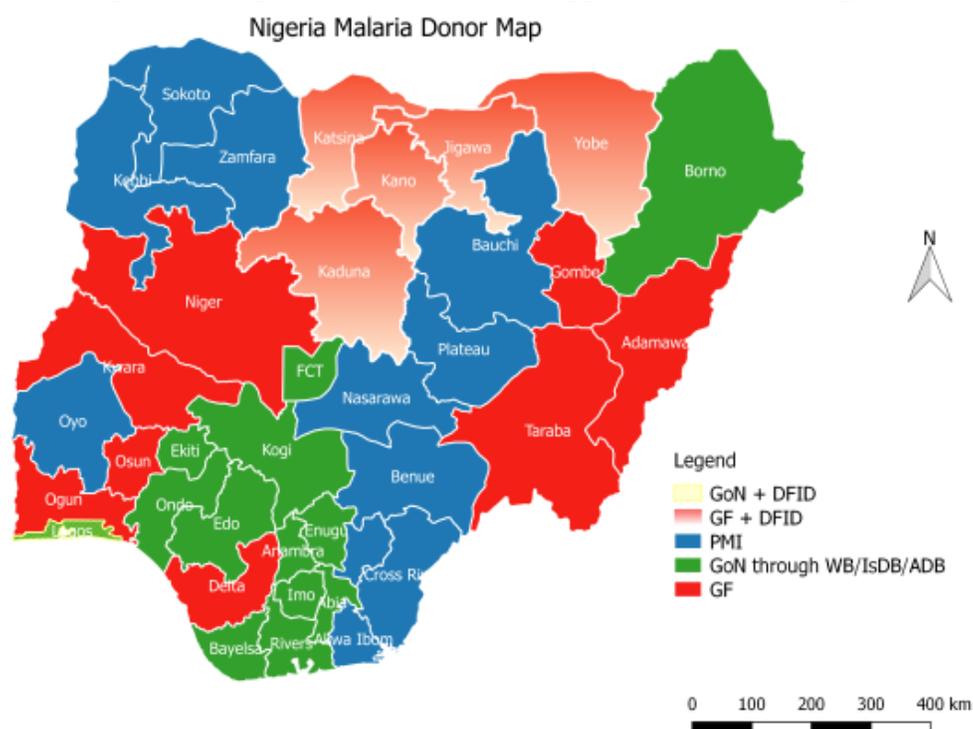
Under the strategic plan, the Government of Nigeria (GoN) supports the provision of ITNs, IRS, larval source management, IPTp, seasonal malaria chemoprevention (SMC), and diagnosis and treatment of uncomplicated malaria through routine health services and integrated community case management (iCCM). The strategy also supports the treatment of severe malaria using injectable artesunate.

The NMEP and partners plan to start the development of a new NMSP in 2019. The new NMSP should be completed in 2020, and will align with the National Strategic Health Development Plan 2018-2022 and the September 2019 National Health Council theme “Consolidating the Journey towards Achieving Universal Health Coverage” to underscore the global and national goal of achieving Universal Health Coverage by 2030. Figures 8 and 9 outline key funding partners by state.

**Figure 8. Malaria Donor-Supported States in Nigeria**

Donors		Geography	Population (2021 projection)	States
Government of Nigeria through African Development Bank		2 states	11,575,123	Anambra and Ondo
Government of Nigeria through Islamic Development Bank		5 states	19,851,233	Bayelsa, Edo, Enugu, FCT/Abuja, and Kogi
GoN through World Bank		5 states	29,723,579	Abia, Borno, Ekiti, Imo, and Rivers
	UKAid	1 state	14,457,412	Lagos
Global Fund	UKAid	5 states	44,314,058	Jigawa, Kaduna, Kano, Katsina, and Yobe
		8 states	40,521,605	Adamawa, Delta, Gombe, Kwara, Niger, Ogun, Osun, and Taraba
PMI		11 states	61,477,704	Akwa Ibom, Bauchi, Benue, Cross River State, Ebonyi, Kebbi, Nasarawa, Oyo, Plateau, Sokoto, and Zamfara
<b>All</b>		<b>36 states + FCT</b>	<b>221,920,715</b>	

**Figure 9. Map of Malaria Donor-Supported States in Nigeria**



PMI began in 2011 with support to three states (Cross River, Nasarawa, and Zamfara). In 2012, PMI expanded to six more states (Bauchi, Benue, Ebonyi, Kogi, Oyo, and Sokoto), and in 2013 added two more states (Akwa Ibom and Kebbi), for a total of 11 states. In 2017, PMI transitioned out of Kogi and began activities in Plateau. Figure 10 provides a detailed description of PMI investment areas for the current 11 PMI-supported states.

**Figure 10. PMI-Supported States by Start-up Year and Planned Interventions for 2020**

State	Start-Up Year	PMI Interventions								
		ITNs	EM/IR <sup>2</sup>	IPTp	SMC	CM <sup>1</sup>	PSM	iCCM	SBC	Surv <sup>3</sup>
Cross River	2011	X	X	X		X	X		X	X
Nasarawa	2011	X	X	X		X	X		X	X
Zamfara	2011	X	X	X	X	X	X		X	X
Bauchi	2012	X	X	X	X	X	X	(X)	X	X
Sokoto	2012	X	X	X	X	X	X		X	X
Benue	2012	X	X	X		X	X	(X)	X	X
Ebonyi	2012	X	X	X		X	X	(X)	X	X
Oyo	2012	X	X	X		X	X		X	X
Akwa Ibom	2013	X	X	X		X	X		X	X
Kebbi	2013	X	X	X	X	X	X	(X)	X	X
Plateau	2017	X	X	X		X	X		X	X

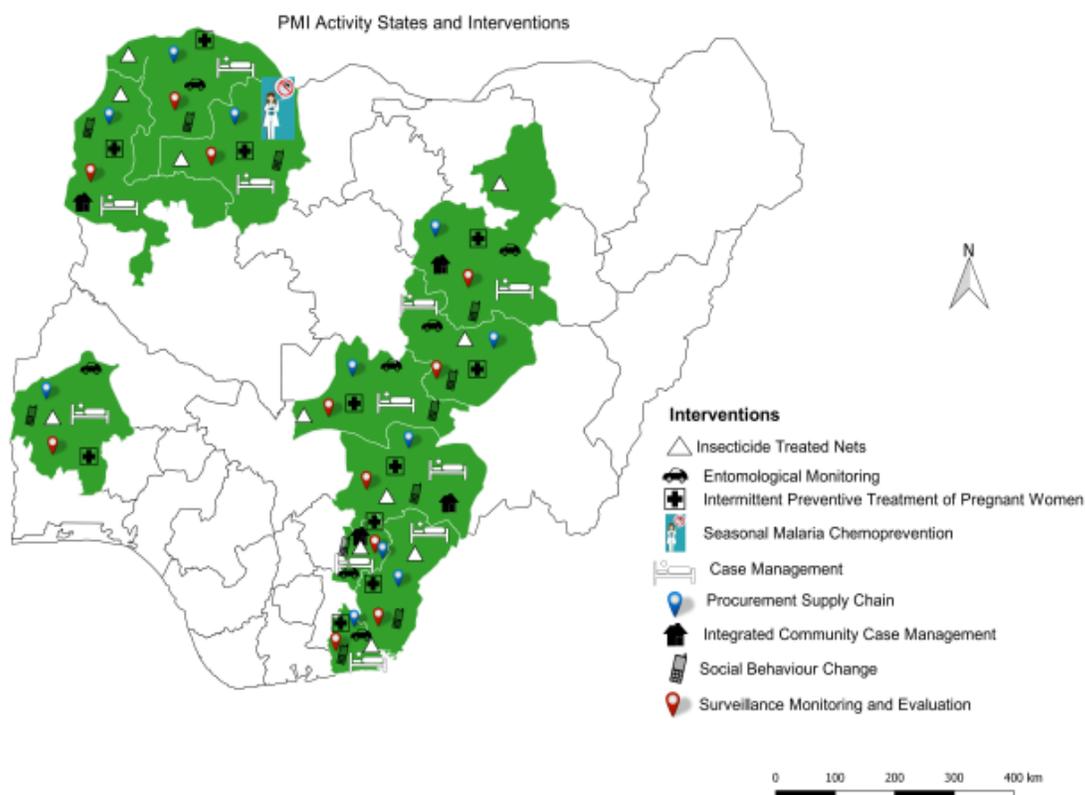
<sup>1</sup> CM - Case management

<sup>2</sup> EM - Entomological monitoring and/or insecticide resistance management

<sup>3</sup> Surv - Strengthening HMIS/DHIS

PMI previously overlapped with the Global Fund in 8 of the 11 states. However, beginning in 2018, the Global Fund grant focused its support to 13 non-PMI-supported states. The projected population for 2020 in the 11 PMI-supported states is 59.6 million. Figures 11 and 12 outlines the facility coverage plan for PMI-supported states.

**Figure 11. Map of PMI-Supported States by Start-Up Year and Planned Interventions for 2020**



**Figure 12. Health Facility Coverage Plan in PMI-Supported States**

State	Total LGAs	Health Facilities		PMI-Supported Health Facilities							
		Total	Total Public	2014	2015	2016	2017	2018	2019	2020	%*
Akwa-Ibom	31	583	482	452	461	442	481	481	481	481	100%
Bauchi	20	1,127	1,050	415	165	206	210	210	275	425	40%
Benue	23	1,367	1,096	184	247	282	302	302	410	550	50%
Cross River	18	1,266	1,043	144	235	377	384	384	425	470	45%
Ebonyi	13	646	523	104	163	349	352	352	450	495	95%
Kebbi	21	730	675		165	270	305	480	570	575	85%

State	Total LGAs	Health Facilities		PMI-Supported Health Facilities							
		Total	Total Public	2014	2015	2016	2017	2018	2019	2020	%*
Nasarawa	13	1,034	790	105	186	494	516	516	516	516	65%
Oyo	33	1,523	783	132	176	178	182	182	250	350	45%
Plateau**	17	1,141	850	.	.	.	254	350	500	635	75%
Sokoto	23	760	693	161	161	267	282	370	500	520	75%
Zamfara	14	740	704	112	130	267	266	350	425	525	75%
<b>Total</b>	<b>226</b>	<b>10,917</b>	<b>8,689</b>	<b>1,809</b>	<b>2,089</b>	<b>3,132</b>	<b>3,534</b>	<b>3,977</b>	<b>4,802</b>	<b>5,542</b>	<b>64%</b>

\* Percent of public health facilities slated to receive PMI support by 2020.

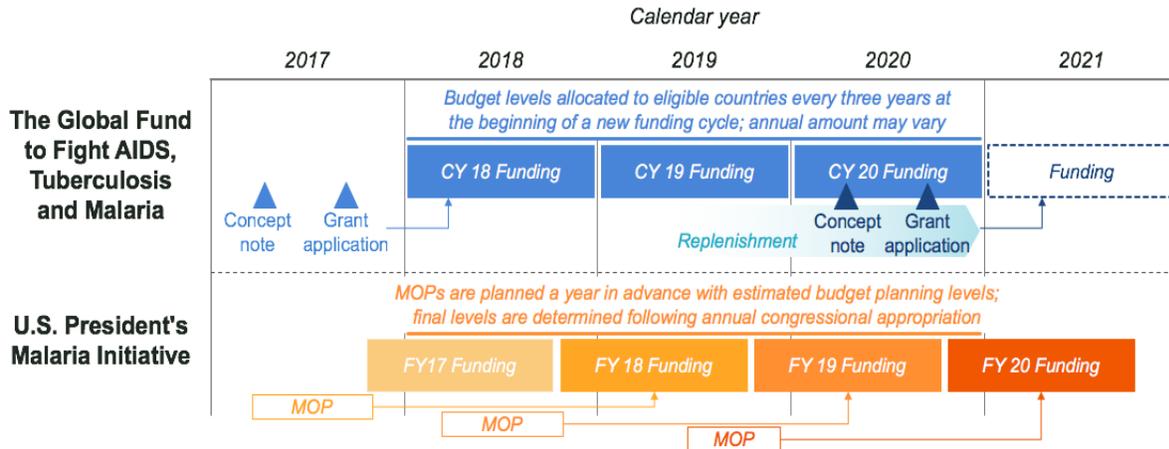
\*\* PMI support for Plateau State started in calendar year 2017.

#### 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 framework has been developed for PMI and Global Fund (i.e. mapping cost categories across organizations).

Figure 13 shows the annual cycle of PMI funding and the MOP implementation year. As the figure illustrates, MOP funds from a given FY support activities that take place during the next FY. For example, the FY18 MOP funds implementation during FY19. In contrast, 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 13. 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.

Figures 13 and 14 summarize contributions by external partners and host country government in calendar years 2018-20, with the goal of highlighting total country investments. For Nigeria, data are available for PMI (FY 17-19) 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 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 is not possible in the FY 2020 MOP cycle to attribute funding from the host country government, even though substantial infrastructural support is evident. There may be similar challenges for other partners.

**Figure 14. Annual Budget by Level 1 Category**

Year <sup>1</sup>	Funder	Vector Control	Case Management	Drug-Based prevention <sup>2</sup>	Supply Chain <sup>3</sup>	Monitoring, Evaluation & Research	Other Cross-Cutting and Health Systems Strengthening	Total
FY17/CY18	PMI	\$49.6M	\$8.7M	\$2.2M	\$5.0M	\$1.5M	\$8.1M	\$75.0M
	Global Fund	\$26.5M	\$10.6M	\$0.8M	\$0.4M	\$2.6M	\$10.5M	\$51.3M
	<b>Total</b>	<b>\$76.0M</b>	<b>\$19.2M</b>	<b>\$3.0M</b>	<b>\$5.4M</b>	<b>\$4.0M</b>	<b>\$18.6M</b>	<b>\$126.3M</b>

Year <sup>1</sup>	Funder	Vector Control	Case Management	Drug-Based prevention <sup>2</sup>	Supply Chain <sup>3</sup>	Monitoring, Evaluation & Research	Other Cross-Cutting and Health Systems Strengthening	Total
FY18/CY19	PMI	\$20.5M	\$28.5M	\$3.1M	\$6.3M	\$3.9M	\$7.8M	\$70.0M
	Global Fund	\$103.5M	\$19.5M	\$4.8M	\$1.1M	\$4.2M	\$12.7M	\$145.8M
	<b>Total</b>	<b>\$124.0M</b>	<b>\$48.0M</b>	<b>\$7.9M</b>	<b>\$7.4M</b>	<b>\$8.1M</b>	<b>\$20.4M</b>	<b>\$215.8M</b>
FY19/CY20	PMI	\$9.4M	\$36.2M	\$3.7M	\$5.7M	\$2.2M	\$7.7M	\$65.0M
	Global Fund	\$42.7M	\$20.9M	\$8.0M	\$5.5M	\$2.1M	\$12.1M	\$86.2M
	<b>Total</b>	<b>\$52.1M</b>	<b>\$57.1M</b>	<b>\$11.8M</b>	<b>\$6.2M</b>	<b>\$4.3M</b>	<b>\$19.7M</b>	<b>\$151.2M</b>

<sup>1</sup> Each year's figures represent the FY for PMI and one CY for GFATM that most closely align

<sup>2</sup> Drug-based prevention, including SMC and MIP where relevant;

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

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

**Figure 15. Annual budget by Level 3 category, *Detailed Breakdown for PMI and Global Fund***

Level 1 Category	Level 3 Category	FY17/CY18 <sup>1</sup>		FY18/CY19 <sup>1</sup>		FY19/CY20 <sup>1</sup>	
		PMI	Global Fund	PMI	Global Fund	PMI	Global Fund
<b>Vector Control</b>	Procure ITNs for Continuous Distribution	\$0.9M	\$10.2M	\$1.7M	\$8.4M	-	\$9.0M
	Distribute ITNs via Continuous Distribution	\$1.0M	\$0.4M	\$0.7M	-	-	-
	Procure ITNs for Mass Campaigns	\$39.9M	-	\$12.2M	\$54.7M	\$5.1M	\$18.5M
	Distribute ITNs via Mass Campaigns	\$6.5M	\$12.2M	\$4.8M	\$23.3M	\$3.1M	\$7.8M
	Other ITN Implementation*	-	-	-	-	-	-
	IRS Implementation <sup>4</sup>	\$0.1M	-	-	-	-	-
	Procure IRS Insecticide <sup>4</sup>	-	-	-	-	-	-
	Other IRS*	-	-	-	-	-	-
Entomological Monitoring	\$1.2M	\$0.1M	\$1.1M	\$0.4M	\$1.1M	\$0.3M	

Level 1 Category	Level 3 Category	FY17/CY18 <sup>1</sup>		FY18/CY19 <sup>1</sup>		FY19/CY20 <sup>1</sup>	
		PMI	Global Fund	PMI	Global Fund	PMI	Global Fund
	SBC for Vector Control <sup>5</sup>	-	\$0.01M	-	\$0.3M	-	\$0.1M
	Other vector control measures	-	\$0.001M	-	\$0.1M	-	\$0.1M
	Removing human rights- and gender-related barriers to vector control programs**	-	\$0.04M	-	-	-	-
Case Management	Active Case Detection**	-	-	-	-	-	-
	Community-based case management	-	\$0.5M	-	\$0.4M	-	\$0.4M
	Facility-based case management	-	\$2.0M	-	\$3.2M	-	\$3.0M
	Private-sector case management	-	\$0.1M	-	\$0.1M	-	-
	Procure ACTs	\$2.6M	\$1.6M	\$12.3M	\$7.6M	\$18.0M	\$8.2M
	Procure Drugs for Severe Malaria	-	\$0.7M	\$1.3M	\$1.0M	\$1.3M	\$1.1M
	Procure Other Diagnosis-Related Commodities	-	\$0.8M	\$0.3M	\$0.5M	\$0.3M	\$0.9M
	Procure Other Treatment-Related Commodities	-	-	-	-	-	-
	Procure RDTs	\$5.3M	\$1.9M	\$6.7M	\$1.6M	\$10.2M	\$2.3M
	Therapeutic Efficacy	-	\$0.2M	\$0.2M	\$0.3M	\$0.4M	\$0.02M
	SBC for Case Management <sup>5</sup>	-	\$1.0M	-	\$1.4M	-	\$1.1M
Other Case Management	\$0.8M	\$0.2M	\$7.6M	\$1.1M	\$6.0M	\$1.1M	
Drug-Based Prevention <sup>2</sup>	Procure SMC-Related Commodities	\$0.9M	-	\$1.5M	\$4.2M	\$1.4M	\$4.2M
	SMC Implementation	\$0.3M	-	\$0.6M	\$0.5M	\$1.3M	\$3.7M
	Prevention of Malaria in Pregnancy Implementation	\$0.5M	\$0.8M	\$0.5M	-	\$0.7M	-

Level 1 Category	Level 3 Category	FY17/CY18 <sup>1</sup>		FY18/CY19 <sup>1</sup>		FY19/CY20 <sup>1</sup>	
		PMI	Global Fund	PMI	Global Fund	PMI	Global Fund
	Procure IPTp-Related Commodities	\$0.5M	-	\$0.5M	-	\$0.4M	-
	IPTi**	-	-	-	-	-	-
	SBC for Drug-Based Prevention <sup>5</sup>	-	\$0.0M	-	-	-	-
	Other Prevention**	-	-	-	-	-	-
<b>Supply Chain<sup>3</sup></b>	In-Country Supply Chain <sup>3</sup>	\$4.0M	-	\$4.0M	-	\$4.3M	-
	Supply Chain Infrastructure	-	-	-	-	-	-
	Ensuring Quality	-	\$0.1M	-	\$0.3M	-	\$0.1M
	Pharmaceutical Management Systems Strengthening	\$1.0M	-	\$2.3M	-	\$1.4M	-
	Supply Chain System Strengthening	-	\$0.2M	-	\$0.9M	-	\$0.4M
<b>Monitoring, Evaluation &amp; Research</b>	Reporting, Monitoring, and Evaluation	\$0.7M	\$0.3M	\$1.9M	\$0.2M	\$1.2M	\$0.2M
	Program and data quality, analysis and operations research	-	\$2.1M	-	\$2.3M	-	\$1.3M
	Surveys	\$0.3M	\$0.3M	\$1.5M	\$1.7M	\$0.5M	\$0.5M
	Other Data Sources**	-	-	-	-	-	-
	Support for FETP*	\$0.5M	-	\$0.5M	-	\$0.5M	-
<b>Other Cross-Cutting and Health Systems Strengthening</b>	Integrated service delivery, quality improvement, and national health strategies**	-	\$0.5M	-	\$0.8M	-	\$0.7M
	Financial management systems**	-	\$0.02M	-	\$1.0M	-	\$0.0M
	Community responses and systems**	-	-	-	-	-	-
	Support for PCV and SPAs*	-	-	-	-	-	-

Level 1 Category	Level 3 Category	FY17/CY18 <sup>1</sup>		FY18/CY19 <sup>1</sup>		FY19/CY20 <sup>1</sup>	
		PMI	Global Fund	PMI	Global Fund	PMI	Global Fund
	Cross-Cutting Human Resources for Health**	-	-	-	-	-	-
	Central and Regional Program management <sup>6</sup>	\$0.1M	\$0.1M	\$0.6M	\$0.3M	\$1.2M	\$0.2M
	In-Country Staffing and Administration*	\$3.0M	-	\$3.5M	-	\$3.4M	-
	Other Program Management**	-	\$9.9M	-	\$10.6M	-	\$11.1M
	SBC Unspecified <sup>5</sup>	\$5.0M	-	\$3.7M	-	\$3.1M	-
<b>Total</b>		<b>\$75.0M</b>	<b>\$51.3M</b>	<b>\$70.0M</b>	<b>\$145.8M</b>	<b>\$65.0M</b>	<b>\$86.2M</b>

<sup>1</sup>. Each year's figures represent the FY for PMI and CY for Global Fund that most closely align;

<sup>2</sup>. Drug-based prevention, including SMC and MIP where relevant;

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

<sup>4</sup>. 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;

<sup>5</sup>. 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).

<sup>6</sup>. 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 the same categories.

\* Category currently funded by PMI only

\*\* Category currently funded by Global Fund only

**Figure 16. Annual Budget, Breakdown by Commodity**

Year <sup>1</sup>	Funder	ITNs for Continuous Distribution	ITNs for Mass Distribution	IRS Insecticide <sup>4</sup>	ACTs	RDTs	Severe Malaria	SMC-Related	IPTp-Related	Total
FY17/CY18	PMI	\$0.9M	\$39.9M	-	\$2.6M	\$5.3M	-	\$0.9M	\$0.5M	\$49.5M
	Global Fund	\$10.2M	-	-	\$1.6M	\$1.9M	\$0.7M	-	-	\$14.4M
	<b>Total</b>	<b>\$11.0M</b>	<b>\$39.9M</b>	<b>-</b>	<b>\$4.2M</b>	<b>\$7.2M</b>	<b>\$0.7M</b>	<b>\$0.9M</b>	<b>-</b>	<b>\$63.9M</b>
FY18/CY19	PMI	\$1.7M	\$12.2M	-	\$12.3M	\$6.7M	\$1.3M	\$1.5M	\$0.5M	\$35.7M
	Global Fund	\$8.4M	\$54.7M	-	\$7.6M	\$1.6M	\$1.0M	\$4.2M	-	\$77.5M
	<b>Total</b>	<b>\$10.1M</b>	<b>\$66.9M</b>	<b>-</b>	<b>\$19.9M</b>	<b>\$8.3M</b>	<b>\$2.4M</b>	<b>\$5.6M</b>	<b>-</b>	<b>\$113.2M</b>

Year <sup>1</sup>	Funder	ITNs for Continuous Distribution	ITNs for Mass Distribution	IRS Insecticide <sup>4</sup>	ACTs	RDTs	Severe Malaria	SMC-Related	IPTp-Related	Total
FY19/CY20	PMI	-	\$5.1M	-	\$18.0M	\$10.2M	\$1.3M	\$1.4M	\$0.4M	<b>\$36.0M</b>
	Global Fund	\$9.0M	\$18.5M	-	\$8.2M	\$2.3M	\$1.1M	\$4.2M	-	<b>\$43.3M</b>
	<b>Total</b>	<b>\$9.0M</b>	<b>\$23.6M</b>	<b>-</b>	<b>\$26.2M</b>	<b>\$12.5M</b>	<b>\$2.4M</b>	<b>\$5.6M</b>	<b>-</b>	<b>\$79.4M</b>

<sup>1</sup> Each year's figures represent the FY for PMI and CY for Global Fund that most closely align.

