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

UGANDA

Malaria Operational Plan FY 2020

U.S. President's Malaria Initiative Uganda Malaria Operational Plan FY 2020. Retrieved from (www.pmi.gov)

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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
CHAI	Clinton Health Access Initiative
CY	Calendar year
DFID	Department for International Development (United Kingdom)
DHS	Demographic and Health Survey
DHIS2	District Health Information System 2
FY	Fiscal year
Global Fund	Global Fund to Fight AIDS, Tuberculosis and Malaria
HMIS	Health Management Information System
iCCM	Integrated Community Case Management
IEC	Information, education, communication
IPTp	Intermittent preventive treatment for pregnant women
IRS	Indoor residual spraying
ITN	Insecticide-treated mosquito net
JMS	Joint Medical Store
LMIS	Logistics Management Information System
MAAM	Mass Action Against Malaria
MIP	Malaria in pregnancy
MIS	Malaria indicator survey
MoH	Ministry of Health
MOP	Malaria Operational Plan
NMCD	National Malaria Control Division
NMS	National Medical Stores
PMI	U.S. President’s Malaria Initiative
RDT	Rapid diagnostic test
SBC	Social and behavior change
SMC	Seasonal Malaria Prevention
SM&E	Surveillance, monitoring, and evaluation
SP	Sulfadoxine-pyrimethamine
SURMA	Strengthening Uganda's Response to Malaria
UNICEF	United Nations Children’s Fund
UCC	Universal Coverage Campaign
UMRSP	Uganda Malaria Reduction Strategic Plan
USAID	United States Agency for International Development

VHTs	Village Health Team
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 Uganda to end malaria. PMI has been a proud partner of Uganda since 2006, helping to decrease child death rates by 53 percent (DHS 2006, DHS 2016) through investments totaling almost $410 million through fiscal year (FY) 2019.

The proposed PMI FY 2020 budget for Uganda is $30 million. This Malaria Operational Plan (MOP) outlines planned PMI activities in Uganda for FY 2020. Developed in consultation with the National Malaria Control Division (NMCD) 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 Uganda as well as other donors and partners.

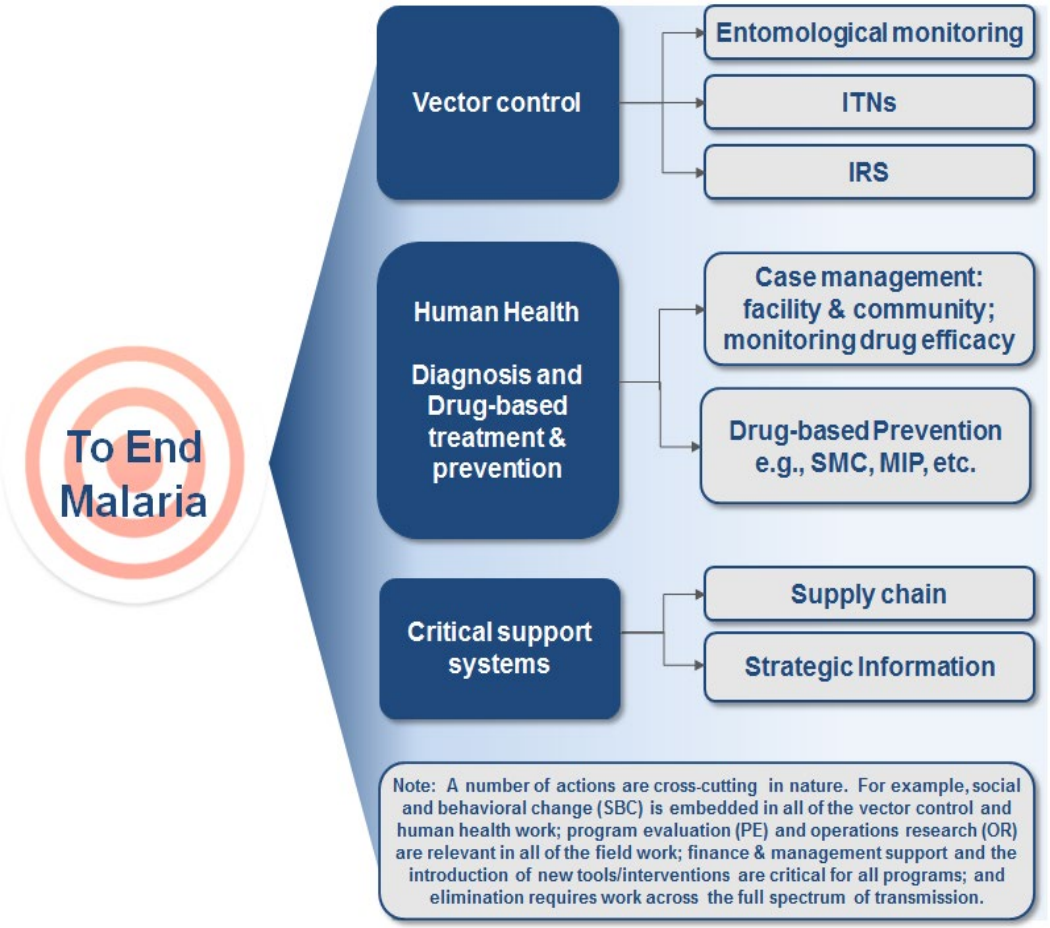
Uganda at a glance

- **Geography:** Uganda is a land-locked country in eastern Africa with 5 bordering countries (all endemic for malaria) covering a total of 241,551km^2, including 37,000 km^2 of water. The country is split into 128 districts. It is situated on a fertile plateau in the center of which is Lake Kyoga. The plateau extends to the Great Rift Valley, with Lakes Albert and Edward in the west, the Ruwenzori and Virunga mountains in the southwest, and Lake Victoria in the south
- **Climate:** Two rainy seasons - a long one from March to June, and a short one from October to November; and two dry seasons - December to February and July to September.
- **Population in 2019:** 40.1 million (Uganda Bureau of Statistics, Population Projection 2015-2020)
- **Population at risk of malaria:** 95% of the population (NMCD)
- **Malaria incidence per 1000 population:** 235 cases per 1000 population in 2018 (HMIS 2018)
- **Under-five mortality rate:** Under-5 mortality rate of Uganda fell gradually from 101.6 deaths per thousand live births in 2006 to 49 deaths per thousand live births in 2017 (MOH/Uganda)
- **World Bank Income Classification & GDP:** Uganda is a low income country with a GDP per capita of ~ $604.04 USD (World Bank Data for low & middle income countries, 2017)

- **Political system:** Uganda has a stable government and political system.
- **Malaria funding and program support partners include (but are not limited to):**
    - Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund)
    - U.S. President's Malaria Initiative (PMI)
    - The World Health Organization (WHO)
    - UK-Department for International Development (DFID)
    - Malaria Consortium (MC)
    - United Nation Children's Fund (UNICEF)
    - Against Malaria Foundation (AMF)
    - Clinton Health Access Initiative (CHAI)
    - Bill and Melinda Gates Foundation (BMGF)
- **PMI Support of National Malaria Control Strategy:** PMI operates both nationally in support of NMCD policy development, dissemination, implementation, monitoring & evaluation, as well as procurement, distribution, and monitoring of malaria commodities (diagnostics, drugs, ITNs, IRS and others), and with direct program support through one bilateral and five regional integrated projects in 52 districts (West Nile, Mid-west, and Central regions) and 76 districts (South West, East Central, Eastern, Northern Acholi and Northern Lang regions) respectively. These programs cover a population of ~ 40 million and an area of 241,551km^2. (See III. Overview of PMI's support of Uganda's Malaria Control Strategy for additional details).
- **PMI Investments:** Uganda became a PMI focus country in FY 2006. The proposed FY 2020 PMI budget for Uganda is US $30 million, bringing the total PMI investment to nearly $440 million, including FY 2020 funds.

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 Uganda'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/Uganda will continue to rely on and engage with local partners such as Infectious Diseases Research Collaboration (IDRC) and Communication for Development Foundation Uganda as well as rely on private sector health facility partnerships including the Private Not For Profit (PNFP) sector and selected Private For Profit (PFP) facilities. PMI will continue supporting the faith-based facilities, both PNFP and PFP. In addition, PMI commodities are distributed through Joint Medical Store (JMS), which was established by, and operated with multiple faith-based bureaus such as the Catholic Medical Bureau and Protestant Medical Bureau.

To accelerate the journey to self-reliance, PMI developed a programmatic inventory to assess the strengths and persistent challenges of Uganda's program (see Annex B). The activities proposed in this MOP are tailored to draw on these strengths and address the weaknesses, which will be

monitored to evaluate the effectiveness of capacity building efforts. In addition, while PMI is cognizant that it will take time before Uganda is capable of fully financing its development priorities, PMI will work with other partners (e.g., the Global Fund) to jointly track Uganda's funding commitments across the malaria portfolio.

II. MALARIA SITUATION AND MALARIA CONTROL PROGRESS IN UGANDA

According to the World Health Organization (WHO) 2018 World Malaria Report, Uganda ranks fifth in terms of malaria morbidity and ninth for malaria mortality globally. There is stable, perennial malaria transmission in 95 percent of the country with *Anopheles gambiae s.l.* and *An. funestus s.l.* being the most common malaria vectors. Preliminary results from the 2018 Malaria Indicator Survey (MIS) show a steady reduction in malaria prevalence confirmed by microscopy in children under 5 years old from 42 percent in 2009 to 19 percent in 2014 and 9 percent in 2018. When comparing data from the National Health Management Information System (HMIS) from 2017 to 2018, total reported malaria cases declined from 14,485,313 to 10,481,632 and malaria related deaths reduced by 52 percent (from 7,298 to 3,503 deaths) despite improved reporting from 92 percent to 96 percent. In 2018, confirmed malaria cases accounted for 20 percent of outpatient visits and 19 percent of inpatient admissions.

However, 2018 saw lower than expected number of malaria cases. There was also no seasonal transmission peak between week 20 and 30 as we've seen in previous years (See Figure 2), which is thought to be due to the mass distribution of nets completed in early 2018. In 2019, malaria cases are on the rise compared to 2018 and the transmission peak was untypically long with causes pointing to increased rains and aging of mosquito nets distributed in 2017/2018. This emphasizes the need to increase efforts towards maintaining gains obtained so far.

Figure 2. Trends in Total National Malaria Cases and Reporting Rates Per Weekly Reports

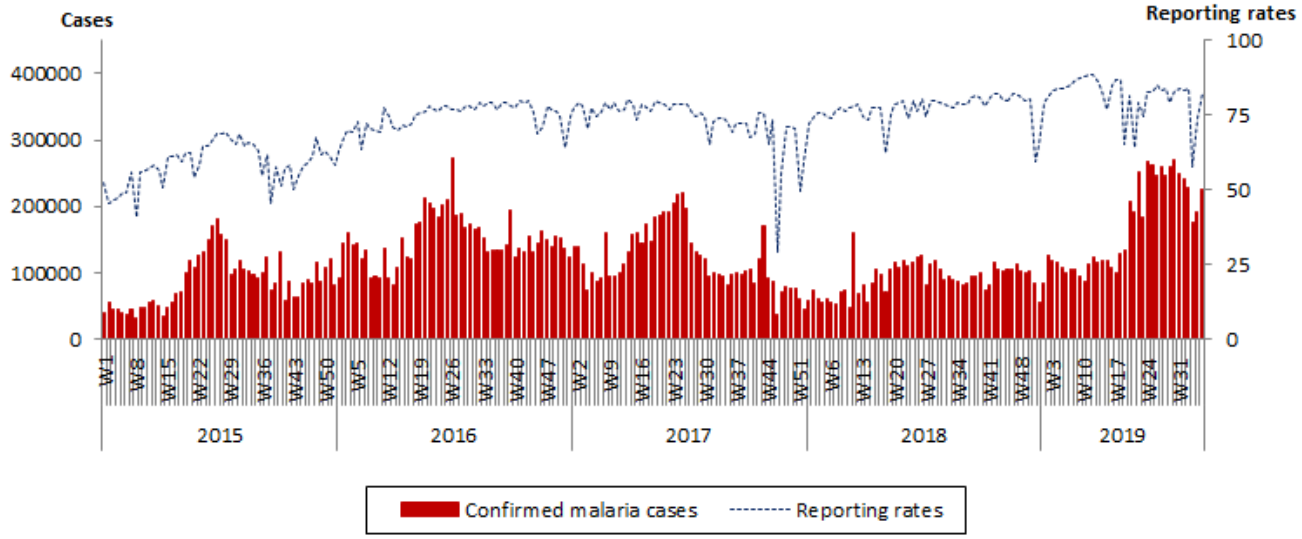
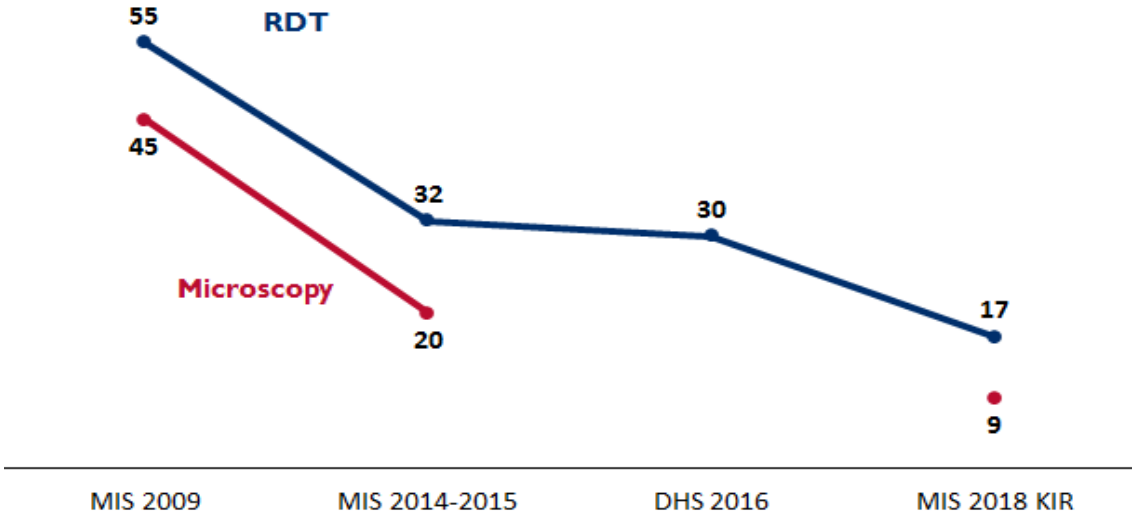


Figure 3. Trends in Malaria Prevalence, *Percent of children age 0-59 months who tested positive for malaria by microscopy and by RDT*



*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

Figure 4. Trends in Prevalence of Low Hemoglobin

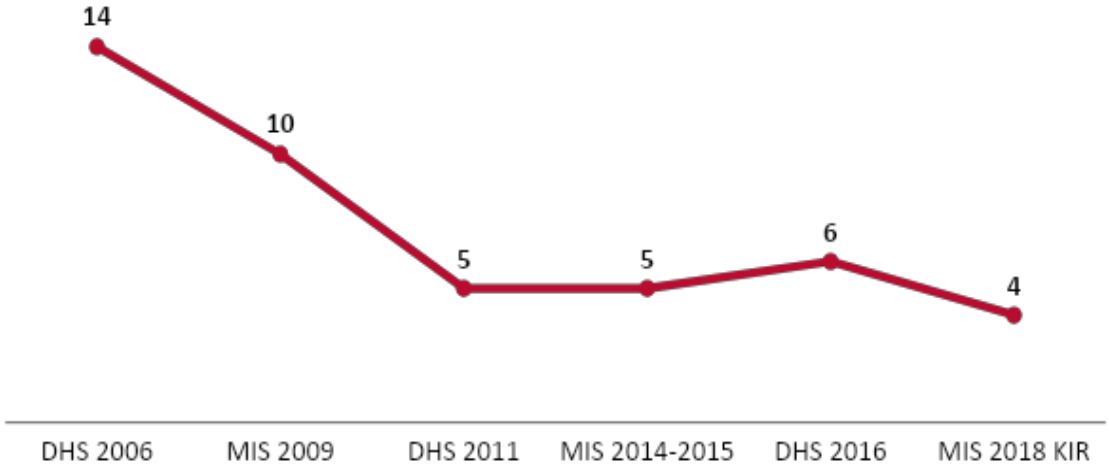


Figure 5. Malaria Parasite Prevalence among Children Under Five Years of Age by Geographic Area, *Percent of Children Age 0-59 Months Who Tested Positive for Malaria by Microscopy (2018 MIS)*

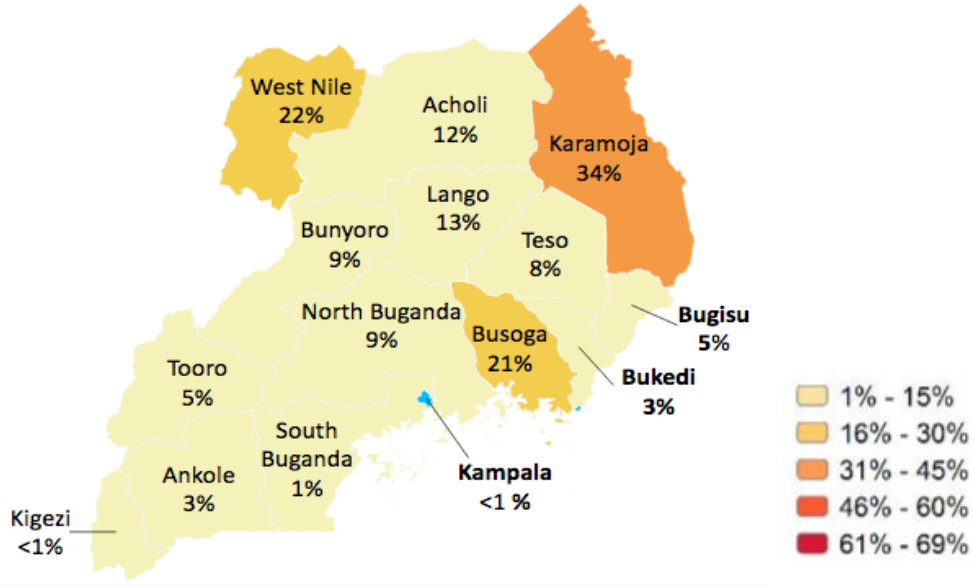
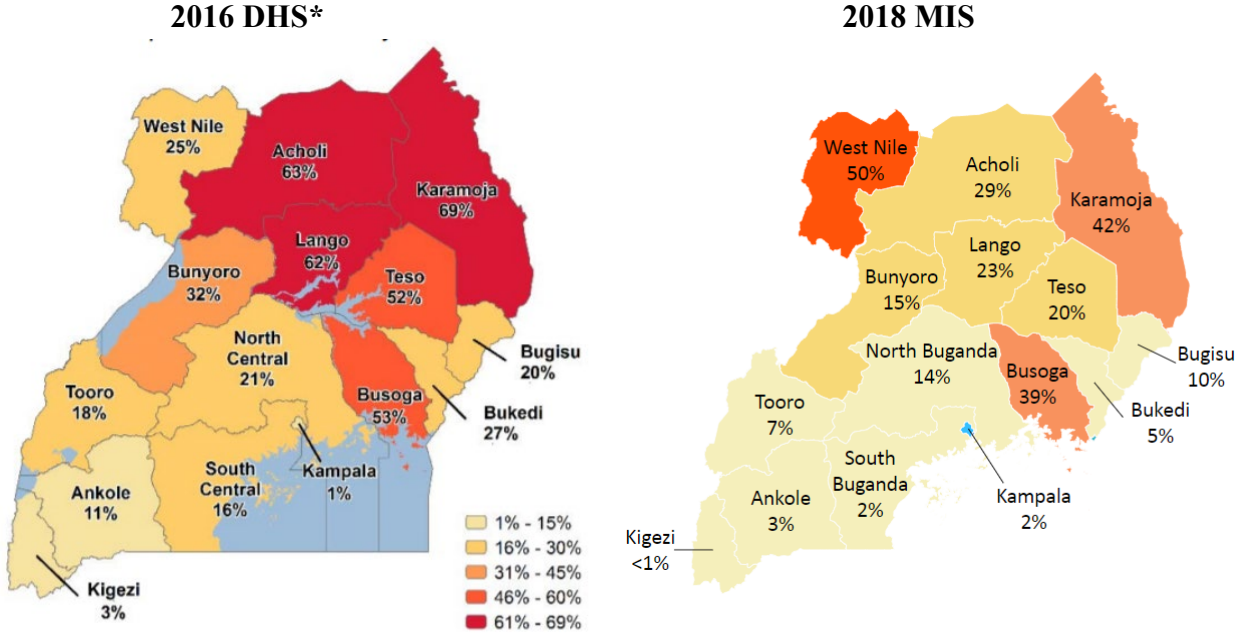


Figure 6. Malaria Parasite Prevalence among Children Under Five Years of Age by Geographic Area, *Percent of Children Age 0-59 Months Who Tested Positive for Malaria by RDT (2016 DHS, 2018 MIS)*



*Data for the 2016 DHS was collected from June to December 2016, which includes the peak seasonal transmission period of May-July (see figure 2), whereas data collection for MIS 2018 was November 2018 to January 2019. Also, this period in 2016 corresponds with the tail end of an upsurge which took place in Northern districts following IRS withdrawal in those districts.

Figure 7. Key Indicators for Malaria Prevention and Treatment Coverage and Impact Indicators from Demographic Health Surveys (DHS) and Malaria Indicator Surveys (MIS) from 2006-2018.

Indicator	2006 DHS	2009 MIS	2011 DHS	2014 MIS	2016 DHS	2018 MIS
% Households with at least one ITN	16%	47%	60%	90%	78%	83%
% Households with at least one ITN for every two people	5%	16%	28%	62%	51%	54%
% Population with access to an ITN	9%	32%	45%	79%	65%	72%
% Population that slept under an ITN the previous night	7%	26%	35%	69%	55%	68%
% Children under five years of age who slept under an ITN the previous night	10%	33%	43%	74%	62%	60%
% Pregnant women who slept under an ITN the previous night	10%	44%	47%	75%	64%	65%
% Children under five years of age with fever in the last two weeks for whom advice or treatment was sought**	83%	82%	84%	82%	81%	87%
% Children under five years of age with fever in the last two weeks who had a finger or heel stick	N/A	17%	26%	36%	49%	51%
% Children receiving an ACT among children under five years old with fever in the last two weeks who received any antimalarial drugs	61%	39%	69%	87%	88%	88%
% Women who received two or more doses of IPTp during their last pregnancy in the last two years*	18%	33%	27%	49%	46%	72%
% Women who received three or more doses of IPTp during their last pregnancy in the last two years	6%	17%	10%	28%	17%	41%
Under-five mortality rate per 1,000 live births	137	N/A	90	N/A	64	N/A
Prevalence of parasitemia (by microscopy) in children 0–59 months	N/A	45%	N/A	20%	N/A	9%
Prevalence of parasitemia (by RDT) in children 0–59 months	N/A	55%	N/A	32%	30%	17%
Prevalence of severe anemia in children 6–59 months (Hgb<8 g/dl)	14%	10%	5%	5%	6%	4%

*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

[1]Note that this indicator has been recalculated according to the newest definition, advice or treatment from any source excluding traditional practitioners

[2]Note that this indicator has been recalculated according to the newest definition, at least the specified number of doses of Sulfadoxine-pyrimethamine (SP/Fansidar) from any source

Figure 8. Evolution of Key Malaria Indicators Reported through Routine Surveillance Systems

	2014	2015	2016	2017	2018
# Suspect malaria cases*	9,694,333	10,752,472	22,038,689	23,754,918	19,912,582
# Patients receiving diagnostic test for malaria	19,367,183	21,592,824	30,088,519	30,263,002	25,896,321
Total # malaria cases (confirmed and presumed)	13,704,101	13,080,797	16,071,710	14,485,313	10,481,632
# Confirmed cases	5,773,346	7,144,971	9,644,154	10,251,007	7,878,334
# Presumed cases	7,930,755	5,935,826	6,427,556	4,234,306	2,134,124
% Malaria cases confirmed	42%	55%	60%	71%	75%
Test positivity rate (TPR)	30%	33%	32%	34%	30%
Total # <5 malaria cases	4,079,086	3,886,786	4,464,146	3,566,893	2,745,493
% Cases under 5	30%	30%	28%	25%	26%
Total # severe cases	676,332	694,369	818,754	750,171	466,107
Total # malaria deaths	5,043	4,672	5,635	6079	3067
# Facilities reporting[1]	48551	50897	52733	56180	60677
Data form completeness (%)	97%	99%	97%	92%	96%

Data sources and comments:

*Suspect malaria case numbers come from weekly malaria reports because monthly reports did not include a "suspected malaria cases" indicator until 2019. Weekly reports have lower reporting rates then monthly reports, which explains why suspected cases are lower than tested cases. All other numbers in this table come from monthly reports.

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

The support PMI provides in Uganda complements the Uganda Malaria Reduction Strategic Plan 2014 – 2020 (UMRSP). It builds on investments made by other partners, including the United Kingdom's Department for International Development (DFID) and the Global Fund to Fight AIDS, Tuberculosis, and Malaria (Global Fund), to improve and expand malaria-related services. PMI also

aims to leverage investments made by other U.S. Government programs to strengthen health systems and reach common goals, especially when it comes to supply chain strengthening, workforce and governance, and surveillance, monitoring, and evaluation (SM&E). PMI's malaria control activities are implemented in all districts in Uganda with the exception of four districts in Karamoja where activities have not yet been extended due to various reasons including security, and which are covered by other partners (See Figure 9). PMI's support at different levels of the health system depends upon need, NMCD priorities, and geographic coverage of other donors and partners to ensure complementarity and to have the greatest impact. PMI is supporting the implementation and scale-up of case management; IPTp; ITN distribution; SM&E, and SBC through its bilateral mechanism in 52 high-burden districts. For additional information on PMI's geographic coverage, see the technical sections below.

Vector Control: PMI provides focused support to the mass distribution of ITNs through universal coverage campaigns (UCCs), which cover the entire country. In addition, PMI supports continuous distribution, nationally, through antenatal care (ANC) and the Expanded Program on Immunization (EPI) which covers all public facilities as well as PNFP facilities and school based distribution of ITNs in the Central region, which began in June 2018. PMI-supported IRS currently covers 10 districts in the east and central part of Uganda and DFID complements PMI's funding to cover an additional five contiguous districts. In most districts, the Uganda Vector Control Division places a vector control officer to assist with vector related health issues. The National Malaria Control Division plans to collaborate with the vector control division and other partners to help build and improve a comprehensive national vector surveillance plan.

Malaria in Pregnancy (MIP): PMI's support covers the largest part of the country via PMI mechanisms and the support largely covers training, mentorship, and supportive supervision; prevention; early diagnosis; and prompt treatment for MIP activities. PMI provides ITNs through ANCs for public and private facilities nationwide. PMI's support is national except for commodities, which go through JMS, which covers more than 600 PNFP facilities nationwide.

Case Management: The bulk of PMI's work in case management is implemented in 52 high burden districts in West Nile, Mid-West and Central regions, with additional support in five regions (East, East Central, North-Acholi, North-Lango, and South-West). PMI is also beginning to scale-up integrated community case management (iCCM) in a phased manner in 13 high burden districts. Case management commodities support is currently directed at all PNFP facilities nationwide.

Supply Chain: PMI supports the management of commodities at the central level by offering technical assistance to the MoH for strengthening of the supply chain system, commodity forecasting and quantification, and the implementation of end use verification surveys.

SM&E: SM&E activities are predominantly implemented in 52 districts (West Nile, Mid-West, and Central regions). PMI helps coordinate SM&E-focused activities implemented in five regions (East, East Central, North-Acholi, North-Lango, and South-West) to strengthen HMIS at the district,

regional, and national levels. PMI also carries out surveillance of antimalarial drug efficacy as well as ITN durability monitoring.

SBC: SBC activities are mainly supported at the national level as well as in 52 high-burden districts, with limited activities in five additional regions (East, East Central, North-Acholi, North Lango, and South-West).

Other Health System Strengthening: PMI supports the central, district, and health facility levels in updating, disseminating, and implementing malaria related policies and guidelines. PMI also supports Peace Corps to implement small scale malaria projects.

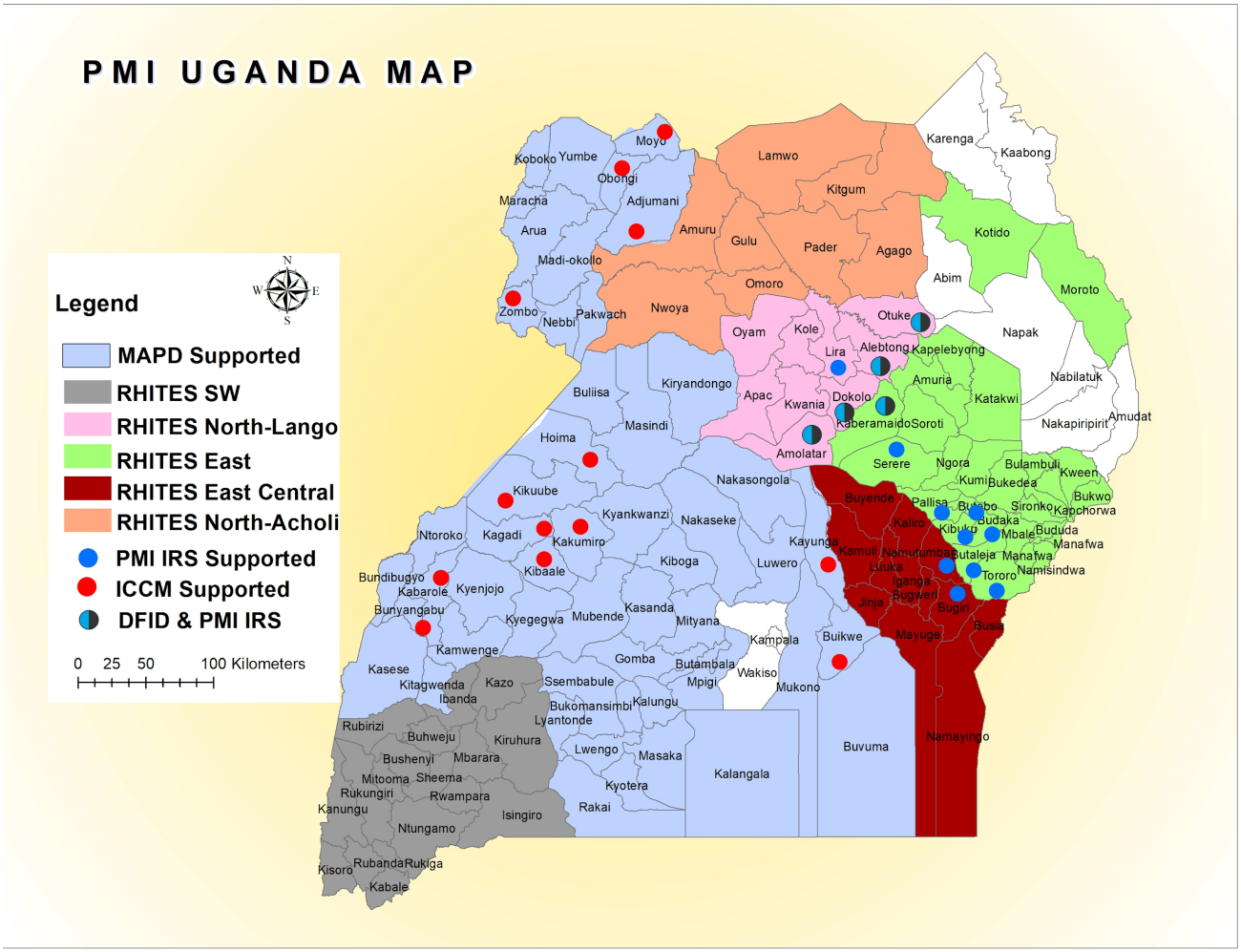
Based on a learning review that was recently concluded on PMI's work in 52 districts, there is a need to revisit the strategic approach of some key intervention areas. As public facilities have been performing successful case management (reporting and testing rates have improved and presumptive treatment has significantly declined), Uganda is beginning to consider a strategic shift from mainly facility-based case management interventions towards community-based preventive approaches through robust SBC, in line with the government's Mass Action Against Malaria (MAAM) initiative. (See Annex A for additional details).

Donor Support in Uganda:

- *Global Fund:* Since the inception of support to the GoU in 2002, the Global Fund has signed a total of 20 grants amounting to $1 billion. The current Global Fund grant for malaria supports procurement and distribution of artemisinin-based combination therapies (ACTs), intravenous artesunate, and rapid diagnostic tests (RDTs) for treatment and diagnosis of malaria as well as ITNs for the upcoming UCC (FY 2020). The case management component of the grants also includes support for SBC, iCCM, and subsidized ACTs for the private sector (co-payment mechanism). The Global Fund procures and distributes malaria commodities for public facilities while PMI support largely covers PNFP facilities to ensure complementarity and the greatest coverage of donor-funded commodities. In addition, PMI and Global Fund frequently coordinate to fill commodity gaps, under the direction of the NMCD, as needed.
- *DFID:* DFID made a commitment in 2010 to significantly increase support for health and malaria control in Uganda. In 2012, a special arrangement between USAID and DFID allowed the use of PMI's supported projects to scale-up its contribution to malaria control in Uganda. DFID has historically supported the procurement and distribution of ITNs for UCCs and routine net distribution, in addition to support for IRS in five districts, iCCM, NMCD capacity building through the secondment of staff ,and support to district-level health systems strengthening. DFID has extended funding until the end of 2022 to support malaria control and prevention efforts in Uganda, but during this period DFID plans to step down its direct bilateral support for malaria. By 2023 DFID will have phased out direct support for malaria completely.

- *Other partners:* In addition to PMI, Global Fund and DFID, other partners including Against Malaria Foundation (AMF) support activities in Uganda. AMF is providing ITNs for the upcoming UCC, which is planned to begin in February 2020.
- *RBM Partnership*: An RBM partners meeting is carried out quarterly and is jointly sponsored by partners, including PMI. This meeting is the highest coordinating forum where all malaria stakeholders (NMCD, District Health Officers, donors, implementing partners, faith-based organizations, civil society organizations, academia, research institutes, members of Parliament, etc.) meet to discuss the strategic direction of the program. Policies and guidelines, technical and research updates, and the status of activities at all levels are thoroughly discussed.
- *Joint grant cycle planning:* The NMCD in collaboration with PMI, the Global Fund and other stakeholders including DFID, WHO and UNICEF jointly plan all work being undertaken in Uganda, including the NMCD's annual work plans, PMI's MOPs, Global Fund grants, DFID's business plans, as well as WHO's and UNICEF's annual plans to ensure complementarity.
- *Geographic overlap:* Under the leadership of the NMCD, all of the activities and support being provided by donors is coordinated to ensure minimal geographic overlap.

Figure 9. PMI Intervention Support Map



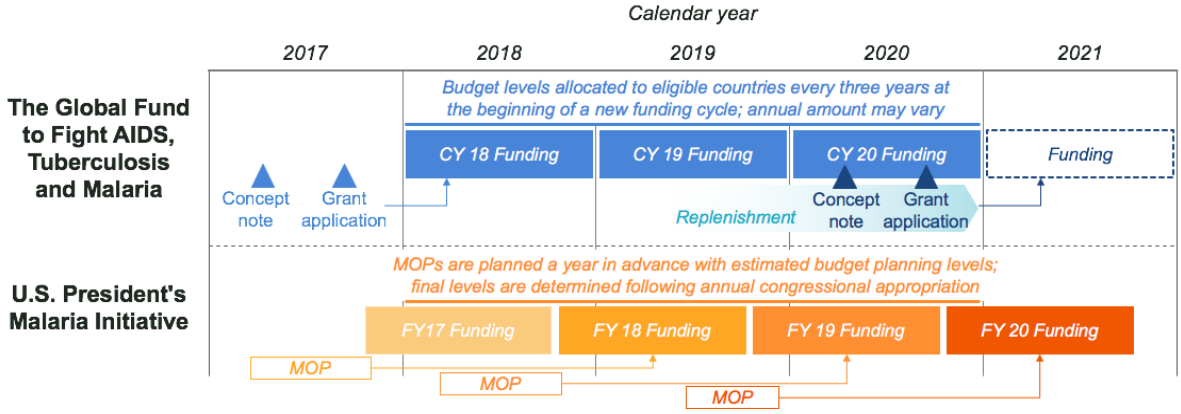
IV. PARTNER FUNDING LANDSCAPE

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

Figure 10 visualizes the annual cycle of PMI funding and the MOP implementation year. As the figure illustrates, any given FY MOP funds activities that take place during the next FY. For example, a FY 18 MOP funds implementation during FY 19. Whereas Global Fund funding (and often, other partners and host country governments) is based on a three-year grant cycle on a calendar year (CY) timeframe during which activities were implemented. Annual PMI country budget allocations depend largely on the U.S. Congress' total overall malaria funding appropriation to

USAID in a given 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 10. PMI and Global Fund Funding Cycle Alignment



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

The tables below summarize contributions by external partners and host country government in calendar years 2018-20, with the goal of highlighting total country investments. For Uganda, data is available for PMI (FY 2018) 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 FY 2020 MOP development, Global Fund country investments for the 2021 implementation period and beyond are not yet known. Note that the host country government invests substantial funding into the national-to-local infrastructure and service delivery for malaria and many other programs. However, there has not been a standardized method for attributing those investments to malaria specifically. Thus, it may not yet be possible in the FY 2020 MOP cycle to attribute funding from the host country government. There may be similar challenges for other partners.

Annually the GoU contributes $1.25 million towards the procurement of ACTs and $700k for SP. The GoU also pays for salaries and operational costs for health workers and facilities respectively. In total, the GoU contributes 7 percent of its annual budget to health, inclusive of malaria funding. In addition, the GoU has pledged to create a dedicated Presidential Malaria Fund and mobilize an additional $785 million for malaria control by 2020 at the Commonwealth Heads of Government Meeting Malaria Summit in April 2018. Dialogue between the Ministry of Finance and MoH regarding increases to the overall health budget has also been fostered; improving absorption of released funds from the Global Fund and modifying underspent line items in the malaria budget to shift them to priority areas. PMI and the MoH developed a malaria implementation letter, which addresses key policy and implementation focus to achieve common objectives towards malaria control in Uganda.

Figure 11. Annual budget by Level 1 category

Year[1]	Funder	Vector Control	Case Management	Drug-Based prevention[2]	Supply Chain[3]	Monitoring, Evaluation & Research	Other Cross-Cutting and Health Systems Strengthening	Total
FY17/CY18	PMI	$19.5M	$6.8M	-	$0.7M	$2.7M	$2.7M	**$32.5M**
	GFATM	$3.3M	$46.5M	$0.5M	$0.2M	$0.8M	$3.8M	**$55.1M**
	Total	**$22.8M**	**$53.3M**	**$0.5M**	**$0.8M**	**$3.5M**	**$6.5M**	**$87.5M**
FY18/CY19	PMI	$15.2M	$9.0M	$1.3M	$0.9M	$2.7M	$3.9M	**$33.0M**
	GFATM	$72.4M	$36.7M	$0.2M	$0.1M	$0.3M	$1.6M	**$111.3M**
	Total	**$87.7M**	**$45.7M**	**$1.5M**	**$1.0M**	**$3.0M**	**$5.4M**	**$144.3M**
FY19/CY20	PMI	$17.2M	$6.0M	$.5M	$1.5M	$1.6M	$3.1M	**$30.0M**
	GFATM	$1.3M	$21.5M	$.0M	$.0M	$.3M	$.8M	**$23.9M**
	Total	**$18.5M**	**$27.5M**	**$0.6M**	**$1.6M**	**$1.9M**	**$3.9M**	**$53.9M**

Footnotes:

1. Each year's figures represent the FY for PMI and one CY for GFATM that most closely align
2. Drug-based prevention, including SMC and MIP where relevant;
3. Covers management of in-country warehousing & distribution of malaria commodities, except for ITNs which are separately captured under "Vector Control"

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

Figure 12. Annual Budget by Level 3 Category, Detailed breakdown for PMI and Global Fund

Level 1 Category	Level 3 Category	FY17/CY18		FY18/CY19		FY19/CY20	
		PMI	GFATM	PMI	GFATM	PMI	GFATM
Vector Control	Procure ITNs for Continuous Distribution	$4.5M	$0.4M	$1.4M	$0.7M	$1.6M	$0.9M
	Distribute ITNs via Continuous Distribution	$1.3M	$0.0M	$0.6M	$0.0M	$1.3M	$0.04M
	Procure ITNs for Mass Campaigns	-	$1.2M	-	$42.0M	$1.0M	-
	Distribute ITNs via Mass Campaigns	-	-	-	-	$0.5M	-
	Other ITN Implementation*	-	-	-	-	-	-
	IRS Implementation[4]	$13.1M	-	$12.1M	-	$12.0M	-

Level 1 Category	Level 3 Category	FY17/CY18		FY18/CY19		FY19/CY20	
		PMI	GFATM	PMI	GFATM	PMI	GFATM
	Procure IRS Insecticide	-	-	-	-	-	-
	Other IRS*	$0.03M	-	-	-	$0.03M	-
	Entomological Monitoring	$0.6M	$0.4M	$1.1M	$0.1M	$0.7M	$0.02M
	SBC for Vector Control[5]	-	$0.2M	-	$0.2M	-	$0.2M
	Other vector control measures	-	-	-	-	-	-
	Removing human rights- and gender-related barriers to vector control programs**	-	-	-	-	-	-
Case Management	Active Case Detection**	-	-	-	-	-	-
	Community-based case management	-	$4.1M	-	$2.7M	-	$1.5M
	Facility-based case management	-	$0.2M	-	$0.1M	-	$0.1M
	Private-sector case management	-	$0.5M	-	$0.2M	-	$0.2M
	Procure ACTs	$2.0M	$18.4M	$3.0M	$16.6M	$1.4M	$9.7M
	Procure Drugs for Severe Malaria	-	$7.2M	$0.1M	$5.5M	$0.3M	$1.0M
	Procure Other Diagnosis-Related Commodities	-	-	-	-	-	-
	Procure Other Treatment-Related Commodities	-	$1.4M	-	$0.2M	-	$0.2M
	Procure RDTs	$1.0M	$5.6M	$1.5M	$4.8M	$1.5M	$5.0M
	Therapeutic Efficacy	$0.3M	-	$0.3M	-	$0.2M	-
	SBC for Case Management	-	-	-	-	-	-
	Other Case Management	$3.6M	$1.5M	$4.2M	$0.5M	$2.7M	$0.1M

Level 1 Category	Level 3 Category	FY17/CY18		FY18/CY19		FY19/CY20	
		PMI	GFATM	PMI	GFATM	PMI	GFATM
Drug-Based Prevention[2]	Procure SMC-Related Commodities	-	-	-	-	-	-
	SMC Implementation	-	-	-	-	-	-
	Prevention of Malaria in Pregnancy Implementation	$0.6M	$0.1M	$1.3M	$0.2M	$0.5M	-
	Procure IPTp-Related Commodities	-	$0.4M	-	$0.01M	-	$0.01M
	IPTi**	-	-	-	-	-	-
	SBC for Drug-Based Prevention[5]	-	-	-	-	-	-
	Other Prevention**	-	-	-	-	-	-
Supply Chain	In-Country Supply Chain[3]	-	-	-	-	$0.6M	-
	Supply Chain Infrastructure	-	-	-	-	-	-
	Ensuring Quality	-	$0.2M	-	$0.0M	-	-
	Pharmaceutical Management Systems Strengthening	$0.7M	-	$0.9M	-	$0.9M	-
	Supply Chain System Strengthening	-	$0.02M	-	$0.02M	-	$0.02M
Monitoring, Evaluation & Research	Reporting, Monitoring, and Evaluation	$1.5M	$0.6M	$2.6M	$0.2M	$1.3M	$0.2M
	Program and data quality, analysis and operations research	$0.3M	$0.1M	-	-	-	-
	Surveys	$0.6M	$0.0M	-	-	-	-
	Other Data Sources**	-	$0.1M	-	$0.1M	-	$0.1M
	Support for FETP*	$0.3M	-	$0.2M	-	$0.3M	-

Level 1 Category	Level 3 Category	FY17/CY18		FY18/CY19		FY19/CY20	
		PMI	GFATM	PMI	GFATM	PMI	GFATM
Other Cross-Cutting and Health Systems Strengthening	Integrated service delivery, quality improvement, and national health strategies**	-	$2.1M	-	-	-	-
	Financial management systems**	-	$0.0M	-	$0.0M	-	$0.0M
	Community responses and systems**	-	$0.1M	-	$0.1M	-	$0.1M
	Support for PCV and SPAs*	$0.03M	-	$0.03M	-	$0.03M	-
	Cross-Cutting Human Resources for Health**	-	$0.3M	-	$0.3M	-	$0.3M
	Central and Regional Program management[6]	$0.3M	$0.1M	$0.2M	$0.2M	$0.2M	$0.4M
	In-Country Staffing and Administration*	$1.2M	-	$1.9M	-	$1.8M	-
	Other Program Management**	-	$1.2M	-	$1.0M	-	-
	SBC Unspecified[5]	$1.2M	-	$1.8M	-	$1.1M	-
Total		**$33.0M**	**$55.1M**	**$33.0M**	**$111.3M**	**$30.0M**	**$23.9M**

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

* Category currently funded by PMI only

** Category currently funded by Global Fund only

Figure 13. Annual Budget, Breakdown by Commodity

Year[1]	Funder	ITNs for Continuous Distribution	ITNs for Mass Distribution	IRS Insecticide[4]	ACTs	RDTs	Severe Malaria	SMC-Related	IPTp-Related	Total
FY17/CY18	PMI[2]	$4.5M	-	-	$2.0M	$1.0M	-	-	-	**$7.5M**
	Global Fund[3]	$0.4M	$1.2M	-	$18.4M	$5.6M	$7.2M	-	$0.4M	**$32.9M**
	Total	**$5.0M**	**$1.2M**	**-**	**$20.4M**	**$6.6M**	**$7.2M**	**-**	**-**	**$40.4M**

Year[1]	Funder	ITNs for Continuous Distribution	ITNs for Mass Distribution	IRS Insecticide[4]	ACTs	RDTs	Severe Malaria	SMC-Related	IPTp-Related	Total
FY18/ CY19	PMI[2]	$1.4M	-	-	$3.0M	$1.5M	$0.1M	-	-	**$6.0M**
	Global Fund[3]	$0.7M	$42.0M	-	$16.6M	$4.8M	$5.5M	-	$0.01M	**$69.5M**
	Total	**$2.1M**	**$42.0M**	**-**	**$19.6M**	**$6.3M**	**$5.6M**	**-**		**$75.5M**
FY19/ CY20	PMI[2]	$1.6M	$1.0M	-	$1.4M	$1.5M	$0.3M	-	-	**$5.6M**
	Global Fund[3]	$0.9M	-	-	$9.7M	$5.0M	$1.0M	-	$0.01M	**$16.7M**
	Total	**$2.5M**	**$1.0M**	**-**	**$11.1M**	**$6.5M**	**$1.2M**	**-**	**-**	**$22.3M**

Footnotes:

[1.] Each year's figures represent the FY for PMI and CY for GFATM that most closely align.

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

[3.] GFATM 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 $48.2M over the CY2018-2020 period;

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

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

V. ACTIVITIES TO BE SUPPORTED WITH FY 2020 FUNDING

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

ANNEX A: INTERVENTION-SPECIFIC DATA

1. VECTOR CONTROL

NMCD objective
● The Uganda Malaria Reduction Strategic Plan 2014-2020 (UMRSP) objective for vector control is to achieve and sustain protection of at least 85 percent of the population at risk through recommended malaria prevention measures (ITNs, IRS, and larval source management) by 2020. The UMRSP recommends that IRS coupled with routine entomological monitoring and vector susceptibility studies be scaled-up in a phased and contiguous manner in 50 districts with the highest transmission rates. ● The UMRSP objective for nets is to maintain universal access to ITNs in all transmission settings and control stages, resulting in a minimum of 85 percent of households with at least one ITN for every two people.
NMCD approach
● NMCD in collaboration with partners including PMI supports the deployment of ITNs countrywide and IRS in selected high burden regions. NMCD employs both ITN universal coverage campaigns (UCCs) to reach one ITN per two people, and continuous distribution channels including ANC, EPI, and school-based distribution. ● For IRS, the NMCD supports blanket spraying of high burden districts.
PMI objective, in support of NMCD
● PMI supports all elements of the NMCD's national malaria strategy, with the exception of larviciding and environmental management. ● For ITNs, PMI provides limited support for UCCs, primarily focusing on support for routine distribution channels, including ANC, EPI, and school-based distribution, which is complementary to the support provided by Global Fund and other donors. PMI supports IRS in 10 high burden districts in support of the NMCD strategy. ● PMI supports comprehensive entomological monitoring, which includes decay rate testing, bionomics monitoring, insecticide resistance monitoring, CDC bottle intensity bioassays, and oxidase enzyme testing.
PMI-supported recent progress (past ~12-18 months)
● Procured 1,999,613 ITNs and distributed 1,643,411 ITNs through routine channels in FY2018.

- Sprayed 950,939 houses protecting 3,504,041 people from malaria through IRS using Actellic 300 CS (Pirimiphos-methyl) in FY2018.
- Conducted insecticide susceptibility monitoring on pyrethroids, carbamates, organophosphates, chlorfenapyr, and clothianidin, as well as PBO synergist assays in a total of 10 sites in 2018.
- Conducted monthly longitudinal monitoring in two DFID supported (Bugiri and Otuke) and one PMI supported (Tororo) IRS intervention districts, Apac, a former IRS district, and Soroti, a district which was never sprayed and used as a control district using CDC light traps, pyrethrum spray catches (PSCs), and human landing catches (HLCs) in 2018.
- Conducted WHO cone bioassay tests in one site in each of the PMI IRS districts within one week of the start of spraying to assess the quality of spraying.

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

- Operational support for the upcoming 2020 UCC.
- Procurement and distribution of nets through routine/continuous channels, including ANC, EPI and schools.
- Implementation of IRS in 10 high burden districts.
- Nationwide insecticide susceptibility testing and comprehensive entomological monitoring in and around IRS areas.
- ITN durability monitoring of two ITN brands concurrent with the upcoming UCC.

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 to increase, decrease, or maintain funding allocation levels for this activity? Why, and what data did you use to arrive at that conclusion?

Overall, PMI is proposing to maintain the funding allocation levels for entomological monitoring to ensure the data generated can continue to be used to support critical vector control decision-making.

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

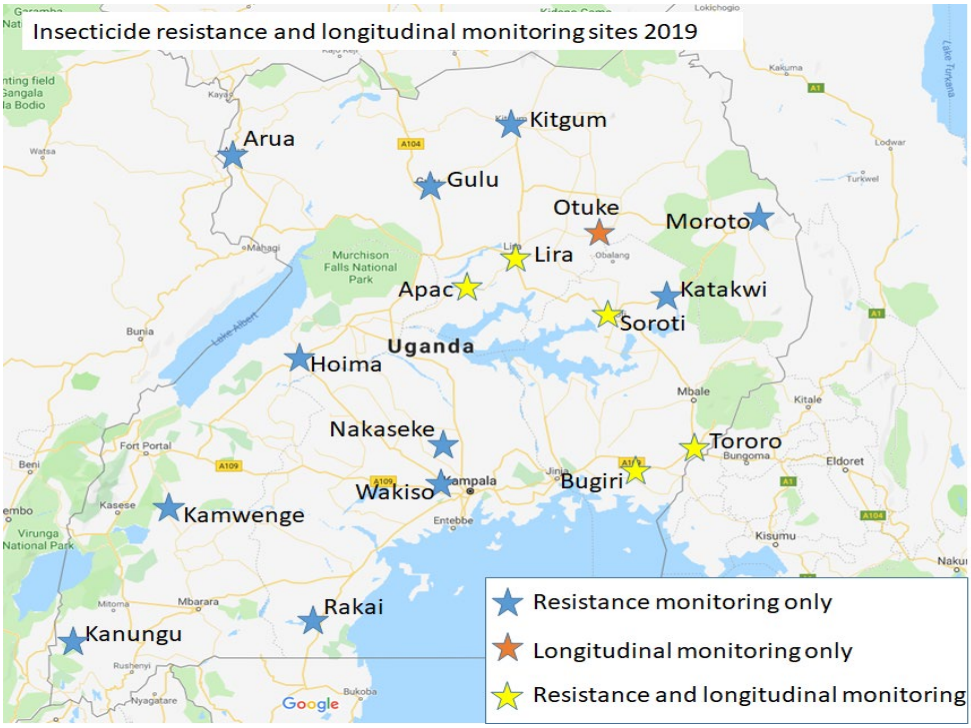
Key Question 1

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

Supporting Data:

Figure A1 shows the resistance and longitudinal monitoring sites supported by PMI in 2019. PMI is the only funder of entomological monitoring for Uganda in 2019, but in 2020, the Global Fund and DFID will support complementary national level entomological monitoring activities.

Figure A1. PMI-Supported Resistance and Longitudinal Monitoring Sites, 2019



Data from the longitudinal monitoring, presented in the 2019 progress report (unpublished) is presented in Figure A2. The laboratory analysis of 2018 specimens is still underway and PMI is currently looking for more expedient laboratory analysis solutions.

Figure A2. Longitudinal Monitoring Data, 2019

Site	Major Vector	Minor Vector	Peak Abundance	Preferred Biting Location	Preferred Resting Location	Preferred Host	Peak Sporozoite Rate	Annual* EIR
Apac	*An. funestus* s.l.	*An. gambiae* s.l.	Aug	*An. funestus* s.l.: indoor: (55%), *An. gambiae* s.l.: outdoor (52%)	n/a	n/a	analysis of 2018 samples underway	TBD

Site	Major Vector	Minor Vector	Peak Abundance	Preferred Biting Location	Preferred Resting Location	Preferred Host	Peak Sporozoite Rate	Annual* EIR
Bugiri	*An. gambiae* s.l.	*An. funestus* s.l.	May	*An. gambiae* s.l.: outdoor (51%), *An. funestus* s.l.: indoor (60%)	n/a	n/a	analysis of 2018 samples underway	TBD
Otuke	*An. gambiae* s.l.	*An. funestus s.l.*	June	*An. gambiae* s.l.: outdoor (69%), *An. funestus* s.l.: indoor (67%)	n/a	n/a	analysis of 2018 samples underway	TBD
Soroti	*An. funestus* s.l.	*An. gambiae* s.l.	July	*An. funestus* s.l.: indoor: (77%), *An. gambiae* s.l.: outdoor (54%)	n/a	n/a	analysis of 2018 samples underway	TBD
Tororo	*An. funestus* s.l.	*An. gambiae* s.l.	October	*An. funestus* s.l. indoor: (n/a), *An. gambiae* s.l.: outdoor (57%)	n/a	n/a	analysis of 2018 samples underway	TBD

* Please denote specific months if it is not estimated for all 12 months of the year
For additional information, please view the PMI 2018 Annual Entomological Monitoring Report.

Conclusion

Current entomological data indicates that the two predominant vectors, i.e. *Anopheles funestus* s.l. and *Anopheles gambiae* s.l. continue to prefer biting at night. While indoor/outdoor resting behaviors were not evaluated, considerable numbers were collected in pyrethrum spray catches, indicating at least some indoor resting. These behaviors justifies the continued use of the two major vector control interventions in malaria prevention (e.g., IRS and ITNs), although resistance will be continued to be monitored (*see Key Question 2*).

Key Question 2

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

Supporting Data

Figure A3 represents data from the most recent entomological monitoring progress report (June 2019). The tests were conducted with WHO susceptibility tests (72-231 *An. gambiae* s.l. mosquitoes tested per test).

Figure A3. Entomological Monitoring Progress Report, June 2019

Insecticide class	Insecticide	Dose	Site							
			Apac	Arua	Bugiri	Kanungu	Lira	Moroto	Rakai	Tororo
Carbamate	Bendiocarb	Diagnostic (1x)	87	86	98	98	n/a	99	81	98
Organophosphate	Pirimiphos-methyl	Diagnostic (1x)	100	100	100	100	97.6	100	98	100
Neonicotinoid	Clothianidin	Diagnostic (1x)	99.5	n/a	100	n/a	100	n/a	n/a	100
Pyrethroid	Alphacypermethrin	Diagnostic (1x)	24	n/a	n/a	98	n/a	18	n/a	12
		5x	70	n/a	n/a	n/a	n/a	50	n/a	n/a
		10x	77	n/a	n/a	n/a	n/a	69	n/a	n/a
		Diagnostic (1x) + PBO	100	n/a	n/a	100	n/a	91	n/a	89
	Deltamethrin	Diagnostic (1x)	54	25	47	97	88	48	n/a	89
		5x	92	52	n/a	n/a	100	92	n/a	98
		10x	96	72	n/a	n/a	n/a	96	n/a	n/a
		Diagnostic (1x) + PBO	100	74	n/a	99	n/a	89	n/a	100
	Permethrin	Diagnostic (1x)	26	23	n/a	98	n/a	25	n/a	73
		5x	83	41	n/a	n/a	n/a	73	n/a	81
		10x	92	72	n/a	n/a	n/a	98	n/a	97
		Diagnostic (1x) + PBO	94	56	n/a	100	n/a	76	n/a	100
Pyrrole	Chlorfenapyr*	Diagnostic	100		99					100

Key: Green = 98 – 100% Yellow = 90 – 97% Red = <90%

*Bioassays were conducted using CDC bottle bioassays.

N/A = not enough mosquitoes were collected in those areas. Mosquito collection is ongoing in order to complete these tests.

Conclusion

Susceptibility tests indicate resistance to bendiocarb in Apac, Arua, and Rakai, but largely susceptibility to Pirimiphos-methyl and clothianidin. Having susceptibility to two insecticides available for IRS allows for a rotation strategy for resistance management, however little is known about clothianidin resistance mechanisms and susceptibility to clothianidin should be monitored closely.

All sites showed resistance to pyrethroids, with the exception of Kanungu, in the south western part of the country. In many situations this resistance was moderately or highly intense, which may compromise the effectiveness of standard pyrethroid nets. As PBO resulted in increased mortality for all pyrethroids, PBO nets should be considered for future net distributions. Similarly, mosquitoes were susceptible to chlorfenapyr, so nets with chlorfenapyr could be considered if budget and production capacity allows.

Key Question 3

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

Supporting Data

DFID has recently provided funding that will be channeled through PMI for entomological and epidemiological monitoring in different eco-epidemiological zones in Uganda. With this funding, insecticide resistance monitoring (WHO bioassays) will be conducted once a year in ten additional districts (Dokolo, Otuke, Kole, Agago, Jinja, Kabale/Kasese, Busia, Mubende, Koboko, and Lamwo); vector density and species composition (CDC light traps, PSC) as well as vector bionomics studies

will be conducted monthly in five IRS and non-IRS districts (Dokolo, Kole, and Lamwo -IRS, Busia and Mubende - non-IRS). Data generated from these monitoring activities will inform the planned DFID IRS withdrawal plan in addition to data generated by PMI.

NMCD plans to expand entomological monitoring beyond current sites covered by PMI and DFID funds utilizing District Vector Control Officers (DVCOs) to expand their reach in line with their Entomological Surveillance Framework, however, it is unclear where the funding for this expansion will come from at this time.

Conclusion

Global Fund and DFID's planned funding for entomological monitoring may have an impact on PMI's funding allocations. For instance, when DFID discontinues bilateral malaria funding by 2023, PMI may need to discuss with Global Fund whether either partner can take on funding for sites previously supported by DFID. Continued coordination with other partners will remain important.

1.B. INSECTICIDE-TREATED NETS (ITNs)

PMI Goal
Achieve high ITN coverage and usage of effective nets in endemic PMI-supported areas (in the context of the current insecticide resistance); and maintain high coverage and use with consistent ITN distribution (via campaigns and/or continuous channels in a combination that is most effective given country context). Determine the geographic distributions, bionomics, and insecticide resistance profiles of the main malaria vectors in the country to inform vector control decision-making.