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

<sup>3</sup> 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 \$33.5 million over the CY 2018-2020 period;

<sup>4</sup> 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 the 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 Nigeria with FY 2020 funding. Please refer to [www.pmi.gov/resource-library/mops](http://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

<b>NMEP objective</b>
<p>Vector control is categorized under the prevention section of the NMSP 2014-2020. The first objective of the NMSP 2014-2020 states: “At least 80 percent of targeted population utilizes appropriate preventive measures by 2020.” The prevention strategy includes integrated vector management which covers entomological sentinel surveillance and insecticide resistance monitoring; universal access to ITNs; IRS in targeted areas; and complementing ITNs and IRS with larval source management, if appropriate. Specifically, the NMSP 2014-2020 targets for vector control are:</p> <ul style="list-style-type: none"><li>• At least 80 percent of households with at least one ITN for every two people (universal coverage).</li><li>• At least 80 percent of children under five years of age sleep under an ITN.</li><li>• At least 80 percent of pregnant women sleep under an ITN.</li><li>• At least 40 percent of households in IRS targeted areas will be protected by 2020.</li><li>• At least 85 percent of all structures in targeted LGAs will be covered using IRS during each spray cycle.</li></ul> <p>At least three vector surveillance sentinel sites will be established in each of the five ecological zones. The NMEP aims for universal coverage of ITNs. Due to the large population of Nigeria and the expense of IRS, use of IRS is limited, though information on resistance patterns to IRS insecticides is monitored.</p>
<b>NMEP approach</b>
<p>Use of insecticide treated nets (ITN) is the primary vector control method in Nigeria, as IRS is not widely implemented. In the context of Nigeria, integrated vector management consists almost entirely of ITN distribution. With availability of both Piperonyl butoxide (PBO) and Interceptor G2 (IG2) nets, as well as increasingly detailed data on resistance intensity patterns, Nigeria is in a position to better match state-level resistance patterns with the most cost-effective ITN product. ITNs are distributed via mass campaigns organized at the state level, with one net provided per two people. The assumption is made that ITNs require replacement every three years. PMI plans according to this assumption. In addition, continuous/routine nets are distributed via ANC and EPI clinics using the remaining balance from ITN mass campaigns.</p>

<p><b>PMI objective, in support of NMEP</b></p>
<p>PMI supports ITN procurement and distribution in 11 states, in accordance with joint planning with the NMEP and the State Malaria Elimination Programs (SMEPs). PMI also supports entomological and insecticide resistance monitoring. PMI now has insecticide resistance data for each of the 11 supported states. These data are used to make state level ITN procurement decisions. PMI is supporting the development of an ITN procurement decision tree that will guide all ITN procurement based on insecticide resistance data.</p>
<p><b>PMI-supported recent progress (past ~12-18 months)</b></p>
<p>PMI-supported recent progress includes:</p> <ul style="list-style-type: none"> <li>• Mass campaigns in Nasarawa, Kebbi, Bauchi, Akwa Ibom, and Cross River states where a total 13,437,032 ITNs were distributed</li> <li>• SBC activities to promote net use and maintenance pre, during, and post campaigns</li> <li>• Durability monitoring of ITNs in Zamfara, Ebonyi, and Oyo states</li> <li>• Monitoring of insecticide resistance in 4 LGAs in each of the 11 states</li> <li>• Longitudinal monitoring of vector populations in seven states</li> <li>• Review and update of ITN campaign implementation guidelines, using lessons from implementations in supported states. Important inclusions in the revised guidelines is the conduct of mass campaigns in challenging operating environments, the use of appropriate technology for household registration and mapping, and defining state leadership and responsibilities.</li> </ul>
<p><b>PMI-supported planned activities (next ~12-18 months, supported by currently available funds)</b></p>
<ul style="list-style-type: none"> <li>• ITN repeat mass campaigns will be supported in Ebonyi, Plateau, and Zamfara States (7,279,050 ITNs) and SBC activities will be implemented to promote net use and maintenance pre, during and post campaigns.</li> <li>• PBO nets will be distributed in Ebonyi State in November 2019</li> <li>• PMI will evaluate the intervention using an interrupted time series approach</li> <li>• IG2 and PBO nets will be distributed in Oyo State in November 2020</li> <li>• PMI will support an evaluation of these ITNs</li> <li>• Longitudinal entomological monitoring will continue in 5 states</li> <li>• Insecticide resistance monitoring will continue in the 11 supported states to inform ITN procurement</li> </ul>

- Facilitate technical assistance to NMEP and other partners including the malaria control project in Bonny Island, which is funded by the private sector, to conduct insecticide resistance monitoring to guide program decisions
- Technical Assistance to NMEP to review and update the Insecticide Resistance Monitoring (IRM) Plan for Nigeria

## 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 activity? Why, and what data did you use to arrive at that conclusion?

Funding levels will increase reflecting increased costs associated with expanding entomological monitoring to evaluate the PBO net mass campaign distribution in Ebonyi State and distribution of Interceptor G2/PBO nets in Oyo State. 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. PMI-Supported Entomological Monitoring Sites in Nigeria

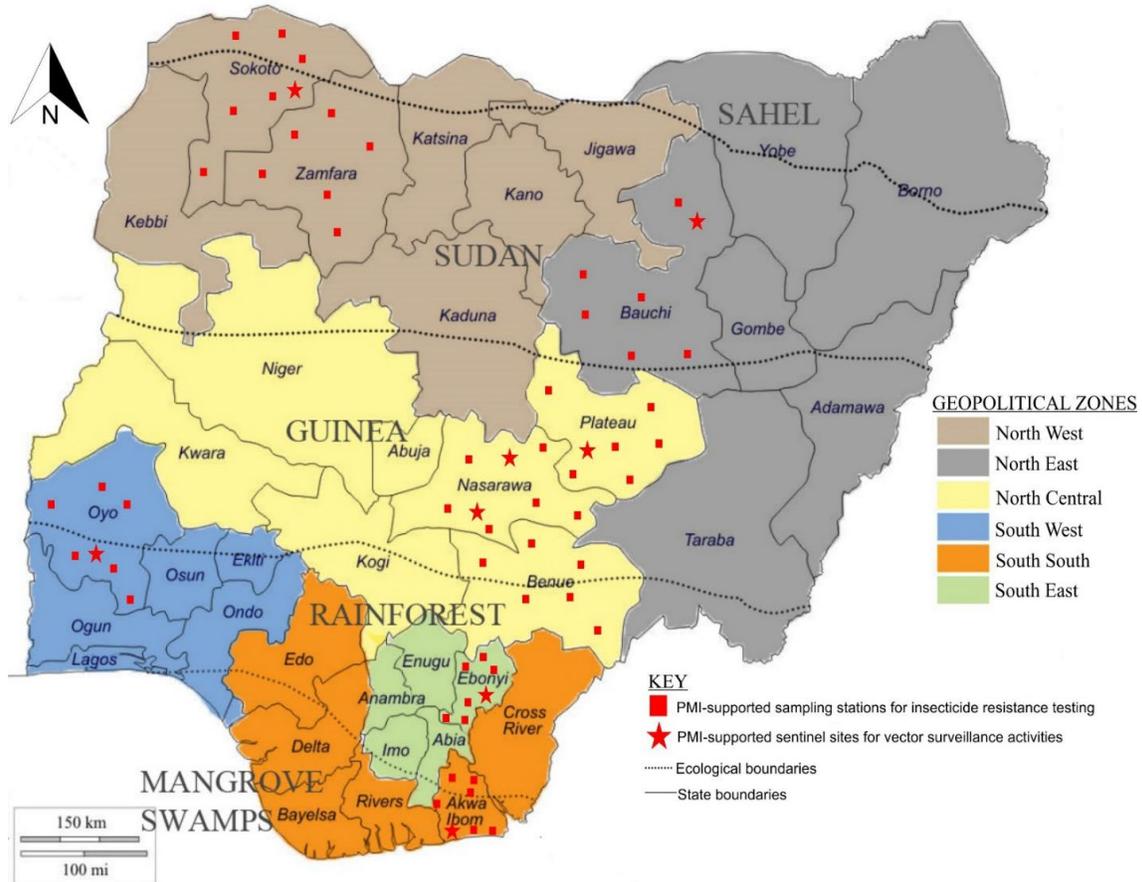
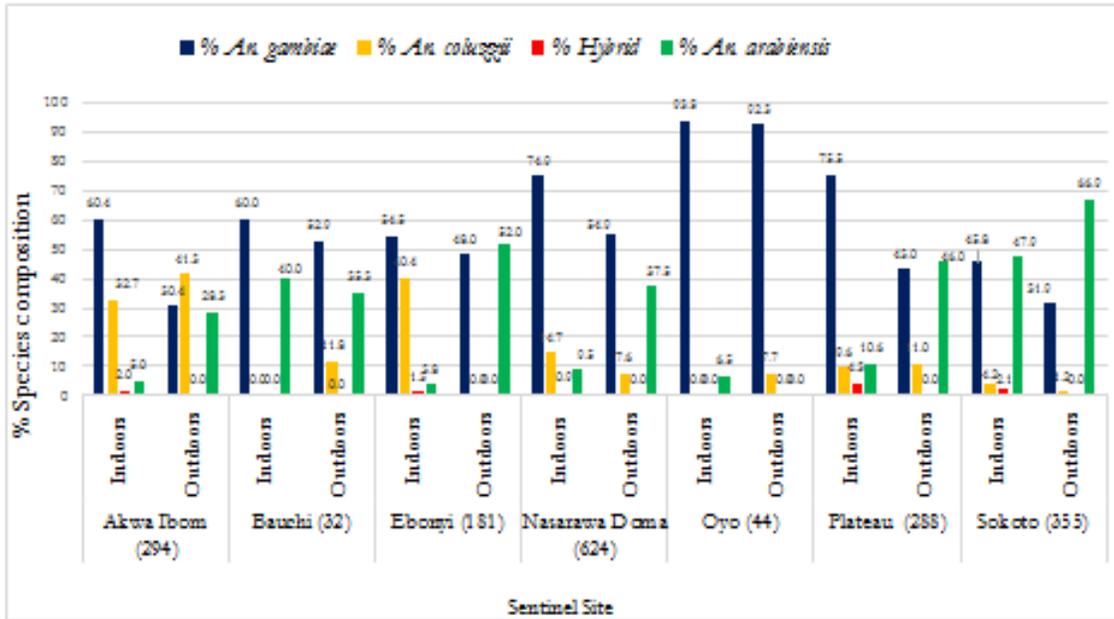


Figure A2 shows that the primary vectors in Nigeria are members of the *An. gambiae* complex, with *An. gambiae* s.s. most common, but with significant numbers of *An. coluzzii* and *An. arabiensis* in some states.

**Figure A2. Primary Vectors in Nigeria**



Source: PCR Data, November 2018 – June 2019

**Figure A3. Geographic Distribution of Malaria Vectors and Bionomical Data in Nigeria in 2018**

Site	Major Vector	Minor Vector	Peak Abundance	Preferred Biting Location	Preferred Resting Location	Preferred Host	Peak Sporozoite Rate	Annual EIR
Akwa Ibom	<i>An. gambiae s.l</i>	<i>An. moucheti</i>	September (375)	Indoors	Indoors	Human	Indoors: 12.0 Outdoors: 3.8	Indoor: 1.94 Outdoors: 1.96
Bauchi	<i>An. gambiae s.l</i>	<i>An. coustani</i> <i>An. nili</i> <i>An. pharoensis</i> <i>An. squamosus</i>	September (440)	Indoors	Indoors	Human	Indoors: 20.9 Outdoors: 3.8	Indoor: 20.70 Outdoors: 0.00
Ebonyi	<i>An. gambiae s.l</i>	<i>An. funestus</i> , <i>An. coustani</i> , <i>An. moucheti</i> , <i>An. nili</i>	September (558)	Indoors	Indoors	Human	Indoors: 12.7 Outdoors: 7.4	Indoor: 6.97 Outdoors: 3.35

Site	Major Vector	Minor Vector	Peak Abundance	Preferred Biting Location	Preferred Resting Location	Preferred Host	Peak Sporozoite Rate	Annual EIR
Nasarawa Eggon	<i>An. gambiae</i> s.l	<i>An. funestus</i> <i>An. coustani</i> <i>An. nili</i> <i>An. pharoensis</i>	July (474)	Indoors	Indoors	Human	Indoors: 13.7 Outdoors: 4.8	Indoor: 46.82 Outdoors: 4.00
Oyo	<i>An. gambiae</i> s.l	<i>An. longipalpus</i>	June (153)	Indoors	Indoors	Human	Indoors: 0.0 Outdoors: 0.0	Indoor: 0.00 Outdoors: 0.00
Plateau	<i>An. gambiae</i> s.l	<i>An. funestus</i> , <i>An. coustani</i> , <i>An. squamous</i> , <i>An. maculipalpis</i> <i>An. rufipes</i>	July (1528)	Indoors	Indoors	Human	Indoors: 8.6 Outdoors: 16.3	Indoor: 23.83 Outdoors: 3.55
Sokoto	<i>An. gambiae</i> s.l	<i>An. coustani</i> <i>An. pharoensis</i>	August (3057)	Indoors	Indoors	Human	Indoors: 16.4 Outdoors: 6.8	Indoor: 75.56 Outdoors: 0.00

## Conclusion

The above map shows the sites for longitudinal monitoring and resistance monitoring. Briefly, the major malaria vectors are *An. gambiae* and *An. arabiensis*, with some areas also having substantial transmission from *An. coluzzi*; *An. funestus* is uncommon. Detailed data are available in the latest report from VectorLink at <https://www.pmi.gov/resource-library/partner-reports/page/6>

## Key Question 2

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

## Supporting Data

The latest PMI entomological monitoring report is shown in Figure A4, with results varying widely from state to state. The following tables summarize 1X resistance testing at all sites. Intensity data are available in PMI's most recent annual report.

Figure A4. 2019 Insecticide Susceptibility/Resistance Test Results, by CDC Bottle Bioassay

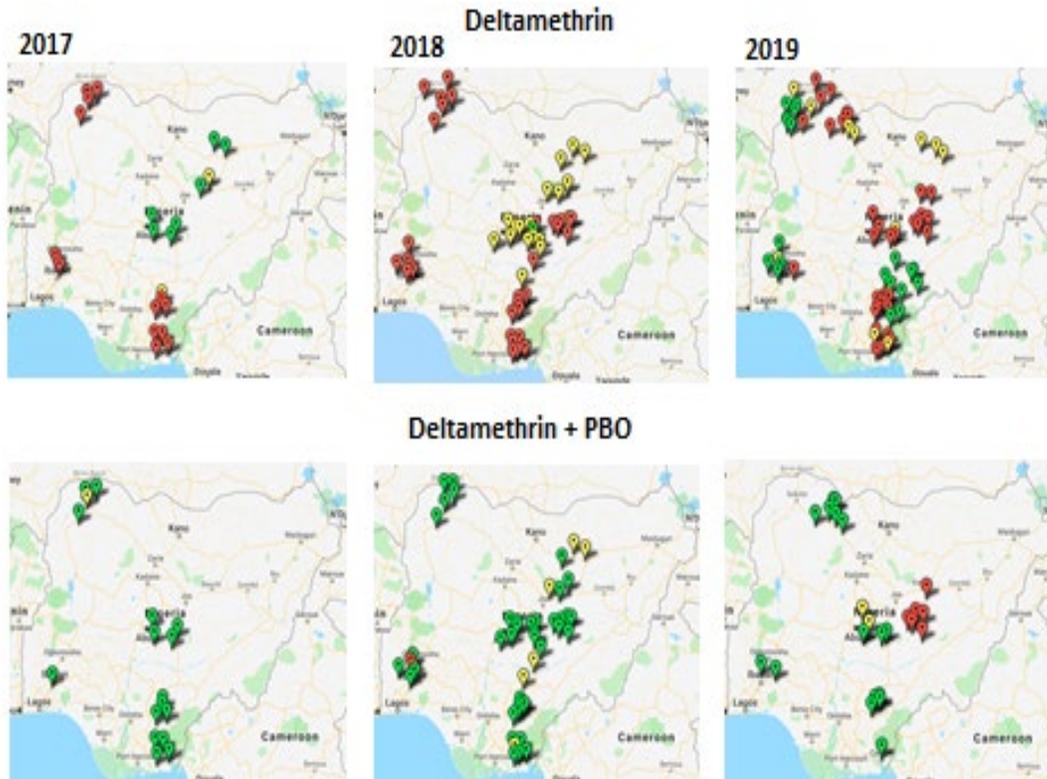
CDC Bottle Bioassay (Percent Mortality After 30 Minutes/45 Minutes for DOT/60mins Primiphoz-methyl)					
Class of Insecticides		Pyrethroids			Organophosphates
Insecticides	Permethrin	Deltamethrin	Alpha-cypermethrin	Primiphoz methyl <sup>a</sup>	
Kebbi	Arzunu	R	S	S	
	Auzie	R	S	PR	
	Binnin Kebbi	R	S	R	
	Bunza	R	S	S	
	Jaza	R	S	S	
	Kalzo	PR	S	S	
Nasarawa	Doma	R	R	R	
	Karu	R	R	R	
	Keffi	R	R	R	
	Lafia	R	R	R	
	Nasarawa	R	R	R	
	Nasarawa Ezzon	R	PR	R	
Oyo	Afio	PR	PR	R	
	Akinrole	PR	S	PR	
	Ariba	R	S	S	
	Ezbeda	R	R	R	
	Ibaramo East	R	S	-	
	Olorole	R	S	S	
Plateau	Lantanz North	R	R	R	
	Lantanz South	R	R	R	
	Milanz	R	R	R	
	Quancan	R	R	R	
	Shendam	R	R	R	
	Wase	R	R	R	
Sokoto	Bodinas	R	PR	S	
	Gudu	S	PR	S	
	Illala	R	R	R	
	Rabah	R	R	R	
	Tambuwal	R	R	S	
	Wamako	S	R	S	
Zamfara	Anja	R	R	-	
	Guusu	R	PR	S	
	Kaura Namoda	R	R	-	

CDC Bottle Bioassay (Percent Mortality After 30 Minutes/45 Minutes for DOT/60mins Primiphoz-methyl)					
Class of Insecticides		Pyrethroids			Organophosphates
Insecticides	Permethrin	Deltamethrin	Alpha-cypermethrin	Primiphoz methyl <sup>a</sup>	
Akwa Ibom	Abak	R	R	R	
	Ikot Ekpene	R	PR	R	
	Iku	R	R	R	
	Mkoz Enin	R	R	R	
	Nai Ubiom	R	R	R	
	Oron	R	PR	R	
Bauchi	Bauchi	R	PR	PR	
	Dass	R	R	R	
	Misau	-	PR	R	
	Ninzi	R	PR	PR	
	Shira	R	PR	S	
	Toro	R	R	R	
Benue	Gboko	R	S	S	
	Katsina-ala	R	S	S	
	Kwande	R	S	S	
	Maloundi	R	S	S	
	Oju	PR	S	S	
	Otuoko	R	S	S	
Cross River	Calabar Municipality	R	R	PR	
	Ikom	R	S	S	
	Obudu	-	-	-	
	Odukpani	-	S	S	
	Ozota	-	S	-	
	Yakur	-	-	S	
Ebonyi	Abakaliki	R	R	PR	
	Ebomi	R	R	R	
	Essa North	R	R	R	
	Essa South	R	R	PR	
	Ihiala	-	-	-	
	Izzi	-	-	-	
Ondo	Ondo	-	-	-	
	Oshogbo	R	R	-	

Figure A5 shows changing patterns of resistance to the most commonly used ITN insecticide in Nigeria, deltamethrin, and the extent to which the resistance is oxidase-based. In general, increased resistance is observed over the three years for which data are available.

**Figure A5. Synergist Test Results for Deltamethrin**



### **Conclusion**

Intensity of resistance varies from state to state, with some states likely still able to use pyrethroid-only nets, but others, especially Oyo and Ebonyi, will require the use of next generation nets. In general, resistance to pyrethroids has increased over time.

### **Key Question 3**

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

### **Supporting Data**

Entomological surveillance is conducted in only a third of all states, and is coordinated by a government agency. There is limited capacity in the non-supported states as well as procurement of needed consumables. Insecticide resistance data from all states is considered more critical than longitudinal data.

### **Conclusion**

Beginning FY 2020, longitudinal monitoring will be conducted in five sites located in five states, with insecticide resistance monitoring continuing in all 11 PMI-supported states. PMI will also provide technical assistance to NMEP to monitor insecticide resistance in GF-supported states.

## 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 ).

**Do you propose expanding, contracting, or changing any ITN and SBC activities? Why? What data did you use to arrive at that conclusion?**

n/a

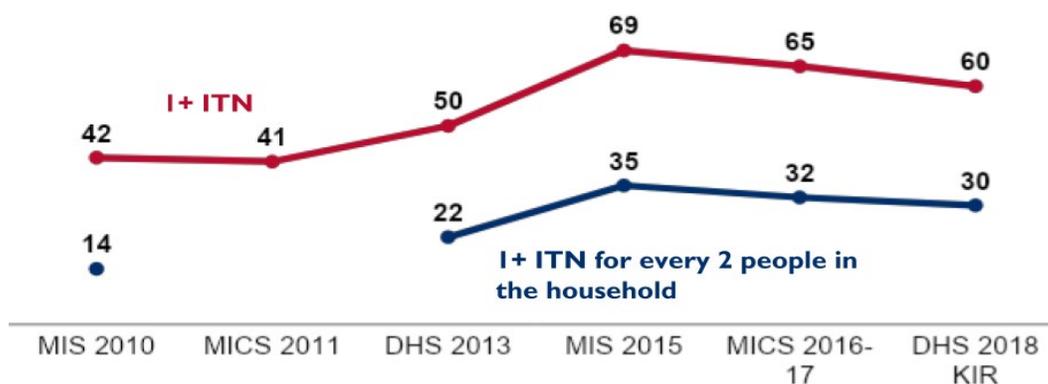
With the current funding and need to procure NexGen ITNs in several states, PMI/Nigeria will be forced to contract the ITN activity. Three states (Sokoto, Kebbi, and Nasarawa) are scheduled for mass campaigns in 2021. However, PMI/Nigeria does not have sufficient funding to fully procure the required ITNs for Nasarawa. Thus, the Nasarawa mass campaign will be pushed to 2022. This will have a ripple effect as four states are already scheduled for mass campaigns in 2022. 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 A6. Trends in ITN Ownership, Percent of Households**



## Conclusion

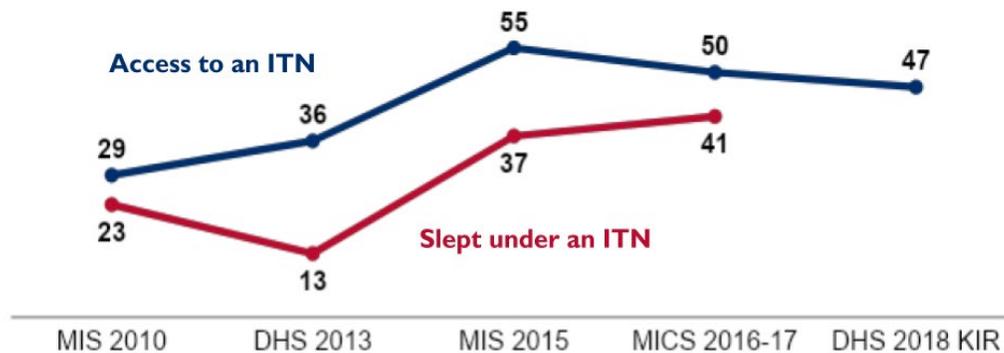
ITN ownership has plateaued in Nigeria. Mass ITN campaigns occur every 3-4 years in only 24 states, and the continuous/routine channels are not sufficient to maintain ITN coverage. As the cost of supporting mass campaigns in 11 PMI-supported states has increased due to the need for NexGen nets, PMI can no longer fully support ANC/EPI channels. PMI will continue advocating for states to procure ITNs for their continuous/routine channels. In addition, each state requires a specific ITN based on insecticide resistance profile. Therefore, nets cannot necessarily be moved across different states when gaps exist.

## Key Question 2

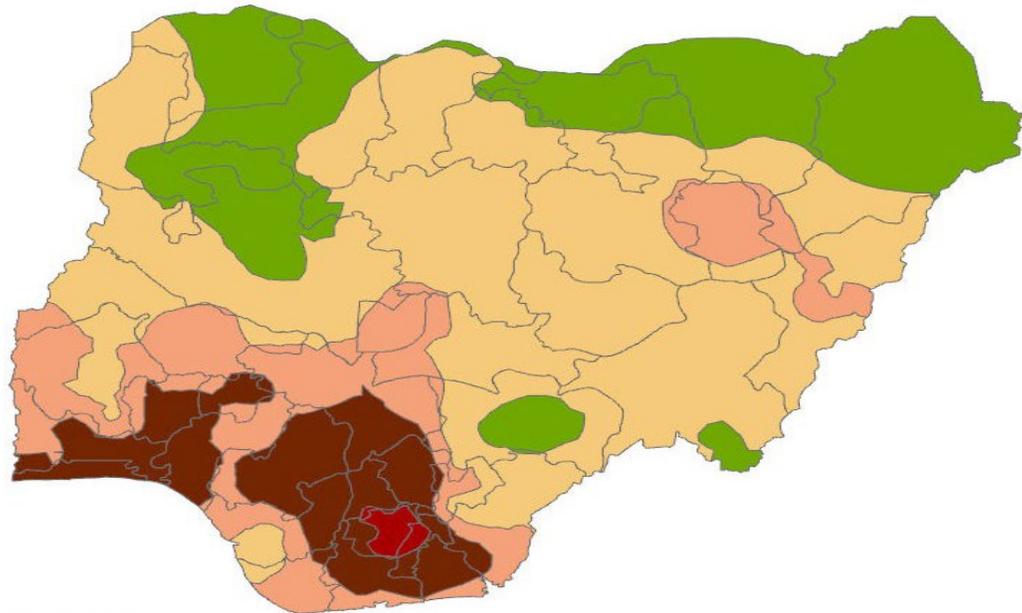
What proportion of the population has access to an ITN? In contrast, what proportion of the population reports using an ITN? What is the ratio between access and use? Does it vary geographically?

## Supporting Data

**Figure A7. Trends in ITN Access and Use, Percent of Household Population with Access to an ITN and Who Slept Under an ITN the Night Before the Survey**



**Figure A8: ITN Access: Use Map**



**LEGEND**

**ITN USE:ACCESS RATIO**

- 0.0-0.2
- 0.2-0.4
- 0.4-0.6
- 0.6-0.8
- 0.8-1.0
- >1.0

No Data

Source: MIS 2015

Data presented in this map are from the 2015 MIS. Data from the 2016-2017 MICS indicate increases in net use across all regions.

Once data from the 2018 DHS becomes available, the team will be able to determine any shifts in use: access ratio.

**Conclusion**

According to NDHS 2018 KIR, ITN access (one ITN for every two members of a household) is 47 percent suggesting PMI continued investments in mass distribution of ITNs. According to the most recent ITN Access and Use Report, there has been a steady upward trend in the use: access ratio across all geographic zones with a peak in the three northern regions. As of the 2016-2017 MICS, the North East region had the highest ratio at 0.95, with North Central at 0.91 and North West at 0.85. In the southern regions, the use: access ratio is moderate to low (South South at 0.72, South East at 0.60, South West at 0.53). In the northern regions, SBC activities would therefore emphasize maintaining net use and promoting net care. In the southern regions, SBC activities would emphasize the uptake of consistent net use and net care as access improves.

**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

**Figure A9. Summary of Key Facilitators and Barriers to ITN Use in Nigeria**

Facilitator	Type of Factor	Data Source	Evidence
Belief that ITNs prevent malaria - <i>Response Efficacy</i>	Internal	PMI-funded Endline Evaluation <sup>9</sup> of Health Communication Capacity Collaborative (HC3) Nigeria, 2017	Belief that ITNs help to prevent malaria doubled the odds of ITN use (OR = 1.99).
Discussing ITN use with others - <i>Social Norms</i>	Social	PMI-funded Endline Evaluation of HC3 Nigeria, 2017	Discussing ITN use with others in the last 12 months increased the odds of net use by 67 percent (OR = 1.67). A related social ideational factor - perception that net use was the norm in the community - increased the odds of net use by 56 percent (OR = 1.56).
Exposure to ITN campaign messages and materials	Environmental	PMI-funded Endline Evaluation of HC3 Nigeria, 2017	Exposure to at least one mass media campaign message on ITN use increased the odds of self-reported ITN use by 36 percent.
Barrier	Type of Factor	Data Source	Evidence
Perception that ITNs are too hot	Internal	Malaria Indicator Survey (MIS) 2015	The most commonly cited reason for why a net was not used the night before was that the net was too hot (34 percent). Of the 11 PMI-supported states, respondents cited this as a barrier t from a low of 19.9% in Benue state to 67.1% in Plateau State
Belief that there are no mosquitoes around	Internal	MIS 2015	The belief that there were no mosquitoes around was the second most cited reason for non-use of ITN (13%). This varied across geographic regions (South South and North West were 22% and 21% respectively) and may have been related to the timing of the survey, which coincided with the end of the rainy/peak transmission season and the onset of the dry season. Regional variations are further corroborated by findings from 2018 post ITN mass campaign end process reports in Sokoto and Kebbi, which cited the top reason for non-

<sup>9</sup> \*PMI-funded malaria end line ideational survey in three of 11 PMI-supported states only (sample size not nationally representative, limited to 3,555 Households in Nasarawa, Kebbi and Akwa Ibom States).

Facilitator	Type of Factor	Data Source	Evidence
			use of ITNs was “no mosquitoes” (10 percent and 6 percent, respectively).
Low perceived severity of malaria	Internal	PMI-funded Endline Evaluation of the HC3 Nigeria, 2017	One of the main barriers to net use is the low perceived severity of malaria. Only 46.8% of respondents perceived that the consequences of malaria was severe. There remains a widespread perception that malaria is an ordinary disease.

**Conclusion**

The data presented in Table 10 suggests the need for SBC activities focused on maintaining net use and care in northern states supported by PMI (where use: access ratios are high), and need for SBC activities focused on promoting correct and consistent use of ITNs in the southern states (where use: access ratios are lower). States with ITN mass campaigns in the last year, as well as those with planned campaigns supported by FY2020 funding will be prioritized for SBC activities. Specifically, states where mass campaigns were held in the preceding year using FY2019 funds (Benue, Oyo, and Zamfara) and those with planned campaigns supported by FY2020 funds (Sokoto, Nasarawa, and Kebbi) will be prioritized. Using post ITN campaign end process data, Local Government Areas (LGAs) with the lowest hanging and use rates will be targeted through community-based IPC channels.

Whereas evidence shows that response efficacy, social norms, self-efficacy, positive attitudes about ITNs, and descriptive norms on ITN use are strong ideational predictors of ITN use, prevalence of these factors remain low among target populations, especially in the south. For example, the 2017 evaluation report of the PMI-funded HC3 activity found that only 48 percent of respondents perceived that bed net use was the norm in their community, indicating room for growth. Similarly, only 60.5 percent of respondents perceived that nets offer effective protection from malaria.

A combination of mass media and interpersonal communication (IPC) approaches will be deployed to deliver key messages addressing these factors. The proposed channel mix is supported by evidence that exposure to mass media messages and materials significantly increased the odds of ITN use by 36 percent. IPC channels will be designed to mutually reinforce media messages and increase skills to improve the use of ITNs.

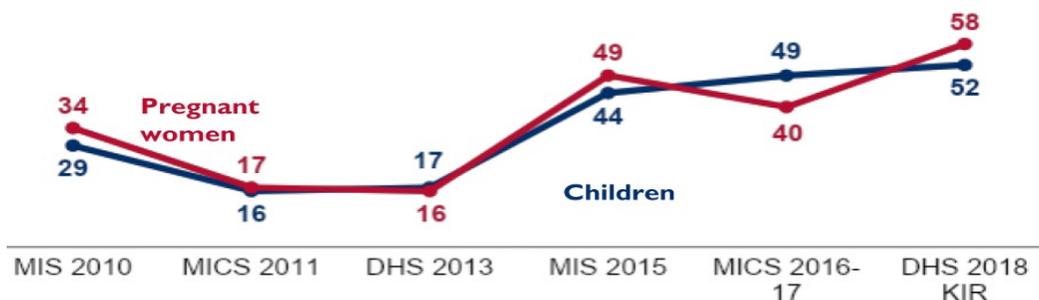
Seasonal variations in net use and perceptions about the absence of mosquitos are also a challenge. To address these factors and encourage year round use of ITNs especially in PMI-supported states in the North West (Sokoto, Kebbi and Zamfara states), SBC activities will be intensified e.g. increased dose of messages, prior to, and at the onset of the malaria transmission season as well as at the outset of same/onset of the dry season.

### Key Question 4

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

### Supporting Data

**Figure A10. Trends in ITN Use, Percent of Children Under 5 Years of Age and Pregnant Women Age 15-49 Who Slept Under and ITN the Night Before the Survey**



\*DHS/MICS surveys are generally done during the dry season, whereas MIS surveys are deliberately done during the high transmission season, which should be taken into consideration when interpreting these indicators. However, the DHS 2018 occurred during the peak malaria season.

### Conclusion

ITN use by children and pregnant women continues to increase. In households with at least one ITN, the DHS 2018 reported 74 percent of children slept under an ITN, and 82% of pregnant women.

### Key Question 5

What channels are used to distribute ITNs?

### Supporting Data

**Figure A11. ITN Distribution by Channel**

	2015	2016	2017	2018	2019	2020	2021
<b>EPI/ANC</b>	232,500	2mil	549,650	1.2 mil	110,929	TBD	TBD
<b>Schools</b>	NA	NA	NA	NA	NA	NA	NA
<b>Community</b>	NA	NA	NA	NA	NA	NA	NA
<b>Mass Campaign</b>	9.5 mil	4.1 mil	4.9 mil	11.4 mil	6.4 mil	11.7 mil	7.6 mil

### Conclusion

With insecticide resistance data now available for each supported state, and the need to procure specific ITNs for these states, PMI/Nigeria has prioritized repeat mass campaigns. As some states require NexGen nets, funding is insufficient to procure ITNs for

continuous/routine channels. Any ITNs leftover following a mass campaign will be distributed through ANC/EPI channels.

### 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 A12. Gap Analysis Table for ITNs**

Calendar Year	2019	2020	2021
<b>Injectable Artesunate Needs</b>			
Projected Number of Malaria Cases seeking treatment from the public sector	20,368,137	20,912,599	21,440,810
Projected Number of Severe Cases <sup>1</sup>	366,626	376,427	385,935
<b>Total Injectable Artesunate vials Needs<sup>2</sup></b>	<b>1,833,132.33</b>	<b>1,882,133.91</b>	<b>1,929,672.90</b>
<b>Partner Contributions</b>			
Injectable artesunate vials carried over from previous year	78,860		
Injectable artesunate vials from Government			
Injectable artesunate vials from Global Fund			
Injectable artesunate vials from other donors			
Injectable artesunate vials planned with PMI funding	500,000	500,000	350,000
<b>Total Injectable Artesunate vials Available</b>	<b>578,860</b>	<b>500,000</b>	<b>350,000</b>
<b>Total Injectable Artesunate vials Surplus (Gap)</b>	<b>-1,254,272</b>	<b>-1,382,134</b>	<b>-1,579,673</b>

**Footnotes:**

<sup>1</sup> Proportion of severe malaria to confirmed cases from the DHIS2 is 1.8%

<sup>2</sup> An average of 5 vials per severe malaria case. Buffer stocks are not included.

See the Nigeria FY 2020 Gap Analysis sheet for commodity gap analysis for details: A total of 32.6 million ITNs (2020 = 11.7 million, 2021= 7.6 million, and 2022 = 13.3 million) will be required over the next three years for mass campaigns in 11 PMI supported states. No other partners are procuring ITNs for PMI supported states. In addition, 5 million ITNs will be needed over the three CYs for distribution through ANC and EPI channels. Currently, no PMI supported states have made hard commitments to procure continuous/routine ITNs during this time frame, although Ebonyi procured 30,000 ITNs for ANC/EPI distribution in 2019.

### Conclusion

With available funding, PMI has prioritized repeat mass campaigns over continuous/routine distribution channels. However, PMI/Nigeria currently does not have sufficient funding to procure 32.6 million ITNs over the next three years in order to maintain the repeat (every 3 - 4 years) mass campaign schedule. This will force mass campaigns to be pushed down the road

and lengthening the time between campaigns. This necessity could compromise the gains that have been made in vector control in Nigeria.

### Key Question 7

What is the current status of durability monitoring?

### Supporting Data

**Figure A13. Current status of durability monitoring in Nigeria**

Campaign Date	Sites	Brands	Baseline	12-month	24-month	36-month
September 2015	Ebonyi	DawaPlus 2.0	X	X	X	X
September 2015	Zamfara	DawaPlus 2.0	X	X	X	X
August 2016	Oyo	DawaPlus 2.0	X	X	X	

Source: [https://www.pmi.gov/how-we-work/technical-areas/insecticide-treated-mosquito-nets-\(itns\)-pmi](https://www.pmi.gov/how-we-work/technical-areas/insecticide-treated-mosquito-nets-(itns)-pmi).

**Figure A14. Key Results of Durability Monitoring**

Site	Survey and time since distribution (months)	Attrition wear and tear (%)	Remaining nets in serviceable condition (%)	Remaining nets hanging over sleeping space (%)		Optimal insecticidal effectiveness in bio-assay (%)
				Campaign	Other	
Ebonyi	12m:12.7	1.3	97.6	73.8	-	-
	24m:25.2	10.1	88.8	98.7	-	100
	36m:	20.0	77.7	92.0	-	96.7
Zamfara	12m:12.7	0.3	98.0	90.7	-	-
	24m:24.2	1.7	93.5	93.5	58.8	100
	36m:	8.5	89.8	91.5	84.2	96.7
Oyo	12m:1.5	2.8	95.8	48.6	41.4	100
	24m:	10.1	88.8	64.5	41.5	100
	36m:	n/a	n/a	n/a	n/a	n/a

### Conclusion

The durability studies in Nigeria compared the same brand of net (DawaPlus 2.0) in three different ecological zones. The study estimated the median survival for ITNs in the three sites as 3.2 years in Oyo; 3.3 years in Ebonyi and 5.3 years in Zamfara. These findings provide evidence for continuing plans to repeat mass campaigns every 3 - 4 years.

### Key Question 8

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

### Supporting Data

Nigeria’s political structure gives states extensive autonomy and responsibility to implement health activities, including malaria prevention and treatment. ITN distributions need to be owned by individual states if any sustainability is to be achieved. With the availability of NexGen ITNs, PMI has expanded insecticide resistance monitoring in supported states to inform ITN procurement decisions. Other partners are following PMI’s lead in this area. Resistance data will lead to the procurement of more effective ITNs, but at extra cost. PMI/Nigeria has been able to manage the extra cost because of a pipeline created by a delay in the procurement of a case management/surveillance partner, and by prioritizing mass campaigns over continuous/routine channels. As of MOP 2020, PMI/Nigeria no longer has sufficient funding to carry out planned mass campaigns.

### Conclusion

If insecticide resistance data leads to the need for more expensive ITNs, this will be a huge challenge to a country requiring approximately 40 million ITNs per year for repeat mass campaigns. In addition, just as PMI/Nigeria is encouraging states to procure ITNs for continuous/routine channels, the price will be going up. Even with the IG2 subsidy for Oyo State, the cost is an additional \$1.25 per net. Nigeria cannot accelerate progress without effective vector control, and effective vector control will require NexGen ITNs.

## 2. HUMAN HEALTH

### 2.A CASE MANAGEMENT in health facilities and communities

NMEP objective
<p>The Nigerian National Guidelines for Diagnosis and Treatment of Malaria are aligned with the WHO recommendations on universal diagnostic testing and treatment with ACTs. The NMSP 2014-2020 outlines Nigeria’s priorities in the area of case management. The objectives for case management are:</p> <ul style="list-style-type: none"><li>• To test all care-seeking persons with suspected malaria using an RDT or microscopy by 2020, and</li><li>• To treat all individuals with confirmed malaria seen in public or private facilities with effective antimalarial drugs by 2020.</li></ul>

## **NMEP approach**

These objectives are to be achieved through the following strategies:

- Create demand for malaria testing and confirmation prior to treatment.
- Ensure availability of and access to equipment and supplies for parasitological confirmation of malaria, and commodities and supplies for treatment of uncomplicated and severe malaria.
- Build capacity of personnel for malaria case management in public and private health facilities, and at the community level through iCCM.
- Strengthen capacity of public and private facilities for the management of severe malaria.
- Implement a comprehensive national strategy for effective participation of the private sector in malaria case management.
- Strengthen systems for quality assurance and quality control (QA/QC) of malaria diagnostic services.
- Conduct antimalarial therapeutic efficacy studies (TES).

The NMEP receives technical assistance and coordinates partners through the case management technical sub-committee. PMI is an active member and assisted in the development of a diagnostic expert working group that reports to the sub-committee. Malaria microscopy requires laboratory scientists who are highly trained and requires continuous capacity building to maintain accurate diagnostic skills. The NMEP considers secondary and tertiary hospitals, and large health centers with inpatient beds, as the facilities where microscopy should be available. The NMEP expects RDTs to: (1) be used at all facilities where microscopy is not available, and (2) complement microscopy in secondary facilities and in certain outpatient clinics of tertiary facilities. The target for parasitological diagnosis is 100 percent in the public sector and 80 percent in the private sector and community (where iCCM is implemented) by 2018 and maintain these targets through 2020.

The NMEP, with support from PMI and in collaboration with the Department of Defense-Walter Reed Program developed and finalized a QA framework and the Malaria Diagnostic External Quality Assurance (EQA) Operational Guidelines for parasite-based confirmation of malaria in 2012. Guidelines call for quarterly facility visits for lab supervision, slide validation, and on-the-job mentoring.

AL and AS/AQ are the two recommended first-line treatments for uncomplicated malaria in Nigeria, including for children weighing less than five kilograms with appropriate dosing. In 2012, the NMEP changed the first-line treatment for severe malaria from quinine to injectable artesunate (IAS), consistent with WHO treatment guidelines. The National Guideline for Diagnosis and Treatment of Malaria (2015) specifies that pregnant women with uncomplicated malaria should receive oral quinine + clindamycin in the first trimester and an ACT in the second and third trimesters, while those with severe malaria should be treated with IAS (or intravenous quinine, if

IAS is not available). The recommended pre-referral treatment for severe malaria is intramuscular or rectal artesunate, intravenous quinine, or intravenous artemether. The target for malaria treatment is that 80 percent of persons with a parasite-based diagnosis of malaria will receive prompt antimalarial treatment according to the national treatment policy by 2017 and maintain these targets through 2020, and 100 percent of persons with a parasite-based diagnosis of malaria will receive prompt antimalarial treatment according to the national treatment policy by 2020.

**PMI objective, in support of NMEP**

- PMI supports NMEP objectives in case management through technical assistance at the federal level and in 11 supported states. PMI's support has been directed at the following key areas: 1) procurement and distribution of diagnostic and treatment commodities; 2) training and supervision of laboratory and clinical care personnel in accurate malaria diagnostics and appropriate treatment; and 3) implementation of QA systems for malaria diagnostics.
- At the federal level, support through case management technical working group is aimed at developing critical case management technical resources, including policies, guidelines, training materials and job aids.
- At regional level, PMI procures malaria diagnostic (RDTs) and treatment (ACTs) commodities that are distributed from regional hubs directly to targeted health facilities within PMI-supported states.
- At state level, PMI supports state staff to monitor case management activities at the facilities. To improve adoption of policies, PMI provides technical assistance to state ministries of health and related agencies to develop, update, and adapt federal level policies and guidelines. PMI is supporting the development of state malaria diagnostic QA centers so each state will own the QA system.
- At the LGA level, PMI supports supervision and on-the-job training of PHC staff, as well as analysis and use of case management data to identify poor performing facilities and better target technical support.
- At the health facility level, PMI supports capacity building of health workers to provide quality malaria service delivery. Additional support is given to health workers for data analysis and use to inform malaria service delivery.
- At the community level, PMI supports service delivery at the community level aimed to increase access to malaria case management in select states. This includes provision of malaria commodities, training and supervision of community health workers on febrile case management, and reporting. This is implemented with other maternal and child health programs.

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

- In 2018, PMI distributed 14.3 million ACTs and 9.5 million RDTs to supported health facilities in the 11 PMI-supported states.
- PMI continued to support malaria diagnostic training and QA in supported states. In 2018/19, PMI trained 42 laboratory scientists from Bauchi and Sokoto states on malaria diagnosis (basic microscopy and RDT). A refresher training was conducted for 39 laboratory scientists to improve skills and competencies in malaria diagnosis. EQA visits occurred in five PMI-supported states (Akwa Ibom, Benue, Cross River, Ebonyi, and Zamfara). To improve malaria diagnostic quality, PMI supported the development of facility-specific SOPs.
- PMI continued to promote care-seeking behaviors through mass media (radio spots), community dialogues, compound meetings, and household visits. Please see SBC section for additional details.
- PMI supported a behavioral economics exercise to analyze provider behaviors and determine barriers to following case management guidelines. PMI identified key environmental and behavioral determinants and four design prototypes developed. The prototypes are currently being piloted in three states.

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

- Training/re-training (including on-the-job capacity training) and supervision of frontline health workers on parasite diagnosis (mRDT and microscopy).
- Improve the capacity in the management of uncomplicated and severe malaria at facility and community levels.
- Build on SBC investments in behavioral economics and provider behavioral change pilots to scale-up successful prototypes to improve provider adherence to malaria case management guidelines.
- Strengthen quality assurance for malaria diagnostics at facility level through facilitated QA monitoring visits and implementation of diagnostic SOPs.
- Support the development of state malaria diagnostic QA centers and incorporate private sector labs where feasible. Nigeria has a Malaria Diagnostic External Quality Assurance Operational Guideline for EQA system in the country. This includes guidance on EQA team composition at national and state levels, required infrastructure and consumables for QA centers. The document also provides information on required capacity building, tools for assessment/ monitoring, and data management.

## 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 activity? Why, and what data did you use to arrive at that conclusion?

PMI case management activities will begin expanding in 2020 and continue into 2021. After a two year delay, PMI case management implementing partners will be active in each PMI-supported state in 2020, and expand activities in 2021. PMI will also build on SBC investments in behavioral economics and provider behavioral change pilots to scale-up successful prototypes to improve provider adherence to malaria case management guidelines. Improved provider adherence to negative test results, and PMI's support to transitioning ACTs into drug revolving funds (DRFs) at secondary facilities, will free up resources to expand malaria commodities, and thus quality malaria case management, to additional PHCs within PMI-supported states.

PMI plans to expand malaria diagnostic QA efforts by supporting state ownership through state level malaria diagnostic QA centers. The current federal-led efforts have resulted in QA activities occurring once every one to two years, rather than quarterly as designed; with little evidence of improved malaria diagnostics. QA will be a state responsibility rather than dependent on outside expertise. State QA will incorporate microscopy and RDTs into one unified QA system involving multiple health agencies.

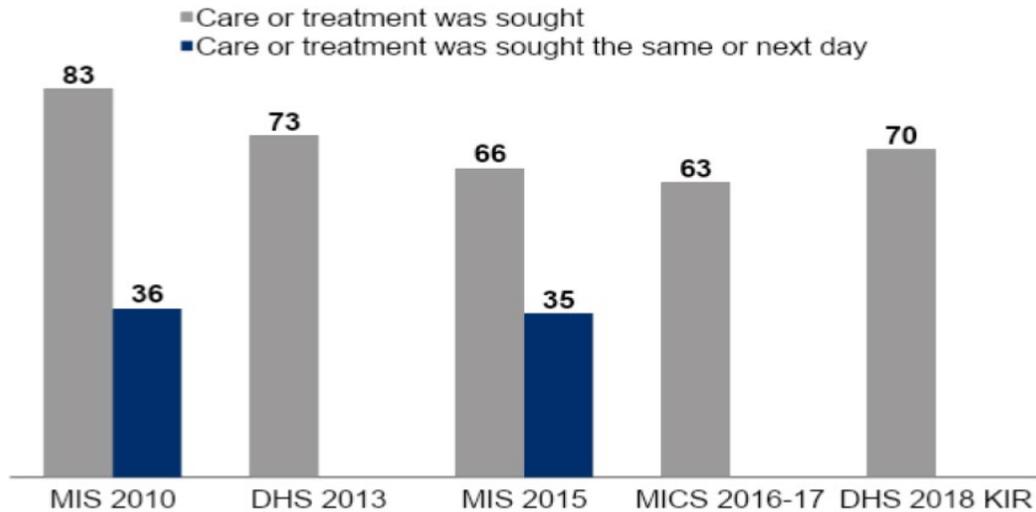
PMI will expand targeted iCCM activities to improve access to care in hard to reach communities while ensuring links to functional health facilities. Please see Table 2 for a detailed list of proposed activities with FY 2020 funding.

## Key Question 1

What is the status of care-seeking?