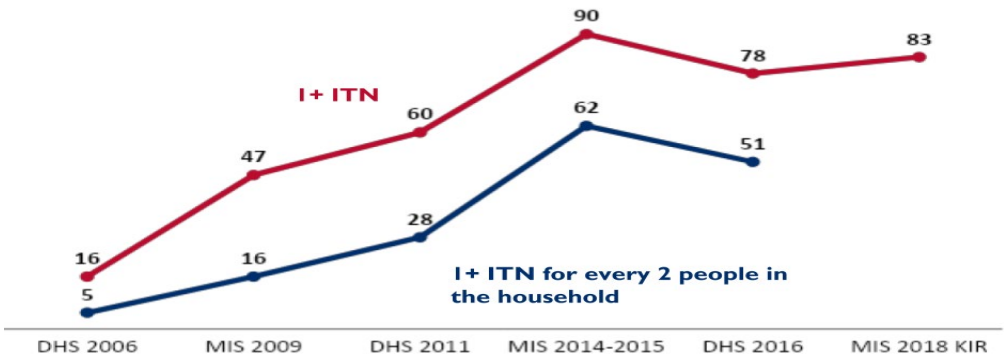
Are you proposing to increase, decrease, or maintain funding allocation levels for ITN distribution and SBC activities? Why? What data did you use to arrive at that conclusion?
Overall, PMI is proposing to increase funding for ITN procurement and distribution to ensure sufficient ITNs are available through PMI-supported continuous distribution channels. With FY20 funds, PMI will continue to support the NMCD in maintaining high ownership and use of ITNs to achieve at least 85 percent net ownership and use through ANC, EPI, and select school-based distribution. These complementary methods will help to maintain any gains achieved through the 2020 UCC. 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 A4. Trends in ITN Ownership, *Percent of Households*



Conclusion

Ownership of at least one ITN has generally increased over time, reaching the highest ownership levels in years following UCCs. Results from the 2018 MIS indicate a slight improvement in ownership of ITNs compared to the 2016 DHS, however there is still room for improvement and a need to ensure Uganda is maintaining the gains achieved post-UCCs. To address the unmet need for ITNs, PMI is planning to focus additional efforts on strengthening existing continuous distribution systems, including EPI and school-based distribution which have additional room for improvement.

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 A5. 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

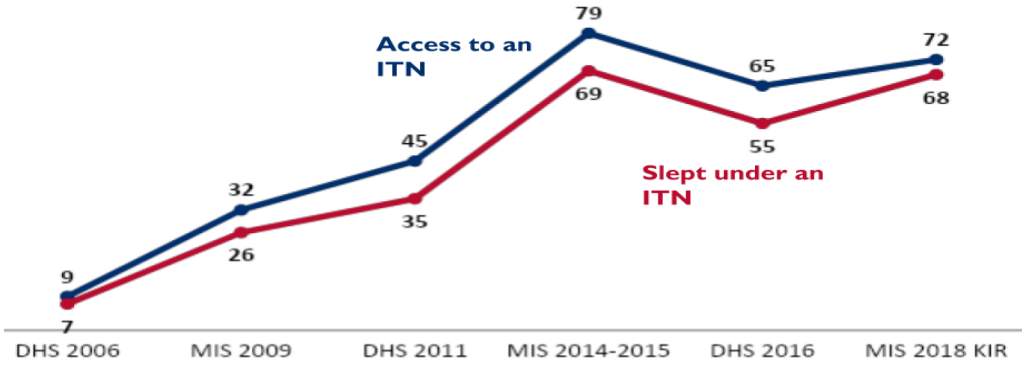
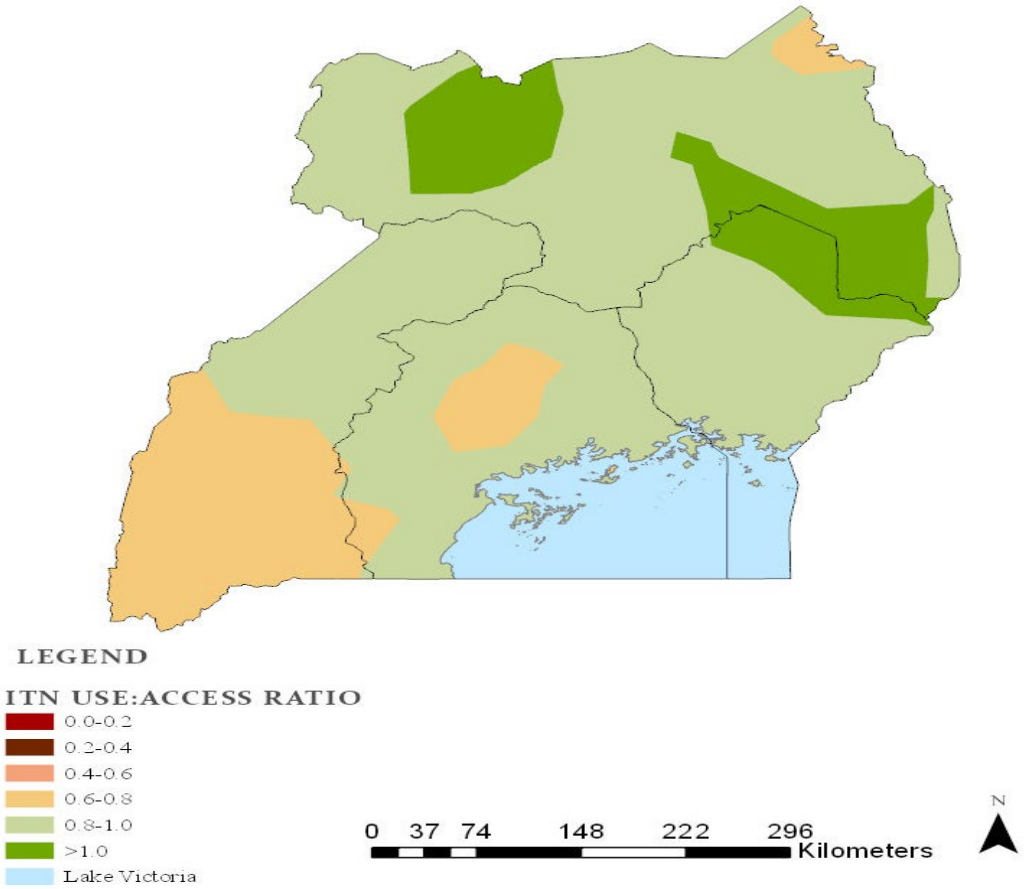


Figure A6. Uganda ITN Use: Access Ratio



Source: DHS 206

Conclusion

According to the 2016 DHS access: use ratio in Uganda was almost 7:6 while in the 2018 MIS it is 7:7. The ITN access: use ratio indicates that access to a net is predictive of its use. The access to enough ITNs within households is the main restriction of ITN use in Uganda. As the access to ITNs increases, the use of ITNs improves as well.

Net ownership and use vary widely across sociodemographic characteristics within the regions of Uganda. In addition, predictors such as household setting, wealth, and cultural or religious influence affect net access and use. The identified barriers to not using ITNs highlight the importance of conducting robust and multipronged campaigns, which include the COMBI (communication for behavioral impact) strategy to enhance the usage of ITNs in regions with better access but low use (Kigezi, Ankole,and West Nile) and regions with less than 70 percent net use (Tororo, Karamoja, and Bukedi). The identified facilitating factors need to be further strengthened to maintain high use in regions with over 70 percent net use (Teso, Bugisu, Acholi, Kampala, South Central, Bunyoro, and Lango).

Even though Uganda is doing well both in terms of access and use when compared to other countries (VectorWorks report ITN-Access-and-use, 2019); PMI, in collaboration with NMCD and RBM

partners, will continue to improve ITN access and net use. PMI will aim at increasing access to ITNs through various ITN distribution methods and will continue to promote robust SBC to further reduce the gap between access and use. PMI will enhance its focus on net use throughout the year, including during the drier seasons (December-February and July-August) where some communities become relaxed and do not use their nets.

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 A7. Facilitators and Barriers to ITN Access and Use

Facilitator	Type of Factor	Data Source	Evidence
Perceived vulnerability to malaria	Internal	Published literature [1]	ITN use was high because of perceived risk to malaria. This was strongly expressed in a qualitative study in Uganda by Strachan *et al*[1]. --- [1] Strachan C. E. *et al.*, "What drives the consistent use of long-lasting insecticidal nets over time? A multi-method qualitative study in mid-western Uganda", *Malaria Journal*, vol. 15, no. 1, article no. 1101, 2016
Suitability of net fabric	Internal	Published literature [2] and field activity reports (2018/19)	[2] Material of net increased acceptability and use among nomadic groups. A study on acceptability of nets in Kenya showed 95.5% acceptance of a net among nomadic populations once the material was felt suitable for their lifestyle. Field reports have also indicated that people in Uganda preferred nets with soft textures than hard ones. --- [2] Gore-Langton G. R. *et al.*, 2015, Investigating the acceptability of non-mesh, long-lasting insecticidal nets amongst nomadic communities in Garissa County, Kenya using a prospective, longitudinal study design and cross-sectional household surveys; *Malaria Journal* (2015) 14:52
Access to ITNs	Environmental	Chase malaria campaign assessment report (2018)	The distribution of mosquito nets during ANC clinics and health education on the risk of malaria during pregnancy facilitated pregnant women to access nets which increased their likelihood to use them

Desire to keep children healthy	Internal	Chase malaria campaign assessment report (2018)	The desire by caregivers to protect their children from malaria motivated them to sleep under nets
Fear factor	Internal	Chase malaria campaign assessment report (2018)	The fear of consequences associated with malaria including walking long distances to health centers, disruption of work schedules, unplanned costs associated with treatment and likelihood of death resulting from malaria/untreated malaria motivated the use of ITNs
Barrier	**Type of Factor**	**Data Source**	**Evidence**
Problem hanging net	Economic	Published literature and field activity reports (2018/19)	Communities that lead unsettled lifestyles, e.g. fishing, pastoralist, and refugee/immigrant communities experienced problems of net hanging related to poor housing and lack of bed [2]. Qualitative field observations showed that in mud-and-wattle houses, lack of beds and inadequate sleeping spaces prevented hanging of nets for use. These field observations concur with economic factors in published literature—populations in the poorest wealth quintiles experience these problems of poor housing and bedding conditions that make it difficult to hang nets for use. --- [2] Strachan C. E. *et al.*, "What drives the consistent use of long-lasting insecticidal nets over time? A multi-method qualitative study in mid-western Uganda", *Malaria Journal*, vol. 15, no. 1, article no. 1101, 2016
Limited perceived benefit of nets	Internal	Field activity reports (2018/19)	Experiences of receiving early evenings mosquito bites before going to bed even with nets available at home led to a lack of faith for full protection of the method. [3] Study findings imply that the risk of human exposure to potentially infectious bites is equally distributed throughout the night, thus supplementary measures to protect people against bites in the evening and morning are desirable. --- [3] Milali M.P. et al., 2017, "Bites before and after bedtime can carry a high risk of human malaria infection", Malaria J. 2017; 16: 91. Published online 2017 Feb 28. doi: 10.1186/s12936-017-1740-0

Religious beliefs	Social	Chase malaria campaign assessment report (2018)	Religious beliefs with specific reference to Kanyiriri (based on the bible verse 666), a religious sect commonly found in Eastern Uganda that discourages its members from attending gatherings or being registered or numbered. It was reported that the sect members are unable to participate in community events to learn about health-seeking behaviors or even go to health centers for fear of being registered.
Myths and misconceptions	Social	Chase malaria campaign assessment report (2018)	Examples of the highlighted myths and misconceptions was the belief that the use of LLINs causes impotence and birth related challenges, perceived discomfort that comes with the feeling of confinement while under the net and the heat generated from the confinement, and fear of fire breaks that may be precipitated by the net

Conclusion

A combination of modifiable and non-modifiable factors affect ITN use, with available nets not being used in limited circumstances resulting in less than optimal protection of key target populations. The high level of variability in the determinants of, and barriers to, ITN use, suggests that context specific responses are required, and the need to go beyond community participation to individual responsibility for malaria prevention, consistent with the Government's Mass Action Against Malaria (MAAM) strategy. PMI will conduct intensified SBC in areas with documented issues surrounding ITN use. NMCD and PMI's expansion of Village Health Team (VHTs) in communities will provide an opportunity to address community-specific issues surrounding net-related behaviors.

Qualitative and quantitative data from household surveys, literature reviews, and field reports identified the main barriers for not using ITNs as being problem hanging nets, limited perceived benefit of nets, religious beliefs, and myths and misconceptions among target beneficiaries.

PMI, in collaboration with NMCD and RBM partners, will conduct intensified SBC to raise net use to optimal levels in the country. As no area of the country achieved optimal use, SBC should be implemented nationwide, but with specific focus on regions with low coverage, such as Karamoja, and all of Buganda, Busoga and Acholi. SBC activities will specifically focus on promoting net use, net care and net retention to increase and sustain coverage to desirable levels. SBC will be adapted to different socio-cultural contexts to address the specific factors influencing net use. For example, living a nomadic lifestyle is the main factor affecting net use in Karamoja; in such case, SBC will have to target increasing risk perception, net care and ultimately, net retention.

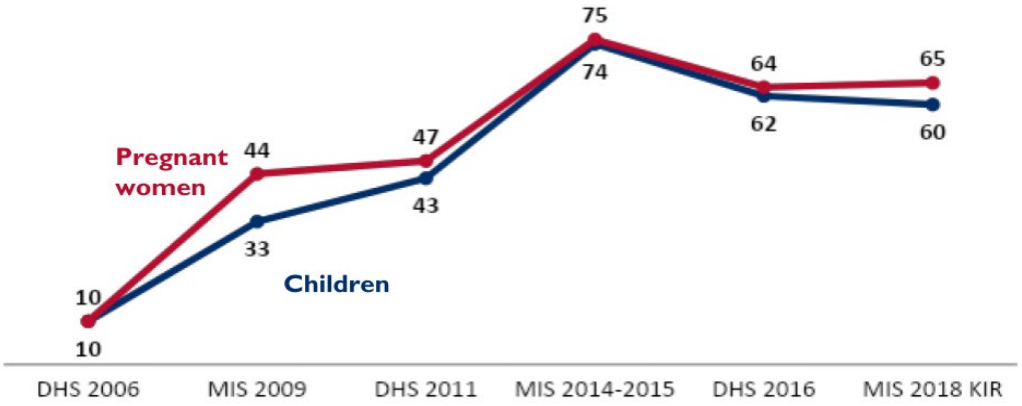
Effective models that facilitate high perception of personal risk and adoption of desired health behaviors will be adopted to deliver SBC. These will be delivered through interpersonal communication (IPC), as well as transformational and promotional approaches, using various platforms.

Key Question 4

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

Supporting Data

Figure A8. Trends in ITN Use among Children and Pregnant Women, *Percent of Children Under 5 Years of Age and Pregnant Women Age15-49 Who Slept Under an ITN the Night Before the Survey*



Conclusion

According to the 2018 MIS, there was a slight increase in ITN use among pregnant women compared to the 2016 DHS (64 percent to 65 percent) and a slight decline in ITN use among children under five years of age over the same period (62 percent to 60 percent). Overall, progress in this area remains stagnant and is below WHO and national targets. This data indicates the need to focus additional attention on ensuring optimal ITN use in these vulnerable populations.

To improve the use of ITNs among pregnant women and children, PMI will strengthen routine distribution channels to ensure a consistent supply of ITNs given the intricate link between access and use. PMI will also intensify ITN-related SBC, including:

1) messaging to households and individuals to take responsibility in caring for household members, especially children under five years of age and pregnant women to sleep correctly and consistently under ITNs, and
2) targeting village level opinion leadership, faith-based organizations and civil society at village and parish levels to support promotion of ITN use.

Key Question 5

What channels are used to distribute ITNs?

Supporting Data

Currently, Uganda utilizes UCCs, routine distribution through ANC and EPI and school-based distribution to deploy ITNs nationwide. Figure A9 includes all ITNs distributed in Uganda from all donor sources per calendar year.

Figure A9. ITN Distribution in Uganda CY 2017 - 2021

Channel	2015	2016	2017	2018	2019	2020	2021
EPI	X	X	1,627,387	1,676,209	1,733,244	1,788,095	1,842,946
ANC	X	X	1,841,218	1,910,099	1,995,246	2,079,180	2,142,960
Schools				600,000	300,000	300,000	300,000
Mass Campaign			23,128,244	0	0	26,195,311	0

Conclusion

The declining ITN ownership from 90 percent in MIS 2014-15 to 83% in MIS 2018-19 serves as a reminder that interventions must be maintained post-UCC and ongoing supply though routine channels enhanced to ensure coverage achievements are maintained.

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 A10. Gap Analysis of ITN Needs

Calendar Year	2019	2020	2021
Total Targeted Population[1]	40,308,000	41,564,035	42,859,200
Continuous Distribution Needs			
Channel #1: ANC[2]	1,995,246	2,079,180	2,142,960
Channel #2: EPI[3]	1,733,244	1,788,095	1,842,946
Channel #3: School Based distribution4	0	300,000	300,000
Estimated Total Need for Continuous Channels	3,728,490	4,167,275	4,285,906
Mass Campaign Distribution Needs			
2019/2020/2021 mass distribution campaign(s)	0	42,865,055	0
Estimated Total Need for Campaigns[5]	0	26,195,311	0
Total ITN Need: Routine and Campaign	**3,728,490**	**30,362,586**	**4,285,906**
Partner Contributions			
ITNs carried over from previous year	0	0	0

Calendar Year	2019	2020	2021
ITNs from MOH			
ITNs from Global Fund[6]	192,308	15,208,231	TBD
ITNs from other donors			
DFID	1,000,000	1,000,000	1,000,000
AMF	868,877	10,381,579	868,877
ITNs planned with PMI funding[7]	500,000	1,350,000	1,300,000
Total ITNs Available	**2,561,185**	**27,939,810**	**3,168,877**
Total ITN Surplus (Gap)	**-1,167,305**	**-2,422,776**	**-1,117,029**

Footnotes:

[1:] UBOS census report 2014, growth rate of 3.0%. For 2020 Mass campaign, refugee population included

[2:] 5.0% of the population is made up of pregnant women (2016 UDHS report). Average ANC coverage as per UDHS 2016 is projected to be 99%(2019), 100%(2020) & 100%(2021)

[3:] 4.3% of the population is made up of children under 1 (UBOS report 2014). EPI coverage is assumed at 100%

[4:] Quantity based on school enrolment data for 22 selected districts (649,117 MOES 2016). Criteria for selection of districts; malaria burden, equity, access to health services, existence & level of complementary interventions within the district, regional coverage

[5:] This is a nationwide mass campaign. 1 net for 1.8 persons in endemic areas (WHO recommended) plus 10% buffer included because of old census data (WHO recommendations)

[6:] Global fund Grant public commitments for the period 2019 to 2020. 2021 commitments not yet determined

[7:] PMI provides nets for the PNFP sector, estimated at what percent of total need

[8:] To be confirmed

Conclusion

The ITN gap analysis revealed that there are gaps of 1,167,305 and 2,434,776 ITNs in 2019 and 2020 respectively. However, there will not be a gap in 2021 provided proposed commitments are honored by the various donors. The PMI Uganda team is currently discussing with other donors on how to fill the 2019 and 2020 ITN gaps, in particular the proposed gap for the 2020 UCC, for which PMI is not providing ITNs.

PMI will continue to support routine distribution of ITNs through ANC, EPI and school-based distribution to maintain gains achieved after the 2020 UCC. PMI will also continue to work with Global Fund and other donors to ensure a consistent supply of ITNs through all channels. PMI utilizes entomological and other data to inform the type of ITNs that are procured. Given current data, PBO ITNs have been budgeted for in this MOP.

Key Question 7

What is the current status of durability monitoring?

Supporting Data

Durability monitoring will be done on a cohort of ITNs in 2 districts during the upcoming UCC, which begins in February 2020. Baseline data will be collected 3-6 months after distribution, followed by surveys at 12, 24 and 36 months. Discussions are underway for both the sites of the study and the brands of ITNs to be monitored. Details are in the table below.

Figure A11. Status of Durability Monitoring Planned for February 2020

Campaign Date	Sites	Brands	Baseline	12-month	24-month	36-month
February-August 2020	TBD	TBD	TBD 2020	TBD 2021	TBD 2022	TBD 2023

Conclusion

Monitoring planned - conclusions will be presented at the end of the monitoring activity.

Key Question 8

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

Supporting Data

Consistent with previous years, PMI will continue to primarily support routine/continuous distribution channels while Global Fund and other donors will support mass campaigns.

Conclusion

N/A

1.C. INDOOR RESIDUAL SPRAYING (IRS)

Key Goal

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

Do you propose to increase, decrease, or maintain funding allocation levels for this activity? Why, and what data did you use to arrive at that conclusion?

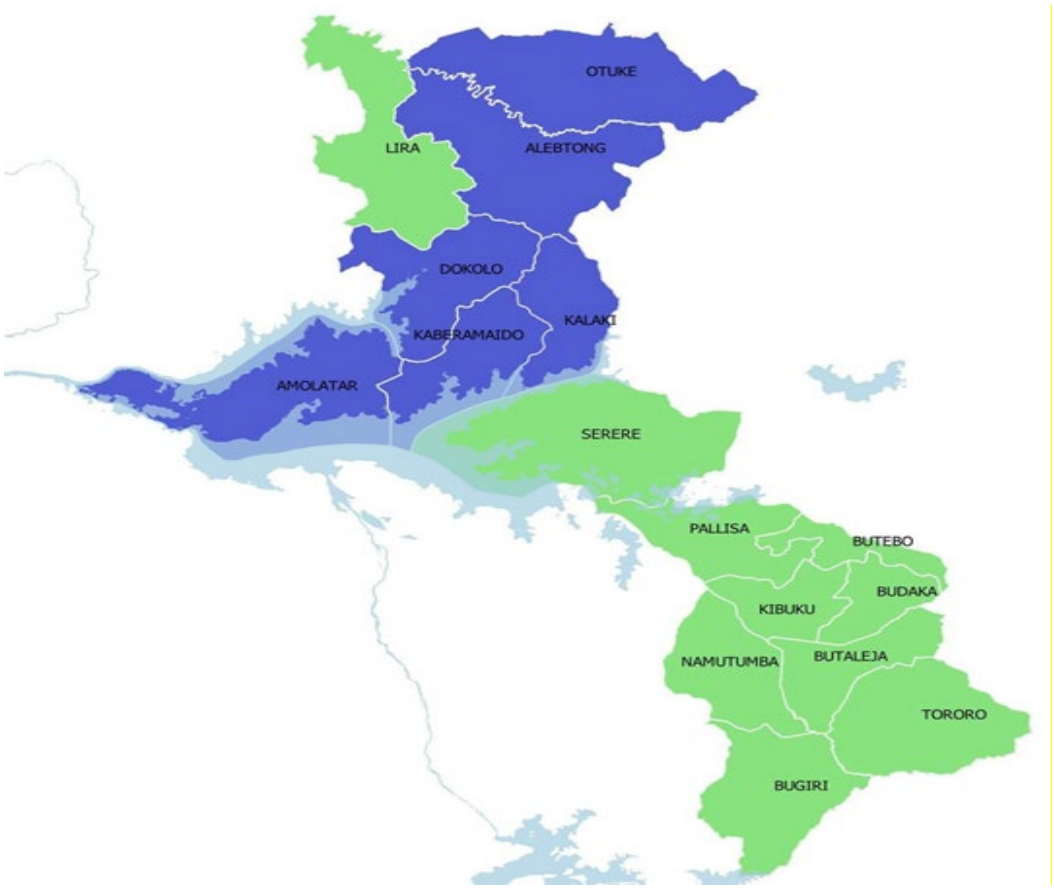
Overall, funding for IRS will be maintained to ensure PMI can continue to implement IRS in 10 high burden districts. Please see Table 2 for a detailed list of proposed activities with FY 2020 funding.

Key Question 1

What areas are targeted for IRS and why?

Supporting Data

Figure A12. IRS Targeted Areas in Uganda



In 2019, 15 districts in Uganda were targeted for IRS. Ten districts were funded by PMI and five districts were funded by DFID. These 15 districts represent high burden malaria districts in the northern and eastern parts of Uganda. There is no IRS supported by the Global Fund or the government at this time.

Conclusion

PMI will continue to implement IRS in 10 high burden districts with long-lasting non-pyrethroid insecticides. However, DFID support will be withdrawn from two districts in 2021 based on the updated DFID transition plan as detailed in *Key Question 6*.

Key Question 2

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

Supporting Data

Figure A13. PMI-Supported Spray Coverage Rates 2016 - 2020

Calendar Year	Number of Districts Sprayed	District Names**	Number of Structures Sprayed	Coverage Rate	Population Protected
2016	9	Budaka, Bugiri, Butaleja, Namutumba, Kibuku, Lira, Pallisa, Serere, and Tororo	863,983	96%	2,976,779
2017	9	Budaka, Bugiri, Butaleja, Namutumba, Kibuku, Lira, Pallisa, Serere, and Tororo	892,217	95%	3,322,222
2018	10	Budaka, Bugiri, Butebo, Butaleja, Kibuku, Lira, Namutumba, Pallisa, Serere and Tororo	950,939	94%	3,504,041
2019	10	Budaka, Bugiri, Butebo, Butaleja, Kibuku, Lira, Namutumba, Pallisa, Serere and Tororo	934,512	92%	3,490,673
2020*	10	Budaka, Bugiri, Butebo, Butaleja, Kibuku, Lira, Namutumba, Pallisa, Serere and Tororo	~950,000	85%+	~3,500,000

*Denotes targets

Conclusion

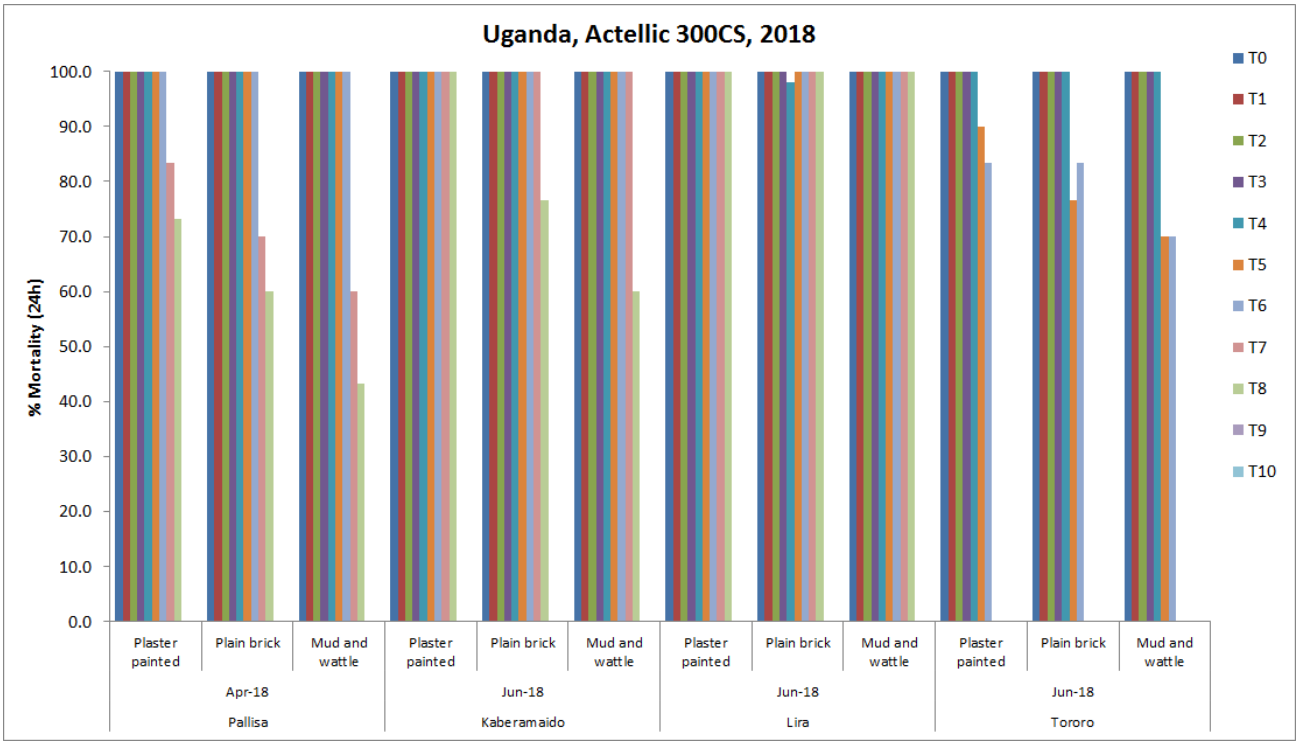
Uganda has the largest PMI-funded spray campaign in sub-Saharan Africa, protecting nearly 3.5 million people per year. High coverage levels of IRS are achieved across all districts, with the exception of Lira, which only achieved 84% coverage in 2019 due to pockets of resistance in urban and peri-urban areas. Intensified interpersonal communication and community dialogue is needed to address the low coverage in Lira district.

Key Question 3

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

Supporting Data

Figure A14. Residual Efficacy of Insecticides for IRS in PMI-Supported Areas



Note: T0 = within seven days post-IRS, T1 = one month post-IRS, T2 = two months post-IRS, etc.

PMI sprayed Pirimiphos-methyl CS in 2018, which had a residual life of approximately 7-8 months. Residual efficacy monitoring of the 2019 spray campaign is ongoing.

Conclusion

The long residual life of Actellic CS documented in 2018 and previous years is sufficient to cover the peak transmission season in Uganda. A new insecticide, clothianidin, was deployed in one PMI-funded district and one DFID-funded district in 2019, and the results from the residual efficacy monitoring of this new insecticide will help to inform the insecticide selection for the 2020 campaign.

Key Question 4

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

Supporting Data

Insecticide resistance monitoring, as outlined in the *Entomological Monitoring Section*, indicates full susceptibility to clothianidin and Pirimiphos-methyl in all sites tested.

Figure A15. Plan for Insecticide Rotation in PMI-Supported Areas

Year	Budaka	Bugiri	Butebo	Butaleja	Kibuku	Lira	Namutumba	Pallisa	Serere	Tororo
2017	p-m CS	p-m CS	p-m CS	p-m CS	p-m CS	p-m CS	p-m CS	p-m CS	p-m CS	p-m CS
2018	p-m CS	p-m CS	p-m CS	p-m CS	p-m CS	p-m CS	p-m CS	p-m CS	p-m CS	p-m CS
2019	p-m CS	p-m CS	p-m CS	p-m CS	p-m CS	Clothianidin	p-m CS	p-m CS	p-m CS	p-m CS
2020*	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD

**p-m CS = Pirimiphos-methyl CS

Conclusion

Given full susceptibility of clothianidin and Pirimiphos-methyl, these insecticides remain viable options for IRS to help mitigate resistance in Uganda. While the final insecticide selection decision for 2020 has not yet been made, the Government of Uganda and PMI plan to implement a rotation strategy using predominantly a combination clothianidin-pyrethroid insecticide as well as Pirimiphos-methyl CS and clothianidin leftover from the 2019 campaign. Uganda's insecticide resistance management plan recommends proactive insecticide rotation every three years to mitigate resistance (unless resistance is detected before three years have elapsed since use started), which is in line with PMI's plans.

Key Question 5

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

Supporting Data

n/a - no planned withdrawal with FY20 funds.

Conclusion

PMI does not plan to withdraw IRS from any of its 10 supported districts in this FY20 MOP. In addition, PMI continues to buy-into regional activities that promote consistent net use and care-seeking behaviors in IRS supported areas.

Key Question 6

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

Supporting Data

Currently, DFID is channeling funding for IRS implementation in six districts through PMI. However, DFID will be withdrawing all bilateral malaria support by the end of 2023, including support for IRS. As such, a transition plan has been agreed upon, whereby DFID will scale back and remove support from two districts in 2021, an additional two districts in 2022, and the final two districts in 2023. DFID has appointed a third party monitoring agent to assess districts' readiness for withdrawal using entomological and epidemiological data that will inform DFID's withdrawal plan. PMI will advocate that the monitoring agent works with MOH/NMCD to come up with a monitoring and response plan with defined triggers, actions, and standard operating procedures (SOPs) in expectation of an increase in cases when IRS is withdrawn.

In addition, as outlined in the *Operational Research Section*, there is a Gates-funded study ongoing in Katawki district looking at iCCM and ProACT as strategies to maintain the gains from IRS after the intervention is withdrawn. PMI will use the results of this study to inform any future withdrawal strategies.

Conclusion

The GoU and PMI Uganda are taking the withdrawal of IRS in DFID districts incredibly seriously given the lessons learned from withdrawal of IRS in the North. PMI is already working with DFID and GoU/MOH/NMCD to ensure that an effective IRS withdrawal strategy is in place before 2021 when DFID withdrawal from two districts is anticipated. PMI believes it is essential to replace one form of effective vector control with another, and thus will work with other partners to ensure next-generation ITNs are distributed in the areas where IRS is withdrawn to the greatest extent possible. To prepare for the removal of IRS, PMI will also work with other partners to ensure adequate stocks of ACTs and RDTs are in place, intensify iCCM efforts, strengthen MIP, and conduct SBC and epidemiological and entomological surveillance.

When DFID withdraws, their Strengthening Uganda's Response to Malaria (SURMA) program will implement a comprehensive package of malaria activities to help mitigate a resurgence. PMI is working to ensure PBO ITNs will be deployed in the DFID IRS areas as part of the upcoming UCC, as well as through routine channels. In addition, DFID will be implementing iCCM district-wide and targeted district health systems strengthening in these areas. There will be a heavy focus on SBC activities to ensure a strong net use culture, prompt care-seeking and other critical measures.

PMI is closely engaged with DFID on their SURMA program and advising on all aspects based on experience to date. All DFID-funded IRS districts have developed IRS exit strategies, which include mitigating interventions to avoid or respond to a potential upsurge. Such interventions include iCCM, which DFID is already implementing in the IRS districts it supports and will be supported by Global Fund after DFID exits bilateral support in Uganda. The ongoing third party monitoring project which DFID is funding is intended to further inform these district exit strategies. The phased DFID IRS exit is also conceived for progressive withdrawal to allow for a direct response from DFID in case of an upsurge and for learnings to inform exit from subsequent districts.

2. HUMAN HEALTH

2.A CASE MANAGEMENT in health facilities and communities

NMCD objective
The Uganda Malaria Reduction Strategic Plan (UMRSP) 2014-2020 objective for case management is that by 2020 at least 90 percent of malaria cases in the public and private sectors, and at the community level receive prompt diagnosis and treatment.
NMCD approach
The following are the main areas identified in the UMRSP to improve malaria case management: ● Rapidly scale-up the Test, Treat, Track initiative to ensure early detection, prompt treatment with effective drugs, and ensure that good surveillance and reporting systems are available and in use for appropriate response. ● Roll out iCCM to all villages across the country in a phased manner. ● Ensure a consistent and sustainable supply and access to all malaria commodities at all levels including the community. ● Strengthen support supervision and clinical audits to address issues of adherence to policies and guidelines, quality assurance for diagnostics to all districts. ● Conduct therapeutic efficacy studies to continuously monitor ACT efficacy to better manage treatment failures and drug resistance. ● Strengthen referral systems from lower levels, community and private sector to improve the management of severe malaria. ● Provide free or highly subsidized ACTs and RDTs to the private sector. *Diagnostic and treatment policies, guidelines, and practices:* ● RDTs are now available at all levels of health facilities and in both public, private and community facilities. Microscopy remains the gold standard diagnostic tool for severe malaria that allows for parasite speciation and quantification. Microscopy is generally available at HC IIIs and above in public health facilities and at HC IIs in PNFP facilities. ● Uganda has not reached universal coverage yet, mainly because the diagnostic rates in the private sector are not fully known, as reporting in the private sector is not complete in DHIS2. Based on the current DHIS2 analysis, the public sector that receives 40 percent of the country's malaria cases has a testing rate ranging between 80-88 percent. Private sector receives over 60 percent of the first contacts of fever cases that mostly demand self-medication and less prioritization of testing before treating when patients cannot afford to do both.

- Malaria microscopy external quality assurance (EQA) activities are based on the approved National Quality Assurance (QA) Manual. EQA involves cross-checking of blood slides by expert microscopists with proven competency on a quarterly basis. Quality assurance of RDTs is done through RDT field stability monitoring to assess any deterioration of RDT performance under field conditions. Field stability monitoring is overseen by highly qualified laboratory technicians, identified in collaboration with the Central Public Health Laboratory, National Health Laboratory Services, and the NMCD. In addition to the EQA, proficiency panel testing, competency assessment, testing quality of reagents, internal quality control assessments of reagents and RDTs, WHO Malaria Microscopy Competency assessment and blinded rechecking of malaria blood slides are carried out on a quarterly basis.
- The NMCD is currently revising the malaria case management guidelines to reflect the latest on artemether-lumefantrine (AL) as a safe drug during the first trimester, discarding monotherapies of artemether or Sulfadoxine/pyrimethamine (SP), recommendations on the correct artesunate dosing relative to age and weight, agreement to conduct malaria death audits and iCCM in hard to reach areas. The policy document is at the highest level of clearance by the ministry.
- Other guidelines updates include the WHO ANC recommendations of eight contacts and starting SP at 13 weeks gestation. The NMCD is working with partners to finalize this document as well as complete the national training of all health workers, so far health workers in 6,000 health facilities (public, PNFP and PFP) will need to be trained. The remaining health worker training gap is mostly in the PFP sector.
- Altogether there are about 12,000 health workers in the public and PNFP sectors and 20,000 in the PFP sector. Of these about 60 percent will need to be trained on the latest revisions, the majority of which work in the private sector.

Integrated Community Case Management (iCCM):

The Child Health Department (CHD) is still lacking supportive structures for supply chain, M&E, SBC, and general oversight for iCCM. There are efforts towards institutionalization of iCCM to receive commodities from NMS to lower health facilities quantified at the catchment health facility. GoU is moving towards an informed push system based on disease burden and catchment area for health center IIIs, in addition to health facilities providing the non-malaria commodities for iCCM from the facility primary health care (PHC) budget. There are two NMCD staff supporting iCCM at the national level, one of whom is supported by the Global Fund. iCCM has been one of the strategies used to reduce childhood mortality since 2010. In the public sector, approximately 65,000 VHTs implement iCCM in 68 of 128 districts, in addition to engaging in health promotion activities such as education of households (HH) on nets use, registration of HH members and mobilization for immunization.

- iCCM reporting remains largely incomplete (less than 40 percent) on a quarterly basis. Proposed new changes for iCCM reporting include a new user-friendly reporting tool with a

shorter reporting interval. PMI assessed iCCM reporting and recommended that parish coordinators collect the VHT's reports and submit them to health facilities. This would reduce the burden of VHT travel to submit reports.

- An analysis of data from the Karamoja region estimated that 40 percent of malaria cases were treated in the community; however the percentage nationally is challenging to determine due to poor community case reporting rates. PMI will continue to engage NMCD and CHD to institutionalize iCCM and strengthen foundational iCCM support structures including providing appropriate training and support supervision for implementation and reporting. PMI will continue to advocate for the improvement of community data reporting.
- In the private sector, several NGOs (including BRAC, Living Goods) have community case management projects that employ various models, some providing monetary incentives to community health workers including opportunities to sell products for a profit.
- In the public sector, VHTs remain volunteers with varying incentives and retention strategies that include a quarterly stipend of about nine U.S. Dollars as a transport refund, meals during their quarterly meeting, training and supervision, items such as t-shirts, bags, name tags and recognition by their district and sub county leadership.

Private Sector:

- In line with the WHO recommendations and as a means of ensuring that the national policy for the recommended first-line drugs are appropriate, the current first-line drugs for uncomplicated malaria are AL and artesunate/amodiaquine (AS/AQ), while the second-line is Dihydroartemisinin piperaquine (DP).
- Approximately 59 percent of patients first seek treatment in the private sector (MIS 2018) and 61 percent of patients with fever seek their first healthcare from the private sector (UDHS 2016/17).

PMI objective, in support of NMCD

- PMI procures all the antimalarial commodities required to cover PNFP facilities as well as all the LLINs required to cover the ANC and EPI needs for the entire country.
- PMI provides assistance at the national level for the development and updating of case management guidelines and policy documents as well as the national, regional and district dissemination of the guidelines through onsite mentorships and focused trainings.
- PMI assists with strengthening the practices in the private health sector to encourage and regulate practices of testing, proper treatment and enhance reporting of malaria cases.
- PMI supports iCCM in targeted sub-counties in the MidWest, West Nile and Central regions.

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

- PMI supported the NMCD to scale-up QA/QC systems for diagnostics and strengthened malaria case management for uncomplicated and severe malaria in public health facilities through support supervision, clinical audits of severe malaria cases, and on-the-job mentoring of health workers in the integrated malaria management tools.
- Case management strengthening activities were carried out in: South West, East, East Central, North Lango and North Acholi, MidWest, Central and West Nile regions, covering over 95 percent of the country.
- PMI supported iCCM in 13 districts in the MidWest, West Nile and Central regions where VHTs were trained to carry out comprehensive iCCM, although there were challenges with ensuring the provision of non-malaria commodities. However, NMCD has agreed with the implementation of malaria community case management until non-malaria commodities are available.
- Health facilities were supported to quantify their commodity needs for iCCM in five new districts to include their VHT's catchment needs. VHTs were also given training that included documentation management and referring patients.
- PMI procured 1,042,770 ACTs, 1,853,000 RDTs and 43,000 vials of injectable artesunate during the period of October 2018 to July 2019.

Implementation challenges were mostly at the community level with iCCM where VHTs were stocked out of commodities while supporting facilities with stock were not willing to redistribute facility commodities to VHTs citing policy barriers and accountability challenges. VHTs continue to face challenges submitting case reports to and obtaining commodities from health facilities because of inadequate transport and delayed travel reimbursement. There are also challenges with incorporating community confirmed malaria cases in the district monthly reports in DHIS2 as malaria information in DHIS2 only has provisions for reporting community confirmed malaria cases on a quarterly basis. This limits the ability to analyze community data with monthly health facility data and quickly respond to any issues coming from the data. PMI is working with partners to promote the analysis and use of the VHT data and work with the government to revise how VHT data is managed in DHIS2 so it can be included in the monthly reports.

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

- PMI will continue to promote SBC to improve early care seeking behavior.
- PMI will continue to support implementation of iCCM in hard-to-reach and highly endemic areas in the West Nile, MidWest and Central regions using the doughnut approach where regions in the peripheral communities with low access to health facilities are prioritized for iCCM or community malaria case management if non-malaria commodities are not available.

- PMI will continue to support mentorships in diagnostic guidelines, testing technical quality, and reporting.
- PMI will continue to support integrated support supervision (ISS) at health facilities together with clinical audits in selected HC IV and hospital levels, based on identified gaps, using HMIS data.
- PMI will continue to support clinical management of severe malaria through health worker mentorship to ensure skills are up to date, as well as ensure availability of injectable artesunate and diagnostic and supportive capacity at these high level facilities.
- PMI will continue to support quality assurance data reporting within the private sector through engagement with professional associations.
- PMI will continue to conduct bi-annual malaria review meetings with District Health Management Teams (DHMTs), health sub-district level and HFs and strengthen capacity building to include gender and youth streamlining.

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 to increase, decrease, or maintain funding allocation levels for this activity? Why, and what data did you use to arrive at that conclusion?

PMI Uganda proposes to increase the budget for this activity to expand targeted iCCM in high burden regions, including West Nile. Routine data coming from the HMIS in 2019 and data from the MIS 2018 show increased cases in northern Uganda, while Lango and Acholi have iCCM supported by DFID under the SURMA project until 2023. PMI proposes to expand its current iCCM coverage beyond the current districts in Central, MidWest and West Nile regions to include the entire region in West Nile in a sub-county targeted manner. Please see Table 2 for a detailed list of proposed activities with FY 2020 funding.

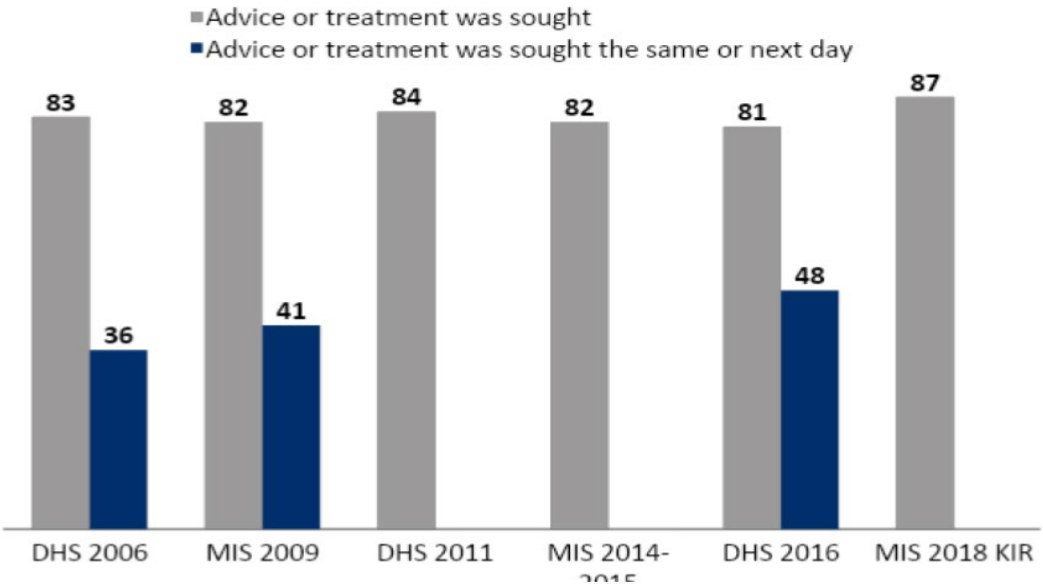
Key Question 1

What is the status of care-seeking?

Supporting Data

Figure A16. Trends in Care-Seeking for Fever

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



*Excludes treatment or advice from a traditional practitioner

Conclusion

Care and treatment seeking behavior continues to be high, increasing from 81 percent in 2016 to 87% in 2018. However, there is room to improve early treatment seeking, in the first 24 hours of a fever. Encouraging care seeking behavior will continue to be a priority for PMI, working alongside the NMCD. Leveraging Uganda's MAAM strategy, a campaign to hold every household accountable for their malaria status, will also be critical to encourage early treatment seeking for fevers.

Key Question 2

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

Supporting Data

Figure A17. Facilitators and Barriers to Care-Seeking in Uganda

Facilitator	Type of Factor	Data Source	Evidence
Quality of services and proper handling of clients by health workers.	Environmental	Uganda National Household Survey 2016/2017	Provider behavior (Handling clients with respect is the top quality issue for public (29%) and private (37%) facilities).

The availability of diagnostic and treatment commodities and physical access to health facilities.	Environmental	MoH Annual Health sector performance report 2017/18	No RDT stock out at 85% of public health facilities and no ACT stock out at 84% of public health facilities.
Availability and access to testing and treatment services	Environmental	Chase malaria campaign assessment report (2018)	The assessment showed that before the adoption and use of RDTs, testing was often a challenge. Over time, the use of RDTs and the confidence the participants have in the test results have contributed to an increase in seeking care and treatment services
Barrier	**Type of Factor**	**Data Source**	**Evidence**
Low risk perception of the illness with delay to seek care.	Internal	Uganda National Household Survey 2016/2017	Low risk perception (57%),
Unavailability of drugs, supplies, at health facilities.	Environmental	Uganda National Household Survey 2016/2017	Public facilities, unavailability of medicines/supplies (23%) Private facilities, drugs not available (9%)
Distance to health facility	Environmental	Uganda National Household Survey 2016/2017	Facilities being far (14%)
Cost of health services	Environmental	Uganda National Household Survey 2016/2017	Overall, cost considerations (13%). In private facilities, services being expensive (39%)
Combination of factors at health facilities including long waiting time, limited range of services, and understaffing	Environmental	Uganda National Household Survey 2016/2017	Public facilities, long waiting time (13%), limited range of services (14% - public facilities; 23% - private facilities), and understaffing (10%)
Misconceptions	Social	Chase malaria campaign assessment report (2018)	Common misconceptions on the cause of malaria included bearing long nails, unwashed hands, having no toilet, not putting on warm clothes, playing in stagnant water, putting on dirty clothes, and untidy hair

Complacency	Internal	Chase malaria campaign assessment report (2018)	Complacency could likely be due to message overload as well as progress on other stages in the *Obulamu* campaign communication process including the intention to act, efficacy and skills, and action

Conclusion

Facilities have largely reduced the level of malaria commodity stockouts and most facilities are able to provide testing and treatment for febrile patients. Emphasis should be on maintaining availability of commodities and ensuring that patients do not retain the perception that facilities are out of drugs.

Improving quality of services and technical and interpersonal communication skills of health facility staff should also be prioritized. Private facilities need to have improved linkages with the national regulatory structures to increase adherence to policies and improve financial access to services. For public health facilities, physical access can be improved by scaling up iCCM.

The challenge of low risk perception by the community leading to delays in seeking care remains a major barrier countrywide. PMI will continue to use data to identify communities with high malaria burden and engage them on their risk perception and possible practices impeding their care seeking practices.

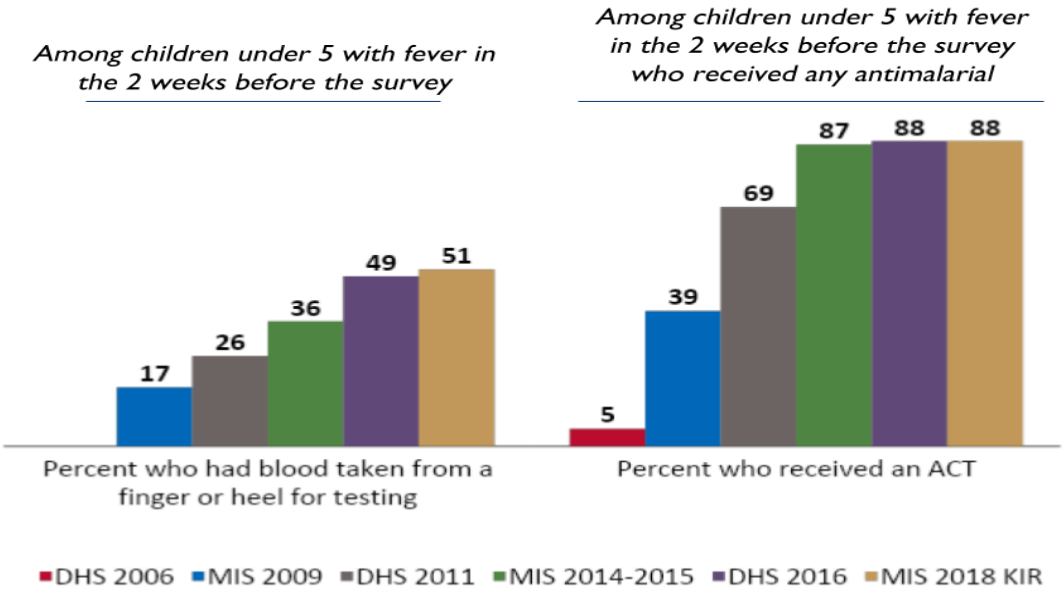
Overall, PMI will use a variety of complementary channels including enhanced community engagement through IPC, radio, and print media to address specific barriers to care seeking across the country. SBC messaging will address commodity availability at health facilities, early treatment seeking behavior, adherence to the test and treat policy, increased male partner engagement, and risk perception.

Key Question 3

How have malaria testing and treatment practices evolved over time?

Supporting Data

Figure A18. Trends in Diagnosis and Treatment of Children with Fever



Conclusion

Substantial gains in availing children under five with fever with antimalarial treatment have been made and maintained. However, progress when it comes to testing fever cases has stalled. Public facilities report nearly 100 percent testing rates, although that is likely over-reported due to a misunderstanding of the indicator definition (most facilities use cases tested as the denominator rather than cases of fever). Testing rates are significantly higher in public facilities compared to private facilities (pharmacies and private health facilities) where 60 percent of the population goes for care. This emphasizes the need for private sector strategies to improve policy adherence.

Key Question 4

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

Supporting Data

Figure A19. Barriers and Facilitators to Testing and Treatment

Facilitator	Type of Factor	Data Source	Evidence
Availability of RDTs and high provider acceptance of RDTs	Environmental	9th End Use Verification Survey, November 2018	84% testing is done by RDT

Facilitator	Type of Factor	Data Source	Evidence
Providers in lower level health facilities (HC II & HC III) have better adherence to test and treat policy	Environmental	9th End Use Verification Survey, November 2018	Presumptive treatment ranged from 2% to 16% (3% in HC II; 2%, in HC III; 5% at HC IV and 16% in hospitals)
HC IIs and HC IIIs also conduct RDT in multiple testing places in the health facility (other than only in the laboratory)	Environmental	9th End Use Verification Survey, November 2018	HC II and HC III RDT testing was conducted 80% and 74% in other places (not in the laboratory) respectively compared to 53% in HC IVs and 63% in hospitals
Barrier	**Type of Factor**	**Data Source**	**Evidence**
Lack of adequate systems and practices to ensure delivery of quality health services including: participation in the accreditation process, carrying out routine quality assurance, having quality assurance committees, having quality monitoring indicators, having systems for obtaining clients opinions or receiving feedback about the health facility or its services, conducting case reviews, and conducting death reviews.	Internal, Environmental	Hospital census report 2016	Northern Uganda had the highest mean availability, with the hospitals/HC IVs having on average six of the eight systems/practices (79%) that were assessed. Eastern Uganda had the lowest mean availability, with the hospitals/HC IVs having on average 72% of the systems/practices that were assessed.

Conclusion

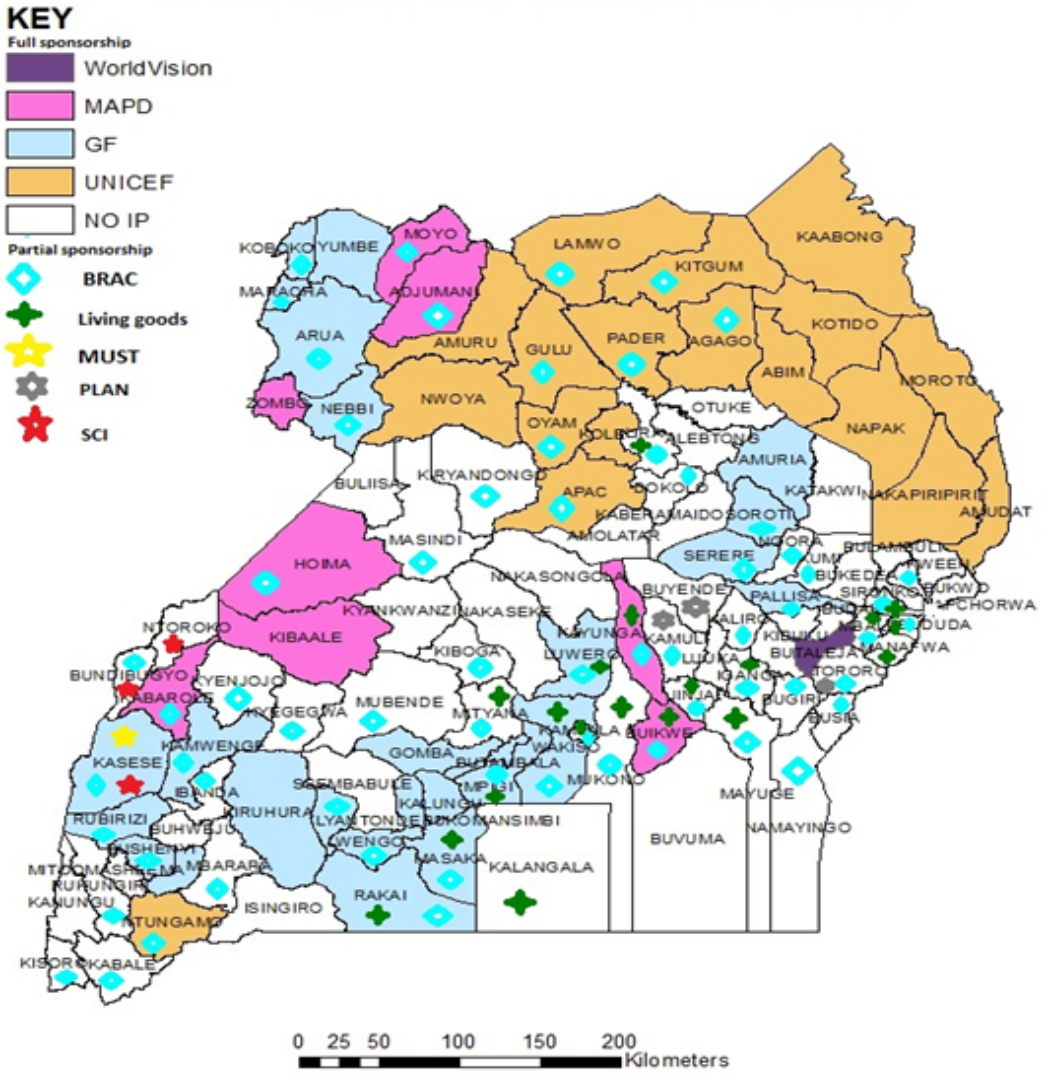
Provider behavioral change efforts should focus on higher level facilities where testing and treating practices are poor. Basic quality assurance systems need to be implemented in health facilities, especially in the public sector, to improve service quality, use, and trustworthiness.

Key Question 5

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

Supporting Data

Figure A20. iCCM District Coverage, 2018



Conclusion

PMI provides support for health facility case management to most districts as shown in the map above. Support for case management is comprehensive and includes training of health workers in integrated malaria management (diagnostics, treatment and reporting) and supportive supervision. GoU rescinded the Community Health Extension Worker (CHEW) strategy as their proposed role was duplicative within existing cadres in the health structure.

PMI supports iCCM implementation in 13 districts in the MidWest and West Nile regions. PMI has not been supporting iCCM in regions that are not PMI malaria focus regions as their iCCM component is minimal, being largely HIV/AIDS focused at facility levels. iCCM is attached to public facilities that are supplied by Global Fund procured malaria commodities through NMS. PMI will

continue to support iCCM implementation, as well as to advocate and coordinate with other partners for the procurement of iCCM commodities, including non-malaria commodities.

Key Question 6

What is the estimated need for RDTs for FY 2020?

Supporting Data

Figure A21. Gap Analysis of RDT Needs

Calendar Year	2019	2020	2021
RDT Needs			
Total country population[1]	40,308,000	41,583,600	42,859,200
Population at risk for malaria [2]	40,308,000	41,583,600	42,859,200
PMI-targeted at-risk population [3]	40,308,000	41,583,600	42,859,200
Total number of projected fever cases [4]	39,516,464	41,027,943	39,643,592
Percent of fever cases tested with an RDT 5	67%	70%	70%
Total RDT Needs	**26,479,142**	**28,743,168**	**27,773,326**
Partner Contributions (to PMI target population if not entire area at risk)*			
RDTs carried over from previous year [6]	8,158,775	12,670,853	20,123,913
RDTs from Government [7]			
RDTs from Global Fund [8]	27,348,820	32,603,828	TBD
RDTs from other donors [9]	742,400	742,400	742,400
RDTs planned with PMI funding [10]	2,900,000	2,850,000	1,250,000
Total RDTs Available	**39,149,995**	**48,867,081**	**22,116,313**
Total RDT Surplus (Gap)	**12,670,853**	**20,123,913**	**-5,657,013**

Footnotes

1: National Population projections based on UBOS 2014 Census

2: Assumes 100% at risk due to malaria endemicity

3: PMI is expected to cover the PNFP sector estimated at 10.38% of the national need for RDTs.

4: This is based on epidemiological annual estimates (i.e. Fevers that are suspected as malaria cases) per age group (Under 5yrs (18% of the population) to have 4.3 episodes of fever/yr., 5-9yrs (16% of the population) to have 2 episode/yr., 10 - 14yrs (14% of the population) to have 1 episodes/yr. & Above 14yrs (52% of the population) to have 0.5 episodes/yr. The total is less the number of suspected Fevers reduced due to vector control (5% annually as reported by the MIS 2014/2015). Projected testing rate (77.2% -2019, 82.55% - 2019 & 82.55% -2020).

5: Projected testing rate (77.2% -2019, 82.55% - 2019 & 82.55% -2020). Percentage Coverage of RDTs Public + PNFP sector (90% - 2019, and 95% - 2020 & 2021) and Percentage diagnosis in the Public + PNFP sector (61%)

6: Ideally the surplus should be carried over and this has been done. However, it is only a presumption and may not sufficiently incorporates actual consumption trends (including peak seasons). From pipeline tool which incorporates actual & projected consumptions the opening stock is lower than the carried over surplus

7: GoU currently not procuring RDTs

8: Global fund Grant public commitments for the period 2019 to 2020. 2021 commitments not yet determined

9: Global fund Grant public commitments for the period 2019 to 2020. 2021 commitments not yet determined. This will be determined upon GF Grant writing

10: PMI is expected to cover the PNFP sector estimated at 10.38% of the national need for ACTs. DHIS2 Data analysis 18 months (Jan 2018 - Jun 2019)

Conclusion

The RDT gap analysis reveals that there could be a surplus of 24.5 million and 28.3 million RDTs in 2019 and 2020, respectively, if no significant changes in consumption are registered and all commitments honored. However, with the ongoing malaria upsurge, a significant increase in consumption is expected by the end of 2019, which will affect the projected surplus. By 2021, we should see a zero balance in RDTs provided the funds pledged by major donors are available and there is not unexpected additional malaria cases. PMI will need to continue to monitor this situation in coordination with the GoU and other donors.

Key Question 7

What is the estimated need for ACTs for FY 2020?