## Supporting Data

**Figure A15. Trends in Care-Seeking for Fever, Among Children Under 5 Years of Age with Fever in the 2 Weeks Before the Survey for Whom**



\*Excludes treatment or advice from a traditional practitioner

## Conclusion

National level data demonstrates that care-seeking for fever, although improving, remains suboptimal. Of particular concern is the significant difference between the percentage of individuals who sought care and the percentage of individuals who did so the same or next day. In the 2015 MIS, there was a 31 percentage point difference between those individuals who sought care and those who did so the same or next day. While data for prompt care-seeking is not available for the 2016-2017 MICS nor 2018 DHS, data does suggest a need for increased SBC activities promoting prompt care-seeking. The primary barriers and facilitators to care-seeking appear to be a mix of internal and social factors, many of which are amenable to SBC interventions.

## Key Question 2

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

## Supporting Data

**Figure A16. Summary of Facilitators and Barriers to Prompt Care-Seeking for Fever among Children Under Five Years of Age**

Facilitator	Type of Factor	Data Source	Evidence
High general malaria ideation	Internal and Social	PMI-funded Endline Evaluation of HC3 Nigeria, 2017	Household survey found that higher level of general malaria ideation increased the odds of prompt care-seeking by 43 percent. General malaria ideation is an index of six ideational variables. When disentangled, high perceived severity of malaria and knowledge of the cause of malaria were the two most predictive factors increasing the odds for prompt care-seeking by 80% and 60% respectively.
High perception that prompt care seeking is the norm	Internal	PMI-funded Endline Evaluation of HC3 Nigeria, 2017	Having a high perception that prompt care-seeking was the norm increased the odds of care-seeking by 55 percent.
Barrier	Type of Factor	Data Source	Evidence
Poor perception of public sector facility-based services	Internal and Social	Breakthrough Action MNCHN and Malaria Literature Review 2018	Available literature suggests that generally, but more in the North than in the South, poor perception of the quality of services in the public sector was a barrier to prompt care-seeking. In Kebbi state, for example, the literature suggests there is distrust in public facility-based care, especially free medicines. This poor perception or mistrust may be a driver of the preference for seeking treatment from patent medicine vendors.
Suboptimal/limited female participation in household decision making	Social and Gender	Breakthrough Action MNCHN and Malaria Literature Review 2018	A recent literature review suggests gender norms that require women to seek and obtain spousal consent before accessing care from the formal health sector is a barrier to care-seeking. Again, this is a factor that limits prompt care-seeking more in the North than in the South. For example, in Kebbi, gender norms that restrict women's movement and social interactions were found to be a major barrier.
High cost associated with care-seeking	Environmental	Breakthrough Action MNCHN and Malaria Literature Review 2018	Literature suggests that costs prior to reaching the facility (distance and transportation cost) and costs related to obtaining service (cost of consultation, tests, drugs, wait time, etc.) are barriers to prompt care-seeking.

## Conclusion

Community and household level IPC will be the primary channels for SBC messages to increase prompt care-seeking. This approach is supported by evidence from a PMI-funded endline evaluation of HC3 Nigeria in 2017, which found that caregivers in community intervention<sup>10</sup> wards were 67 percent more likely to seek care promptly than those in non-intervention wards. The study found no association between exposure to mass media and prompt care-seeking behavior when controlling for socio demographic factors. However, exposure to mass media interventions was associated with a significant increase in general malaria ideation. This suggests the need for sustained mass media interventions to deliver messages to improve general malaria ideation, especially perceived severity of malaria. Further analysis of the endline data also showed that women exposed to media messages were more likely to believe that women should participate in household decisions about child health. Therefore, mass media messages, especially in the northern states where participation is low, will focus on women's participation in household decision-making as a cross cutting normative factor for improving care-seeking for child health services including but not limited to fever.

For the prioritization of IPC coverage, data on regional and intra-state variations in prompt care-seeking will be taken into account. Messages will be tailored to address context-specific barriers and strengthen facilitators. For example, addressing the poor perception of public sector services (which is not a barrier limited to care-seeking for fever) will be a component of community engagement sessions. This will be reinforced through service communication efforts to improve the quality of client-provider interactions and provider behavior change efforts to improve adherence to case management guidelines. Additionally, increased PMI investments in malaria case management quality improvement efforts will contribute to increased client satisfaction. Messages will be crafted to prime clients who promptly seek care to demand a test to confirm whether fever is caused by malaria before treatment is issued and accepted. Finally, to address cost factors, PMI will leverage ongoing implementation of self-sustaining community-based savings/support schemes aimed at increasing women's financial agency for improved uptake of services, including care-seeking for fever, in Bauchi, Sokoto, and Kebbi states.

## Key Question 3

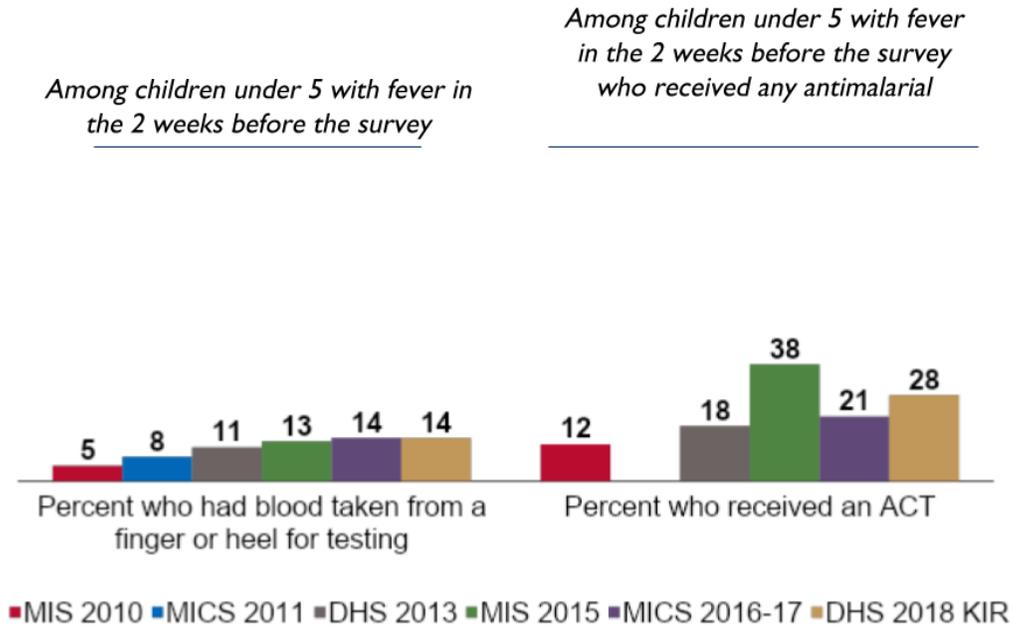
How have malaria testing and treatment practices evolved over time?

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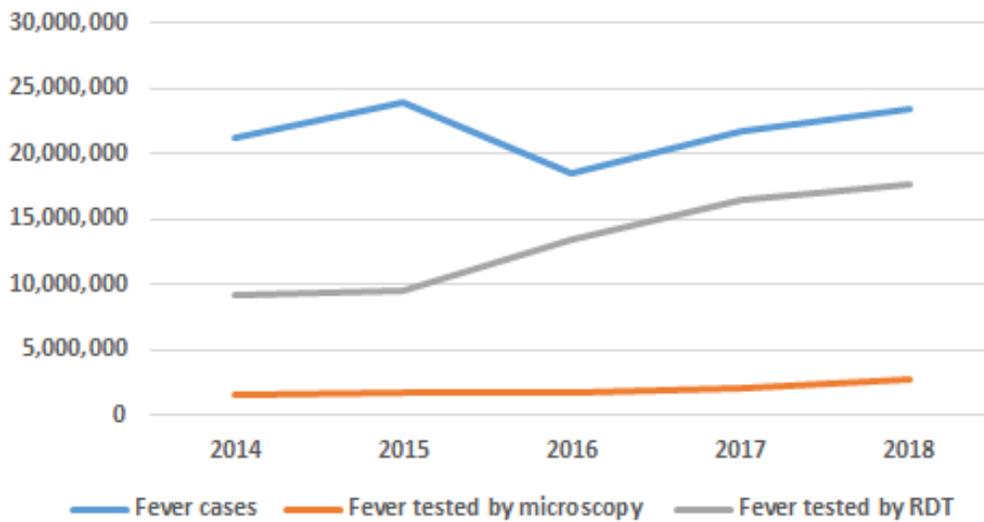
<sup>10</sup> Household visits, community dialogues and compound meetings.

**Supporting Data**

**Figure A17. Trends in Diagnosis and Treatment of Children with Fever**

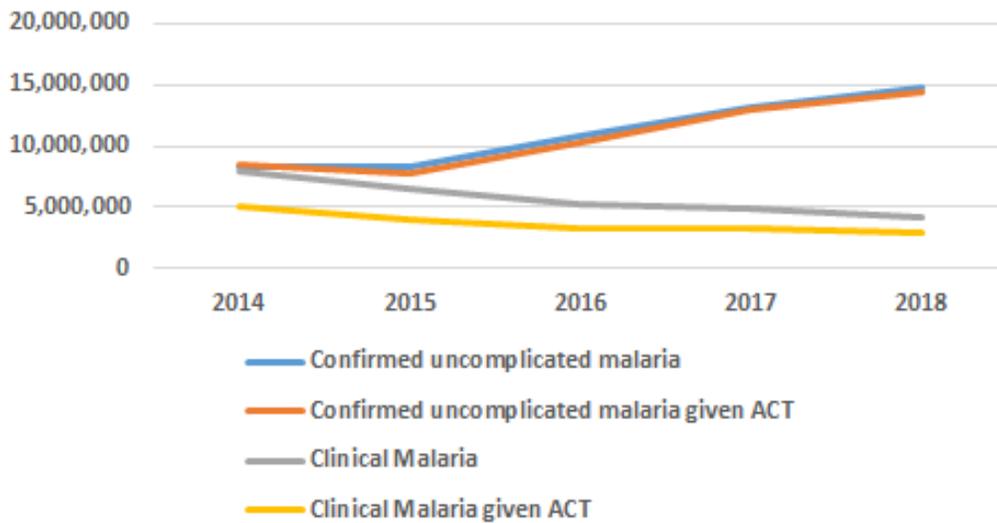


**Figure A18. HMIS-Reported Trends in Malaria Diagnosis**



Source: PMI/Nigeria

**Figure A19: HMIS reported trends in malaria treatment**



### Conclusion

Household survey data trends in malaria diagnosis and treatment do not appear to reflect what is happening at the health facility level. HMIS data reported through the DHIS2 shows improving trends in testing every fever for malaria, and if a fever case is confirmed as malaria, nearly every case is treated with an ACT. Monitoring visits indicate that the greatest challenge in case management is providers ignoring negative malaria test results, leading to overtreatment with ACTs.

### Key Question 4

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

### Supporting Data

**Figure A20. Summary of Key Facilitators and Barriers to Provider Adherence to Malaria Case Management Guidelines**

Facilitator	Type of Factor	Data Source	Evidence
High knowledge of first-line treatment for malaria among providers	Internal	ACTwatch Outlet Survey Nigeria, 2015	Survey found that 87 percent of providers in public health facilities correctly stated the first-line treatment for uncomplicated malaria (a rise over the 80% cited in previous rounds of the survey).

Barrier	Type of Factor	Data Source	Evidence
Provider consultations with large numbers of clients	Environmental	PMI-funded Behavioral Diagnosis Report, 2018 <sup>1</sup>	Behavioral diagnosis exercise found that having to consult with large numbers of clients diminishes the quality of provider consultations with clients. Consequently, the logistics involved may dissuade some providers from testing clients for malaria.
Low perception of efficacy of RDTs	Internal	PMI-funded Behavioral Diagnosis Report, 2018	The behavior diagnosis exercise found that providers think RDT results are not reliable. This discourages them from testing their clients, as well as from adhering to test results in their treatment recommendations.
High perception of self-expertise to clinically diagnose cases	Internal	PMI-funded Behavioral Diagnosis Report, 2018	The behavioral diagnosis exercise found that providers had strong identities as clinical experts and are less sure of treatment guidelines when test results contradict their clinical assessment.

**Footnote:**

<sup>1</sup>Sample size includes thirty two (32) different cadres of providers from 12 facilities, facility observations, and 24 client interviews in three of eleven PMI-supported states of Akwa-Ibom, Nasarawa and Kebbi.

Specifically, these are contextual and behavioral features contributing to the problem of providers not basing the treatment of suspected malaria cases on the outcome of malaria parasite test results. PMI/Nigeria conducted a behavioral mapping exercise to consider the decisions made and actions taken by providers “(i)to test and (ii) base treatment on test outcomes” identified factors likely to impact each decision and the steps involved in each action, as well as where the “behavioral bottlenecks” occur for providers. Identified factors were prioritized based on frequency of occurrence as key or peripheral. Key diagnoses are defined as those contributing directly to the decision-action process, while peripheral diagnoses are those that inform providers’ decisions, but are not directly driving the provider behavior of interest. Two of three key diagnoses factors are internal, suggesting their amenability to SBC interventions.

Results suggest that providers, especially those in PMI-supported high volume facilities, may be operating under a “scarcity” mindset in which inadequate resources, including time, negatively impact cognition and decision-making and causing providers to “tunnel,” or intently focus on seeing as many clients as possible instead of adhering to case management protocol in consultations. To address this, current programming investments have prioritized the design and user testing of a “process change” to promote “testing before consultation”. Testing before consultation addresses the hassle factors, makes consultation faster (reducing the feeling of scarcity) and prompts providers to make treatment decisions based on test results.

Providers' lack of trust in the validity of rapid diagnostic tests (RDTs) for malaria is often attributed to a perceived lack of RDT sensitivity to malaria in its early stages, its inability to detect different strains of malaria, concerns about test kits storage, or worries about tests being old or past their date of expiration. Ongoing program investments to address this among providers include reorientation on RDT protocols and RDT quality assurance posters, as well as fever care information slips to inform clients on other causes of fever, acceptance of non-malaria diagnosis, and follow up instructions.

Another key barrier to provider adherence to case management guidelines is a prevalent “mental model of diagnosis” in which test results are considered a tool to complement expert medical opinions and not as one essential to forming a diagnosis. “Overconfidence” in clinical assessment skills, outweighs confidence in the accuracy of the test. Program investments to address this include design and user testing of visual cues, such as redesigned client evaluation form with active choice prompts for differential diagnosis of fever; reinforcing messaging on other causes of fever; data and accountability measures, such as routine data validation of ACTs dispensed vis-a-vis malaria test results; supportive supervision to coach, provide feedback, and troubleshoot challenges; and data reconciliation feedback and group problem solving. All of these approaches are currently being tested using existing funds. Only those found to have been successful will be implemented at scale (by service delivery partners) using FY 2020 funds.

## **Conclusion**

The interaction between internal and environmental factors that drive provider decision to adhere to case management guidelines especially the use of and trust in RDTs results, suggests the need for close collaboration between service delivery and SBC implementing partners. PMI will support peer cluster and professional association meetings to strengthen peer-to-peer networks, generate discourse, and promote shared norms and group problem solving to address provider biases regarding use of malaria RDTs and treatment decisions.

## **Key Question 5**

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

## **Supporting Data**

A map is not available but please refer to the following figures in this document:

- Figures 10 and 11: PMI-Supported States by Start-up Year and Planned Interventions for 2020
- Figure 12: Health Facility Coverage Plan in PMI-Supported States

## Conclusion

PMI intends to provide support to 64 percent of functional public health facilities in the 11 supported states by 2020. These facilities cover approximately 80 percent of reported malaria cases. As PMI/Nigeria has been without a state level case management implementing partner for two years, due to the delay in procurement of the follow-on Malaria Action Program for States mechanism; the initial focus will be on quality of services rather than expanding coverage. PMI's ability to expand to additional facilities is critically dependent on the ability to provide malaria commodities.

PMI/Nigeria plans to support iCCM. However, this support will be targeted within four states (Bauchi, Benue, Ebonyi, and Kebbi). The specific LGAs and communities will be identified.

## Key Question 6

What is the estimated need for RDTs for FY 2020?

## Supporting Data

**Figure A21. Gap Analysis Tables for RDTs**

Calendar Year	2019	2020	2021
<b>RDT Needs</b>			
Total country population	208,979,594	215,666,941	222,999,617
PMI-targeted at-risk population	57,796,013	59,587,689	61,477,704
Total number of projected fever cases	99,099,589	102,204,370	105,406,967
Total number of projected fever cases-seeking care public sector (includes community)	35,890,382	37,008,979	38,162,630
Fevers receiving diagnostic test	28,919,695	30,561,074	32,276,836
Percent of fever cases tested with an RDT	90%	90%	90%
<b>Total RDT Needs</b>	<b>26,027,726</b>	<b>27,504,967</b>	<b>29,049,152</b>
<b>Partner Contributions (to PMI target population if not entire area at risk)*</b>			
RDTs carried over from previous year	8,045,083	0	0
RDTs from Government			
RDTs from Global Fund	0	0	0
RDTs from other donors	0		
RDTs planned with PMI funding	17,222,363	25,000,000	24,000,000
<b>Total RDTs Available</b>	<b>25,267,446</b>	<b>25,000,000</b>	<b>24,000,000</b>
<b>Total RDT Surplus (Gap)</b>	<b>-760,280</b>	<b>-2,504,967</b>	<b>-5,049,152</b>
<b>RDTs needed to fill the pipeline</b>	<b>13,013,863</b>	<b>13,752,483</b>	<b>14,524,576</b>

**Notes:**

- (a) Projected fever cases estimated at an average of 1.7 fevers per person per year in PMI-supported states.
- (b) Average 66% care seeking for fever, with 53% public health facility or community based in PMI-supported states.
- (c) Diagnostic testing rates were estimated by state (ranging from 76% to 86%) with plans for 2% increase per year.

## Conclusion

The Gap Analysis for RDTs (Figure A21) shows the increasing use of RDTs for malaria diagnostics at the health facility level. The RDT gap analysis estimates the RDT need for the 11 PMI-supported states. However, PMI does not support every health facility within those 11 states. PMI/Nigeria would like to expand RDT support to all facilities, but at present, that would also require expansion of ACT support and PMI/Nigeria does not have sufficient resources to expand further.

## Key Question 7

What is the estimated need for ACTs for FY 2020?

## Supporting Data

**Figure A22. Gap Analysis Tables for ACTs**

Calendar Year	2019	2020	2021
<b>ACT Needs</b>			
Total country population	208,979,594	215,666,941	222,999,617
PMI-targeted at-risk population	57,796,013	59,587,689	61,477,704
Total number of projected fever cases seeking care public sector (includes community)	35,890,382	37,008,979	38,162,630
Total projected number of confirmed malaria cases	20,368,137	20,912,599	21,440,810
Total projected number of unconfirmed ACT treated fever cases	7,848,558	7,245,533	6,998,417
<b>Total ACT Needs</b>	<b>28,216,695</b>	<b>28,158,132</b>	<b>28,439,227</b>
<b>Partner Contributions (to PMI target population if not entire area at risk)<sup>1</sup></b>			
ACTs carried over from previous year	6,470,778	3,262,225	
ACTs from Government*			
ACTs from Global Fund	0	0	
ACTs from other donors			
ACTs planned with PMI funding	25,008,142	20,000,000	18,000,000
<b>Total ACTs Available</b>	<b>31,478,920</b>	<b>23,262,225</b>	<b>18,000,000</b>
<b>Total ACT Surplus (Gap)</b>	<b>3,262,225</b>	<b>-4,895,906</b>	<b>-10,439,227</b>
<b>ACTs needed to fill pipeline (6 months)</b>	<b>14,108,347</b>	<b>14,079,066</b>	<b>14,219,614</b>

**Notes:**

- (a) Projected fever cases estimated at an average of 1.7 fevers per person per year in PMI-supported states.
  - (b) Average 66% care seeking for fever, with 53% public health facility or community based in PMI-supported states.
  - (c) Diagnostic testing rates were estimated by state (ranging from 76% to 86%) with plans for 2% increase per year.
  - (d) TPR estimates by state ranged from 65% to 78% in PMI-supported with an estimated 2% decrease per year.
  - (e) All those not tested are assumed to be presumptively treated with an ACT.
  - (f) Non-adherence to negative tests by state ranged from 10% to 16% in PMI-supported with an estimated 2% decrease per year.
- \* ACTs are being procured for drug revolving funds at state level, but PMI is unable to quantify the numbers

## Conclusion

The ACT gap analysis estimates the ACT need for the 11 PMI-supported states. However, PMI does not support every health facility within those 11 states. Due to competing priorities, PMI will be procuring fewer ACTs with FY 2020 funding leading to an increase in the ACT gap to about 10 million. PMI/Nigeria is looking for a sustainable way to increase access to ACT treatment of confirmed malaria. With declining cost of ACTs, and improved quality of local ACT manufacturing, an opportunity exists to transition malaria treatment (ACTs) back into existing DRFs. In CY 2020, PMI will begin this transition in select secondary health facilities in select states. The poor are more likely to use a PHC over a secondary facility. PMI will continue to provide RDTs and injectable AS to secondary facilities. The savings resulting from this transition would allow expansion to more PHCs (both RDTs and ACTs), thus increasing access to quality case management, especially for the poor.

## Key Question 8

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

## Supporting Data

**Figure A23. Gap Analysis Tables for Injectable Artesunate**

Calendar Year	2019	2020	2021
<b>Injectable Artesunate Needs</b>			
Projected Number of Malaria Cases seeking treatment from the public sector	20,368,137	20,912,599	21,440,810
Projected Number of Severe Cases <sup>1</sup>	366,626	376,427	385,935
<b>Total Injectable Artesunate vials Needs<sup>2</sup></b>	<b>1,833,132.33</b>	<b>1,882,133.91</b>	<b>1,929,672.90</b>
<b>Partner Contributions</b>			
Injectable artesunate vials carried over from previous year	78,860		
Injectable artesunate vials from Government			
Injectable artesunate vials from Global Fund			
Injectable artesunate vials from other donors			
Injectable artesunate vials planned with PMI funding	500,000	500,000	350,000
<b>Total Injectable Artesunate vials Available</b>	<b>578,860</b>	<b>500,000</b>	<b>350,000</b>
<b>Total Injectable Artesunate vials Surplus (Gap)</b>	<b>-1,254,272</b>	<b>-1,382,134</b>	<b>-1,579,673</b>

**Footnotes:**

<sup>1</sup> Proportion of severe malaria to confirmed cases from the DHIS2 is 1.8%

<sup>2</sup> An average of 5 vials per severe malaria case. Buffer stocks are not included.

## Conclusion

As with ACTs, PMI/Nigeria does not have sufficient funding to cover the estimated need for injectable artesunate in the 11 PMI supported states. Some of the savings achieved from

transitioning ACTs into DRFs could be used to increase procurement of IAS for secondary facilities.

### Key Question 9

Are the first-line ACTs effective and monitored regularly?

### Supporting Data

**Figure A24. 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
2015	Ogbia (Bayelsa), Neni (Anambra), Ogwa (Imo), Numan (Adamawa), Ilorin (Kwara), Kura (Kano), Bodinga (Sokoto), Ibadan (Oyo)	AL, ASAQ, DP	<ul style="list-style-type: none"> <li>• Yes</li> <li>• (97.4%, similar for the three medicines)</li> </ul>	n/a
2018	Kano, Plateau, Enugu	AL, ASAQ, DP	<ul style="list-style-type: none"> <li>• AL: 98.2%</li> <li>• ASAQ: 98.9%</li> <li>• DP: 100%</li> </ul>	Results pending
2020	Lagos, Cross River, Adamawa, Sokoto	AL, ASAQ, DP, PA		CDC Atlanta (PARMA)

**Source:** Study report, Therapeutic Efficacy of Artemether-Lumefantrine, Artesunate-Amodiaquine, and Dihydroartemisinin Piperazine for the Treatment of Uncomplicated *Plasmodium falciparum* Malaria in Nigerian Children

**Footnotes** - ACPR: adequate clinical and parasitological response; AL: artemether-lumefantrine; ASAQ: amodiaquine-artesunate; DP: Dihydroartemisinin-piperazine; PA = pyronaridine artesunate; PARMA: PMI-supported Antimalarial Resistance Monitoring in Africa

### Conclusion

As of 2015, AL, ASAQ, and DP remain efficacious in Nigeria. The 2018 TES results are being finalized and will be available prior to the end of 2019. The TES planned for 2019 was unable to start during the peak malaria season, and thus was postponed until 2020. The plan is to carry out TES in 4 sites on a yearly basis going forward.

### Key Question 10

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

### Supporting Data

The quality of malaria microscopy is very poor in most secondary and tertiary health facilities. Strengthening quality assurance of malaria diagnostics including procurement of microscopy reagents/consumables, lab supervision, and slide rechecking is planned. For the private health

facilities and laboratories, the plan is to improve malaria parasite diagnosis through training, and linkage to the malaria diagnosis quality assurance program at the state level.

### Conclusion

As stated above, PMI plans to expand malaria diagnostic QA efforts by supporting state ownership through state level malaria diagnostic QA centers. The current federal-led effort resulted in QA activities occurring once every one to two years, rather than quarterly as designed, and little evidence of improved malaria diagnostics. QA will be a state responsibility rather than dependent on outside expertise. State QA will incorporate microscopy and RDTs into one unified QA system involving multiple health agencies. When functioning well, private sector labs will be added to the system.

### Key Question 11

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

### Supporting Data

N/A

### Conclusion

N/A

## 2.B. DRUG-BASED PREVENTION

<b>NMEP objective</b>
<p>The NMSP 2014-2020 targets for IPTp and SMC are:</p> <ul style="list-style-type: none"> <li>• All eligible pregnant women attending ANC receive at least three doses of SP-IPTp by 2020 through directly observed therapy</li> <li>• SMC for children between the ages of 3 and 59 months in areas of highly seasonal malaria transmission across the Sahel sub-region</li> </ul>
<b>NMEP approach</b>
<ul style="list-style-type: none"> <li>• In 2014, Nigeria adopted the updated the WHO IPTp policy of providing IPTp with SP starting as early as possible in the second trimester for all pregnant women at each scheduled ANC visit until the time of delivery, provided that the doses are given at least one month apart. IPTp-SP is to be administered as directly observed therapy during ANC visits. The NMEP and partners have revised the training and SBC materials to align with the new IPTp policy. The country is in the process of reviewing the HMIS registers to capture three or more doses of IPTp-SP.</li> </ul>

- *Iron/folate*: National guidelines and strategies for malaria prevention and control during pregnancy state that SP shall be administered as part of the complete ANC package, including anti-helminthic drugs in the second or third trimester, nutrition counseling, and daily hematinic supplements (iron and low-dose folic acid). Because high-dose folic acid is still procured and provided at ANC in Nigeria, the guideline recommends that high-dose folic acid should be withheld for one week after SP administration. The NMEP and partners continue to advocate for the procurement of low-dose folic acid.
- The NMEP strategy recommends SMC in nine states in the Sahel region: Sokoto, Kebbi, Zamfara, Bauchi, Katsina, Kano, Jigawa, Yobe, and Borno (four doses of Sulfadoxine-pyrimethamine + amodiaquine [SP-AQ] at monthly intervals over the four-month malaria transmission season). There are 227 LGAs and a population of approximately 11 million children under the age of five years in these states.

#### **PMI objective, in support of NMEP**

- PMI supports implementation of IPTp with SP in all 11 supported states.
- PMI began directly supporting SMC in Zamfara State in 2019. and plans to provide support for SMC in applicable targeted PMI-supported states.

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

In 2018, PMI distributed 3.7 million treatment doses of SP to supported health facilities in the 11 states. Since the start of 2019, 1.7 million doses of SP have been distributed to health facilities.

PMI had no partner working to support service delivery of IPTp at health facilities in the supported states over the past two years. However, there were collaborations with GoN integrated services (particularly, the Saving One Million Lives Project) through which health facility staff in the states received support to improve IPTp. A key collaboration occurred in Ebonyi State with the UNITAID-funded Transforming Intermittent Preventive Treatment for Optimal Pregnancy (TIPTOP) project working in select local governments. PMI supported the project activities by distributing 8,200 doses of SP to an additional 36 health facilities in the LGA. The TIPTOP project will increase uptake of IPTp in supported communities through strengthening health facilities and community distribution.

With philanthropic and DFID funding, the Malaria Consortium supported SMC implementation in Sokoto, Jigawa, Katsina, and Zamfara states. PMI collaborated with the Malaria Consortium by providing additional commodities for SMC implementation in Zamfara State, while philanthropic funding (through Malaria Consortium) covered operational costs.

With FY 2016 funds, PMI procured and prepositioned 1,689,300 treatments of SP+AQ. For the 2019 SMC campaign, PMI provided 1,689,300 treatments for implementation through the Malaria

Consortium in Zamfara State. The Malaria Consortium will continue implementation support in the PMI-supported states of Sokoto, Kebbi, and Bauchi beyond 2019.

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

- PMI will support activities to strengthen IPTp at federal, state, and facility levels. At the federal level, PMI will support the revision of guidelines, SOPs, and job aids to address barriers to uptake of IPTp. At the state and health facility level, support will be provided for integrated supportive supervision, and training of health workers to administer, document, and report SP doses appropriately. PMI will advocate to federal and state authorities to procure SP using domestic resources.
- PMI will procure 2,533,950 treatments with FY 2019 funding, and together with a pipeline of 1,689,300 doses, a total of 5,223,250 treatments will be available for distribution in Zamfara State in 2020.
- PMI will provide operational cost for distribution in Zamfara state with a target to reach about 1 million children.
- Additional support will be provided as technical assistance to NMEP to coordinate implementation of SMC activities and to plan for SMC in 2021.

**2.B.i SEASONAL MALARIA CHEMOPREVENTION (SMC)**

**PMI Goal**

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

**Do you propose expanding, contracting, or changing any activity? Why, and what data did you use to arrive at that conclusion?**

In FY2020, PMI/Nigeria proposes to expand SMC to support:

- **Procurement** - 2.9 million SP-AQ complementing advance procurement of 1.1 million from prior fiscal years to cover 1 million eligible children 3-59 months of age.
- **National Level** - Support the national program in the development and review of SMC guidelines and the production of materials to facilitate state level implementation.
- **State Level** - Support microplanning, training, drug administration, supervision, monitoring, and reporting.

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 A25. Map of Areas Targeted with SMC



Note: There are 9 states (217 LGAs) (Figure A25) within the Sahelian region in Nigeria eligible for SMC: Bauchi (10), Borno (27), Jigawa (27), Kano (44), Katsina (34), Kebbi (21), Sokoto (23), Yobe (17), Zamfara (14). PMI will support Zamfara State.

## Conclusion

A total of 418,812,470 treatments of SP-AQ will be required for SMC from 2020 - 2022 in the 9 eligible states to cover about 35 million children aged 3-59 months annually over the three-year interval. Of these, 51,459,978 treatments will be required to cover the four eligible states where PMI supports malaria program. An average of 140 million and 17 million treatments is required per year to meet the national and PMI-supported states' needs, respectively. Current plans are of 8.1 million (CY 2020 and 2021) from PMI for one state, and additional 10 million philanthropic funding through Malaria Consortium (CY 2020 - 2021) for three other eligible PMI states. These quantities are not adequate to cover all required treatments. Additional

resources are needed to close the commodity gap of about 16 million doses of SP-AQ for the next three years. Please see the Excel spreadsheet for Commodity Gap Analysis Tables.

### **Key Question 2**

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

### **Supporting Data**

PMI provides technical assistance to NMEP to coordinate SMC activities at the federal level. The non-commodity needs for SMC implementation include operational cost for microplanning, human resource development, service delivery, pharmacovigilance, supervision, process monitoring/coverage surveys, community mobilization, and coordination. Based on the available cost data, this cost is estimated to be \$0.25 per treatment. An average of \$11.7 million and \$4.0 million is required annually nationally and in PMI-supported states for SMC operations.

In 2019, PMI only provided commodities for SMC implementation in one state, with non-commodity costs borne by the state and Malaria Consortium. The operational cost for other states were provided by DFID, Global Fund, and Malaria Consortium. In 2020 and 2021, PMI will provide funding for non-commodity cost in Zamfara State only, with Malaria Consortium supporting the other states.

PMI will provide some funds to support SMC coordination in Sokoto and Kebbi states during 2020 implementation.

### **Conclusion**

Adequate planning and budgeting is required for non-commodity costs towards a successful SMC campaign. There is a need to advocate to states and other resource partners to take up costs for non-commodities including costs for human resource development, supervision, and monitoring.

Additionally, efforts towards integration and leveraging of resources where feasible to minimize cost of operations should be explored in each of the states.

### **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**

No data available.

### Conclusion

There is a dearth of data on refusal rates for SMC as well as on determinants of uptake in Nigeria. As recommended by the MOP guidance, targeted community mobilization efforts to address acceptance and uptake of SMC will be led by service delivery implementing partners. However, focused technical assistance (TA) such as microplanning will be provided by SBC partners during periodic campaigns.

### Key Question 4

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

### Supporting Data

PMI plans to fully implement SMC in Zamfara State during 2020 implementation season. Certain parts of Zamfara may be inaccessible due to security concerns and could benefit from a fixed post (facility) distribution. This could impact the coverage in the affected communities.

In addition, conflicting timelines with other public health campaigns like mass campaigns and mass vaccinations could impact the availability of trained community health workers to be engaged for the SMC campaigns.

### Conclusion

Adequate planning, collaboration, and coordination with state stakeholders (including ministry of health, state primary health care agencies, and WHO) will prevent conflicts with other health programs. Also, working with and through traditional health institutions will minimize security challenges. Appropriate micro-planning and training of staff will mitigate challenges of human resources.

## 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 three doses, and effective case management of malaria, in accordance with WHO recommendations.

### Do you propose expanding, contracting, or changing any activity? Why, and what data did you use to arrive at that conclusion?

In FY 2020, PMI/Nigeria proposes to maintain the allocation for MIP to support:

- **National Level** - Support the national program in the development and review of MIP guidelines and the production of materials, such as job aids, to promote uptake of IPTp by pregnant women in targeted states.
- **Facility Level** - Train/retrain health providers who offer services to pregnant women attending antenatal care; and support mentoring and supervision.

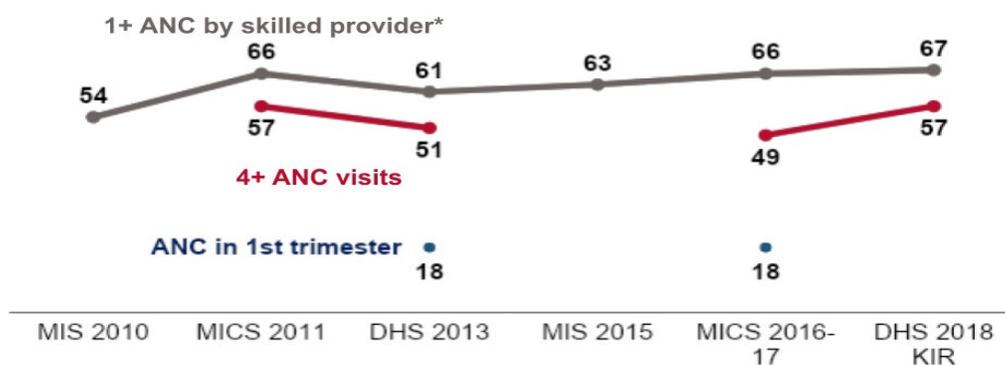
Please see Table 2 for a detailed list of proposed activities with FY 2020 funding.

### Key Question 1

What proportion of pregnant women are receiving ANC early and frequently during their pregnancy? What barriers and facilitators exist?

### Supporting Data

**Figure A26. Trends in ANC Coverage, Percent of Women Age 15-49 with a Live Birth in the 5 Years Before the Survey for Most Recent Birth**



\*Skilled provider includes doctor, nurse, or midwife

**Figure A27. Key Barriers and Facilitators to ANC Attendance**

Facilitator	Type of Factor	Data Source	Evidence
High malaria ideation in pregnancy	Internal	PMI-funded Endline Evaluation of the HC3 Nigeria, 2017	A recent household survey found that respondents with high levels of malaria ideation <sup>11</sup> , especially perceived susceptibility and perceived severity, had improved attitudes toward ANC/IPTp.

<sup>11</sup> General malaria ideation is an index of six ideational variables (knowledge, perceived threat/susceptibility, perceived response efficacy, perceived self-efficacy, perceived social support and interpersonal communication) about malaria-related outcomes

Barrier	Type of Factor	Data Source	Evidence
Cost, distance to facilities, and lack of transportation	Environmental	Breakthrough Action MNCHN and Malaria Literature Review, 2018	A secondary analysis of NDHS 2013 revealed that cost/lack of money (56%), distance to a facility (48%), and lack of transportation (44%) were listed as the top three reasons for non-use of ANC services.
Lack of perceived need for ANC (especially in the first trimester)	Internal	Breakthrough Action MNCHN and Malaria Literature Review, 2018	Literature revealed that a factor related to underutilization of ANC services is the lack of a perceived need, especially in the first trimester. This is further heightened by a perception that the ANC is a curative and not preventive service.
Difficulties in securing spousal permission	Social	Breakthrough Action MNCHN and Malaria Literature Review, 2018	In the North, gender norms restrict women's movements and social interactions and require them to obtain spousal consent before they leave their homes. This was found to be a major barrier to (timely) uptake of ANC services.

## Conclusion

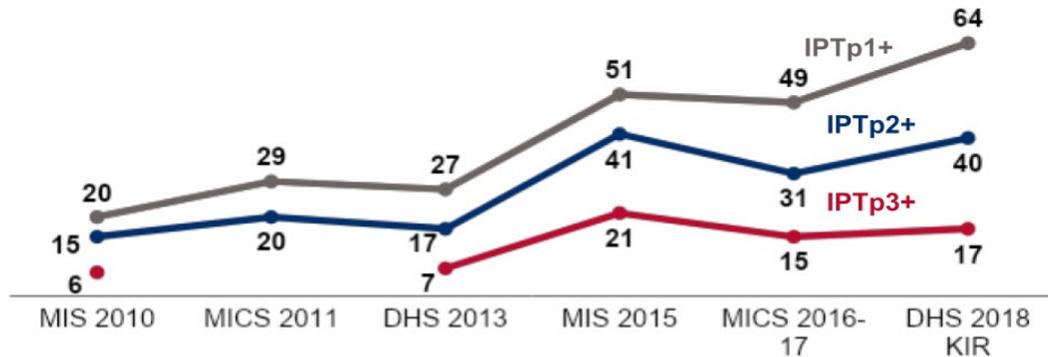
Nigeria has adopted the 2016 WHO ANC model which recommends a minimum of eight contacts during pregnancy. Policies and guidelines at the federal and state levels have been developed. However, implementation at facilities has been low and there are challenges with documentation of ANC visits into the national health management information system. Household and community level interpersonal communication activities aimed at promoting early and repeat ANC attendance are being supported using an integrated approach with funding from MNCH in Kebbi, Sokoto and Bauchi states. These states have the lowest uptake of ANC 1 ranging from 14.7 percent to - 24.3 percent and far below the national average of 67 percent (NDHS 2018). In other PMI supported states (with the exception of Zamfara), ANC 1 uptake is in the range of 72.4 to 82.4 percent (higher than national average), suggesting the need for PMI investments to be focused on addressing missed opportunities for IPTp uptake at ANC in these states.

## Key Question 2

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

## Supporting Data

**Figure A28. Trends in IPTp Coverage, Percent of Women Age 15-49 With a Live Birth in the Two Years Before the Survey Who Received the Specified Number of Doses of SP/Fansidar During Their Last Pregnancy**



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.

## Conclusion

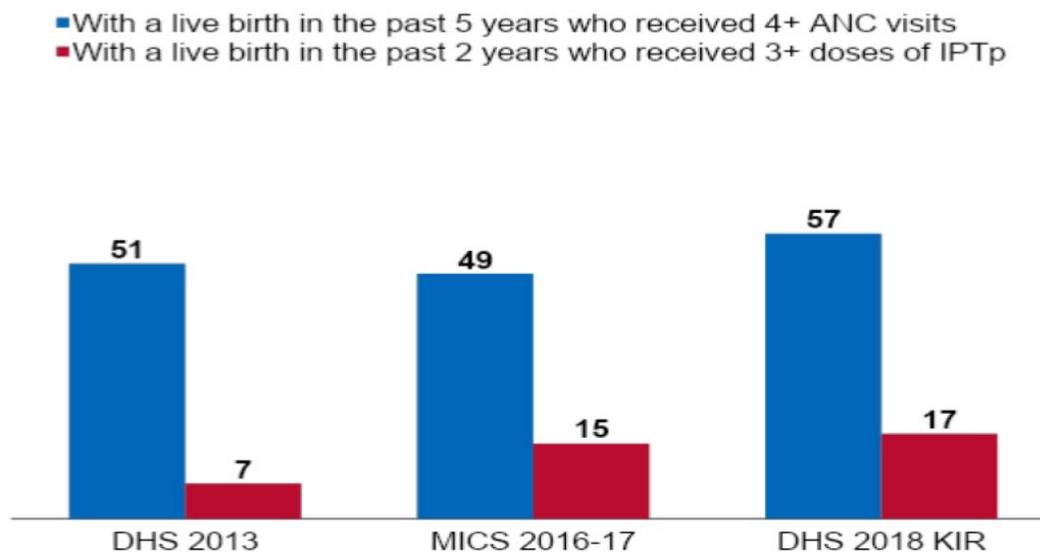
There has been a steady increase in the proportion of women who received one dose of IPTp in Nigeria but no increase for IPT2 or IPT3 since 2015. The awareness of the benefits of IPTp and availability of SP at health facilities are important determinants.

## Key Question 3

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

## Supporting Data

**Figure A29. Trends in IPTp Missed Opportunities, *Percent of Women Age 15-49***



The graphic above shows the trend in IPTp uptake during ANC visits. The discrepancies between ANC attendance and IPTp uptake suggests substantial missed opportunities and a need to identify facility-level factors influencing IPTp uptake during ANC.

**Figure A30. Key Barriers and Facilitators to IPTp Administration at ANC Visits**

Facilitator	Type of Factor	Data Source	Evidence
Existence of an integrated Reproductive Maternal Newborn Child Adolescent Health and Nutrition (iRMNCAH+N) Technical Working Group (TWG)	Environmental	iRMNCAH+N TWG Terms of Reference (TOR), 2017	The Federal Ministry of Health (FMOH) hosts the iRMNCAH+N TWG - a coordination group that actively focuses on maximizing investments and opportunities to effectively integrate malaria services (IPTp and ITN uptake at ANC) and RMNCAH+N services at different levels of the healthcare delivery system.

Barrier	Type of Factor	Data Source	Evidence
Low provider knowledge of IPTp protocols	Internal	Patterns of Case Management and Chemoprevention for MIP by Public and Private Sector Health Providers in Enugu State, Nigeria, 2012 <sup>12</sup>	At the individual level, poor knowledge of IPTp guidelines by providers appears to be a substantial barrier to achieving optimal adherence to MIP guidelines. <sup>13</sup> Confusion over the timing and dosing of SP in relation to gestational age <sup>14</sup> was commonly cited as well as inability to name the major side effects or contraindications of SP. Poor knowledge is further exacerbated by lack of effective training and supervision of providers and lack of a quality assurance system for the IPTp delivery in the health facilities. <sup>15</sup>
Stock-outs of SP	Environmental		SP stock-out rates remained fairly consistent at 7 percent through 2018, but rose sharply to 30 percent in the last three months due to a transition from international procurement to local procurement. Stock-outs result in women either being turned away without being given IPTp or being given a prescription to go and buy the drug from a private drug seller and there is no guarantee that women will buy and take the drug.

## Conclusion

A 2017 assessment of malaria interventions in four<sup>16</sup> PMI-supported states suggested gaps in understanding health providers' perspectives on low uptake of IPTp. A 2012 study<sup>17</sup> concluded that factors driving missed opportunities for increasing IPTp coverage are structural<sup>18</sup> and not demand side factors such as ANC attendance, appropriate timing of ANC attendance, and perceptions about side effects. PMI investments will be channeled through service delivery implementing partners to address knowledge deficits on the protocol through

<sup>12</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3720261/>

<sup>13</sup> <https://pdfs.semanticscholar.org/d772/9c5b5e153625b65433e85a04202264d814fe.pdf>

<sup>14</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3392746/>

<sup>15</sup> <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3364889/>

<sup>16</sup> Cross River, Ebonyi, Nasarawa and Sokoto states

<sup>17</sup> [https://www.researchgate.net/publication/221972079\\_Low\\_coverage\\_of\\_intermittent\\_preventive\\_treatment\\_for\\_malaria\\_in\\_pregnancy\\_in\\_Nigeria\\_Demand-side\\_influences](https://www.researchgate.net/publication/221972079_Low_coverage_of_intermittent_preventive_treatment_for_malaria_in_pregnancy_in_Nigeria_Demand-side_influences)

<sup>18</sup> <https://malariajournal.biomedcentral.com/articles/10.1186/1475-2875-12-342>

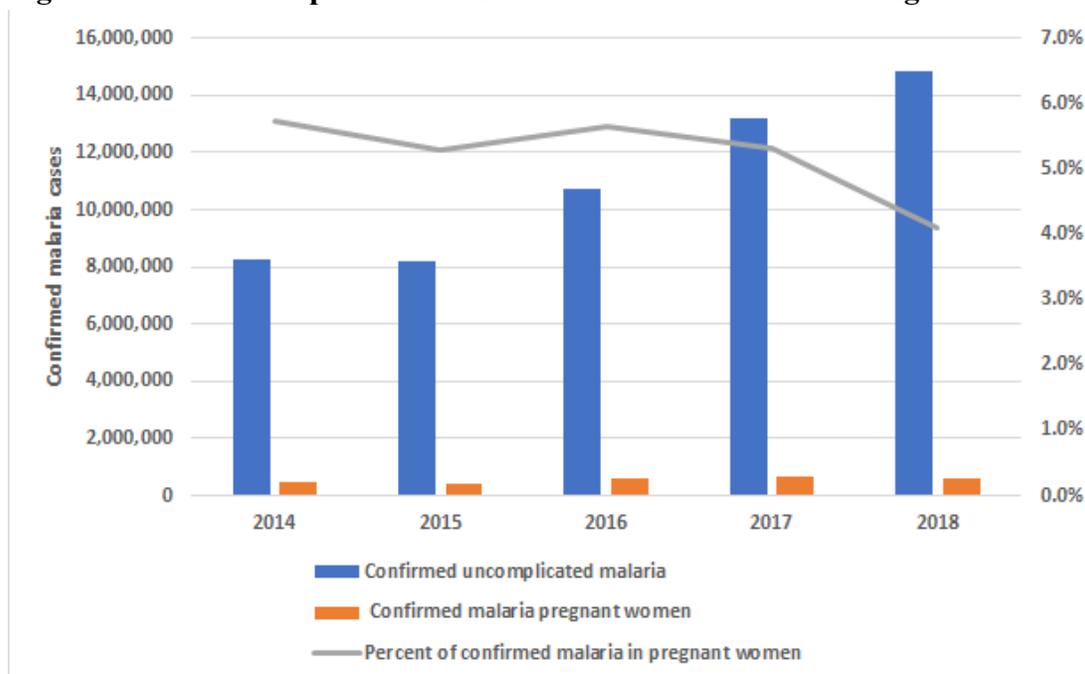
retraining and supportive supervision. Finally, stock outs have returned to below 10 percent with the arrival of new SP consignment procured from a local pharmaceutical manufacturer

#### 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

**Figure A31. HMIS-Reported Trends in Confirmed Malaria in Pregnant Women**



Currently, the HMIS does not disaggregate fever, malaria testing, and treatment by pregnancy status. Figure A31 shows the proportion of confirmed malaria cases reported in pregnant women. The proportion is consistent with the estimated percent of pregnant women in the population.

It is possible that environmental/systemic factors (such as consultation with a large volume of clients) and internal barriers (such as a low perception of the efficacy of RDTs and high perception of self-expertise to clinically diagnose malaria cases) that act as barriers to provider adherence to malaria case management guidelines could potentially affect adherence to testing and treatment guidelines among pregnant woman. However, at present, there is no data to suggest that pregnant women face unique barriers in testing and treatment for malaria.

#### Conclusion

Pregnant women presenting to ANC with fever/symptoms of malaria are referred to the outpatient department for diagnosis and treatment. Pregnant women presenting to facilities with malaria receive free diagnosis and treatment. PMI will prioritize provider adherence to

case management guidelines to ensure proper testing and treatment for malaria in all populations, including pregnant women.

### 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 A32. Gap Analysis Tables for SP**

Calendar Year	2019	2020	2021
Total Targeted Population	57,796,013	59,587,689	61,477,704
<b>SP Needs</b>			
**Total number of pregnant women attending ANC in public health facility	1,169,502	1,205,757	1,244,001
***Total SP Need (in treatments)	2,654,770	2,737,068	2,823,883
<b>Partner Contributions</b>			
SP carried over from previous years	140,400	1,593,330	-1,143,738
****SP from Government	5,000		
SP from Global Fund	0	0	0
SP from Other Donors			
SP planned with PMI funding	4,102,700	0	0
<b>Total SP Available</b>	<b>4,248,100</b>	<b>1,593,330</b>	<b>-1,143,738</b>
<b>Total SP Surplus (Gap)</b>	<b>1,593,330</b>	<b>-1,143,738</b>	<b>-3,967,621</b>

The expected number of pregnant women in Nigeria is 5% of the total population.