Supporting Data

Figure A22. Gap Analysis of ACT Needs

Calendar Year	2019	2020	2021
ACT Needs			
Total country population1	40,308,000	41,583,600	42,859,200
Population at risk for malaria2	40,308,000	41,583,600	42,859,200
PMI-targeted at-risk population 3	40,308,000	41,583,600	42,859,200
Total projected number of malaria cases4	20,366,604	18,567,105	17,216,247
Total ACT Needs	**20,366,604**	**18,567,105**	**17,216,247**
Partner Contributions (to PMI target population if not entire area at risk)			
ACTs carried over from previous year5	16,055,490	19,456,471	23,695,617
ACTs from Government6	1,571,885	1,571,885	1,571,885
ACTs from Global Fund7	18,718,440	19,289,106	TBD
ACTs from other donors8	577,260	577,260	577,260
ACTs planned with PMI funding9	2,900,000	1,368,000	95,000
Total ACTs Available	**39,823,075**	**42,262,721**	**25,939,761**
Total ACT Surplus (Gap)	**19,456,471**	**23,695,617**	**8,723,514**

Footnotes:

[1:] National Population projections based on UBOS 2014 Census

[2:] Assumes 100% at risk due to malaria endemicity

[3:] PMI is expected to cover the PNFP sector estimated at 10.38% of the national need for ACTs. DHIS2 Data analysis 18 months (Jan 2018 - Jun 2019)

[4:] This is based on epidemiological annual estimates (i.e. Fevers that are suspected as malaria cases) per age group (Under 5yrs (18% of the population) to have 4.3 episodes of fever/yr., 5-9yrs (16% of the population) to have 2 episode/yr., 10 - 14yrs (14% of the population) to have 1 episodes/yr. & Above 14yrs (52% of the population) to have 0.5 episodes/yr. The total is less the number of suspected Fevers reduced due to vector control (5% annually as reported by the MIS 2014/2015). The number of cases are determined through diagnosis. Projected targets for diagnosis per year i.e. 77.2%(2019), 82.55%(2020), 83%(2020) were based on the UMRSP 2014/2020, and the Weighted National Target is taking into account the Public, Community and Private sectors) and compliance to the testing results (80%(2019), 85% (2020) and 90% (2021) (Based on analysis of HMIS2/DHIS2 data 2016) and 58% test negativity rate. 52% & 10% of malaria cases 2019 to seek care in Public+PNFP sector and Community (ICCM) respectively. In 2020 & 2021 the proportions are assumed to be 53% each while 10% for ICCM.

[5:] Ideally the surplus should be carried over and this has been done. However, it is only a presumption and may not sufficiently incorporates actual consumption trends (including peak seasons). From pipeline tool which incorporates actual & projected consumptions the opening stock is lower than the carried over surplus

[6:] Government's contribution

[7:] Global fund Grant public commitments for the period 2019 to 2020. 2021 commitments not yet determined. This will be determined upon GF Grant writing

[8:] DFID/UNICEF Only 2019 ICCM commitment confirmed. 2020 and 2021 commitments yet to be confirmed

[9:] PMI is expected to cover the PNFP sector estimated at 10.38% of the national need for ACTs. DHIS2 Data analysis 18 months (Jan 2018 - Jun 2019)

Conclusion

The ACT gap analysis reveals that there could be a surplus of 18.8 million and 14.96 million ACTs in 2019 and 2020 respectively, provided the funds pledged by major donors are available and no significant changes in consumption are registered. However, with the ongoing malaria upsurge, a significant increase in consumption is expected by the end of 2019 which will affect the projected surplus. PMI will continue to monitor this closely and coordinate with the NMCD and other donors to ensure that national ACT needs are covered, especially since a gap of 136,637 ACTs is anticipated in 2021 based on current projections.

Key Question 8

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

Supporting Data

Figure A23. Gap Analysis of Injectable Artesunate Needs

Calendar Year	2019	2020	2021
Injectable Artesunate Needs			
Projected Number of Severe Cases[1]	919,782	825,205	765,167
Projected # of severe cases among children			
Projected # of severe cases among adults			
Total Injectable Artesunate vials Needs [2]	**4,905,505**	**4,401,091**	**4,080,888**
Partner Contributions			
Injectable artesunate vials carried over from previous year3	3,770,563	0	0
Injectable artesunate vials from Government4	0	0	0
Injectable artesunate vials from Global Fund5	600,000	1,842,725	TBD
Injectable artesunate vials from other donors	0	0	0
Injectable artesunate vials planned with PMI funding6	43,000	100,000	150,000
Total Injectable Artesunate vials Available	**4,413,563**	**1,942,725**	**150,000**
Total Injectable Artesunate vials Surplus (Gap)	**-491,942**	**-2,458,366**	**-3,930,888**

Footnotes:

[1:] 4% of the uncomplicated malaria cases is estimated to progress to severe malaria (Analysis of HMIS 2016 data). 70% of severe malaria cases will be managed through public & PNFP health facilities, 30% will be managed through private health facilities (Expert opinion 2016 in Malaria quantification workshop).

[2:] An average of 5 vials of artesunate (60mg vial) is required for each patient. It is also estimated that a third (1/3) of severe malaria cases will be seen at lower level health facilities and then referred after a single dose (1 vial) of artesunate to higher level facilities

[3:] Opening stock is obtained from PIPELINE TOOL, which also includes data on actual consumptions and shipments

[4:] GoU not providing Artesunate injection

[5:] Global fund Grant public commitments for the period 2019 to 2020. 2021 commitments not yet determined. This will be determined upon GF Grant writing

[6:] PMI is expected to cover the PNFP sector estimated at 25% of the national need for Inj Artesunate • PMI MOP 18 (43,000) and MOP 19 (100,000) commitments for Artesunate 60mg vial w/ solvents for PNFP health facilities included. This leaves a significant GAP in the PNFP sector both in FY19 and FY20.

Conclusion

Per the injectable artesunate gap analysis, we can expect a gap of 491,942 and 971,043 vials in 2019 and 2020 respectively, mainly due to the funding gap by the major donors (Global Fund) for artesunate. There should be no gaps in 2021 provided current commitments are honored by the respective donors. In addition to continuing to monitor the situation and work with the NMCD and partners to cover the gaps in the next couple of years, PMI will continue to support interventions that aim to eliminate inappropriate use of this commodity. This includes interventions to stop use in outpatient settings or lower level hospitals whose mandates do not include the treatment of severe malaria.

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
2016	Mubende, Arua, Gulu, Mbale	AL,DP	Yes[1]	World Bank Funded study
2018/2019	Aduku, Arua, Masafu, Kanungu, Mubende	AL, ASAQ, DP	TBD	CDC Atlanta (PARMA)

Footnotes - ACPR: adequate clinical and parasitological response; AL: artemether-lumefantrine; DP: dihydroartemisinin-piperaquine; PARMA: PMI-supported Antimalarial Resistance Monitoring in Africa

Conclusion

As of 2016, first line ACTs used in Uganda remain efficacious. Results from the most recent therapeutic efficacy study are pending.

Key Question 10

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

Supporting Data

- Private sector service points, more specifically drug shops and pharmacies, are where 60% of febrile patients first go to seek care. When supported to adhere to national policies for case

management as well as reporting and regulation, these outlets could provide increased access to quality services, and improved reporting of cases that are currently not captured in DHIS2.

- MIS data show a decline in national malaria prevalence of from 19% in 2016 to 9.2% in 2018. However, a closer look at the district level data show a heterogenous picture with the highest prevalence noted in the northern region. Routine health information data also suggest an increase in malaria cases in those areas, when compared to 2018. PMI will reduce health access barriers by increasing community strategies and expanding iCCM coverage in high burden areas. The chronic absence of non-malaria commodities led to a delay in iCCM implementation until the NMCD reached a resolution to start providing community case management services with anti-malarial medications as efforts continue to avail non-malaria iCCM commodities.

Conclusion

PMI will continue to work with the NMCD and partners to finalize and implement a national private sector strategy to strengthen case management practices and reporting of private facilities. This should include strengthening the regulatory and licensing bodies that oversee operations in the private sector to ensure adherence to national policies and promote quality control of commodities.

MIS 2018 data along with routine facility information will be used to target areas down to the sub county level to provide iCCM where access to health facilities is limited and malaria burden is high. PMI will support public facilities supporting iCCM with technical assistance that includes training and integrated supportive supervision with a focus on case management, reporting, and commodity management. PMI will also support the finalization of the iCCM policy guidelines and supporting documentation to improve reporting at the community level by VHTs. VHTs will also be supported with gloves, t-shirts and where possible medicine storage boxes or airtime to facilitate reporting.

Key Question 11

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

Supporting Data

- The Ebola situation in DRC bordering Uganda in the west and north western regions may affect case management implementation. The national Ebola strategy response has made provision for presumed malaria case management in the event that Ebola cases cross into the country. Presumptive case management, should it take place, will have implications on the commodities planned for procurement.
- The increase in refugee populations from bordering countries (1.3 million refugees currently residing in Uganda) may contribute to an increase in malaria cases that requires inclusion in planning for malaria commodities and or specific response approaches.
- The MoH program leading iCCM was reluctant to scale-up iCCM until funding for non-malaria commodities was identified. This resulted in delayed implementation of iCCM in

many districts. The issue has been resolved with all relevant stakeholders agreeing to move forward with the training of VHTs on iCCM and the implementation of community case management with available malaria commodities while continuing resource mobilization efforts for non-malaria commodities.

Conclusion

PMI supports a comprehensive systems strengthening approach that uses routine health information and supply chain data to promptly address increases in malaria cases, and adequately stock epidemic prone areas, malaria hot spots, areas that are likely to experience malaria upsurges, and refugee host areas with the appropriate commodities.

In addition to maintaining support for the high performance of health facility in malaria case management, PMI will increase coverage of iCCM in West Nile to add to the current eleven districts in the Mid-Western region, with a focus on high burden areas with reduced access to health facilities. PMI will also await the results of a study evaluating proactive iCCM in Katakwi district before considering wider support for this approach.

2.B. DRUG-BASED PREVENTION

NMCD objective
The NMCD Strategic Plan (2014-2020) ends soon but the follow-on Strategic Plan (2021-2025) is under discussion. NMCD in collaboration with partners including PMI, will strengthen the management of malaria in pregnancy (MIP) with emphasis on promoting IPTp 3+ coverage (from the current 41 percent (UMIS 2018/19), to at least 85 percent). The NMCD does not implement SMC as malaria transmission is not highly seasonal (60% of cases do not occur within a four month period).
NMCD approach
Uganda has adopted the WHO guidelines for intermittent preventive treatment for pregnant women (IPTp). IPTp implementation includes a treatment dose of SP for HIV negative women at each scheduled antenatal care visit (ANC) starting at 13 weeks gestational age, with a minimum four week interval between doses, and a recommended minimum of three doses (IPTp 3+). SP is recommended to be administered as directly observed therapy (DOT).
PMI objective, in support of NMCD
PMI supports NMCD's MIP objectives. In areas of moderate-to-high malaria transmission PMI supports implementation of IPTp with SP by DOT for all pregnant women at each scheduled ANC visit starting as early as possible during the second trimester of gestation, provided these visits are at least one month apart.

PMI-supported recent progress (past ~12-18 months)
• PMI continued providing support in strengthening the NMCD's capacity to coordinate and increase IPTp uptake including supporting the full implementation of the revised MIP policies in all ANC facilities. • PMI continued providing support in strengthening supportive supervision with emphasis on data quality. • PMI procured 250,000 tablets of SP to fill the nationwide gap as the MOH/NMS has not procured and distributed SP to all public health facilities. • PMI seconded one senior MIP expert to NMCD who provides TA and follows day-to-day progress of MIP. • PMI supported the training of 340 healthcare workers in integrated malaria management (IMM) including IPTp. • PMI through high level of advocacy supported NMCD to have SP be included in the essential medicines list and procured as a priority medicine. • PMI in collaboration with RBM partners continued advocating for low-dose folic acid as recommended by the WHO.
PMI-supported planned activities (next ~12-18 months, supported by currently available funds)
• PMI will continue to support one senior TA embedded in NMCD. This individual is responsible for coordinating with the NMCD/DHMTs to bring onboard all RBM partners to fully adopt and implement the 2016 WHO ANC recommendations for positive pregnancy outcomes. • PMI in collaboration with RBM partners will continue high level advocacy to the GoU to procure and make available SP and low-dose folic acid (or iron and folate combination tablets, with 60 mg/day iron and 0.4 mg/day of folate), which is recommended by the WHO for use in pregnancy. • PMI will continue supporting NMCD to improve data quality through supporting the dissemination of registers and data reporting tools for IPTp 3+.

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

PMI Goal
Support the national strategy for MIP, which includes provision of ITNs at first ANC visit, IPTp to all HIV negative pregnant women in malaria endemic areas including Uganda starting at 13 weeks

gestational age, for a minimum of three doses, and effective case management of malaria, in accordance with the WHO recommendations.

Do you propose to increase, decrease, or maintain funding allocation levels for this activity? Why, and what data did you use to arrive at that conclusion?

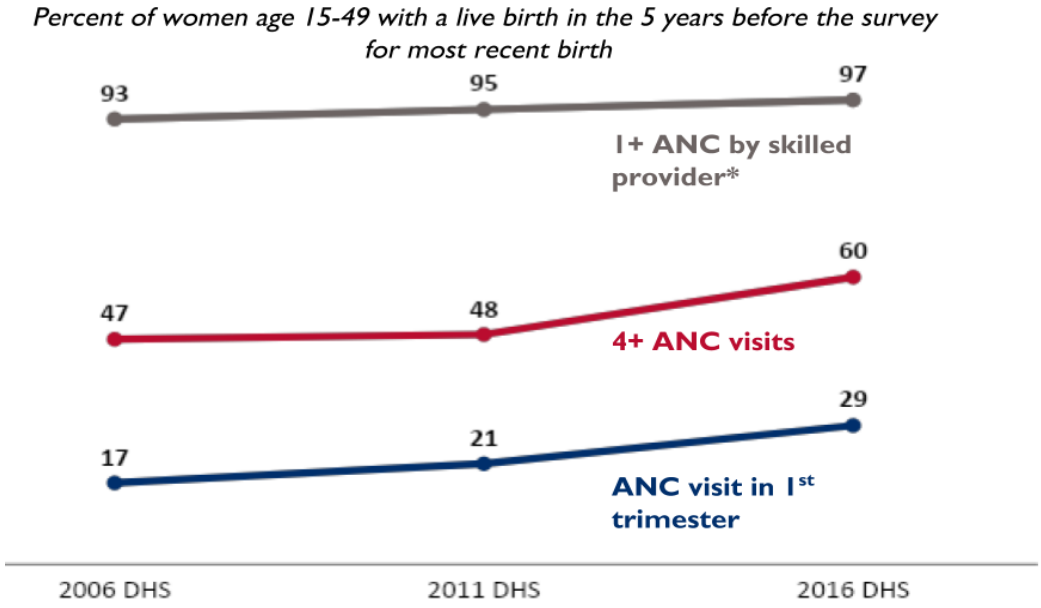
PMI Uganda proposes to maintain the same funding level for MIP activities as in FY 2019. Please see Table 2 for a detailed list of proposed activities with FY 2020 funding.

Key Question 1

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

Supporting Data

Figure A25. Trends in ANC Coverage



*Skilled provider includes doctor, nurse, or midwife.

Conclusion

ANC coverage has increased gradually over time; however, the initial ANC visit in the first trimester has only increased by 12 percent in the past ten years. Pregnant women, as a result of socio-cultural factors prefer coming to ANC for the first time between 20 and 24 weeks of pregnancy or at any other time when the pregnancy is overt, which limits the ability to provide sufficient doses of IPTp. In Uganda, there is a large difference between the percent of women who receive 1+ ANC visits by skilled providers and 4+ ANC visits (97 percent vs 60 percent UDHS 2016). The late first ANC visit affects the uptake of IPTp. However, the recent MIS 2018 shows that the uptake of IPTp3+ has increased from 17% (UDHS 2016) to 41 percent.

Progress has been made to adopt the WHO guidance for MIP as national policy. The document has reached the highest level of the ministry leadership and is awaiting approval. Proactive SBC interventions through community engagement are needed to improve early ANC 1 attendance during the first trimester (as early as the 13th week of gestation) to increase the IPTp3+ uptake. PMI will continue supporting NMCD to minimize missed opportunities through robust SBC, consistent supply of SP, and clean water with cups for DOT to both the public and the private sectors. PMI will also continue to support District Health Offices to carry out regular supportive supervision.

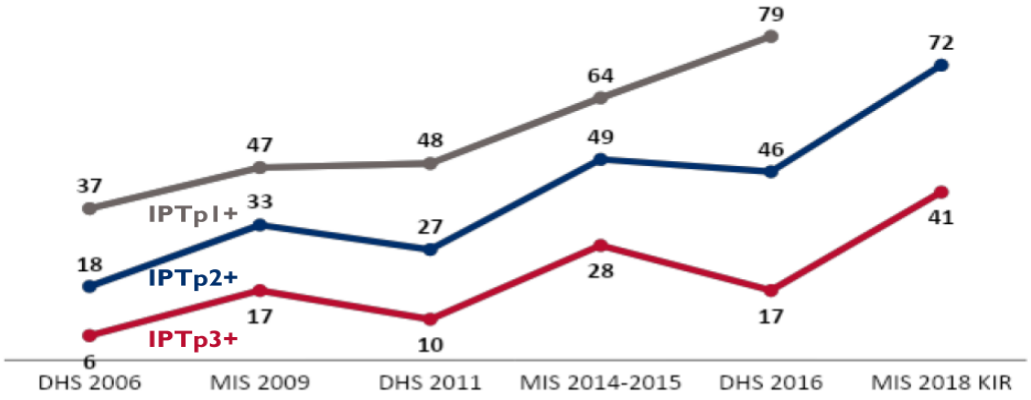
Key Question 2

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

Supporting Data

Figure A26. Trends in IPTp

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: Historical estimates have been recalculated to reflect the new definition of IPTp indicators, which includes all doses of SP/Fansidar received, regardless of source

Conclusion

The proportion of pregnant women receiving at least three doses of SP to prevent malaria in pregnancy (IPTp 3+) is 41 percent. Trends in IPTp3+ are steadily improving, especially in the last two and a half years. This is attributed to the closer collaboration between the NMCD and the Reproductive Health Division (RHD) of MoH in collaboration with stakeholders including PMI. These interventions include capacity building through on-site mentoring, strengthening supply chain management, SBC and advocacy. PMI will continue supporting NMCD to improve IPTp 3+ uptake.

Key Question 3

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

Supporting Data

Figure A27. Trends in Missed Opportunities for IPTp, *Percent of Women Age 15-49*

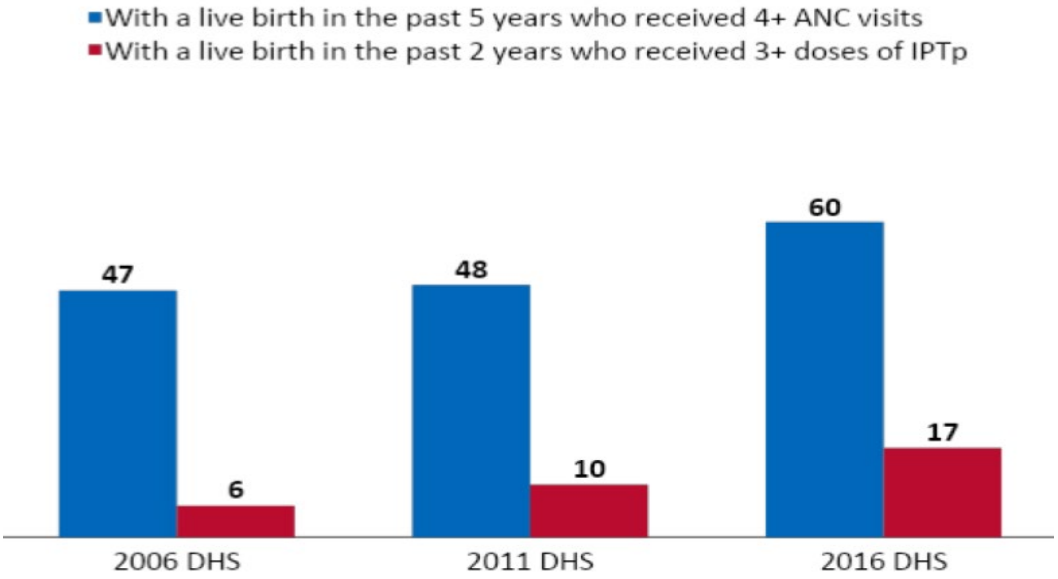


Figure A28. Facilitators and Barriers to IPTp Uptake

Facilitator	Type of Factor	Data Source	Evidence
IPTp policy and guidelines developed based on WHO recommendation	Environmental	NMCD records	Addendum to the country's national policy on malaria (2015)
IPTp policy and guidelines disseminated and implemented	Environmental	NMCD records	Dissemination of Guidelines through Circulars by the DGHS (March 2018)[1] Disseminating workshops (2015-18) at different levels (national and regional)[2]
Proactive coaching and mentoring of health care providers is taking place	Environmental	PMI/IP and DHMT records	Records of IP on coaching and mentoring of health care providers
Regular supportive supervision is carried out	Environmental	PMI/IPs and DHMTs records	Records of IP on coaching and mentoring of health care providers

Access to LLINs	Environmental	Chase malaria campaign assessment report (2018)	IPTp is incorporated within the ANC services package. Therefore, the initiatives that promote early and regular ANC attendance have a bearing on IPTp uptake. Initiatives that promote ANC attendance such as media campaigns may increase the likelihood of IPTp uptake
Desire to have a healthy baby	Internal	Chase malaria campaign assessment report (2018)	The desire to have a healthy baby by parents and caregivers was reinforced by knowledge of the benefits of IPTp as a presumptive therapy against malaria in pregnancy among the study participants
Fear of negative consequences	Internal	Chase malaria campaign assessment report (2018)	The fear of negative consequences such as the death of the mother and stillbirth motivated pregnant women to go for IPTp.
Barrier	**Type of Factor**	**Data Source**	**Evidence**
Myths and misconceptions about reporting pregnancy very early (ANC 1 visit is not happening during the first trimester)	Social	Qualitative discussions during field visits and published literature	Cultural beliefs and practices make the pregnant women report late. For example, in some tribes/cultures, a pregnant woman presenting to ANC before the pregnancy is overt is considered abnormal.[3]
Poor records and reporting into the DHIS2, data use	Environmental	Qualitative discussions during field visits	Register books at health facilities/ANC do not capture IPTp 3+
Stockout of commodities	Environmental	Monthly and quarterly LMIS reports	MOH does not regularly procure SP and stockout of SP contributes to the low IPTp uptake.
Lack of husband/partner support	Internal	Chase malaria campaign assessment report (2018)	The assessment observed that pregnant women were not being morally, emotionally, financially and physically supported by their partners during pregnancy including attending antenatal care
Provider barriers and self-stigma	Environmental	Chase malaria campaign assessment report (2018)	The poor provider attitude and deterioration in confidentiality discouraged pregnant women from seeking antenatal care services. Elderly women had self-stigma because of big age differences between health workers and pregnant women. This self-stigma was worsened by the provider attitude.

Facility-based barriers	Environmental	Chase malaria campaign assessment report (2018)	The statutory requirement for HIV counseling and testing of all pregnant women demotivated women from seeking antenatal care services, including IPTp services
Alternative help from Traditional Birth Attendants (TBAs)	Environmental	Chase malaria campaign assessment report (2018)	Immediate help from easily accessible and trusted TBAs counteracted women's desire to seek services from far off health facilities especially in remote areas. This was reinforced by elderly women who had successfully delivered from homes

Footnotes:

[1.] Scaling up provision of IPTp and maintaining this approach has policy implications. The resource people will have to be trained, facilitated and linked to the health units to get SP, basic supplies and effective supervision.

[2.] Mbonye A.K.et al., "Intermittent preventive treatment of malaria in pregnancy: a new delivery system and its effect on maternal health and pregnancy outcomes in Uganda" Bulletin of the World Health Organization, Past issues, Volume 86: 2008, Number 2, February 2008, 81-160

3 Christopher Pell et.al, "Social and Cultural Factors Affecting Uptake of Interventions for Malaria in Pregnancy in Africa: A Systematic Review of the Qualitative Research" PLoS One. 2011;6(7):e22452. doi: 10.1371/journal.pone.0022452. Epub 2011 Jul 20. Published: July 20, 2011

Conclusion

The Chase malaria campaign assessment report (2018), monthly and quarterly LMIS reports, national and district level records, qualitative discussions during field visits, and published literature revealed that cultural beliefs and practices lead to women attending their first ANC visit late in their pregnancy. PMI will use a COMBI approach to address both challenges (myths and misconceptions about reporting pregnancy early and the attitude of providers) to minimize missed opportunities. PMI will continue supporting NMCD to address the challenges outlined and to secure final approval of new Ministry of Health ANC/MIP guidelines.

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

N/A Routine data on testing and treatment are not available disaggregated by pregnancy status.

Figure A29. Facilitators and Barriers to Diagnosis and Treatment of Pregnant Women

Facilitator	Type of Factor	Data Source	Data Source Evidence
MOH/Uganda adopted the new WHO MIP policy and guidelines	Environmental	WHO MIP policy (2016)	Implementing partner's interviews with pregnant women

Barrier	Type of Factor	Data Source	Data Source Evidence
Inadequate number of qualified midwives leading to fatigue with resultant poor-quality healthcare	Environmental	Support supervision reports (2018)	MOH staffing records
Occasional stock out of malaria commodities especially SP	Environmental	Stock data from DHIS 2 (2018)	Stock data in DHIS 2 Quantification data from MOH/QPPU
Delayed/late reporting to health facility for treatment	Social	Chase Malaria campaign assessment report (2018) Malaria Journal Vol.18 Articleno: 250 (2019): Barriers to IPTp uptake in Uganda. Alexander York	According to the Chase Malaria campaign assessment report (2018), pregnant women may have to consult their spouses first and get approval and facilitation before attending health facility
Distance to health facility	Environmental	MOH health facility mapping (2018)	Health facility mapping with minimum distance from health facility with ANC is not less than 5kms
Long queues at nearest ANC	Under-staffing at ANCs	MOH staffing norms	MOH staff list

Conclusion

Data on the proportion of pregnant women with fever and malaria infection who are getting diagnosed and treated is not available. All fever cases including pregnant women are intended to be tested and treated according to national policy. However, there is a need to continue the orientation of newly recruited staff and provide refresher training for the currently deployed health workers (especially midwives and other clinicians) to understand the consequences and management of fever in a pregnant woman. There is also the need to sensitize pregnant women on the dangers of malaria in pregnancy and the need for early reporting to a health facility for treatment when symptoms appear.

Scaling up provision of IPTp and maintaining this approach has policy implications. PMI will support NMCD to train, motivate, and retain health workers and to make available basic supplies, along with support for effective supervision at ANC/health facilities to improve the quality of services. Addressing the barriers and reinforcing the facilitating factors will enhance treatment of malaria in 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 A30. Gap Analysis of IPTp Commodities Need

Calendar Year	2019	2020	2021
Total Population at Risk[1]	40,308,000	41,564,035	42,859,209
SP Needs			
Total number of pregnant women[2]	2,015,400	2,078,202	2,142,960
Total SP Need (in treatments)[3]	**5,604,426**	**5,840,187**	**6,019,338**
Partner Contributions			
SP carried over from previous years	2,036,000	0	0
SP from Government	3,568,426	5,840,187	6,019,338
SP from Global Fund			
SP from Other Donors			
SP planned with PMI funding	0	0	0
Total SP Available	**5,604,426**	**5,840,187**	**6,019,338**
Total SP Surplus (Gap)	**0**	**0**	**0**

[1:] UBOS census report 2014, growth rate of 3.0%

[2.] 5.0% of the population is made up of pregnant women (2016 UDHS report). ANC coverage is assumed 99% (2019) & 100% (2020 & 2021)

[3.] for IPTp3+, a minimum of 3 doses are given to a pregnant mother with 1 month between the doses until delivery (Addendum to the Uganda National Malaria in Pregnancy Policy Guidelines 2015)

Conclusion

The NMCD fully supports the implementation of the WHO/MOH ANC/MIP Guidelines and is making efforts to ensure that the minimum number of IPTp doses with SP is three. The NMCD has advocated for SP to be considered a high value medicine and is therefore not charged to the health facility medicine budget at present time. The recent successful efforts of NMCD, including PMI, to include SP as an essential medicine will allow facilities flexibility to order SP based on consumption and facility needs. The government procures SP and therefore PMI may not need to procure SP.

Key Question 6

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

Supporting Data

The NMCD in collaboration with partners including PMI will continue to advocate for the government to procure SP as one of the essential medicines and to ensure adequate stock. This will not only increase SP stock available in facilities but will facilitate the reallocation process where overstock exists.

NMCD, together with the Reproductive Health Division and other malaria stakeholders including PMI will continue orienting health workers on knowledge and skills in conducting ANC services and implementation of the new WHO/MoH MIP Guidelines.

Through its SBC office, the NMCD will continue sensitizing communities on the values of early ANC attendance, uptake of IPTp and correct and consistent use of bednets.

Conclusion

In early 2018, the government delayed the procurement of SP and PMI stepped in to provide over 250,000 treatment doses of SP to fill gaps during a critical stockout.

3. CROSS-CUTTING AND OTHER INFRASTRUCTURE

3.A. SUPPLY CHAIN

NMCD objective
● The National Pharmaceutical Sector Strategic Plan 2015-2020 and the National Medicines Policy, updated in July 2015 objectives are To ensure the efficient and economical procurement of medicines and of certain other medical supplies of good quality primarily to the public health services; ● To secure safe and efficient storage, administration, distribution and supply of the goods in accordance with the national drug policy and the national drug authority; ● To establish and maintain systems to ensure the quality of medicine and goods supplied; ● To estimate current and future needs as a basis for procurement planning and budgeting by the Ministries concerned; ● Continuous capacity building through mentorship of health workers in management and use of health commodities.
NMCD approach
The Ministry of Health's strategy for strengthening supply chain system include three key pillars: ● Ensuring that national policies support cost-effective, equitable, and transparent use of essential medicines and health supplies; ● Strengthening country capacity for the effective management and utilization of essential medicines and health supplies; ● Increasing the availability and access to essential medicines and health supplies for priority populations.