\*\*Average of 57% ANC attendance in PMI-supported states, with average 71% in public sector. Calculated using state-specific ANC coverage by skilled provider - DHS 2013.

\*\*\*Plan for 100% SP1, 77% SP2, and 50% SP3.

\*\*\*\* One State procured 5,000 treatment doses of SP

### Conclusion

The Government of Nigeria has banned the importation of SP into the country as it is produced locally. The cost of procuring quality-assured SP locally is much higher than PMI cost to procure on the international market. Therefore, PMI has decided to be consistent with Global Fund's approach, and will not plan to procure SP. This could lead to a gap in SP availability during the second half of CY 2021. PMI is advocating to federal and state health authorities to include procurement of SP in their budgets and through the Saving One Million Lives (SOML) project. One state procured some SP in 2019. In addition, SP is readily available in the market at low cost. If the GoN is unwilling to procure SP, it will be difficult to sustain any partner supported intervention.

### Key Question 6

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

### Supporting Data

See Question 5.

### Conclusion

Under the current environment and budget, it does not make sense for PMI/Nigeria to procure SP.

## 3. CROSS-CUTTING AND OTHER HEALTH SYSTEMS

### 3.A. SUPPLY CHAIN

<b>NMEP objective</b>
<p>The fifth objective of NMSP 2014-2020 is to ensure the timely availability of appropriate antimalarial medicines and commodities required for prevention and treatment of malaria in Nigeria.</p> <ul style="list-style-type: none"><li>• NMSP has the following strategies to achieve this objective:</li><li>• Strengthen procurement-related processes.</li><li>• Develop efficient distribution systems for antimalarial medicines and commodities (storage, transport distribution, and inventory management).</li><li>• Strengthen logistics management.</li><li>• Implement policies on QA and pharmacovigilance.</li><li>• Operationalize and update where necessary existing policies for malaria case management in the private sector.</li><li>• Increase access to antimalarial prevention and management commodities in the private sector.</li><li>• Strengthen collaboration with the National Agency for Food and Drug Administration and Control (NAFDAC) to put in place regulatory requirements for distribution, including storage and transportation of antimalarial products in the private sector</li></ul>
<b>NMEP approach</b>
<p>Nigeria, in collaboration with donors, has rolled out the Nigeria Supply Chain Integration Project (NSCIP), under the National Product Supply Chain Management Program (NPSCMP), Food and Drug Services Department of FMoH. The NSCIP strategy was endorsed by the national health council and has the support of the NMEP and other development partners in Nigeria including the Global Fund. The country has adopted an integrated supply chain system for all public health</p>

programs coordinated at the national level by the NPSCMP, at the state level by the Logistics Management Coordination Unit (LMCU), Department of Pharmaceutical Services, State Ministry of Health, and at the local government level by the local government LMCU.

### **PMI objective, in support of NMEP**

USAID is part of the Development Partners Group for Health (DPGH) supply chain TWG at the national level aimed at effective coordination of supply chain activities in the country. PMI supports all supply chain coordination activities at all levels of government in Nigeria. PMI has supported the pharmaceutical supply chain management TWGs at the federal level and in all 11 PMI-supported states. PMI supported the integrated national forecast for malaria commodities 2015-2020. As a result, state-specific quantifications and gap analyses have been developed and used to inform commodity planning by partners and as advocacy tools for resource mobilization. PMI supported other TWGs of NMEP and State Malaria Elimination Programs (SMEPs) with supply chain data to inform effective decision making.

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

**Supply Chain Coordination:** PMI has supported supply chain activities at national, state, and LGA levels in the last 12-18 months. The GON coordination structures supported are as follows:

- NPSCMP, at the national level
- Logistics Management Coordination Unit (LMCU) at the state level
- Local government LMCU at the LGA

PMI supported the training of 54 state LMCU personnel in the 11 PMI supported states and at the federal level, PMI supported various malaria PSM subcommittees and technical working groups at national, regional, and state levels.

**Storage and distribution:** GON- and donor-procured commodities flow from two national pharmaceutical grade warehouses (Abuja and Lagos) to regional/axial stores and then directly to health facilities, bypassing state warehouses. The warehouse management and distribution is outsourced to private logistics providers. The regional distribution system is meant to be a medium term solution. As states upgrade to pharmaceutical grade warehouses, distributions can again take place from the state level to health facilities, coordinated by the state LMCU.

- PMI provided technical assistance support to Nasarawa and Benue states to plan for upgraded warehouses.
- PMI carried an assessment of the performance of drug revolving fund (DRF) in three PMI supported states (Akwa Ibom, Bauchi, and Nasarawa).

PMI supported the routine bimonthly distribution of ACTs, RDTs, and SP to 3,666 health facilities. In the last 12 months, PMI supported the distribution of 25 million ACTs, 17.2 million RDTs, 2.5 million SP treatments, and 219,000 vials of injectable artesunate.

**Data management:** PMI supported the development and roll out of an electronic logistics management information system (eLMIS) known as the national health logistics management information service (NHLMIS). The NHLMIS is the logistics data reporting platform for all public health programs in Nigeria.

- PMI supported two rounds of End-Use Verification (EUV) surveys. PMI has been triangulating LMIS and HMIS data (from NHLMIS and DHIS2 platforms). This has resulted in a decline in the ACT use/reported case ratio in the 11 supported states. Under reporting of malaria cases through the HMIS is a contributing factor to the discrepancy in drug uptake versus reported cases. PMI will use malaria commodities support to leverage for more accurate HMIS reporting in all PMI supported states.

**Medicines quality:** PMI supported the ISO 17025 accreditation of NAFDAC biologicals laboratory in 2019, bringing the total number of accredited NAFDAC laboratories to four. PMI's support has made it feasible for NAFDAC laboratory to test the quality of mRDTs in Nigeria.

- PMI supported NAFDAC to carry out post market surveillance (PMS) of malaria medicines in the last 12-18 months. PMS results showed low proportions of circulating substandard and falsified malaria medicines in the country (4.3 percent in 2016, 1.4 percent in February 2017, 1.9 percent in November 2017, and 2.65 percent in July 2019 – NAFDAC PMS report).
- PMI supported Nigeria pharmaceutical manufacturers to produce quality ACTs and SPs.

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

With FY 2020 funding, PMI will strengthen the state LMCUs' capacity to coordinate all supply chain activities at the state level.

In line with the Journey to Self-Reliance (J2SR), PMI will support state LMCUs to manage integrated warehousing and last mile distribution contracts. PMI will support state LMCUs to procure ACTs and SPs for drug revolving fund (DRF) from local pharmaceutical manufacturers and wholesalers with required WHO and other relevant certifications. PMI will support the strengthening of GON DRF system at the state level. This sustainable medicines supply system will accelerate the states' J2SR.

PMI continues to distribute malaria commodities (excluding ITNs) through the NSCIP regional/axial stores while strengthening the capacities of some state LMCUs to coordinate integrated storage and distribution of malaria commodities from the state level. As PMI transitions ACTs into the DRF in

targeted secondary facilities, the savings will allow for expansion into more PHCs with both ACTs and RDTs, increasing access to quality malaria case management.

PMI will continue to support the roll out of the NHLMIS, particularly the inclusion of all health facilities (including non-PMI supported health facilities) in each of the PMI-supported states. PMI will advocate for feasible integration of the eLMIS and DHIS 2 systems for improved data quality for decision-making and forecasting needs.

PMI will continue to support the quality assurance and regulatory activities of the national drug regulatory agency. This includes support for post marketing surveillance (PMS) and global standards for traceability of malaria medicines. Additional support to pharmaceutical manufacturers' quality assurance processes to produce quality malaria medicines in Nigeria.

### **PMI Goal**

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

### **Do you propose expanding, contracting, or changing any activity? Why, and what data did you use to arrive at that conclusion?**

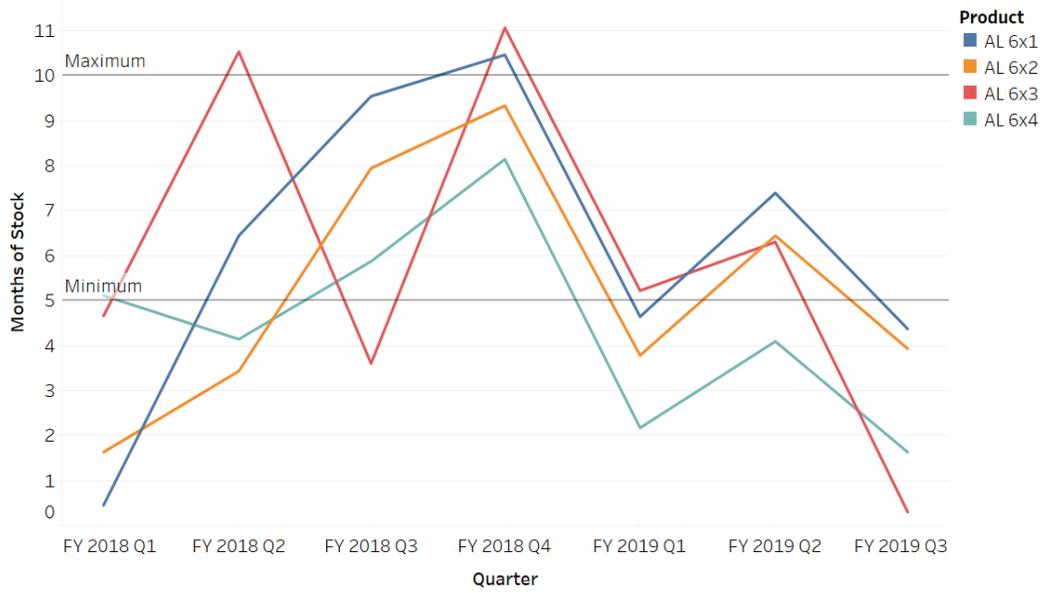
Funding for supply chain support including technical assistance and distribution will remain the same. Overall stock out rates have improved, but require continued support for warehousing, distribution, reporting and data analytics. As stated previously, PMI/Nigeria will no longer procure SP. Please see Table 2 for a detailed list of proposed activities with FY 2020 funding.

### **Key Question 1**

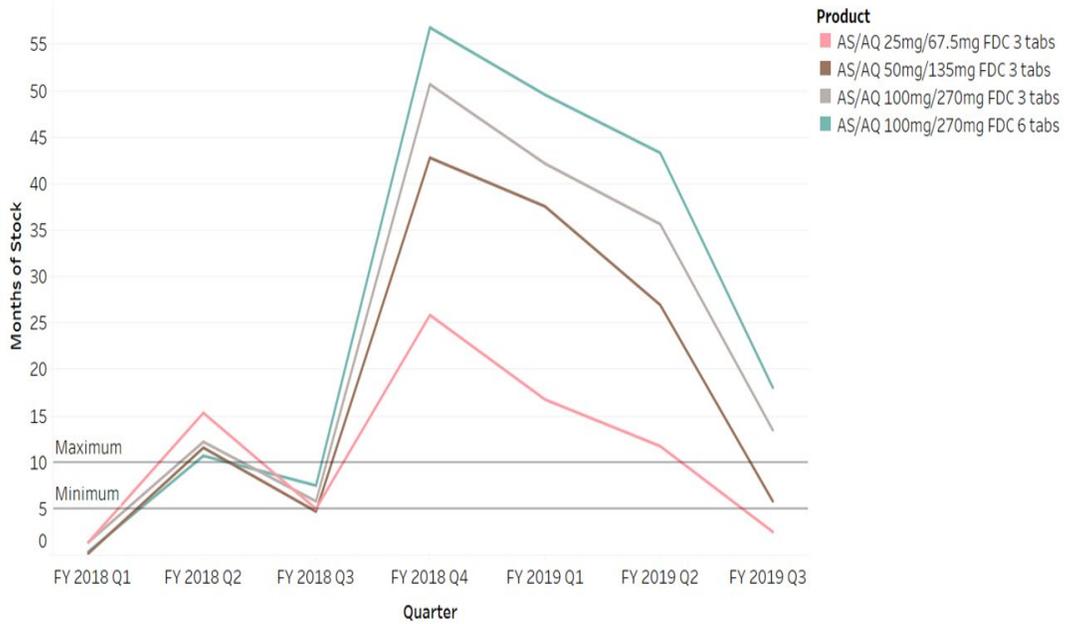
Has the central level been stocked according to plan for ACTs, RDTs, SP and Art. Inj over the last year? If not stocked according to plan, have they been under, over or stocked out?

## Supporting Data

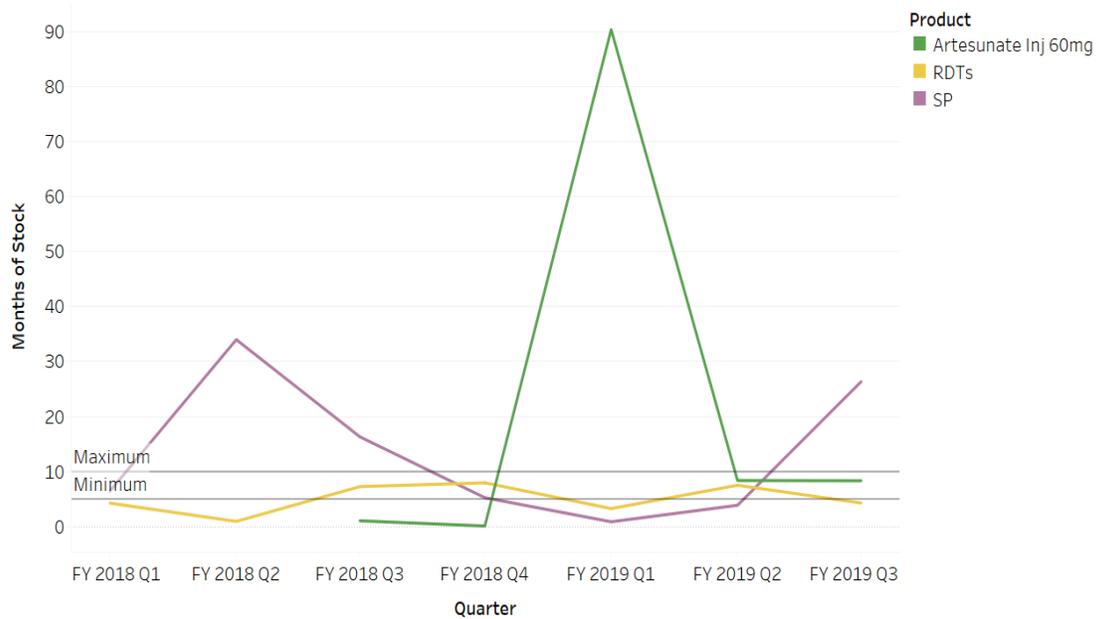
### Figure A33. Central Stock Levels for AL



### Figure A34. Central Stock Levels for AS/AQ



**Figure A35. Central Stock Levels for RDTs, SP and Injectable Artesunate 60mg**



### Conclusion

Nigeria uses both AL and AS/AQ as first line malaria treatment, although providers and patients generally prefer AL over AS/AQ. The low consumption of AS/AQ has been an issue for years, and led to high central stock levels. Over the years, PMI/Nigeria has gradually reduced the procurement of AS/AQ from 50% to 40% to 30% to 20%. After consultations with the NMEP, PMI/Nigeria will no longer procure AS/AQ, shifting to 100% AL. A large order of injectable artesunate increased central stock level, but this was subsequently distributed to health facilities.

### Key Question 2

What are the trends in facility- and community health worker-level stock out rates for ACTs, and SP over the last year (if tracked)? Is there a seasonal or geographic difference in stock out rates?

Supporting Data

Figure A36. AL Stockout Rates

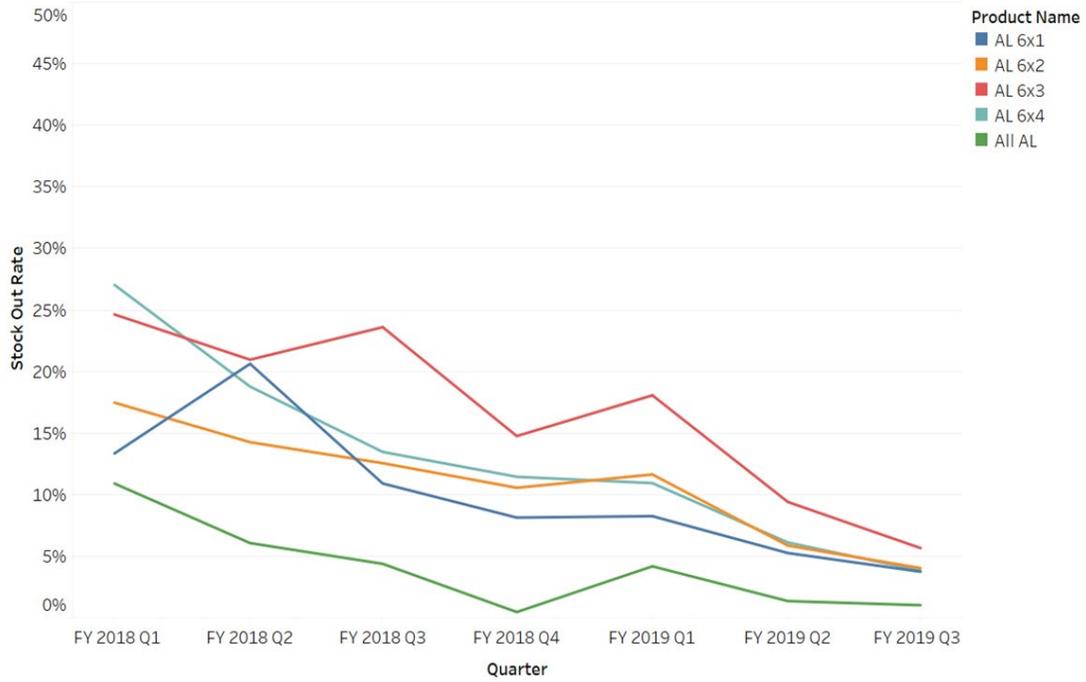
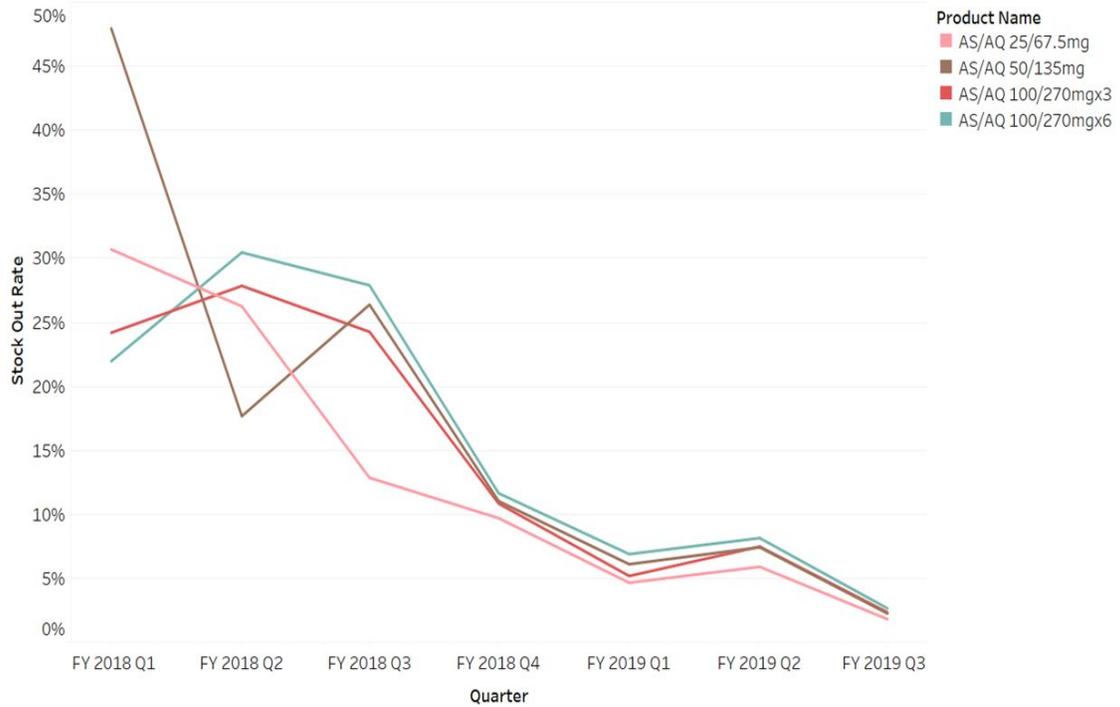
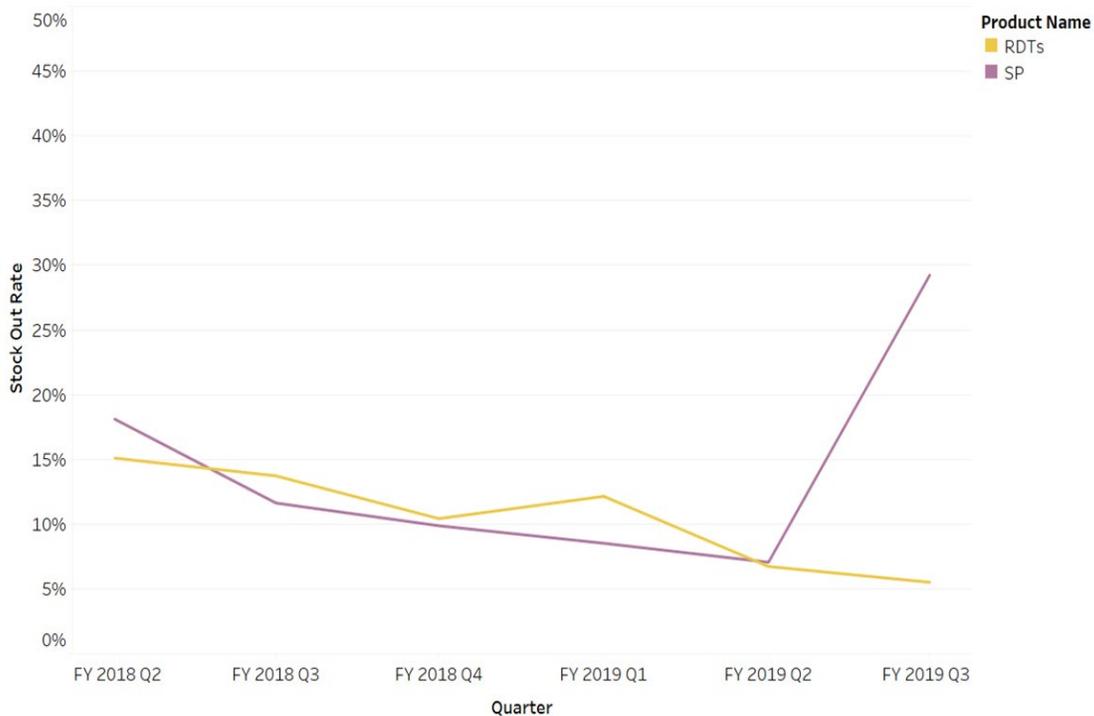


Figure A37. AS/AQ Stockout Rates



**Figure A38. SP and RDT Stockout Rates**



### Conclusion

Stock out rate of malaria commodities at health facility level improved significantly during the year.

- AL stock out rates have reduced from 15-25 percent in the first quarter of 2018 to below 10 percent in the third quarter of 2019.
- ASAQ and RDT stock out rates have been below 10 percent for the last three quarters
- SP stock out rates were consistently below 15 percent, spiked in the second quarter of 2019, but has returned to below 10 percent with the arrival of new SP consignment procured from a local pharmaceutical manufacturer. The transition from international procurement to local procurement affected availability of SP.