PMI objective, in support of NMCD

- PMI provides strategic guidance and support to strengthen the NMCD and pharmacy department capacity for quantification, procurement, supply chain management and accountability/tracking of malaria commodities. The various levels of the supply chain system receive different levels of technical support including identifying commodity gaps as well as completing and reviewing national forecasting of needed supplies to increase availability of malaria commodities. PMI supports MoH/NMCD to coordinate commodity procurement and supply plans between the sectors and monitor commodity management at service delivery levels. PMI provides most of its malaria commodities to PNFP through JMS. There are 646 PNFP, 43 sites from the Uganda Community Based Health Care Association (UCBHCA) and 3,077 public health facilities in the country (JMS and MoH national health facility master list, respectively). The system of JMS to PNFP facilities is a "pull system" where malaria commodities are distributed based on consumption data. In public facilities, NMS uses a "push system" for HC IIIs and HC IIs, and a pull system based on consumption for HC IVs and hospitals. Therefore, the ordering system in public facilities depends on the level of care and the product. There is a plan to upgrade some HCIIIs and IIs as well as scale up the pull system at all health facilities in the near future.
- Commodity management is now a key activity in all districts, PMI together with other malaria stakeholders support district health teams to conduct dedicated technical supportive supervision as well as integrated supervision to ensure commodity management at health facilities for both the public, private, and PNFP sectors.
- Support includes mentorship/supervision from locally employed health workers referred to as medicine management supervisors using five indicators (dispensing, prescription, store management, stock management and reporting). This support has improved staff performance in stock management, storage management, ordering and reporting, prescribing quality, and dispensing quality in government and PNFP health facilities and in return improved forecasting and supply planning accuracy at national level.

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

- PMI provided technical assistance to the NMCD, district health teams, and facilities to improve supply chain management and develop accurate stock inventories of AL, RDTs, SP, ITNs and severe malaria drugs. In the past 12–18 months, National Medical Stores (NMS) received support to develop an integrated enterprise resource planning tool (ERP) - this will greatly improve visibility of all commodities and equipment in the public sector and facilitate monitoring of both stocks and consumption of commodities. The ERP is scheduled to go live at NMS in June 2020 and thereafter rolled out into all health facilities starting at hospital level. Joint Medical Stores is also receiving support to ensure the use of global standards (GS1) using barcodes as well as implementing Activity Based Costing (ABC). These initiatives will provide a foundational capacity required to meet the country's strategic goal

of end-to-end visibility of supply chain systems as well as leverage the global momentum around GS1 product identification and labelling of products.

- At the service delivery level, progress continued stabilizing supplies of malaria commodities at PMI-supported health facilities and improving stock management and reporting. PMI supports bi-annual EUV surveys. The most recent survey was conducted in November 2018 in 75 randomly selected facilities in 15 districts, of which 57 were public and 18 were PNFPs. Health facilities were selected using a multistage random sampling process. Findings from the EUV show that the percentage of malaria cases (single or with co-morbidities) as a proportion of total outpatient department cases had increased from 18 percent to 22 percent but decreased from 31 percent to 26 percent for children under 5 compared to the January 2018 EUV survey. Compared to the January 2018 EUV survey, this data were collected for a period during the rainy season which may explain the increase in cases. The trend for overall cases is consistent with the national surveillance data, which shows a lower number of cases compared to the same period of last year.
- The survey indicated an increase in testing rate from 89 percent (EUV 8) to 96 percent (EUV 9), facility adherence to the policy has greatly improved. RDT availability on the day of the visit slightly increased from 85 percent in January 2018 to 95 percent in November 2018 (EUV 9), but ACT availability on the day of the visit was excellent from 95 percent to 100 percent.
- There were fewer stockouts of SP thanks to the one-off PMI procurement of the product, from 37 percent to 13 percent of the facilities visited. More facilities (53 percent) surveyed at the time of the EUV received the quantities of commodities as ordered, 34 percent received less and 13 percent received more than ordered. The most undersupplied commodity was artesunate, and the most oversupplied were ACTs 2x6 presentations. This time round, the situation was better for the public facilities as compared to the PNFP facilities supported by PMI. Procurement and supply chain challenges were faced in the past because facilities were not prioritizing SP procurement from their essential medicine budgets. However, this situation will continue to improve as SP was added to the facility credit line in FY 2019/2020. This means that facilities no longer have to charge their commodity budget (essential commodities budget) when requesting SP. Now SP and the cost associated with it will be covered from the NMS national budget. PMI will continue following up implementation of this new policy with MOH/NMCD and NMS. Future EUVs will continue to assess SP availability at health centers.
- While there have been strategies and improvements in strengthening the Logistics Management Information System (LMIS), there still remain significant issues that hinder the ability to extrapolate data to compare to HMIS. Currently, the LMIS in Uganda consists of a manual and electronic system. All health facilities still use manual LMIS (stock cards, issue/requisition vouchers, dispensing logs), however, the Ministry of Health has

communicated through different donor platforms a drive to launch and scale up installation of an Integrated Intelligent Computer Systems (IICS) at all health facilities. This system is designed to capture most activities performed at the health facilities. All present systems initiated by President's Emergency Plan for AIDS Relief (PEPFAR) such as web based ART and TB ordering and reporting system will eventually fold into the IICS. PMI will be required to be part of the development of the system as a major MOH stakeholder.

- Every year maldistribution (both overstocks and stockouts) of major malaria commodities continue to be an issue in public facilities for various reasons. In the absence of an integrated system, the number of ACTs provided do not equal number of malaria cases captured in the health information system. In addition, in 2018, the commodity situation in the PNFP facilities continued to be stable as compared to the public facilities. PNFP facilities were appropriately stocked, that is, between minimum and maximum stock levels with almost no stockouts experienced during the year.
- In 2018, USAID/Uganda continued to implement mechanisms to improve the internal controls and accountability at MOH through seven implementation letters (ILs); these range from Malaria, Reproductive health and maternal child health, TB, human resources for health, governance and leadership. The mission including PMI continue to benefit from the establishment of an inter-ministerial task force to govern the reform of the health commodities and supply chain system. This task force is charged with overseeing the operationalization of the IL#3 Amendment and overview of the reform of the entire supply chain system for all commodities, including malaria drugs and supplies.

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

- PMI is continuing to work with PEPFAR and other USG partners on necessary reforms to the NMS's supply chain operations. PMI is also aiming to leverage funding by USAID and CDC through PEPFAR and other disease programs to support overall supply chain strengthening, including improving NMS' technical capacity to implement an effective LMIS and ensure that systems are transparent and accountable.
- PMI will provide technical assistance to strengthen the lower level supply chain through trainings in stock management, improving ordering systems, stock flow information, space planning, location and management.
- To optimize access to donated malaria commodities, PMI will harmonize cost recovery mechanisms used by the PNFPs to minimize potential impact of high user fees while maintaining sustainability. PMI will also continue to support EUV surveys every six months.

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

Do you propose to increase, decrease, or maintain funding allocation levels for this activity? Why, and what data did you use to arrive at that conclusion?
PMI funding for supply chain will not change. Key needs and priority activities such as supporting improvement of visibility of stock levels at the lower lever facilities remain. PMI will continue to support EUV and the national LMIS system to strengthen facility-level visibility of commodities. Please see table 2 for a detailed list of proposed activities with FY 2020 funding.

Key Question 1

Has the central level, (or sub-central level if appropriate) 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 A31. Central Stock Levels for ACTs for PNFP

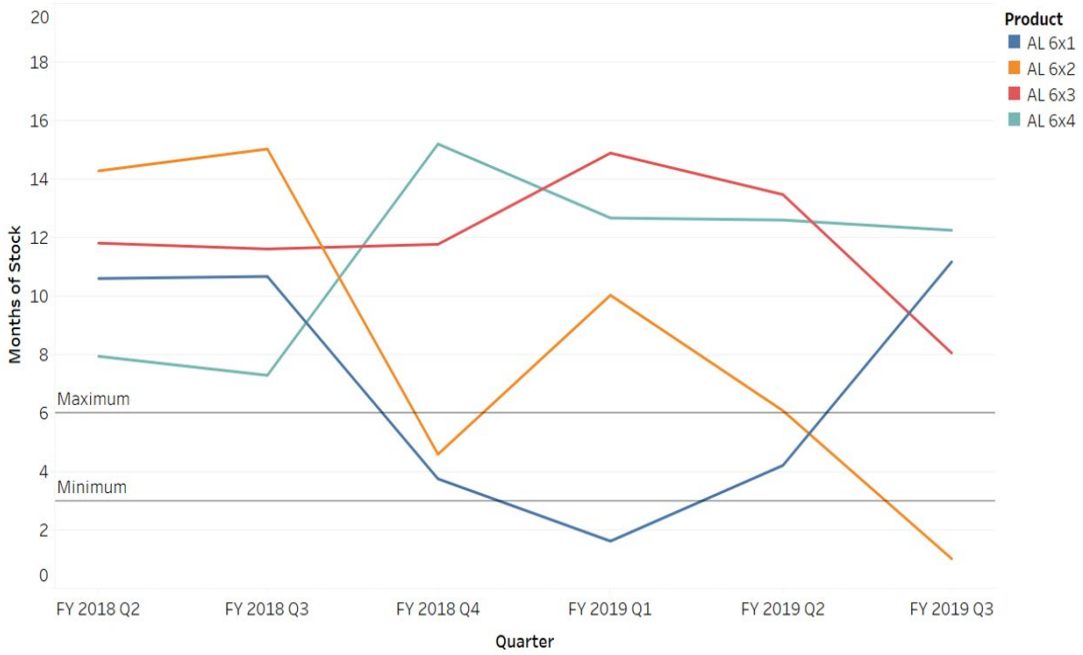


Figure A32. Central Stock Levels for ACTs for Public Sector

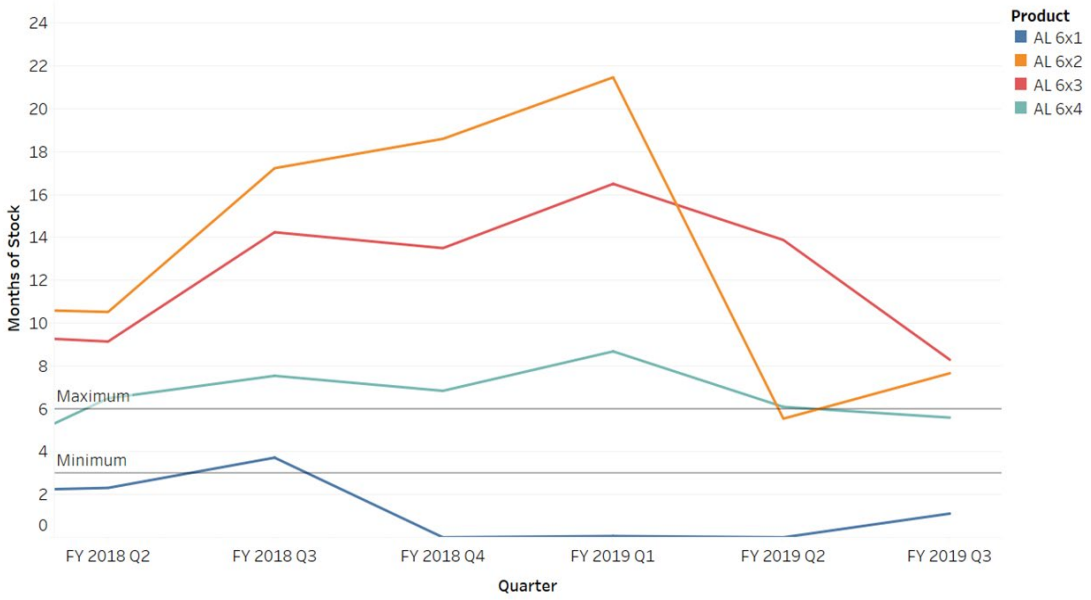


Figure A33. Central Stock Levels for RDTs and Injectable Artesunate 60mg for PNFP

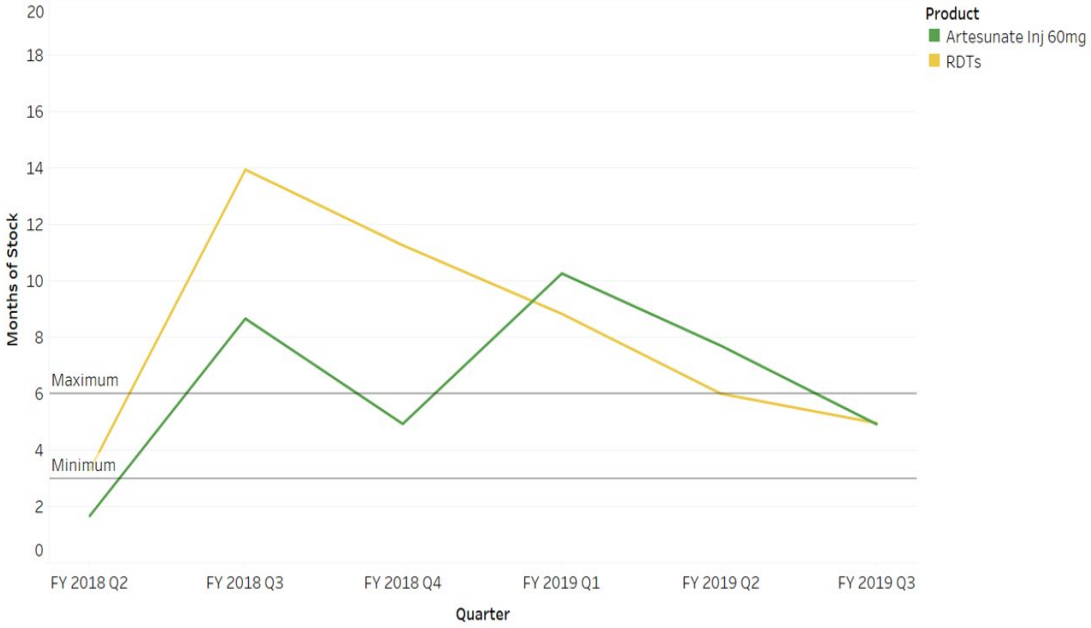
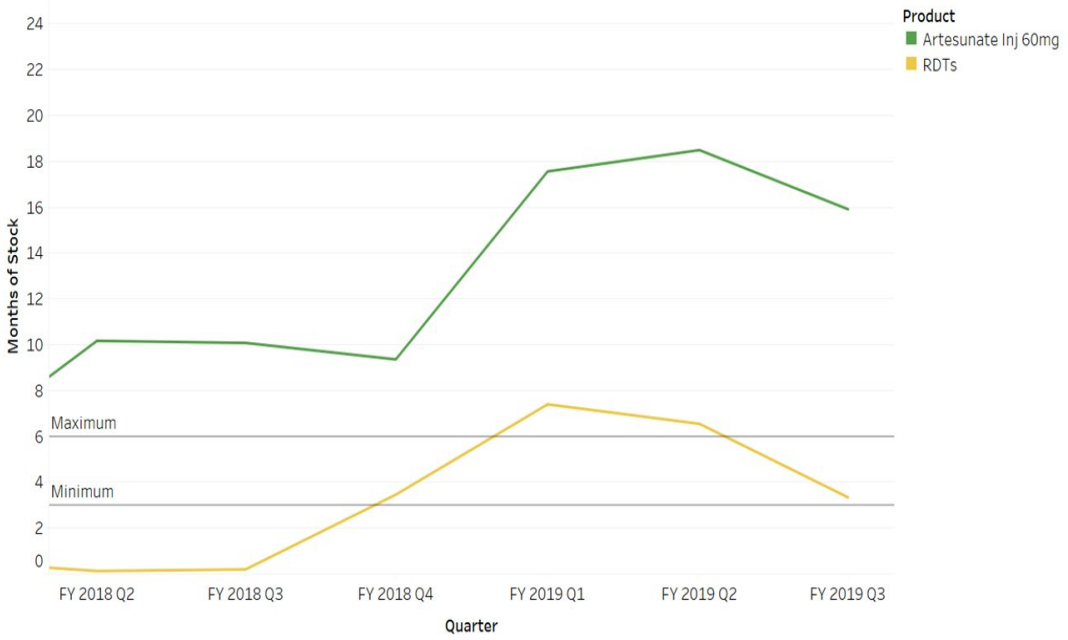


Figure A34. Central Stock Levels for RDTs and Injectable Artesunate 60mg for Public Sector



Conclusion

There have been challenges in maintaining appropriate stock levels of some ACT presentations at facility level leading to many months of overstocks especially in the public health facilities supplied through the Global Fund. PMI is working with Global Fund to improve quantification assumptions ensure a more adequate projection commodity needs in order to reduce future overstock issues leading to increased risks for expiries. PMI is also working with NMCD on the Global Fund concept note to plan for commodities in 2021-2023.

Key Question 2

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

Supporting Data

Figure A35. Public Sector Stock Out Rates for ACT, mRDTs & SP

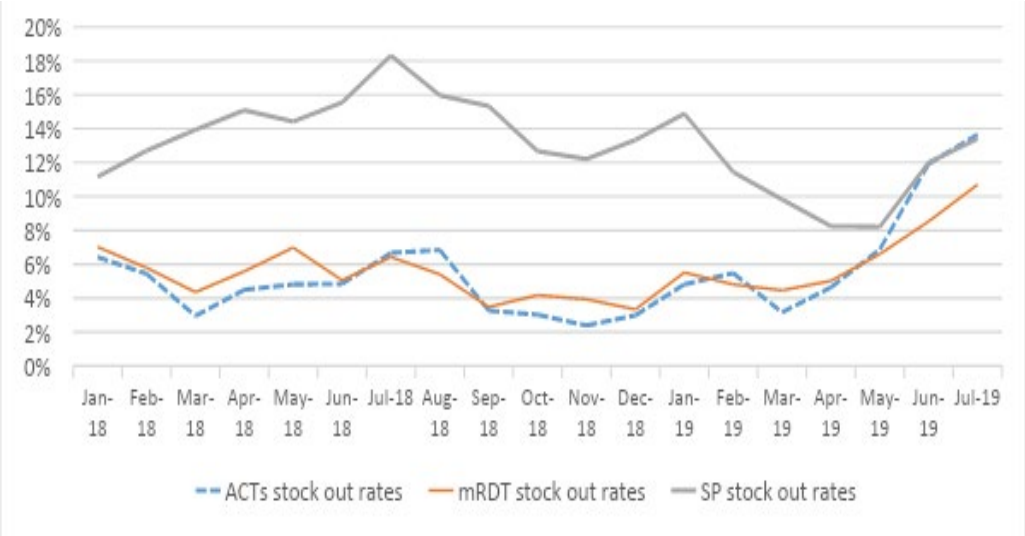


Figure A36. ACT Stockout Rates in PNFP Sector

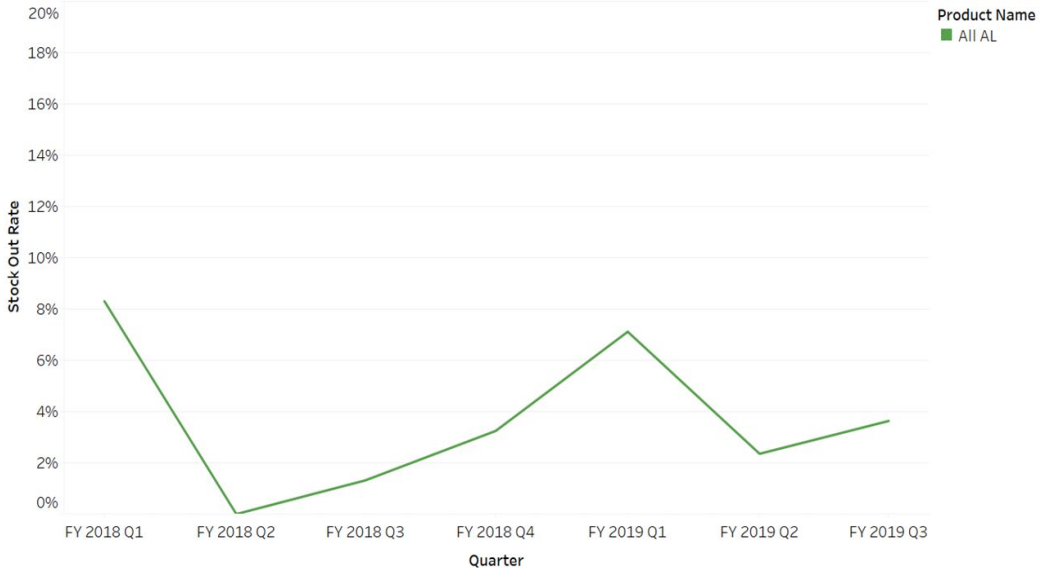
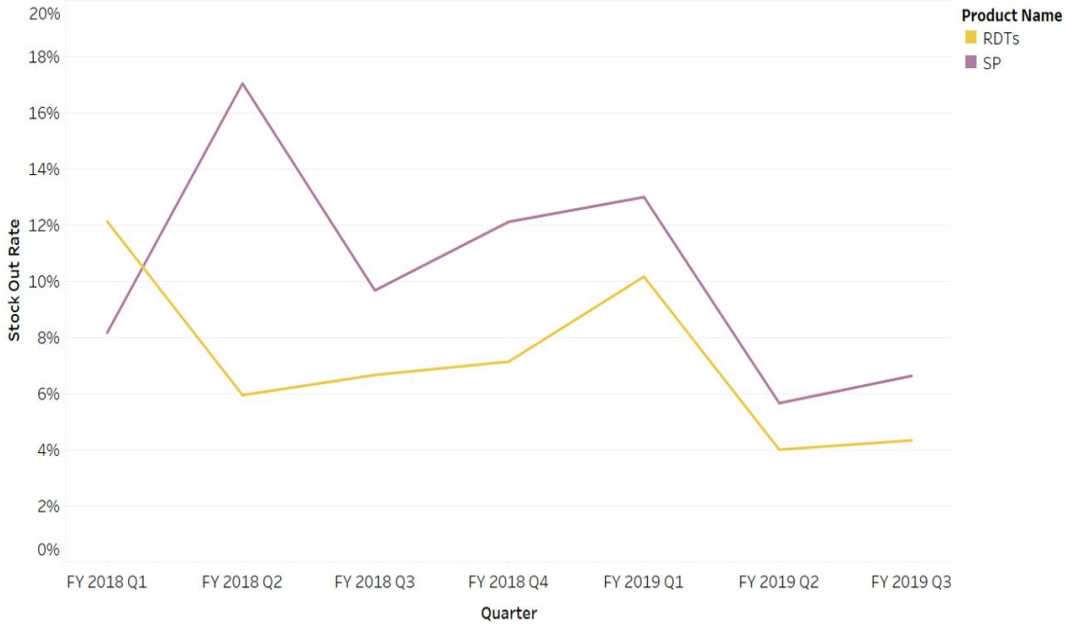


Figure A37. SP and RDT Stockout Rates in PNFP Sector



Conclusion

While health facilities maintain adequate stock levels of malaria commodities, stock outs are very frequent for CHWs and in part due to policies that disallow redistribution of commodities between CHWs and HFs. Further, data from CHWs are rarely used for commodities quantifications. In addition, contributing to community level stock outs is poor reporting for community level stock with the reporting rate at about 14 percent in 2018 but this has improved to about 37 percent in the last half of 2019 (DHIS 2 data).

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 A38. Public Facilities – DHIS2 Cases Reported vs A/L Utilized (DHIS2) vs NMS Issues for A/L

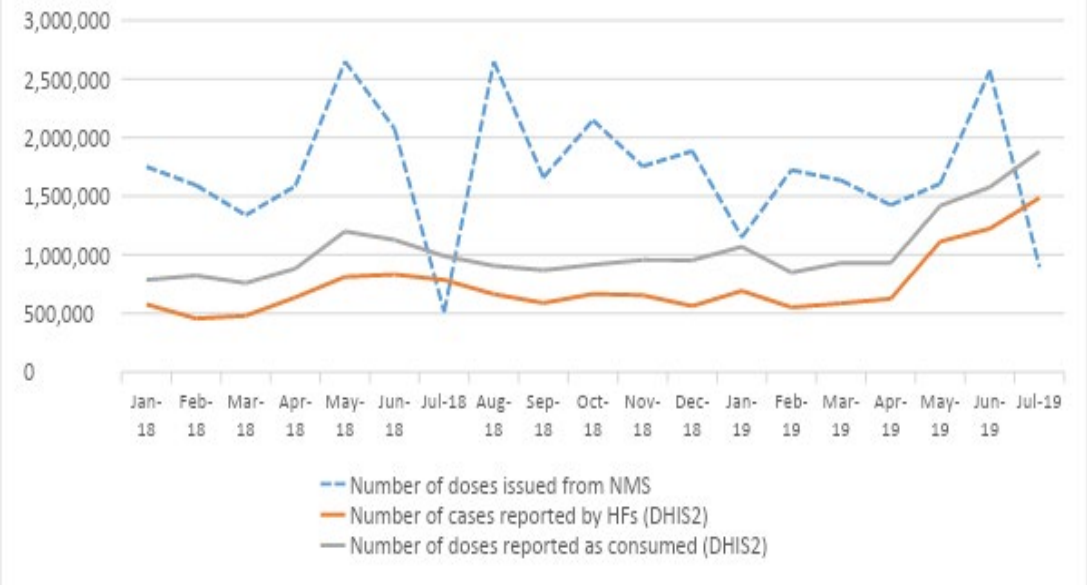
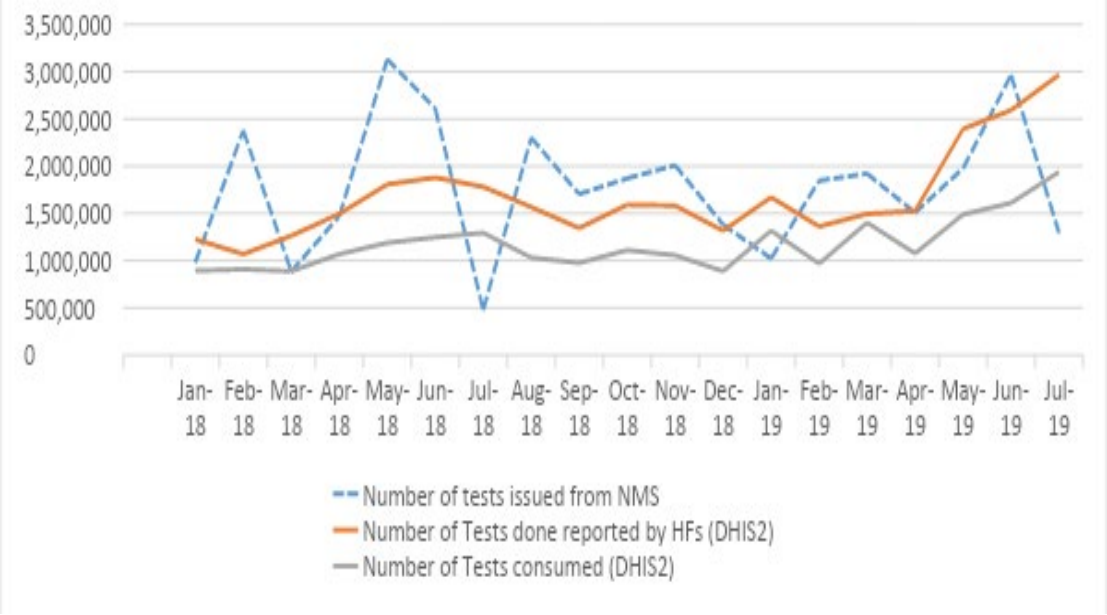


Figure A39. Public Facilities- Tests Done Reported I nDHIS2 vs Tests Utilized (DHIS2) vs NMS Issues for mRDTs



Conclusion

The gap between ACTs distribution and malaria cases reported remains a challenge in Uganda but has been decreasing over the years as a result of improved data collection and decreased misuse of the ACT formulations during dispensing. As noted from the graphs above, cases reported by health

facilities in DHIS are significantly lower than doses reported by the same facilities as utilized. According to an analysis of ACT and Artesunate consumption conducted by the in-country supply chain activity in 2018, the under reporting is attributed to:

- Under reporting of cases at facility level, attributed to the cumbersome process of counting cases from physical HMIS forms e.g. OPD register
- No recording of cases in the HMIS forms
- Transcription errors of data from HMIS forms to the DHIS2/LMIS
- Commodity pilferage especially at the dispensing point
- Quality of reported data e.g. some facilities report wrong units of measure for ACTs which contributes to under reporting.

Key Question 4

What are the trends in LMIS reporting rates?