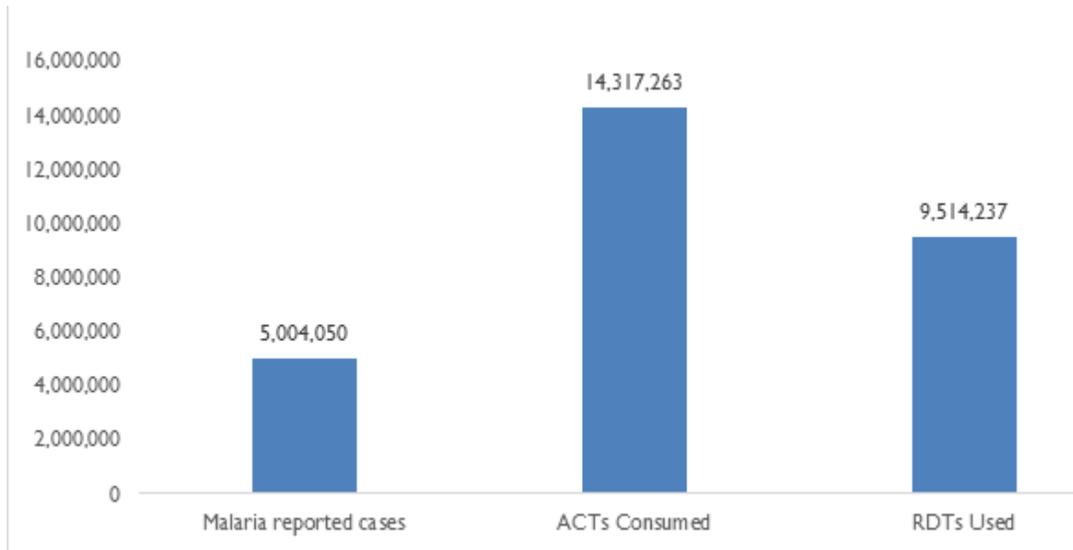
Ability to treat malaria in any health facility has consistently remained at 100 percent through all EUV surveys carried out over the past two years. The National Product Supply Chain Management Program and PSM branch of NMEP will be supported to monitor pipeline of malaria commodities to improve availability at health facility level.

### 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

**Figure A39. Malaria Cases vs ACTs Consumed vs RDTs Used (2018)**



## Conclusion

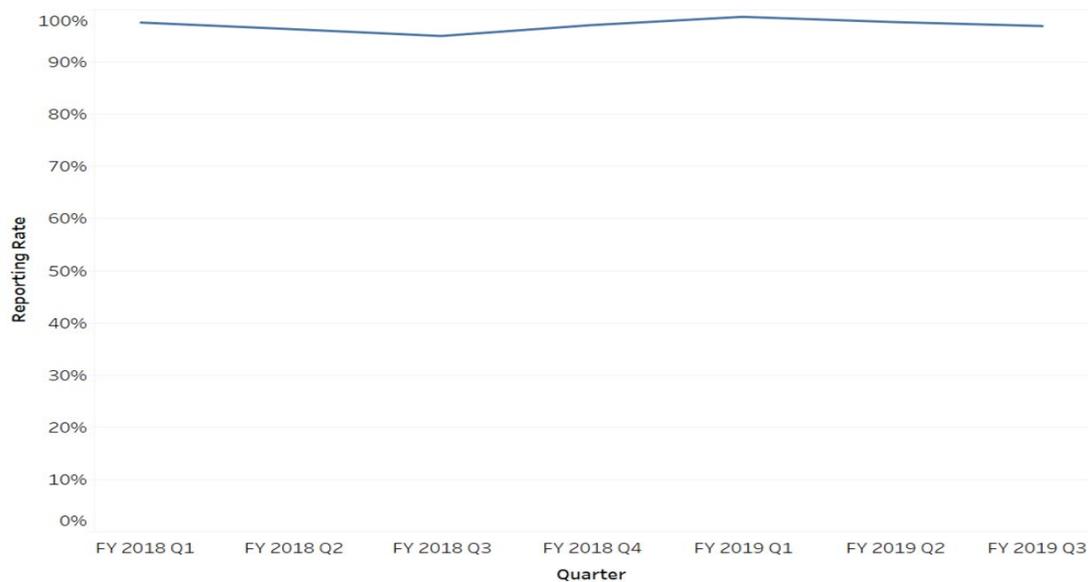
There have been large discrepancies between service delivery data (reported malaria cases through the DHIS2) and commodity distribution data (eLMIS). The cause of this discrepancy is multifactorial. HMIS reporting from health facility can be poor, inconsistent, and often inaccurate. Health facilities can also mishandle and inaccurately report on stock status, including providing commodities to other facilities not supported by PMI. As commodities are delivered from regional hubs directly to health facilities, the state LMCUs and SMEP do not have sufficient information to triangulate data and hold facilities accountable. PMI needs to ensure all data is visible to the state, and the state staff have the capacity to analyze, interpret, and use the data. In addition, PMI can leverage commodity support to health facilities to accurate HMIS reporting (no report, no commodities). Also, PMI is considering adjusting resupply from consumption based to HMIS reported malaria case based calculations.

## Key Question 4

What are the trends in LMIS reporting rates?

## Supporting Data

**Figure A40. LMIS Reporting Rates**



## Conclusion

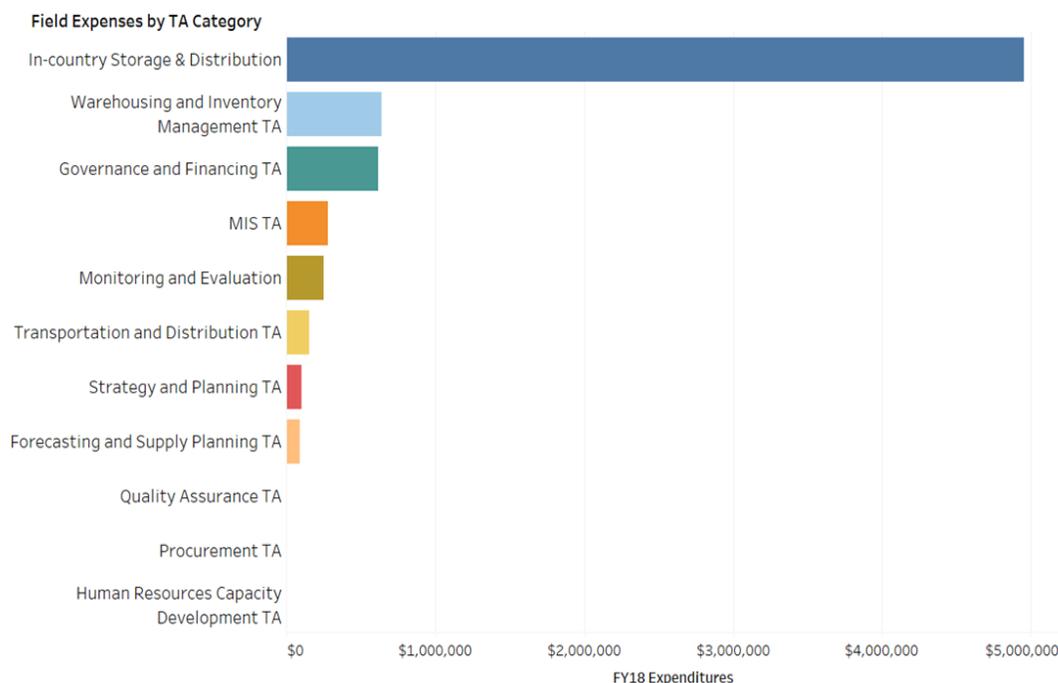
LMIS reporting rate for malaria commodities on the National Health Logistics Management Information Service (NHLMIS) have been above 97 percent. The reporting rate is for health facilities supported by PMI that have been trained on MCLS. The reporting rate has remained consistently high in the last year. There is adequate LMIS data for decision making. Quality of data continues to be a challenge. There are different layers of data verification to improve the quality of data. State LMCU teams will be supported to improve quality of data reported from health facilities. Staff at the health facility level will be supported to enter LMIS data directly into the NHLMIS.

## 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 funding and so should be maintained?

## Supporting Data

**Figure A41. PMI Supply Chain Investments in FY 2018**



## Conclusion

PMI has supported in-country storage and distribution of malaria commodities, warehousing and inventory management, NHLMIS, monitoring and evaluation, human resources capacity building, forecasting and supply planning at both national and state levels.

PMI has also supported quality of medicines activities (strengthening national medicines regulatory authority, post marketing surveillance of malaria, support to local pharmaceutical manufacturers to meet WHO good manufacturing practices).

PMI should continue to provide support to storage and distribution of malaria commodities. PMI country team is working to move ACTs and SP to the sustainable medicines supply system of the government. PMI will provide technical assistance to states and central DRF schemes. PMI will continue to support post market surveillance of malaria medicines to ensure that local manufacturers produce good quality ACTs and SP.

It remains important for PMI to continue to support state LMCUs on framework contract management for procurements, third party warehousing and distribution activities. Similarly, PMI will support supply chain interventions, governance, and leadership structures at the state level on the journey to self-reliance.

## Key Question 6

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

### Supporting Data

Nigeria has passed the National Health Act (NHAct) that allocates one percent of consolidated revenue to healthcare services. It serves as a legal backing for the regulation, development, and management of the health system. NHAct sets out a legal framework for the provision of health services through the Basic Health Care Provision Fund (BHCPF) by extending primary health care to all Nigerians. It is a tool to strengthen the health system and sets the country on the road Universal Health Coverage (UHC).

As the BHCPF commences implementation of activities, provision of free malaria medicines may be a challenge to the system. PMI will review supply of free ACTs and SPs to health facilities.

PMI should provide technical assistance to support efficient implementation of BHCPF activities related to supply of malaria commodities. Such activities may include strengthening internal capacity for effective procurement processes, improving the availability of quality malaria medicines from local pharmaceutical manufacturers, and improving state capacity on effective contract management among other supply chain supports.

### Conclusion

PMI will continue to work with NMEP, NAFDAC, state LMCUs, and local pharmaceutical manufacturers to provide support for malaria commodities security and assure quality of malaria medicines. Targeted support will be provided to position SMEP and SLMCU on the journey to self-reliance by coordinating supply chain activities at the state level.

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

NMEP objective
SME is an integral part of the NMSP 2014-2020, with one of the primary objectives focusing on routine collection and reporting of malaria data, and use of such data for program improvement. In 2009, the NMEP developed the National M&E Plan for Malaria Control in Nigeria. The M&E plan was reviewed in 2014 to align with the NMSP 2014-2020. Objective 6 of the NMSP states, “At least 80 percent of health facilities in all LGAs report routinely on malaria by 2020, progress is measured, and evidence is used for program improvement.”
The NMEP SM&E Technical Working Group led the process for developing the M&E plan, with the support and participation from a broad group of partners including PMI, the Global Fund, WHO, World Bank, UNICEF, DfID, and local NGOs.

### **NMEP approach**

The NMEP M&E plan covers three main areas: (1) strengthening routine malaria information systems; (2) supporting periodic household surveys; and (3) improving OR to ensure that new intervention strategies are evidence-based. The primary objective of the M&E Plan for Malaria Control in Nigeria is to establish a sound and continuously updated database that monitors progress towards agreed targets, evaluate outcomes and impact, and is used to effectively manage and adjust interventions based on evidence. Strategies of the M&E plan include:

- Improve collection, quality, and utilization of routine data to monitor the implementation of malaria-related interventions to feed into the HMIS.
- Periodically evaluate the progress of malaria control with respect to outcome and impact indicators through appropriate data collection processes.
- Strengthen links between the research community, the NMEP, and its development and implementation partners in order to ensure that ongoing research is oriented towards key operational questions and can provide the necessary evidence to continuously improve interventions for malaria control.
- Provide a roadmap for coordination of malaria-related SME among partners.

### **PMI objective, in support of NMEP**

- PMI is the co-chair of the SME technical subcommittee of the NMEP, which: (1) coordinates efforts for strengthening the HMIS, (2) oversees the planning and implementation of various surveys and assessments, and (3) coordinates SME activities with other partners.
- Support to sub-national (state, local government and health facilities) levels in 11 states.
- PMI supports routine data through the HMIS and periodic surveys (DHS and MIS).

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

In the past year, due to a gap in programming, PMI/Nigeria support has been limited to SME strengthening at the federal level. PMI is working through the SME subcommittee and the Data Management Expert Group to:

- Develop a national malaria data repository (MDR):The NMEP with support from partners is developing a data repository to warehouse key malaria data to support malaria decision making. The MDR development is planned to occur in three phases: a) DHIS2 synchronization; b) Non-HMIS malaria data integration; c)advanced analytics and custom communications. Funding is from GF, Gates Foundation, PMI and DFID.
- Update NHMIS tools
- Ensure data from secondary and tertiary facilities are uploaded into the DHIS2

- Design a community component of the HMIS to meet the needs of iCCM and malaria surveillance
- Standardize approaches to DQA and surveillance supportive supervision with existing state and LGA structures

Nigeria has implemented two national malaria SME workshop with support from PMI in order to build SME capacity at SMEPs. The MEASURE Evaluation regional SME training curriculum was adapted to the Nigeria context to meet the evaluation needs at the state level to include resources needed for planning, monitoring, and assessing malaria achievements. The two-week workshop targets public health personnel (malaria program managers and malaria program SME personnel). The first training included 15 states, specifically targeting the 11 PMI-supported states. The second workshop targeted the 13 GF supported states.

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

- Support roll-out of revised HMIS tools down to health facilities in the supported states through cascade training and production/distribution of tools.
- Support activities to improve data quality at health facility levels including monthly data validation meetings.
- Support for periodic data analysis at all levels aimed to increase the use of data
- Strengthen NMEP through embedded staff to support the setting up of national malaria data repository.
- Technical and financial assistance for 2020 malaria indicator survey
- Technical assistance for malaria program review and development of the next national malaria strategic plan and the accompanying surveillance, monitoring and evaluation plan.

**PMI Goal**

To support the NMEP 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 activity? Why? What data did you use to arrive at that conclusion?**

The SME activities will expand after a 2 year delay as PMI implementing partners will be working in all 11 supported states to improve the quality of routine malaria data. Additional support will be

required for the implementation of the malaria indicator survey in 2020. 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 A42. Surveillance, Monitoring, and Evaluation Data Sources 2013-2023**

Data Source	Data Collection Activities	Year								
		2015	2016	2017	2018	2019	2020	2021	2022	2023
Household Surveys	Demographic Health Survey (DHS)				x					(x)
	Malaria Indicator Survey (MIS)	x					(x)			
	Multiple Indicator Cluster Survey (MICS)*		x							
	EPI survey*					x				
Health Facility Surveys	Service Provision Assessment (SPA)									
	Service Availability Readiness Assessment (SARA) survey									
	Other Health Facility Survey (SOML HFS)*		x		x		(x)		(x)	
Other Surveys	EUV	x	x	x	x	x	(x)	(x)		
	School-based Malaria Survey									
	Other (Knowledge, Attitudes and Practices Survey, Malaria Behavior Survey)						(x)			
	Other (Malaria Implementation Assessment)		x							

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

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

## Conclusion

Reporting rates through the HMIS/DHIS2 have improved but the quality of reporting needs additional support. PMI will prioritize activities towards improving data collection and use at sub-national levels.

## 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 A43. Donor-Supported HMIS 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		
<b>Central Level</b>					
Register, tools (e.g. checklists, indicator glossary), job aids (design, indicators, definition of data elements, data dictionary, system support)			X	(X)	(X)
Data quality assessments (separate from supervision – funding for travel to lower levels)				(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)
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)	(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)	(X)
<b>Admin 1 Level (State). PMI supports activities in 11 states while Global Fund supports activities in 13 states.</b>					
Registers (warehousing, printing, distribution)			X	(X)	(X)
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 local government staff to conduct training at lower levels, capacity building (i.e. on the job training for local government level staff)			X	(X)	(X)
Human Resources (secondment of person for malaria SM&E, office/team for SM&E)					

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			X	(X)	(X)
Participation in national meetings (support for travel costs)			X	(X)	(X)
Support to Annual Operational Plans for State Malaria Program			X	(X)	(X)
<b>Admin 2 Level (Local government area)</b>					
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)	(X)
Monthly/Quarterly data quality review meetings (venue, meeting support)			X	(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 State (support travel)					

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		
<b>Facility Level</b>					
Data collection/entry, summary, and transmission (training, re-training, computers, internet, tools)			X	(X)	(X)
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)	
<b>Community Level</b>					
Data collection/entry and transmission (training, re-training, tools)			X		
Data use (analysis, interpretation, decision-making)					
Monthly/quarterly data quality review meetings (support for travel)					

**Conclusion**

PMI/Nigeria will have a SME implementing partner in all 11 supported states in 2020 after a 2-year delay. PMI will focus heavily on data quality through monthly ward level data validation meetings owned by LGAs. PMI will also emphasize data analysis and use at LGA and state levels.

**Key Question 3**

What are the outcomes of HMIS strengthening efforts?

## Supporting Data

**Figure A44. HMIS Reporting Timeliness, Completeness, and Accuracy**

		2017	2018
Timeliness	% of reports received on time	69.2%	72.9%
Completeness	“Confirmed malaria cases for children under 5 years of age” was reported in X% of facility-months	Not available	Not available
Accuracy	Populate with most recent DQA data	Not available	Not available

## Conclusion

PMI has not had an SME implementing partner at the state level for the past 2 years so strengthening efforts have been limited.

## Key Question 4

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

## Supporting Data

In-country considerations have been previously discussed.

## Conclusion

NA

### 3.C. SOCIAL AND BEHAVIORAL CHANGE (SBC)

NMEP Objective
The goal of National Malaria Strategic Plan (NMSP) is to “reduce malaria burden to pre-elimination levels and bring malaria related mortality to zero,” with seven objectives and strategies that bear relevance to all components of malaria program, including Advocacy, Communication and Social Mobilization (ACSM). The ACSM specific objective is to provide adequate information to all Nigerians such that at least 80 percent of the populace habitually takes appropriate malaria preventive and treatment measures as necessary by 2020.
NMEP Approach
Nigeria’s approach to malaria SBC is guided by the National Strategic Framework and Implementation Guide for Malaria Advocacy, Communication and Social Mobilization (ACSM) supported by PMI in 2014. The ACSM Strategy is in support of the National Malaria Strategy 2014–2020 and emphasizes implementation at both the national and subnational levels and across the individual, service delivery, community, and policy levels. It serves as a guide for the design and

implementation of malaria SBC interventions at the national, state, and LGA level, and to other malaria donors, partners, and stakeholders. The strategy aims to:

- Maintain high knowledge (> 94 percent) of malaria prevention, diagnostic, and treatment practices, and the benefits of prevention and treatment;
- Increase demand for malaria prevention, diagnostic, and treatment services;
- Sustain the promotion of positive attitudes, desirable norms, values, and behavior change regarding malaria and the recommended measures for its prevention and treatment;
- Sustain the promotion of desirable behaviors for malaria prevention and treatment at the community, household, and individual levels;
- Enhance political will and an enabling environment for malaria control activities; and
- Improve ACSM coordination at national, state, and local government levels.

At the NMEP, the ACSM branch serves as the secretariat for the ACSM subcommittee, which consists of RBM partners, including PMI. Other notable members of the ACSM subcommittee include WHO, the Global Fund and its partners, the Malaria Consortium, and UNICEF. The subcommittee supports the ACSM branch to coordinate and provide technical oversight to SBC activities at the federal and state level. In PMI-supported states, malaria focal persons are supported by state-level ACSM technical committees, which were established with PMI support. However, staff strength, technical and coordination capacity vary significantly across states.

At the FMOH, the Health Promotion Division houses the secretariat of the National Behaviour Change Communication Consultative Group, which was constituted in 2017. This group is charged with coordination of SBCC activities related to reproductive, maternal, newborn, child health and nutrition, as well as liaising with other health area specific coordination committees such as malaria and TB. The Health Promotion Division is a member of the NMEP ACSM subcommittee and has a focal staff that actively participates and supports it. PMI's investments in SBC interventions, just as with other interventions, do not geographically overlap with those of other donors.

#### **PMI Objective in Support of NMEP**

PMI supports the NMSP in its effort to provide adequate information to all Nigerians such that at least 80 percent of the populace habitually takes appropriate malaria preventive and treatment measures as necessary by 2020. PMI provides support for these efforts at the national, state, local government, ward, and community levels. At the federal and state levels, PMI provides technical assistance, support for capacity strengthening activities including for coordination, and the development of materials and relevant guidelines, such as the ACSM Strategy (2014). At the state level, PMI supports eleven (11) of thirty six states, to adapt the national ACSM Strategy to state contexts, develop work plans and materials, and support partner coordination efforts. The bulk of PMI's SBC activities, however, are directed at the community level in the eleven PMI focus states.

Through partnerships with local media organizations, community based organizations, and collaboration with community volunteers (CVs), PMI supports the NMEP’s efforts to expand mass media and community level IPC activities aimed at increasing correct and consistent ITN use and care, prompt care-seeking for fever, uptake of RDT tests and IPTp, and adherence to diagnostic results for treatment with ACTs.

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

In the last 12-18 months, PMI continued to support multi-channel delivery of messages to address select ideational determinants of malaria prevention (ITN use and care, IPTp uptake), diagnosis (testing before treatment) and treatment (care-seeking, uptake of ACT) behaviors at the individual, health provider, and community levels across all 11 PMI-supported states. Specifically, key activities and outputs included:

- Technical assistance (TA), using a media partnership approach, to 25 government and privately owned radio stations to produce more than 200 episodes of radio shows, aired at no cost to PMI, to extend the reach of the national “malaria-free” campaign. These shows are complemented by PMI-supported radio spots, each focused on a priority behavior and aired at discounted rates across local media stations.
- An omnibus survey completed in January 2019 that included 3,116 respondents across six project states<sup>19</sup> found 67 percent of respondents reported exposure<sup>20</sup> to at least one of the three PMI-supported media messages. Exposure was highest (51 percent) for the “*Oga Bulus*” spot that encouraged people to sleep inside a bed net consistently; the malaria theme song (40 percent) and the “*Oga Bulus*” spot related to testing before treatment (38.4 percent). Over half (54 percent) of the respondents who reported exposure to any of PMI-supported malaria media messages were able to recall the national “malaria-free” campaign slogan “Play Your Part” compared to less than one-quarter (23 percent) who were not exposed to PMI-supported messages.
- Reached an estimated 117,077 individuals across 107 wards in 10 LGAs of Ebonyi and Plateau states through community dialogues, compound meetings, and household visits aimed at promoting appropriate malaria prevention and treatment behaviors.
- Completed community entry activities, finalized communication materials, and trained 77 LGA Social Mobilization Assistants (SMAs) and 622 community volunteers across 228 wards in 38 LGAs in five PMI-supported states of Akwa Ibom, Benue, Nasarawa, Oyo, and Zamfara on readiness for roll-out for community level interventions.
- Implemented pre, during and post ITN campaign SBC activities in Nasarawa, Kebbi, Akwa Ibom, Bauchi, and Cross River states. As a result of media partnerships built, 53 percent and

<sup>19</sup> Kebbi, Sokoto, Bauchi, Plateau, Ebonyi and Akwa Ibom

<sup>20</sup> Defined as those who reported to have heard or seen TV or radio spots featuring a character named “*Oga Bulus*” concerning use of ITN and testing before treating for malaria, and the malaria theme song that features 2Face or 2Baba Idibia

60 percent of ITN-use radio spots were aired at no-cost to PMI in Cross River and Bauchi states, respectively. End process evaluations revealed mean ITN redemption rates ranging from 98.5 percent to 99.8 percent; retention rates from 96 percent to 99 percent; hanging rates from 71 percent to 88 percent and mean use rates from 57 percent to 82 percent.

- Completed the problem definition and diagnosis phases of a behavioral economics study to determine the contextual and behavioral factors driving the decisions made and actions taken by providers to (i) test all fever cases using RDTs and (ii) base treatment on test outcomes. A total of 66 provider interviews, 56 client interviews, and 27 primary and secondary facility observations were completed in three<sup>21</sup> PMI-supported states
- Developed four design prototypes and conducted user testing to obtain provider input on acceptability and suitability of the designs for addressing key behavioral barriers to malaria testing before treatment among providers.
- Reached 1,265 providers through 41 peer cluster and professional association meetings to strengthen peer-to-peer networks, generate discourse, and promote shared norms and group problem solving to address provider biases regarding use of malaria RDTs for testing and treatment decisions.
- Provided technical assistance to the NMEP-ACSM unit to complete: (i) an analysis of the state of functionality of the various malaria ACSM units and core groups in PMI-supported states; (ii) a mid-year performance review of the 2019 ACSM Annual Operational Plan (AOP); (iii) constitute a Behavioral Economics Fever Case Management National Coordination Team and developed a terms of reference in support of the roll-out of PMI-supported BE study; and (iv) assisted with ongoing revision of the National ITN Implementation Guideline and Training Manual for ITN distribution through routine channels (ANC/EPI) and iv) supported the integration of malaria messages to promote IPTp uptake and ITN use by pregnant women as part of existing RMNCAH+N SBC materials.