Supporting Data

Figure A40. LMIS Reporting Rate for PNFP

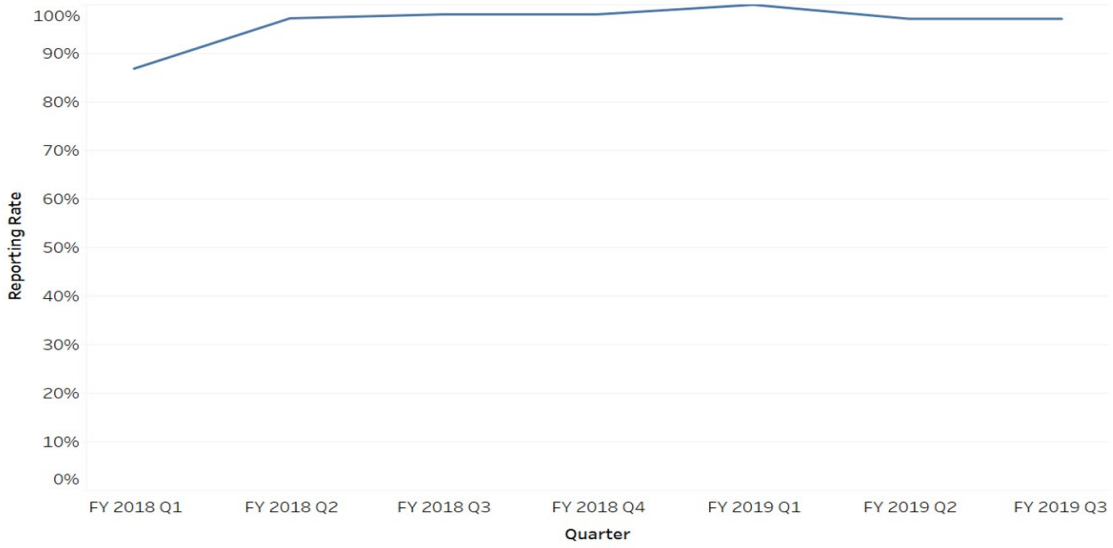
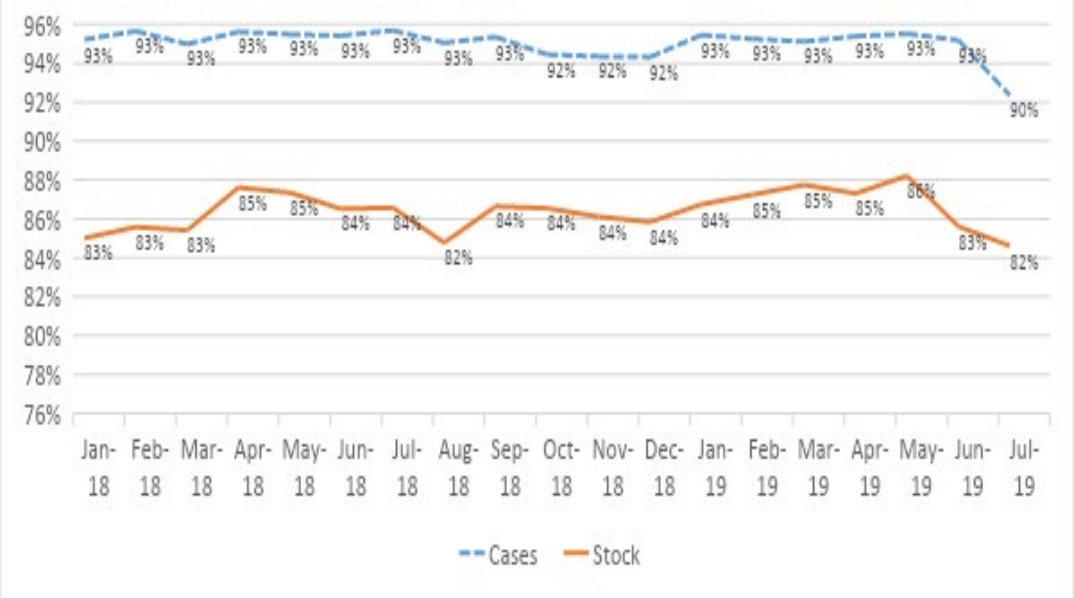


Figure A41. DHIS 2 Reporting Rates for Casts and Stock Utilized



Conclusion

LMIS reporting is rapidly improving in PNFP sector and has remained relatively stable. However, in terms of reporting rates:

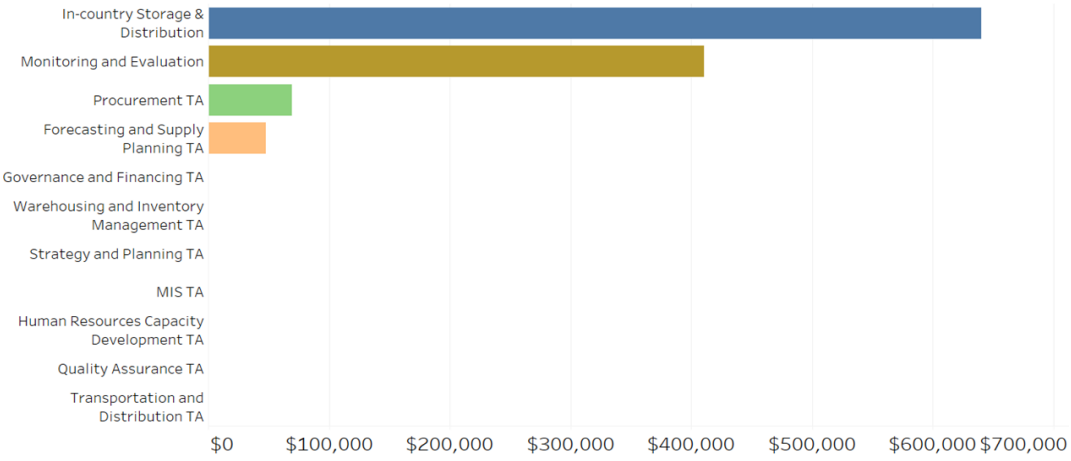
- Some health facilities have no DHIS 2 codes and are therefore unable to report in DHIS
- Missed reporting by some facilities in given months.

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 A42. PMI Supply Chain Investments in FY 2018



Conclusion

The emphasis on technical assistance in these areas is aligned with and responsive to the problems with over stockout and LMIS reporting noted above. In addition, PMI will continue to focus on forecasting and supply planning in addition to transportation and distribution TA at the central level.

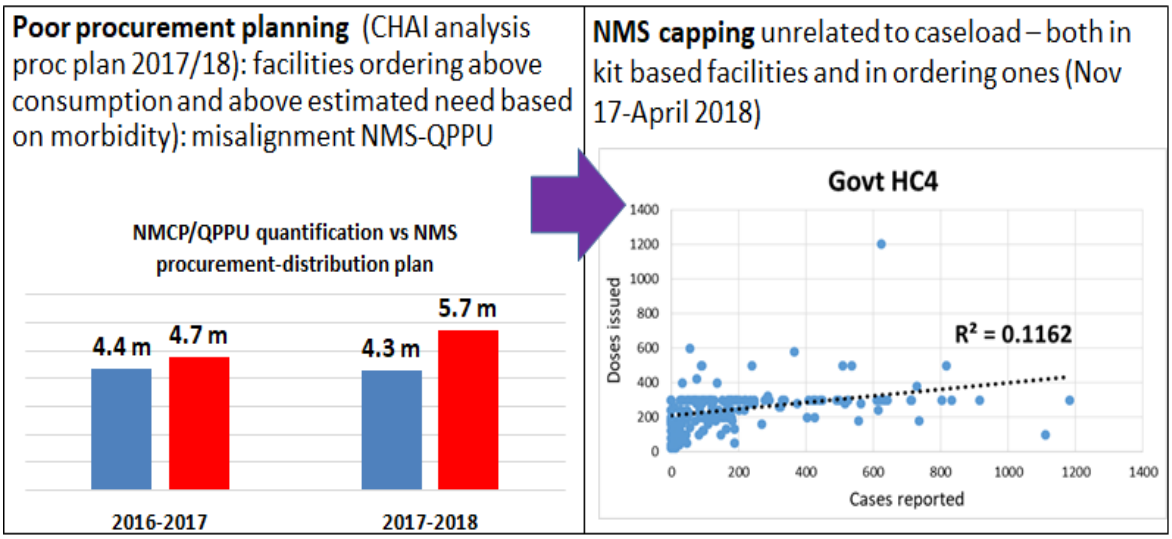
Key Question 6

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

Supporting Data

Graph showing supply chain challenges in Uganda (source: left graphic - Quantification Planning and Procurement Unit (QPPU) and NMS-facility procurement plans; right graphic: NMS issues data and DHIS II)

Figure A43. Supply Chain Challenges in Uganda



Two supply chain systems currently exist in the country i.e. Joint Medical Stores (JMS) serving the Private Not For Profit (PNFP) sector and National Medical Stores (NMS) serving health facilities in the public sector. In the public sector, the Global Fund is currently supporting a commodity subsidy that will end in December 2020. The country is planning to submit a new grant in January 2020 to continue this subsidy. The MIS 2018 showed that 60 percent of patients go to the private sector for care hence PMI's focus on the PNFP sector for all commodities and TA. However, given that PMI commodities are mandated to be free, PMI is not focusing on the private for profit (PFP) sector. In the public sector, PMI provides TA and supplies ITNs to all health facilities. In addition, the U.S. Government has invested in an Enterprise Resource Planning (ERP) software supported by PEPFAR. Both the public (NMS) and private (JMS) are using the ERP software in their procurement planning, quantification, and delivery systems. Even with this progress however, a lack of supply chain capacity for data management exists at facility level.

Conclusion

Uganda still faces challenges in its supply chain system for essential medicine including weak procurement planning i.e. facilities ordering above consumption and above estimated need based on morbidity): misalignment NMS-QPPU, overconsumption, misuse and maldistribution of malaria commodities is a complex problem linked to multiple weaknesses in the medicine management cycle. Several actions have been undertaken to address the problem, both at specific level (for malaria commodities) and at system level but more interventions and efforts are needed, in collaboration and coordination with different departments, and leveraging a comprehensive system approach.

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

NMCD objective
In line with the WHO Global Technical Strategy for Malaria, The NMCD aims to transform malaria surveillance into a core intervention. The primary aim of surveillance, monitoring and evaluation as outlined in the UMRSP 2014-2020 Monitoring & Evaluation Plan is to provide well-coordinated, systematic, and holistic tracking of progress in malaria control and guide decision-making for program improvement.
NMCD approach
Health data, including malaria data in Uganda is collected through the District Health Information System (DHIS) 2 platform, which is managed by the MOH Division of Health Information (DHI). The NMCD works with DHI to support HMIS strengthening and use. Currently, DHIS2 covers all districts in Uganda. Paper HMIS reports from health facilities and community health workers are entered at district level for onward digital submission to the national level. The Monitoring and Evaluation Plan for the UMRSP provides a framework for the collection, processing, reporting, analysis, and use of malaria data in Uganda, outlining standard indicators, targets, and frequency of reporting. In addition to managing routine HMIS data, the NMCD supports population based surveys and various assessments aimed at informing programmatic direction. Several platforms that facilitate the flow of data from the primary source to all relevant stakeholders exist in Uganda. This includes the national M&E TWG which meets monthly with regular participation from NMCD, PMI, and partners, to discuss pertinent issues and which is increasingly charged with leading the planning and review of key NMCD research and critical scientific inquiries. The NMCD is also working with partners to develop a platform that will serve as a repository for all malaria related data, and that will be accessible to all stakeholders.
PMI objective, in support of NMCD
PMI support focuses on improving the quality, completeness, timeliness, and use of HMIS malaria data at the national, district, facility, and community levels. PMI also contributes to population-based national surveys such as DHS and MIS, and provides continuous technical assistance in SM&E to the NMCD and various malaria stakeholders. For example, PMI funds and participates in the national SM&E TWG meetings monthly.
PMI-supported recent progress (past ~12-18 months)
● PMI supported the 2018-2019 Uganda Malaria Indicator Survey (UMIS) which showed an overall decrease in malaria prevalence to nine percent from 42 percent in the 2009 MIS. It also identified the Karamodja region as having the highest malaria prevalence (34 percent) along with significant socio-economic challenges. While regions such as West Nile and

Busogo also constitute malaria hotspots (22 percent and 21 percent prevalence respectively), the prevalence is uniformly at or below five percent in southwestern and IRS districts.

- PMI supports national level surveillance capacity building, HMIS strengthening, and promotes HMIS data use by funding two FETP fellows to be assigned to the M&E unit at the NMCD. Part of these fellows' duties include drafting Uganda's Quarterly Malaria Bulletin, which contributes to PMI's general support of national synthesis of HMIS data to ensure that high quality and meaningful information is shared among all partners. To this end, PMI also supports and actively participates in the NMCD's M&E TWG to ensure coordination of data collection across partners.
- PMI has been supporting surveillance capacity building at the district and facility levels in 52 PMI focus districts, by using SM&E experts to help train district and health facility staff, and to monitor and improve data quality. In the 73 districts where PMI contributes to integrated health programming, PMI is leveraging efforts led by other donors such as PEPFAR to contribute to strengthen surveillance.
- HMIS strengthening was also furthered through the malaria reference centers (MRCs), high-volume level IV/III public health facilities, which serve as centers of excellence and learning for malaria surveillance. These MRCs are now funded by the National Health Institutes (NIH) to facilitate research that compares malaria interventions, using malaria prevalence as an outcome measure.
- PMI contributes to two USAID/Uganda Mission-wide mechanisms focused on data collection and use. One of these projects assists other USAID health projects in developing performance management plans, collecting and tracking data on key program indicators and conducting data quality assessments. The project also provides continuous external monitoring and evaluation of all Mission projects. The other project assists the Mission in improving learning, coordination, and adaptation based on evidence.

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

- PMI plans to maintain its investments in SM&E at the national and district level, and increase focus at the health facility and community level to improve data use.
- In order to optimize its support, PMI will engage in a landscape analysis to better understand the extent of SM&E support from other USG programs and non USG donors, identify opportunities for better coordinating and leveraging existing investments as well as gaps, and prioritize activities to strengthen HMIS and promote data use.

PMI Goal

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

Are you proposing to increase, decrease, or maintain funding allocation levels for this activity? Why? What data did you use to arrive at that conclusion?

PMI proposes to maintain similar funding levels for FY2020 while taking into consideration other complementary funding such as support through the PILGRIM study in RHITES E. Results of the g landscape analysis expected in November 2019 will also be central in determining how to best allocate existing funds to fill gaps related to HMIS strengthening, with a focus on the health facility and community levels.

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 A44. Data Collection and Sources to Inform Interventions

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)									
	EPI survey									
	Uganda Household survey			*X**		*(X*)*		*(X*)*		*(X*)*
Health Facility Surveys	*Service Provision Assessment (SPA)*									
	Service Availability Readiness Assessment (SARA) survey				*X**					

Data Source	Data Collection Activities	Year								
		2015	2016	2017	2018	2019	2020	2021	2022	2023
	Other Health Facility Survey - Baseline, midline, and endline evaluation of health facilities; (Malaria Bilateral project baseline, learning review, endline)			X		X			(X)	
Other Surveys	*EUV*	X	X	X	X	X	(X)	(X)	(X)	(X)
	School-based Malaria Survey (Household surveys before and after school based net distribution)				X					
	Other (Knowledge, Attitudes and Practices Survey, Malaria Behavior Survey) (Dipstick)				X					
	Other (Malaria Impact Evaluation)									
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)	X	X	X	X	X	(X)	(X)	(X)	(X)
	Other (Electronic Logistics Management Information System (eLMIS) (Logistics data within DHIS2)	X	X	X	X	X	(X)	(X)	(X)	(X)
	Other (Malaria Rapid Reporting System)									

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

Conclusion

PMI contributes to the generation of a wealth of data to track progress in the fight against malaria and to inform future programmatic direction. PMI will keep this level of support for these critical activities.

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 A45. HMIS-Supported Interventions

Intervention	PMI-Funded? (X)			Does Global Fund plan to fund this? (X)	Does another donor plan to fund this? (X)
	FY 18	FY 19	FY 20		
Central Level					
Register, tools (e.g. checklists, indicator glossary), job aids (design, indicators, definition of data elements, data dictionary, system support)				X	X
Data quality assessments (separate from supervision – funding for travel to lower levels)	X	X	X	X	X
Program monitoring and technical assistance (funding for travel to lower levels)	X	X	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	X
Human Resources (secondment of person in NMCD for SM&E, office/team for SM&E - FETP for PMI)	X	X	X	X	
Data Use (analysis, interpretation, visualization (dashboards, bulletins, dissemination/feedback to lower levels, decision-making)	X	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	X	
Support to annual operational plans for national malaria program	X	X	X	X	
Desk review to catch “logic errors system” (provide TA to catch logic errors)	X	X	X	X	X

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

Intervention	PMI-Funded? (X)			Does Global Fund plan to fund this? (X)	Does another donor plan to fund this? (X)
	FY 18	FY 19	FY 20		
Monthly/Quarterly data quality review meetings (venue, meeting support)	X	X	X	X	X
Data Use (analysis, interpretation, visualization (i.e. dashboards), dissemination/feedback to facilities, decision-making)	X	X	X	X	X
Human Resources (secondment of person for malaria SM&E, office/team for SM&E)					
Annual planning with Admin 1 (support travel)	NA	NA	NA	NA	NA
Facility Level					
Data collection/entry, summary, and transmission (training, re-training, computers, internet, tools)	X	X	X	X	X
Supervision of CHWs (training, traveling, administering supervision tools/checklists of community health workers)	X	X	X	X	X
Data use (analysis, interpretation, visualization (dashboards), dissemination/feedback to CHWs, decision-making)	X	X	X	X	X
Monthly/Quarterly data quality review meetings (support for travel)	X	X	X	X	X
Community Level					
Data collection/entry and transmission (training, re-training, tools	X	X	X	X	X
Data use (analysis, interpretation, decision-making)	X	X	X	X	X
Monthly/quarterly data quality review meetings (support for travel)	X	X	X	X	X

* Uganda does not have an Admin level 1. The administrative level after the central level is the district level. There are no provinces or administrative regions. The regions referred to throughout this MOP document are geographical designations, not administrative.

Conclusion

PMI along with other donors such as the Global Fund and PEPFAR support a wide range of HMIS activities covering all levels of the health system. However, this support is geographically patchy and

vertically implemented at times. This justifies the need for PMI to conduct a landscape analysis to have a better sense of overlaps in funding as well as gaps, in order to better rationalize support to HMIs strengthening.

Key Question 3

What are the outcomes of HMIS strengthening efforts?

Supporting Data

Figure A46. HMIS Strengthening Efforts

	Indicator	2017	2018
Timeliness	% of reports received on time	68%	83%
Completeness	"Confirmed malaria cases for children under 5 years of age" was reported in X% of facility-months	92 %	96%
Accuracy	Please see Figure A47. This exercise was conducted to evaluate the completeness, integrity, reliability, validity, and timeliness of malaria indicators reported by implementing partners. Selected indicators below are those retrieved from the HMIS.		

Figure A47. DQA Results, 2018

Indicator	Activity	Outcome	Overcall rating
Proportion of malaria cases treated that were confirmed by RDT or microscopy	MAPD	**Validity:** However, there were variations of 16.7% between the data in OPD register, HMIS 031 (264) and the monthly reporting form HMIS 105 (220) at the health facility visited	Acceptable if corrections are made
	RHITES-E	**Validity;** RHITES-E did not have a PIRS for this indicator, hence no detailed guidance on the indicator definition and variables to be included in the computation of data for this indicator. **Reliability:** RHITES-E did not have documented SOPs for data extraction from DHIS 2 and analysis for this indicator.	Acceptable if corrections are made
	RHITES-EC	**Validity:** There were issues of incomplete, missing and inconsistent data at the sampled health facility sites visited. The numbers in OPD Register (HMIS 031) were not consistent with the summary data reported in HMIS 105.	Acceptable if corrections are made
	RHITES-SW	**Validity:** This indicator is not in the Activity AMELP, hence no detailed guidance on the indicator definition and variables to be included in computation of data.	Acceptable if corrections are made

Indicator	Activity	Outcome	Overcall rating
Proportion of malaria cases confirmed that were appropriately treated	MAPD	MAPD reported that they were advised to drop this indicator, since it is nearly universal and therefore does not measure program performance.	N/A
	RHITES-E	**Reliability:** RHITES-E did not have documented SOPs for data extraction from DHIS2 and analysis for this indicator.	Acceptable if corrections are made
	RHITES-EC	**Validity:** The USAID PIRS was missing a definition for the term '*appropriately treated*'. There were inconsistencies between the data counted from the OPD Register (HMIS 031) and that summarized in the HMIS 105 at the health facility visited, which is likely to affect the quality of the indicator data.	Accept if corrections are made
	RHITES-SW	**Validity:** This indicator is not in the Activity AMELP, hence no detailed guidance on the indicator definition and variables to be included in the computation of data for this indicator. RHITES-SW uses the HMIS 105 for reporting on this indicator, yet the HMIS 105 does not capture 'appropriate treatment', but rather 'malaria diagnosis'. The RHITES-SW team further pointed out that data for this indicator may not be easily collected since it needs a team knowledgeable on appropriate treatment for malaria, doses as well as duration of treatment.	Acceptable if corrections are made
Malaria positivity rate	MAPD	**Validity:** However, there were variations of 5.7% between the data in OPD register, HMIS 032 (663) and that in the monthly reporting form, HMIS 105 (630) at the health facility visited.	Acceptable if corrections are made
	RHITES-E	**Validity:** RHITES-E did not have a PIRS for this indicator, hence no detailed guidance on the indicator definition and variables to be included in computation of data for this indicator. **Reliability:** RHITES-E did not have documented SOPs for data extraction from DHIS2 and analysis for this indicator.	Acceptable if corrections are made
	RHITES-EC	**None** However, there were issues of incomplete, missing and inconsistent data at one of the HF sites visited (OPD Register, Bugulumbya HCIII).	Acceptable
	RHITES-SW	**Validity:** This indicator is not in the AMELP, hence no detailed guidance on the indicator definition and variables to be included in computation of data for this indicator. It is not yet reported on.	Acceptable if corrections are made

Indicator	Activity	Outcome	Overcall rating
Average stock out rate of ITNs at the Health facility (Malaria commodities)	MAPD	**Validity:** The indicator was missing in the AMELP and did not have a PIRS. This is a newly activated indicator; the Activity had not collected or reported data. MAPD reported that ITN is not an essential commodity and therefore not tracked by the Ministry of Health (MoH) monthly reporting form, HMIS 105.	Acceptable if corrections are made
	RHITES-E	**Validity:** RHITES-E had not yet started to collect data for this indicator. However, their planned data source was HF stock cards via DHIS2. **Reliability:** RHITES-E did not have documented SOPs for data extraction from DHIS2 and analysis for this indicator.	Acceptable if corrections are made
	RHITES-EC	**Validity:** The standard Activity PIRS lacked a precise definition for the indicator; how the numerator is computed at facility and across facilities.	Accept if corrections are made
	RHITES-SW	**Validity:** This indicator is not in the Activity AMELP, hence no detailed guidance on the indicator definition and variables to be included in computation of data. RHITES-SW had not yet started tracking this indicator, hence not being reported on yet. The HMIS 105 does not capture data for this indicator.	Acceptable if corrections are made
	UHSC	None	Acceptable
Number of Insecticide treated nets distributed in the reporting year	MAPD	**Integrity:** However, there was variation in data of 16,9% in the ANC, Child Register and ITN distribution register (313) and that in the monthly reporting form HMIS 105 (260) at the health facility visited	Acceptable if corrections are made
	RHITES-E	**Reliability:** RHITES-E did not have documented SOPs for data extraction from DHIS2 and analysis for this indicator.	Acceptable if corrections are made
	RHITES-EC	**None.** However, there were issues of incomplete, missing and inconsistent data at the sampled health facilities visited.	Acceptable
	RHITES-SW	**Validity:** This indicator is not in the Activity AMELP, hence no detailed guidance on the indicator definition and variables to be included in computation of data for this indicator.	Acceptable if corrections are made

Conclusion

Routine HMIS data in Uganda has seen sustained progress in terms of timeliness and completeness. Data quality is improving as well but deserves focuses attention moving forward to ensure that strategic and programmatic decisions are based on accurate evidence.

Key Question 4

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

Supporting Data

- Significant understaffing and absenteeism issues at the health facility level
- Continuous fragmentation of districts leading to new districts having to build staff capacity and establish new administrative processes.
- Presidential elections planned in February 2021, which could shift focus from technical to political issues at the central and district levels.
- Uncertainty around the implementation of a new cadre of community care workers (CHEWS), which if established, could influence HMIS strengthening at the community level.
- Village health team members are volunteers who inconsistently receive allowances for transportation.
- Frequent revisions of reporting tools, including recent revision requiring re-training of all health care workers at all levels.
- High demands on health care workers from multiple programs.

Conclusion

PMI will need to continue working with other donors and stakeholders to advocate for increased government of Uganda investments in health, particularly when it comes to human resources. This advocacy efforts will need to be intensified as we approach the presidential elections planned in 2021.

3.C. SOCIAL AND BEHAVIORAL CHANGE (SBC)

NMCD Objective
The NMCD's *Uganda national SBC strategy 2015-2020* aims to promote positive human behaviors for malaria control in mainland Uganda. The NMCD's SBC strategies serve as a guide to coordinate SBC efforts, messages, and activities for all malaria implementing partners. The NMCD's SBC strategy aligns with the Uganda Malaria Reduction Strategic Plan (UMRSP) 2014-2020 and is acknowledged as a major cross cutting intervention. Strategic SBC objective of the NMCD is have at least 85% of the population practicing correct malaria prevention and management measures by 2020 through: ● Development and implementation national malaria SBC guidelines ● Implementation of comprehensive SBC activities. ● Monitoring the impact of SBC interventions supported by the NMCD.

NMCD Approach

Social Behavior Change activities are implemented based on the Uganda national SBC strategy 2015-2020. The table below shows the behavioral and communication objectives and targets for key malaria-related behaviors:

Figure A48. SBC Activities Implemented in Uganda

Objective	Baseline	Target
Behavioral Objective		
Sleep under an ITN every night	75%	85%
Communication Objectives		
Increase the proportion of people who believe that using an ITN is an effective way to protect themselves and loved ones from malaria	75%	85%
Increase the proportion of people who believe that the insecticides used in ITNs are safe	75%	85%
Increase the proportion of people who feel able to use and maintain ITNs correctly and consistently	75%	85%
Increase the proportion of people with positive attitudes to ITNs	75%	85%
Behavioral Objective		
Seek and receive prompt and appropriate care at the health facility if experiencing signs of malaria	75%	85%
Communication Objectives		
Increase the proportion of people who have accurate knowledge of the signs and symptoms of malaria	75%	85%
Increase the proportion of people who are aware of their malaria risk, particularly vulnerable groups	75%	85%
Increase proportion of people who believe the consequences of malaria are serious and can lead to death if not properly diagnosed and treated	75%	85%
Behavioral Objective		
Get tested for malaria before taking treatment	75%	85%
Communication Objectives		
Increase the proportion of people who know that the consequences of self-diagnosing and treating malaria are serious	75%	85%

Increase the proportion of people who believe it is important to test before using a malaria medication	75%	85%
Increase the proportion of clients who trust and accept the test results	75%	85%
Increase the proportion of prescribers who trust the laboratory test results and treat malaria accordingly	75%	85%
Increase the proportion of target population who know the appropriate treatment for malaria is ACTs	75%	85%
Increase the number of target population who believe that ACTs are safe and effective malaria treatment products	75%	85%
Behavioral Objective		
Seek and receive prompt and appropriate care at the first sign of newborn or child illness	75%	85%
Communication Objectives		
Increase the proportion of parents and caregivers of children under age five who recognize the signs of malaria, including severe malaria	75%	85%
Increase the proportion of parents and caregivers of children under age five who believe malaria to be a serious childhood illness that can be fatal if they do not access prompt treatment at a health facility	75%	85%
Behavioral Objective		
Receive three or more doses of IPTp to prevent malaria	75%	85%
Communication Objectives		
Increase the proportion of pregnant women and their partners who believe that attendance at a full course of ANC is important for the health of mother and baby	75%	85%
Increase the number of pregnant women who know that they should receive at least three doses of IPTp, beginning in the second trimester	75%	85%
Increase the proportion of pregnant women and their partners who believe that IPTp is a safe and effective malaria prevention method	75%	85%
Increase the number of pregnant women and their partners who have accurate knowledge of the dangers of acquiring malaria when pregnant	75%	85%
Increase providers' knowledge on the benefits and correct timing of IPTp doses	75%	85%

Source: Uganda National SBC Strategy 2015 - 2020

PMI provided support for the establishment and functioning of the national integrated SBC TWG at the Ministry of Health which serves as a platform for coordinating SBC across all health areas as well as a malaria-specific TWG at the NMCD. Both TWGs coordinate SBCC activities across

partners, and play an important role in reviewing the technical content of all malaria SBC messages, ensuring accuracy and harmonization. The two TWGs are active, with a particular focus on increasing SBC monitoring and measurement of behaviors that determine and drive risk reduction.

Beyond PMI, other main donors that support malaria specific SBC activities are DFID through the Strengthening Uganda's Response to Malaria (SURMA) program and Global Fund through The AIDS Support Organization (TASO). Activities supported by the two donors as well as PMI include integrated community dialogues, home visits in hotspot areas, printing of Information Education and Communication (IEC) materials, outdoor community posters and school murals, mass media through radio talk shows, radio spots and jingles, group activations, school activations, advocacy using champions, and contact tracing for SBC mass media beneficiaries. In addition, PMI-supported activities currently monitor standard malaria indicators such as ITN use and health seeking, and measure intermediate outcomes like behavior intentions and message comprehension. Beyond these indicators, PMI is also working with SBC implementing partners to monitor behavioral determinants (such as individuals' perceived risk) throughout the project lifecycle.

PMI Objective in Support of NMCD

PMI-supports national SBC efforts with the aim of reaching all Ugandans with key malaria messages on the importance of net use, malaria testing, timely treatment, and prevention of MIP. PMI has supported the development of the NMCD's national SBC strategy and training materials used for SBC activities working in malaria prevention and treatment. Vector control, case management, and MIP training for health workers and VHTs includes an SBC component and VHTs are given job aids and storyboards to conduct sensitization sessions on malaria prevention and treatment in their communities. The national SBC strategy, training materials, and tools are used not only in the PMI target areas, but also by Global Fund implementers in the remaining areas of the country. PMI has also supported the training of NGO staff on SBC related to malaria prevention, and supported Peace Corps Volunteers (PCVs) to work with local NGOs on implementing malaria SBC activities in various districts.

SBC messages are disseminated via a variety of complementary channels, including interpersonal communication (IPC), radio, and print. All USAID/Uganda health-related SBC activities (including for malaria, HIV, and family health) are implemented through one SBC Mission-wide strategy and all are coordinated by the MoH. The overarching strategy for malaria SBC implementation by Uganda's NMCD uses a common umbrella known as the "Chase Malaria for Good" campaign, which seeks to address social determinants for malaria prevention and control including skills, access, negative norms, risk perception, motivation, and male involvement.

Most SBC activities are implemented nationally through PMI's national-level partner. PMI's national level partner is implementing the *Obulamu* (life) campaign in support of the NMCD's Chase Malaria umbrella campaign. Regional integrated mechanisms also implement SBC activities specific to their geographic areas of focus. At the national level for example, PMI supports the SBC TWG to discuss behavior change campaign updates including the *Obulamu* (life) campaign and the

Chase Malaria campaign and how this is building on the goals set forth in the national SBC strategy, what changes need to be made to the messaging or the targeting of the messaging, etc. This is done through organizing quarterly meetings at the MoH and supporting supportive supervision visits by MoH and local government staff such as district health officers and malaria focal point persons. PMI regularly supports M&E, and knowledge management review meetings in which national-level stakeholders brainstorm demand creation interventions implemented by different malaria actors, changes observed in service uptake, and SBC value addition (i.e., what are the perceived and real changes observed as a result of the SBC activities implemented).

In 2017, PMI spearheaded the drafting of a policy paper on demand creation interventions that was passed by the TWG and has since been used to guide SBC activity implementation. PMI conducts pulse surveys to gauge audience exposure to campaign messages to identify recall and generate feedback to feed into follow up actions such as revised messaging or method used. In 2017, for example, the recognition of the Obulamu campaign was at 67 percent among 2,000 respondents reached by a pulse survey and at 47 percent for the response to the questions: 'how's your life?' and 'how's your pregnancy?'