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

In the next 12-18 months, using available funds, PMI/Nigeria will support the following activities:

- Continued implementation of IPC activities, including community dialogues, compound meetings, and household visits in the eleven PMI-supported states.
- Implement pre, during, and post ITN campaign SBC activities in Zamfara, Oyo and Benue states.
- Continued technical assistance to local media stations for the production and airing of radio shows and spots with messages to address priority ideational factors in order to improve the

<sup>21</sup> Akwa Ibom, Nasarawa, and Kebbi

practice of malaria prevention and treatment behaviors, as well as the uptake of malaria products and services.

- Co-implement, with service delivery partners, feasibility testing for the four refined behavioral design prototypes. Jointly review evidence and determine successful/feasible prototypes and provide technical assistance support to service delivery partners for the scale-up of successful prototypes.
- Sustain peer-to-peer engagement and group problem solving through provider cluster and professional association meetings to promote provider behavior change regarding the use of RDTs for testing and treatment decisions.
- Co-develop and expand modules on IPC/counseling skills in the national malaria training curricula and co-implement complementary post-training activities with PMI service delivery partners.
- Provide on-going, on-the-job technical assistance to improve the capacity of ACSM units at national and state levels to plan and coordinate SBC activities.
- Support the growth of SBC communities of practice at the state level and build the capacity of such communities to serve as a venue for peer-to-peer SBC learning, networking, and exchange of best practices.
- Strengthen linkages between local media organizations and the technical programs of the N/SMEP at the national and state levels.
- Leverage the use of Maternal Newborn Child Health+Nutrition (MNCH+N) funds for the collection of process and output data through a mobile survey on malaria SBC activities in Sokoto, Kebbi, and Bauchi states.

### **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 activity? Why, what data did you use to arrive at that conclusion**

With FY 2020 funds, PMI proposes to decrease funding for SBC activities from 4.7 percent in FY 2019 to 3.7 percent of the total planning budget in FY 2020. This is reflective of a defined scope of priority behaviors and a decreased level of effort (LOE) on the provider-facing case management behavior. For the latter, successful behavioral prototypes from ongoing feasibility testing will be

scaled-up by service delivery partners with technical assistance from SBC partner. With FY 2020 funding, PMI/Nigeria’s SBC efforts will remain focused on two primary technical areas: vector control (ITN use and care) and case management (prompt care seeking for fever and provider adherence to case management guidelines). Efforts to promote ITN use and care through mass media and community level IPC will be limited to six states that had a recent mass campaign (Zamfara, Benue, and Oyo) or that have an upcoming mass campaign scheduled (Sokoto, Nasarawa, and Kebbi). Provider behavior change efforts will be focused on providing technical assistance to service delivery partners for the implementation of successful behavioral prototypes and for facilitation of peer cluster and professional association meetings to promote shared norms and group problem solving to address provider biases regarding testing and treatment. Increased emphasis will be placed on community-based efforts to improve prompt care-seeking for fever. Efforts to increase uptake of IPTp during ANC will also be done in collaboration with service delivery partners. Funding has also been allocated for development of materials, donor coordination, and national and county level capacity strengthening activities, such as support to the N/SMEP ACSM subcommittees. 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 A45. Prioritized Behaviors with FY2020 Funds**

Behavior	Primary Target Population	Geographic Focus	Justification
Prompt Care-Seeking for Fever for Children Under Five Years of Age	Caregivers of Children Under 5 Years of Age	All 11 PMI-supported states	In the 2015 MIS, there was a 31-percentage point difference between those individuals who sought care (66%) and those who did so promptly (35%). This suggests a need for increased SBC activities promoting prompt care seeking.

Behavior	Primary Target Population	Geographic Focus	Justification
Consistent ITN Use/Maintenance and Care	All members of a household	Benue, Oyo, Zamfara, Sokoto, Nasarawa, Kebbi states	Nigeria's use: access ratio remains sub-optimal and varies widely across regions. Several states will be prioritized for SBC efforts aimed at promoting net use and care because they are slated to receive PMI support for ITN mass campaigns in FY 19 and FY 2020. For states in the North Central region (Benue and Nasarawa), North West region (Zamfara and Sokoto and Kebbi) where the use: access ratios are 0.91 and 0.85 respectively, SBC efforts will focus on maintaining ITN use and care. In the South West region (Oyo) where the use: access ratio is 0.53, efforts will be intensified to promote the uptake net use. Messages will be carefully crafted to address the ideational barriers.
Adherence to Case Management Guidelines	Health Facility Based Providers	All 11 PMI-supported states	Nationally, health workers adherence to diagnostic and treatment guidelines at facilities where malaria diagnostics and treatment were available is generally low. The NDHS 2018 KIR found that only 14% of children presenting with fever were tested using mRDT. The behavioral factors summarized in Key Question 2 below influence provider decisions to test and treat only positive cases with ACTs.

## Conclusion

The data shown under the ITN Section (1.B.) indicates the key behavioral factors influencing ITN use, resulting in variations in the use: access ratios across geopolitical zones. This evidence shaped the prioritization and proposed PMI-supported SBC activities. Relatedly, under the Case Management (2.A.) Section, the available data indicates there is a continued need to promote prompt care-seeking (within 48 hours). Drawing on this data, PMI proposes prioritizing interventions to address the behavioral barriers to prompt care-seeking using FY2020 funds. A critical priority area is improving provider adherence to case management guidelines. As noted in the Case Management Section (2.A.), adherence to case management guidelines is currently sub-optimal. Available data suggests behavioral factors play a role in provider's decisions to test using RDTs and base their treatment decisions on test outcomes. Therefore, PMI support will consolidate ongoing investments from FY 2019 funding while SBC investments in FY 2020 will focus on providing technical assistance support to service delivery partners for the scale-up of successful provider behavior change prototypes as part of their work plans.

## 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 A46. Summary of Determinants and Gaps for FY2020 Prioritized Behaviors**

Behavior	Key Facilitators	Key Barriers	Knowledge Gaps
Prompt Care-Seeking for Children Under Five Years of Age	<ul style="list-style-type: none"> <li>High General Malaria Ideation</li> <li>High perception that prompt care seeking is the norm</li> </ul>	<ul style="list-style-type: none"> <li>Poor perception of public sector facility-based services</li> <li>Suboptimal/limited female participation in household decision making</li> <li>High cost associated with care-seeking</li> </ul>	No major gaps identified at this time.
Consistent ITN Use/Maintenance and Care	<ul style="list-style-type: none"> <li>Belief that ITNs prevent malaria - <i>Response Efficacy</i></li> <li>Discussing ITN use with others - <i>Personal advocacy</i></li> <li>Exposure to ITN campaign messages and materials</li> </ul>	<ul style="list-style-type: none"> <li>Perception that ITN is too hot</li> <li>Belief that there are no mosquitoes around</li> <li>Low perceived severity of malaria</li> </ul>	No major gaps identified at this time.
Adherence to Case Management Guidelines	<ul style="list-style-type: none"> <li>High Knowledge of First-Line Treatment for Malaria Among Providers</li> </ul>	<ul style="list-style-type: none"> <li>Provider consultations with large numbers of clients</li> <li>Low perception of efficacy of RDTs</li> <li>High perception of self-expertise to clinically diagnose cases</li> </ul>	No major gaps identified at this time.

## Conclusion

The data above summarizes the key determinants influencing the adoption and practice of the three prioritized malaria behaviors for FY 2020. As detailed in the respective MOP sections 1.B. and 2.A. above, PMI's SBC investment will prioritize interventions to address these barriers and leverage the facilitators among priority populations and geographies using data.

### **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**

The 2017 Mid-Term Review of the NMSP reviewed the capacity of the NMEP ACSM branch to implement planned activities and make appropriate recommendations towards optimal capacity for program implementation. Enablers identified included:

- Existence of a Private Sector Engagement Strategy (PSES) and ample possibility and willingness to involve the private sector to contribute towards malaria elimination efforts including SBC.
- The availability of financial and technical support from SBC partners in-country.
- The existence of a coordination structure for the ACSM, which includes the subcommittee, working groups, and content design teams helping to monitor and coordinate partners' activities even up to the sub-national level.
- The vast and evolving landscape of the country's digital technology and availability of media organizations provides an opportunity to expand the reach of malaria SBC messages.
- Constraints identified included:
  - Inadequate funding, high reliance on partners, poor prioritization of ACSM, coupled with non-release of funds poses a challenge to effective coordination, supervision/monitoring of SBC activities up to the sub-national level.
  - The inadequacy of technical expertise and staff attrition poses a challenge to effective coordination of national and sub-national ACSM activities.
  - The lack of documentation and working tools to capture, archive, and showcase ACSM activities poses a problem of knowledge management, which may have been able to reduce the effect of staff attrition.
  - Due to lack of adequate Operational Research for malaria, except in some donor funded states, ACSM activities in several states are not evidence-based and thus may not contribute to improved SBC outcomes. PMI plans to incorporate the malaria SBC module into the MIS 2020 to begin to address this gap.
  - Ratings were decided through a consultative process with the NMEP and other malaria stakeholders.

### **Conclusion**

There is a need for continued SBC capacity building at both the national and sub-national levels, with increased level of effort at the state level. To bolster the N/SMEP's ACSM

capacity for the planning, design, implementation, and evaluation of SBC activities, PMI will support:

- Coordination at the national level through targeted support to improve the effectiveness of the ACSM sub-committee.
- State-specific NMEP/ACSMs to increase coordination and ensure the impact of SBC investments, specifically:
- Strengthening of capacity of key players for effective SBC design, implementation, and evaluation.
- Support for the development of annual operational/work plans, M&E plans, and other instruments of an effective ACSM subcommittee.
- Alignment of SBC implementation efforts with country monitoring and evaluation plans, specifically:
  - Support to revise the NMSP performance framework and M&E Plan to include additional SBC indicators.
  - Capacity building for ACSM staff on the use of data (e.g. from the expanded SBC module in MIS 2020) to inform SBC program priorities and strategies.

#### **Key Question 4**

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

#### **Supporting Data**

Being a multi-ethnic country with a wide range of socioeconomic diversity, the sociocultural and political context for programming vary significantly. This implies the need for a state-by-state implementation approach that takes into account beneficiary populations' unique context. As an illustrative example, security challenges range from farmer/herder and ethnic clashes in the middle belt/North Central (Benue, Nasarawa) to banditry and cattle rustling in the North West (Zamfara); insurgency in the North East and kidnappings in the South South and South West. These security challenges affect the implementation of community level activities to varying degrees - ranging from limiting large community gatherings and increasing household visits to non-coverage of parts or whole of LGAs with lingering crises.

Additionally, the structure of malaria programs (SMEPs), staff strength, and capacity also varies significantly from one state to another. In some states, malaria programs are hosted in the state ministry of health and in others, within the state primary health care agency/board. Some states have no staff designated to lead ACSM efforts and in others, high staff turnover resulting from frequent transfers or poor welfare, poses a significant challenge to capacity retention.

## Conclusion

Local partners will be used for the implementation of IPC activities whenever possible. Planned SBC efforts also emphasize building on the country's existing community health structures, such as Ward Development Committees to promote desired malaria-related behaviors and uptake of malaria services and products. Leveraging community structures and players who are grounded in the local context and have a functional understanding of the security architecture helps to minimize risks and increase local capacity and commitment/ownership - both enablers of Nigeria's journey to self-reliance. To address state level capacity gaps, a state by state approach - informed by the state specific analysis funded by PMI in the past year - will be deployed to the delivery of the proposed activities outlined in Key Question 3 above.

### 3.D. PROGRAM EVALUATION AND OPERATIONAL RESEARCH

<b>NMEP objective</b>
The goal of the National Malaria Strategic Plan (NMSP) 2014 – 2020 is to reduce malaria burden to pre-elimination levels and bring malaria related mortality to zero. A key element in achieving this goal is the need for a well-tailored Malaria Operational Research to implement the most impactful interventions. The NMEP in collaboration with its partners developed a National Malaria Operation Research Agenda (NMORA).
<b>NMEP approach</b>
<p>The goal of the NMORA is to provide a situational analysis of the progress in malaria research and guide researchers, academic institutions, program implementers, health development partners, donors, policy makers, non-governmental organizations and other stakeholders on malaria research priorities by thematic areas for Nigeria. However, implementation of the NMORA has been slow due to absence of a critical framework for coordinating and communicating the NMORA priorities for improved uptake by research institutions.</p> <ul style="list-style-type: none"><li>• The implementation framework for the NMORA includes coordination, resource mobilization, engagement with stakeholders, capacity building, review, monitoring and evaluation of the NMORA and dissemination of research findings. To address these challenges, the NMEP included the funding of the OR agenda coordination in the Global Fund request for the 2018-2020 Malaria grant.</li><li>• An OR stakeholder prioritization meeting was held. The meeting was coordinated by NMEP alongside its partners to achieve the following objectives:</li><li>• prioritize areas in the project cycle that may require operations research to optimize delivery.</li><li>• promote awareness of the operation research priorities for malaria among researchers in Nigeria.</li></ul>

<ul style="list-style-type: none"> <li>• strengthen mechanism for establishing linkages and coordination between NMEP and Research institutions.</li> <li>• explore resource mobilization options to support malaria operation research agenda.</li> <li>• establish systems that will enhance translation of malaria operation research into use for decision making.</li> </ul>
<p><b>PMI objective, in support of NMEP</b></p>
<ul style="list-style-type: none"> <li>• PMI continues to support the NMEP to identify OR priorities and topics for consideration for PMI funding support.</li> <li>• PMI supports FETP malaria focused residents and assists in identifying programmatically relevant research topics.</li> </ul>
<p><b>PMI-supported recent progress (past ~12-18 months)</b></p>
<ul style="list-style-type: none"> <li>• PMI completed durability monitoring in three states (Zamfara, Ebonyi, and Oyo). Results can be found in section 1.B. A manuscript is being finalized.</li> <li>• Completed the problem definition and diagnosis phases of a behavioral economics study to determine the contextual and behavioral factors driving the decisions made and actions taken by providers to i) test and ii) base treatment on test outcomes. Results can be found in section 2.A.</li> <li>• The 4<sup>th</sup> NCDC/NFELTP annual scientific conference was held in Abuja on 10<sup>th</sup> and 11<sup>th</sup> September with scientific presentations, very informative keynote presentations and educative pre-conference workshops.</li> </ul>
<p><b>PMI-supported planned activities (next ~12-18 months, supported by currently available funds)</b></p>
<ul style="list-style-type: none"> <li>• Using samples collected during the 2018 Nigeria AIDS Indicator and Impact Survey, dried blood spots will be analyzed using multiplex bead assay (MBA) technology to determine malaria prevalence in all age groups, parasite transmission dynamics through serologic methods, non-falciparum species, and hrp2 gene deletion prevalence.</li> <li>• PMI is supporting an evaluation of PBO ITNs to be distributed in Ebonyi State focused on malaria incidence and prevalence, and entomological outcomes including vector density, parity rates, and entomological inoculation rate (EIR) as secondary outcome measures.</li> <li>• In collaboration with the New Nets Project, PMI is supporting an evaluation of IG2 and PBO ITNs to be distributed in Oyo State on malaria incidence and prevalence, and entomological outcomes including vector density, parity rates, and entomological inoculation rate (EIR) as secondary outcome measures.</li> </ul>

- Continuing the behavioral economics work on changing provider behavior, current investments are focused on i) co-implementation of behavioral prototypes and information sharing; ii) joint review of evidence and determination of successful/feasible prototypes and ultimately, in FY2020, focus on scaleup of successful prototypes.

### PMI Goal

PMI will conduct OR/PE that helps: to evaluate coverage of populations 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.

No new OR activities are proposed with FY 2020 funding. PMI will restart durability monitoring in three states following 2021 mass campaigns. In addition, new net evaluations will continue into CY 2021.

### Do you propose expanding, contracting, or changing any activity? Why? What data did you use to arrive at that conclusion?

No new OR activity is planned. An increase in funding is proposed for ITN durability monitoring and new net evaluations in Ebonyi and Oyo states.

### Key Question 1

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

### Supporting Data

All OR and evaluation decisions are done in consultation with the NMEP. OR priorities are determined during a yearly OR stakeholders meeting.

**Figure A47. PE/OR Currently Conducted in Country with USG, GF, Multilaterals or other Major Donors.**

Source of Funding	Implementing institution	Research Question/Topic	Current status/timeline
PMI, GF, BMGF	Nigeria CDC, IHVN, CDC Atlanta	Analysis of malaria prevalence among all age groups, serological markers of exposure, parasite transmission dynamics, and hrp2 gene deletions	Ongoing

Source of Funding	Implementing institution	Research Question/Topic	Current status/timeline
PMI	PMI VectorLink	PBO net evaluation	Ongoing
UNITAID	Jhpiego	Transforming Intermittent Preventive Treatment for Optimal Pregnancy (TIPTOP)	Ongoing
UNITAID	CHAI, UNICEF, Swiss TPH	Feasibility of reducing childhood mortality by delivering quality assured rectal artesunate	Ongoing
IVCC	PATH	New net evaluation	Protocol development

**Conclusion**

NA

**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 Nigeria**

N/A

**Conclusion**

N/A

**Key Question 3**

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

**Supporting Data Nigeria**

The NMEP is not a research institution. Research institutions of varying skills exist in Nigeria (NIMR, NCDC, universities). NMEP staff and partners develop and prioritize research questions, but the NMEP has not developed strong, consistent working relationships with other agencies and institutions. PMI has used entomological monitoring and TES as an opportunity to foster improved collaboration between NMEP and NIMR. The NAIIS malaria analysis is also an opportunity to link NMEP with NCDC.

## Conclusion

PMI will continue to facilitate partnerships among NMEP, partners, and in-country research institutions, as well as building staff capacity.

### 3.E. OTHER HEALTH SYSTEMS STRENGTHENING

<b>NMEP objective</b>
<p>To achieve Universal Health Coverage (UHC), Nigeria is currently scaling up inputs required to improve service delivery in 10, 000 PHC facilities, one per each ward. While all the 774 LGAs that exist in Nigeria are the constitutionally-designated providers of primary health care, they are the weakest level of the healthcare system and provide limited quality malaria services. The national malaria strategic plan (2014-2020) lists the core functions of the Program as:</p> <ul style="list-style-type: none"><li>• Formulation of policies and guidelines on Malaria Control,</li><li>• Coordination of the activities of partners and other stakeholders on malaria control activities,</li><li>• Provision of technical support to implementing bodies including States and LGAs and other stakeholders, mobilization of resources, and</li><li>• Monitor and evaluate progress and outcomes in malaria control efforts.</li></ul>
<b>NMEP approach</b>
<p>As part of MOH, the NMEP consists of about 120 staff members and is divided into six branches: Program Management; Procurement and Supply Management; Integrated Vector Management; Case Management; Surveillance, Monitoring, and Evaluation; and Advocacy, Communication, and Social Mobilization (ACSM). At the national level, the NMEP is responsible for establishing policies, developing guidelines, coordinating partners and activities, and monitoring program implementation. Each state has a State Malaria Elimination Program, with a coordinator and staff, and each LGA has a Malaria Program Officer (a local civil servant), who oversees malaria activities in his or her area.</p>
<b>PMI objective, in support of NMEP Infrastructure</b>
<p>To strengthen the technical capacity of NMEP to support the states to implement evidence based malaria control activities.</p>
<b>PMI-supported recent progress (past ~12-18 months)</b>
<p>Through 2018, the total number of public health facilities in the 11 PMI-supported states was around 8,689, of which PMI has supported 3,534 facilities (41 percent). All health facilities in Nigeria receive support from the states and LGAs. PMI support for states, LGAs, and facilities is intended to fill critical gaps without becoming a substitute for resources from the Government of Nigeria (GoN). The focus and level of funding of PMI support in each state is guided by the availability of other donors and the capacity of the state and national governments to provide resources for malaria. PMI</p>

works closely with each state, as well as other partners to assess needs and set priorities, which vary from state to state.

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

- Secondment of malaria staff to strengthen country capacity to LMIS at central level;
- Improving work-space with colocation of PMI funded projects within SMEP.

**PMI Goal**

Assist the NMEP and SMEP to strengthen coordination structures for malaria service delivery and Health Systems Strengthening.

**Key Question 1**

What additional capacity development support is needed in order to operationalize priorities set by NMEP and SMEPs?

**Supporting Data**

Since 2011, the U.S. President’s Malaria Initiative (PMI) Program in Nigeria, in conjunction with the Global AIDS Program, and subsequently the Global Health Security Agenda and GID, has provided support to the 2-year competency based FELTP and several residents of this program have learned key aspects of outbreak investigation and surveillance system evaluation as it relates to malaria and the National Malaria Elimination Program (NMEP) at the Nigeria Ministry of Health. The two-year training focuses on epidemiological investigations, outbreak investigations, and SM&E of malaria. Residents have engaged in malaria related activities including support for data analysis, research, HMIS, and surveillance. The most recent cohort (Cohort 11) was recruited in August 2019, and comprises 60 residents.

Since fiscal year 2011, PMI has provided funding for FELTP in Nigeria. Graduates of the program are now supporting NMEP (5 graduates), university (1), state commissioner (1), state malaria coordinators (2), CDC-NSTOP Malaria Frontline project State Coordinators (2) and central level project coordinators (1), while 12 are State Epidemiologists. To date, NFELTP trainees have worked on 30 research projects that include case management (11), MIP (13), ITNs/IRS (10), and laboratory/diagnostics (10).

In 2018, NFELTP in collaboration with partners developed the curriculum and training materials for the Malaria Short Course(MSC). The program also held a scientific writing workshop to develop and submit manuscripts to scientific journals to disseminate the research findings. Six Cohort 10 residents are currently supporting Malaria Control Programmes in PMI states.

In 2019 the first cohort of the MSC was recruited and trained malaria programme managers from the national programme and from across the country. This first cohort of 27 graduates, cut across 6 States and the FCT and consists of Malaria Program Managers and all other Malaria Programme Officers. May 27-31, the programme held a manuscript writing workshop to mentor residents to develop and submit manuscripts from their malaria-related research. In 2019 Twenty-two Residents and graduates participated in the Malaria Rapid Impact Assessment survey. The NFELTP also participated in the subsequent Survey Data analysis workshop during July 8-12. In July 23-24, Residents and graduates participated in the review of the National Malaria Operations Research agenda document. The National Malaria Operations Research Agenda (NMORA) workshop brought together development partners, donors, policy makers, non-governmental organizations and other stakeholders to review and update Nigeria's malaria OR priorities by thematic areas. Four Cohort 10 residents are currently working on their malaria research proposals under the mentorship of programme and academic supervisors.

Support for improved malaria diagnostics has been built on the foundation established by the PEPFAR DoD-Walter Reed Program to improve human immunodeficiency virus (HIV)-related laboratory services. PMI has further worked to expand on this foundation to support training of trainers and the establishment of a functional malaria diagnosis quality assurance (QA) system in PMI-supported states.

## **Conclusion**

The states and LGAs are the operational levels of the malaria elimination program in Nigeria where implementation and service delivery happen. The most important program outcomes occur at the state level, making the strengthening of state and LGA-level management and technical capacity essential to any programmatic success. Consequently, PMI will continue such support at all three levels—national, state, and LGA—to effectively and efficiently plan, implement, coordinate, monitor, and evaluate malaria control program interventions. At the state level, PMI will support malaria coordination at state and LGA level, training of health workers, supportive supervision, and data validation and use meetings. This will include continued support for the two-year FELTP course and the malaria short course. PMI will continue to support the strengthening of QA for malaria diagnostics. This support will assist in the implementation of the Malaria Diagnostic External Quality Assurance Operational Guidelines that includes both microscopy and RDTs in PMI-supported states. This activity is closely linked with the on-the-job training and supervision of health care providers at the facility level.

## **Key Question 2**

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

### **Supporting Data**

Security continues to be a challenge in Nigeria. PMI is not working in the most vulnerable Northeast region of the country, and frequent rural conflict (e.g. farmer-herdsmen conflicts) in three target states (Nasarawa, Plateau, and Benue) for PMI activities poses significant security risk. There are also frequent bandit attacks in Zamfara and an increased number of refugees from neighboring Cameroon impacting Benue and Cross River States. Per new USAID Senior Obligation Review Alignment, USAID/Nigeria is designing an activity to enable rapid deployment of resources in areas prone to health emergencies and humanitarian assistance. This would require coordination and some PMI contribution.

### **Conclusion**

Nigeria does not have a clear system of ensuring synergy and coordination between NMEP and other Agencies of Government with potentially significant malaria control funds and doing substantial activities in malaria control such as the NHIS, NPHCDA, SOML (P4R), etc. PMI through its malaria flagship PMI for States intends to support NMEP to improve coordination function by including those line agencies in annual operational plan development and program reviews.