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

In the last 12-18 months, PMI has supported the following activities:

- PMI supported the assessment of the national chase malaria campaign from August to September 2018 in collaboration with MoH/NMCD and other malaria stakeholders. The overall objective was to assess audience specific insights, barriers, and motivators of health care seeking behaviors specific to malaria prevention promoted under the chase malaria campaign.
- Key findings were:
    - motivators to uptake of positive practices included availability and access to interventions (LLINs, IRS, IPTp, testing and treatment);
    - desire to have a healthy baby;
    - desire to keep children healthy, and
    - fear of negative consequences of malaria.
- Barriers were:
    - limited male partner support;
    - religious cults in some parts of the country; provider barrier;
    - alternative help from TBAs;
    - myths and misconceptions, and

- belief and reliance on herbal medications. PMI, working with the NMCD, will use the results to inform a planned refresher chase malaria campaign using FY 2020 funds.

- Supported targeted community dialogues in response to malaria upsurges particularly in northern Uganda and West Nile regions. Through community dialogues, PMI reached 7,527 people directly with malaria SBC interventions including messages and skills on net use, IPTp, prompt diagnosis and treatment, and adherence to treatment guidance. In addition, PMI supported targeted talk shows throughout the country with increased intensity in the areas most affected by malaria upsurges.
- Supported targeted health facility talks and interpersonal communication with health workers, VHTs and community members directly reaching a total of 12,878 people through small group discussions, one on one discussions, and home visits. Through these platforms, PMI addressed barriers including belief and reliance on herbal medications, fears of the risk of fire while sleeping under nets among some households using candles, and reluctance to clear breeding areas around the homes.
- PMI also used positive deviants to share their stories in beneficiary communities to motivate those who have doubts about malaria prevention. PMI also worked with health facility staff in using data to map hot spots in their surrounding catchment areas, establishing the key issues/ barriers and building IPC skills essential in holding meaningful conversations at individual, household and community levels on malaria prevention and control.
- Supported redesign of the national *'chase malaria'* campaign. Following the chase malaria campaign assessment, PMI is supporting NMCD and partners to develop a refresher chase malaria campaign with the tagline *chase malaria to zero* in alignment with the global Roll Back Malaria (RBM) slogan – z*ero malaria starts with me*. The redesigned campaign seeks to deepen malaria SBC to address SBC determinants such as self - efficacy and motivation as well as negative social and gender norms in addition to limited knowledge that are hampering malaria prevention and control efforts (MIS 2018). The campaign is targeting men, health workers and school children as priority audiences while sustaining interventions among pregnant women and caretakers of children under 5.
- PMI used the period in the run up to the 2019 World Malaria Day (referred to as world malaria month in Uganda) to scale up media messages on malaria. During this period, PMI supported a country wide media campaign with messages on correct and consistent net use, malaria prevention and treatment in pregnancy, and prompt diagnosis and treatment. In total, PMI supported 338 radio exposures including announcements (radio spots), DJ mentions, 16 two radio talk shows, and 76 TV announcements.
- SBC is a critical component of PMI's IRS campaigns. In the 12-18 months, PMI continued to support enhanced SBC in the 10 IRS districts focusing on IPC, radio, and IEC to encourage people to open their houses for spraying, continue to sleep under ITNs, and seek prompt diagnosis and treatment in the event of a fever. These messages continue to help to ensure a

strong net culture is built in all IRS areas and households are aware of their risk for malaria when IRS is withdrawn and the need for prompt treatment seeking. In the organic farming areas, PMI supported advocacy and dialogue to encourage community members to open their houses for IRS while maintaining separate non-sprayed areas for their organic produce. In that way, organic farming communities benefited from the health benefits of IRS as well as higher prices from organic products. Working with organic farmers remains a challenge in IRS target districts, frequently slowing IRS activities given the misconceived negative association to IRS. However, as of post mid-2019, the organic farming company is relocating to new target districts, and this issue may no longer be a challenge in coming years in the current IRS districts.

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

PMI will support the following activities over the next 12-18 months using FY 2020 funds:

- PMI will continue supporting targeted and evidence-based SBCC interventions at national, district, and community levels for correct and consistent use of ITNs, increased IPTp uptake, acceptance of IRS where applicable, and early diagnosis and treatment of malaria.
- PMI will use the time patients are waiting at ANC to provide health education sessions, which will include televised education sessions supported by additional explanation, feedback, and direction from health workers. In addition, male partners of pregnant women (key influencers of ANC attendance and compliance) will be targeted through the use of male-friendly audio-visual interpersonal tactics at health facilities.
- PMI will continue increased focus on IPC with 70 percent or more of available SBC resources spent on IPC activities, continue encouraging malaria messaging in PEPFAR programs, continue supporting coordination and scale-up of SBC in all malaria projects, and continue ensuring a strong SBC TWG at the national level with the objective of continued use of SBC to drive down malaria prevalence in Uganda.
- PMI will continue to use community mobilization and mass media approaches, including integrated health outreach, radio talk shows, radio spots, community meetings, and IPC. These interventions will address existing barriers to uptake of malaria prevention and treatment services related to limited knowledge and skills and social and gender norms as well as target interventions to get the right exposure and intensity required to achieve behavior change.
- PMI will continue supporting targeted community outreach in areas with high prevalence and low uptake of services and will print, distribute, and orient health workers and VHTs on the use of IPTp job aids and informational materials to increase demand and use of IPTp. Promotion of prompt care-seeking behaviors for suspected malaria, recognition of symptoms

of severe malaria, parasitological-based diagnosis, and appropriate treatment for those with confirmed malaria will also continue to be emphasized.

- Overall, PMI's SBC funding will continue going towards district and lower-level SBCC activities, with a heavy focus on IPC at the community level and health workers. Support provided at the national level will allow PMI to have a broader impact, particularly as this level has been traditionally weak with respect to SBC. SBC materials developed at the national level will be rolled out to all projects and activities to help facilitate malaria prevention and care-seeking behaviors, not just to increase knowledge. PMI will continue to measure the impact of SBC activities on increasing key malaria-related behaviors through national surveys (such as the 2018 MIS).
- In terms of measuring the impact of SBC activities on increasing key malaria-related behaviors, PMI will continue to measure impact through national surveys, dipstick surveys, and qualitative evaluations conducted at different points during implementation. While audience recall, usually measured through national household surveys every two to five years, is important, it is also very important that behavioral factors are measured at different time points throughout activity implementation.

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.

Are you proposing to increase, decrease, or maintain funding allocation levels for this activity? Why? What data did you use to arrive at that conclusion?

With FY2020 funds, PMI/Uganda proposes to maintain funding for SBC activities. With FY 2020 funding, PMI/Uganda will cover all districts implementing iCCM and continue many of its current SBC activities. Support will remain focused across the three primary technical areas: vector control, case management, and MIP. However, increased emphasis will be placed on community-based efforts around case management and MIP, while high-levels of ITN use will be maintained through mass media channels. Funding has also been allocated for development of materials, donor coordination, and national and county level capacity strengthening activities, such as support to the SBC TWG.

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

Based on preliminary results of the most recent MIS (2018), PMI is proposing to prioritize the following behaviors through its SBC programming:

1. Receive three or more doses of IPTp to prevent malaria – IPTp 3+ is at 41% (MIS 2018). PMI will focus specifically on SBC activities at community level that will promote increased IPTp uptake to overcome this challenge.
2. Seek and receive prompt and appropriate care at the health facility if experiencing signs of malaria – testing is at 51% (MIS 2018). PMI will specifically focus on health worker skills and attitudes that promote the test and treat policy as well as advocacy messages for community members to demand testing before treatment.
3. Sleep under an ITN every night – overall net use is at 68% (MIS 2018). PMI will enhance messages at community level that promote net use i.e. messages on sleeping under nets, hanging, and care and repair.

Conclusion

PMI SBC interventions are nationwide in nature, targeting the entire Ugandan population of ~40 million people. Some interventions such as IPC are focused to specific communities that require intense follow up such as during a malaria upsurge or in case of increasingly low intervention uptake or in iCCM districts. In the coming year, PMI will specifically target men in addition to caretakers of children under five and pregnant women. The 2018 chase malaria campaign assessment showed that men are influential in fostering behavioral change at the household and community level yet they have not been significantly targeted in previous malaria SBC efforts. Figure 49 below shows the SBC programmatic focus using MOP FY 2020 funds:

Figure 49. PMI Prioritized Behaviors for SBC Programming

Behavior	Target population	Geographic focus	Justification
Receive three or more doses of IPTp to prevent malaria	Pregnant women + women of reproductive age (15-39 years) + male partners of pregnant women	National	MIS 2018 showed IPTp 3+ is at 41% + 2018 chase malaria assessment showed men are influential in fostering behavioral change at the household and community level
Seek and receive prompt and appropriate care at the health	Caretakers of children under five and pregnant women +	National	MIS 2018 showed testing is at 51% + 2018 chase malaria assessment showed men are

Behavior	Target population	Geographic focus	Justification
facility if experiencing signs of malaria	a specific focus on men + health workers		influential in fostering behavioral change at the household and community level
Sleep under an ITN every night	Caretakers of children under five and pregnant women + a specific focus on men	National	MIS 2018 showed overall net use is at 68% + 2018 chase malaria assessment showed men are influential in fostering behavioral change at the household and community level

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 A50. Behavioral Determinants Associated with Receiving Three or More Doses of IPTp to Prevent Malaria

Facilitator	Type of Factor	Data Source	Evidence
IPTp policy and guidelines developed based on WHO recommendations	Environmental	NMCD records	Addendum to the country's national policy on malaria (2015)
IPTp policy and guidelines disseminated and implemented	Environmental	NMCD records	Dissemination of Guidelines through Circulars by the DGHS (March 2018)[1] Disseminating workshops (2015-18) at different levels (national and regional)[2]
Proactive coaching and mentoring of health care providers is taking place	Environmental	PMI/IP and DHMT records	Records of IP on coaching and mentoring of health care providers
Regular supportive supervision is carried out	Internal and social	PMI/IP and DHMT records	Records of IP on coaching and mentoring of health care providers
Access to LLINs	Environmental	Chase malaria campaign assessment report (2018)	IPTp is incorporated within the ANC services package. Therefore, the initiatives that promote early and regular ANC attendance have a bearing on IPTp uptake. Initiatives that promote

			ANC attendance such as media campaigns may increase the likelihood of IPTp uptake
Desire to have a healthy baby	Internal	Chase malaria campaign assessment report (2018)	The desire to have a healthy baby by parents and caregivers was reinforced by knowledge of the benefits of IPTp as a presumptive therapy against malaria in pregnancy among the study participants
Fear of negative consequences	Internal	Chase malaria campaign assessment report (2018)	The fear of negative consequences such as the death of the mother and stillbirth motivated pregnant women to go for IPTp.
Barrier	**Type of Factor**	**Data Source**	**Evidence**
Myths and misconceptions about reporting pregnancy very early (ANC 1 visit is not happening during the first trimester)	Social	Qualitative discussions during field visits and published literature	Cultural beliefs and practices make the pregnant women report late. For example, in some tribes/cultures, a pregnant woman presenting to ANC before the pregnancy is overt is considered abnormal.[3]
Poor records and reporting into the DHIS2, data use	Environmental	Qualitative discussions during field visits	Register books at health facilities/ANC do not capture IPTp 3+
Stockout of commodities	Internal	Monthly and quarterly LMIS reports	MOH does not regularly procure SP and stockout of SP contributes to the low IPTp uptake.
Lack of husband/partner support	Internal	Chase malaria campaign assessment report (2018)	The assessment observed that pregnant women were not being morally, emotionally, financially and physically supported by their partners during pregnancy including attending antenatal care
Provider barriers and self-stigma	Environmental	Chase malaria campaign assessment report (2018)	The poor provider attitude and deterioration in confidentiality discouraged pregnant women from seeking antenatal care services. Elderly women had self-stigma because of big age differences between health workers and

			pregnant women. This self-stigma was worsened by the provider attitude
Facility-based barriers	Environmental	Chase malaria campaign assessment report (2018)	The statutory requirement for HIV counseling and testing of all pregnant women demotivated women from seeking antenatal care services, including IPTp services
Alternative help from Traditional Birth Attendants (TBAs)	Environmental	Chase malaria campaign assessment report (2018)	Immediate help from easily accessible and trusted TBAs counteracted women's desire to seek services from far off health facilities especially in remote areas. This was reinforced by elderly women who had successfully delivered from homes

Footnotes:

[1.] Scaling up provision of IPTp and maintaining this approach has policy implications. The resource people will have to be trained, facilitated and linked to the health units to get SP, basic supplies and effective supervision.

[2.] Mbonye A.K.et al., "Intermittent preventive treatment of malaria in pregnancy: a new delivery system and its effect on maternal health and pregnancy outcomes in Uganda" Bulletin of the World Health Organization, Past issues, Volume 86: 2008, Number 2, February 2008, 81-160

[3.] Christopher Pell et.al, "Social and Cultural Factors Affecting Uptake of Interventions for Malaria in Pregnancy in Africa: A Systematic Review of the Qualitative Research" PLoS One. 2011;6(7):e22452. doi: 10.1371/journal.pone.0022452. Epub 2011 Jul 20. Published: July 20, 2011

Figure A51. Behavioral Determinants to Seeking and Receiving Prompt and Appropriate Care at the Health Facility

Facilitator	Type of Factor	Data Source	Evidence
Quality of services and proper handling of clients by health workers.	Environmental	Uganda National Household Survey 2016/2017	Provider behavior (Handling clients with respect is the top-quality issue for public (29%) and private (37%) facilities).
The availability of diagnostic and treatment commodities and physical access to health facilities.	Environmental	MoH Annual Health sector performance report 2017/18	No RDT stock out at 85% of public health facilities and no ACT stock out at 84% of public health facilities.
Availability and access to testing and treatment services	Environmental	Chase malaria campaign assessment report (2018)	The assessment showed that before the adoption and use of RDTs, testing was often a challenge. Over time, the use of RDTs and the confidence the participants have in the test results have contributed to an increase in seeking care and treatment services

Barrier	Type of Factor	Data Source	Evidence
Low risk perception of the illness with delay to seek care.	Internal	Uganda National Household Survey 2016/2017	Low risk perception (57%),
Unavailability of drugs, supplies, at health facilities.	Environmental	Uganda National Household Survey 2016/2017	Public facilities, unavailability of medicines/supplies (23%) Private facilities, drugs not available (9%)
Distance to health facility	Environmental	Uganda National Household Survey 2016/2017	Facilities being far (14%)
Cost of health services	Environmental	Uganda National Household Survey 2016/2017	Overall, cost considerations (13%). In private facilities, services being expensive (39%)
Combination of factors at health facilities including long waiting time, limited range of services, and understaffing	Environmental	Uganda National Household Survey 2016/2017	Public facilities, long waiting time (13%), limited range of services (14% - public facilities; 23% - private facilities), and understaffing (10%)
Misconceptions	Social	Chase malaria campaign assessment report (2018)	Common misconceptions on the cause of malaria included bearing long nails, unwashed hands, having no toilet, not putting on warm clothes, playing in stagnant water, putting on dirty clothes, and untidy hair
Complacency	Internal	Chase malaria campaign assessment report (2018)	Complacency could likely be due to message overload as well as progress on other stages in the *Obulamu* campaign communication process including the intention to act, efficacy and skills, and action

FigureA52. Behavioral Determinants Associated with Sleeping Under an ITN Every Night

Facilitator	Type of Factor	Data Source	Evidence
Perceived vulnerability to malaria	Internal	Published literature [1]	ITN use was high because of perceived risk to malaria. This was strongly expressed in a qualitative study in Uganda by Strachan *et al*[1].
Suitability of net fabric	Internal	Published literature [2] and field activity reports (2018/19)	Material of net increased acceptability and use among nomadic groups. A study on acceptability of nets in Kenya showed 95.5% acceptance of a net among nomadic populations once the material was felt suitable for their lifestyle.[2] Field reports have also indicated that people in Uganda preferred nets with soft textures than hard ones.
Access to ITNs	Environmental	Chase malaria campaign assessment report (2018)	The distribution of mosquito nets during ANC clinics and health education on the risk of malaria during pregnancy facilitated pregnant women to access nets which increased their likelihood to use them
Desire to keep children healthy	Internal	Chase malaria campaign assessment report (2018)	The desire by caregivers to protect their children from malaria motivated them to sleep under nets
Fear factor	Internal	Chase malaria campaign assessment report (2018)	The fear of consequences associated with malaria including walking long distances to health centers, disruption of work schedules, unplanned costs associated with treatment and likelihood of death resulting from malaria/untreated malaria motivated the use of ITNs
Barrier	**Type of Factor**	**Data Source**	**Evidence**
Problem hanging net	Economic	Published literature and field activity reports (2018/19)	Communities that lead unsettled lifestyles, e.g. fishing, pastoralist, and refugee/immigrant communities experienced problems of net hanging related to poor housing and lack of bed.[2] Qualitative field observations showed that in mud-and-wattle houses, lack of beds and inadequate sleeping spaces prevented hanging of nets for use. These field observations concur with economic factors in published literature—populations in the poorest wealth quintiles experience these problems of poor housing and bedding conditions that make it difficult to hang nets for use.[3]

Limited perceived benefit of nets	Internal	Field activity reports (2018/19)	Experiences of receiving early evenings mosquito bites before going to bed even with nets available at home led to a lack of faith for full protection of the method.[4] Study findings imply that the risk of human exposure to potentially infectious bites is equally distributed throughout the night, thus supplementary measures to protect people against bites in the evening and morning are desirable.
Religious beliefs	Social	Chase malaria campaign assessment report (2018)	Religious beliefs with specific reference to Kanyiriri (based on the bible verse 666), a religious sect commonly found in Eastern Uganda that discourages its members from attending gatherings or being registered or numbered. It was reported that the sect members are unable to participate in community events to learn about health-seeking behaviors or even go to health centers for fear of being registered.
Myths and misconceptions	Social	Chase malaria campaign assessment report (2018)	Examples of the highlighted myths and misconceptions was the belief that the use of LLINs causes impotence and birth related challenges, perceived discomfort that comes with the feeling of confinement while under the net and the heat generated from the confinement, and fear of fire breaks that may be precipitated by the net

1. Strachan C. E. *et al.*, "What drives the consistent use of long-lasting insecticidal nets over time? A multi-method qualitative study in mid-western Uganda", *Malaria Journal*, vol. 15, no. 1, article no. 1101, 2016
2. Gore-Langton G. R. *et al.*, 2015, Investigating the acceptability of non-mesh, long-lasting insecticidal nets amongst nomadic communities in Garissa County, Kenya using a prospective, longitudinal study design and cross-sectional household surveys; *Malaria Journal* (2015) 14:52
3. Strachan C. E. *et al.*, "What drives the consistent use of long-lasting insecticidal nets over time? A multi-method qualitative study in mid-western Uganda", *Malaria Journal*, vol. 15, no. 1, article no. 1101, 2016
4. Milali M.P. et al., 2017, "Bites before and after bedtime can carry a high risk of human malaria infection", Malaria J. 2017; 16: 91. Published online 2017 Feb 28. doi: 10.1186/s12936-017-1740-0

Conclusion

Data from the Chase Malaria Campaign Assessment Report (2018) indicated that misconceptions and religious beliefs were outstanding communication barriers in all intervention areas. In addition, the assessment showed that access to services has a bearing on the adoption of recommended behaviors. The report also showed that gender-based social ties, particularly among the males, were evident in affecting adoption of positive malaria control and treatment behaviors. Further, unfriendly provider attitudes while seeking services at health facilities were a major barrier to the adoption of positive behaviors such as requesting for testing before treatment, acceptance of results, and prompt treatment seeking. Addressing these misconceptions and religious beliefs will require intensified interpersonal communication using positive deviants within the targeted communities as well as engaging religious leaders and local leaders with advocacy messages.

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 MIS 2018 showed that IPTp 3+ is at 41 percent, testing is at 51 percent, and overall net use is at 68 percent in Uganda. In addition, the 2018 chase malaria campaign assessment showed that men are influential in fostering behavioral change at the household and community level yet they have not been significantly targeted in previous malaria SBC efforts. Based on this, PMI proposes the following activities to bolster the country's capacity for SBC at national and community level:

- Advocacy – engagement of leaders to lead behavior change at the community level. This includes both opinion and political leaders.
- Mass media – use mass media to amplify proposed interventions with strong community level engagement.
- Interpersonal communication – need to design innovative interpersonal approaches that are relevant to the target audience and to the respective regions for example using football to reach men, using schools to reach the family as a unit, and using village health clubs to inspire communities in the uptake of malaria interventions.
- Health facility based communication – need communication at the health facility to reach the affected audience at a moment when they are in need and it is at this point that PMI SBC activities have great opportunity to create change since beneficiaries are at the point of care.
- Monitoring and evaluation i.e. strengthen monitoring, research, and knowledge management – need to evaluate SBC activities on a regular basis in order to measure their impact and use data generated to help in re-planning redesign and refocusing activities to meet the project objectives.

Conclusion

All intervention areas will have a specific focus on SBC. Main audiences are caretakers of children under five, pregnant women, women of reproductive age (15-49 years), men, and health workers.

Key Question 4

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

Supporting Data

Key in country context:

- Expansion of ICCM in districts with high malaria cases provides a good opportunity for NMCD to expand the reach of interpersonal communication
- Withdrawal of IRS in the northern districts has increased the demand for more tailored SBC and complicated SBC programming in Uganda
- Recent increase in the number of malaria cases in Kampala particularly among people with recent travel history to rural areas indicates that people in areas with low malaria transmission that visit high prevalence areas may require a tailored SBC approach.

Increasing focus on SBC particularly at the community level will require additional resources in order to create the change that PMI desires hence the slight increase proposed in the SBC funding allocation. We plan to have a 70 percent/30 percent split between IPC and mass media activities as per PMI guidance.

Conclusion

All intervention areas will have a specific focus on SBC. Main audiences are caretakers of children under five years of age, pregnant women, women of reproductive age (15-49 years), men, and health workers.

3.D. PROGRAM EVALUATION (PE) AND OPERATIONAL RESEARCH (OR)

NMCD objective
The national M&E plan for malaria control in Uganda plans for regular and periodic program reviews, assessments, and monitoring, including a midterm and end term performance review of the UMRSP. This M&E plan also reinforces the need for OR, with an emphasis on therapeutic efficacy testing and insecticide susceptibility studies. The NMCD understands the importance of OR as an integral strategy to identify gaps and weaknesses to improve program implementation and measure the impact of malaria interventions, and has included the establishment of research priorities and the mobilization of funds for malaria research as core strategies in the updated National Malaria Control Policy. This policy also promotes the strengthening of the Uganda Malaria Research Centre (UMRC) to coordinate malaria research in Uganda.
NMCD approach
● The NMCD works with PMI and others to collaborate and help implement OR that is synergistic with NMCD and PMI-defined OR priorities. Current OR priorities are outlined in the OR strategy, which the NMCD finalized in 2018. Studies completed and proposed with PMI support are aligned with this strategy and have focused not only on identifying and assessing insecticide and drug resistance, but on improving effectiveness and scale-up of existing interventions, and improving program efficiency to address bottlenecks in malaria program interventions. ● Similarly, the NMCD works with PMI and relevant stakeholders to jointly plan and implement performance reviews for the UMRSP or individual projects contributing to this plan.
PMI objective, in support of NMCD
PMI works with the NMCD and other stakeholders and donors including AMF and BMGF to identify OR needs and facilitate studies that meet those needs. PMI provides technical assistance in designing appropriate scientific approaches that effectively answer research questions and provide

the needed information for malaria decision-making. In addition, PMI funds OR that addresses priorities and improves the effectiveness of malaria program interventions and addresses bottlenecks.

PMI also contributes technical assistance and funding to program reviews aimed at generating learnings and recommendations to improve performance towards the goals of the UMRSP.

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

Current and recently completed studies supported by PMI:

- Impact of addition of proactive case detection to integrated community case management on key malaria indicators following population based indoor residual spraying in combination with chemotherapy in a high transmission setting in north eastern Uganda
- UMRSP midterm performance review
- Malaria Action Program for Districts learning review

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

Planned studies (both MOP and core funded):

- Impact of housing modifications combined with PBO ITNs on the reduction of malaria burden
- UMRSP end term performance review

PMI Goal

PMI will conduct OR/PE that helps: to evaluate coverage of population at-risk, quality of intervention(s), and efficiency in intervention delivery, or study reducing remaining malaria transmission and disease burden, test effectiveness of new or evolved priority interventions and strategies, or explore new metrics and mechanisms to assess the impact of interventions.

Are you proposing to increase, decrease, or maintain funding allocation levels for this activity? Why? What data did you use to arrive at that conclusion?

PMI does not plan to allocate FY2020 funding for OR but will instead finalize the implementation of current priority research, and focus on translating research and program review findings into evidence based programming.

Key Question 1

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

Supporting Data

The following questions have emerged as areas of strategic importance to the NMCD, PMI and other key stakeholders, following the UMRSP midterm review, the MAPD learning review, as well as technical and strategic consultations:

- Rapid net attrition as demonstrated by 2018/19 MIS data and preliminary results of PBO study.
- Reported refusal of polyethylene nets in the community leading to GoU developing a policy instructing donors to no longer procure these nets
- DFID's transition from bilateral funding leading to 5 districts exiting out of IRS by 2022, without clear evidence on what interventions need to be in place in order to avoid a resurgence in malaria cases following IRS exit.
- Slow scale up of ICCM implementation with key issues related to quantification of commodities, reporting, and funding of VHTs.
- Poor performance related to data use at the district, health facility, and community levels.

Figure A.53. 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
BMGF/PMI/Rotary International	Pilgrim Africa	• Phase I: Impact of IRS with and without MDA on malaria • Phase II: A pilot intervention to assess the impact, feasibility and cost-effectiveness of Proactive Community Treatment (ProAct) as a post-IRS transition strategy compared to standard iCCM as a way to maintain the gains from IRS with or without MDA	• Phase I: Data collection completed; data analysis ongoing. • Phase II: Baseline data collected April 2019, launched in August 2019.
PMI	London School of Hygiene and Tropical Medicine /IDRC/CDC	Impact of housing modifications combined with PBO ITNs on the reduction of malaria burden. Evaluate epidemiological and entomological effectiveness, cost-effectiveness, feasibility, and acceptability of housing modification.	Launch TBD

Source of Funding	Implementing Institution	Research Question/Topic	Current status/ timeline
AMF	London School of Hygiene and Tropical Medicine /IDRC/UCSF	PBO Net Study−Impact of long-lasting insecticidal nets with, and without, Piperonyl-butoxide on malaria indicators in Uganda.	Data collection and analysis is complete. Preliminary results have been shared internally with the NMCD and PMI country team. Results of 18 months follow-up will be presented at ASTMH.

Conclusion

No new PE/OR topics proposed for FY2020 as the focus will be on implementation of ongoing studies and program adaptation based on evidence.

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

The following issues would merit further exploration if supported by anticipated evidence and evolving program priorities:

- Determinants of high net attrition
- Factors associated with successful IRS exit/follow up questions related to Pilgrim study
- Malaria control in low burden areas

Conclusion

PMI will continue to work with the NMCD to advance Uganda's dynamic research agenda, contribute to its implementation, and use resulting data to inform programmatic decisions.

Key Question 3

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

Supporting Data

- Significant understaffing and absenteeism issues at the health facility level
- Continuous decentralization and splitting of districts leading to new districts having to build staff capacity and establish new administrative processes.
- Presidential elections planned in February 2021, which could shift focus from technical to political issues at the central and district levels.

- Very strong in-country capacity for research

Conclusion

There is a need for the NMCD and partners to leverage the strong in-country research capacity to ensure that relevant districts are capacitated to implement research activities, and to advocate for malaria research questions to remain at the top of district priority lists.

3.E. OTHER HEALTH SYSTEMS STRENGTHENING

NMCD objective
The GoU has been implementing a decentralization program as a way of improving the efficiency and effectiveness of service delivery since 1993. Services are decentralized to districts and within districts to health sub-districts with each level having specific roles and responsibilities. Health system strengthening is the cornerstone of Uganda's health sector development plan 2015-2020. PMI supports health sector competitiveness through strengthening health service delivery systems, health information, health workforce, and health infrastructure including small scale renovation.
NMCD approach
The following are the main areas that the NMCD is addressing in order to improve the program's effectiveness: ● Enhance the management capacity of NMCD staff and raise the profile of the NCMD as well as appoint substantive staff in the program ● Harmonize salary schemes for technical assistants who should be targeted to specific needs ● Strengthen coordination between the NMCD and in-country malaria partners, especially the leadership of the program ● Hold regular scheduled expanded RBM Partnership Forum meetings with a standard agenda and action plans ● Institute quarterly and annual planning and review meetings to monitor progress of implementation of activities ● Restrict the NMCD's central role to its core mandate (policy and guidelines development, standards setting, technical support and supervision, resource mobilization, quality assurance and monitoring and evaluation) and revitalize the role of districts and relevant decentralized levels in planning, implementation and supervision of malaria control activities
PMI objective, in support of NMCD Infrastructure
Over the last 13 years, PMI has provided significant support to complement the efforts of other USG programs supported by USAID, CDC, PEPFAR, and the GoU. In collaboration with PEPFAR and

other USAID health programs, PMI supports improvement in workforce policy, planning, and management through:

- Strengthening human resource units and information systems in ministries of health, education, and sports, in health professional councils, and in districts;
- Development and implementation of evidence-based human resource strategies;
- Advocating for increased funding and support for the health workforce that has increased staffing levels, retention, and productivity; and
- Developing in-service and pre-service training plans.

Capacity building of the NMCD has been continuously supported by the two PMI Resident Advisors and two malaria program management specialists on all aspects of malaria control activities and programming. These advisors have played key roles in the country's malaria TWGs, RBM partners' forums, and coordination task forces. Since 2008, PMI has also equipped the NMCD with computers, scanners, and photocopiers.

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

- Supported the NMCD to strengthen coordination with malaria stakeholders through the RBM forum, TWGs, malaria scientific sessions, review meetings, assessments (capacity and VHTs) and surveys (e.g. DHS 2016 and MIS 2018), and review of policies, guidelines, manuals, and job aids (e.g., MIP).
- Provided technical assistance to revitalize five major TWGs focused on M&E, integrated vector management, case management, MIP, and SBC. PMI also supported the USAID/Uganda sector-wide initiative to address human resource shortages and develop the capacity of the health workforce at national and district levels, and the sector-wide private health sector activity.
- PMI contributed greatly to formulating the health system strengthening strategy for USAID/Uganda, which is focused on four elements: HRH including formalizing CHEWs, health financing, health information, and supply chain. In the last year, continued relationships with the Community Health Department to support the MoH CHEW Strategy (2015-2020) as well as with the Department of Planning at the MoH contributed to finalization of the newly updated health financing strategy 2015/16-2024/25.
- Over the past 12 months, PMI trained 599 Technical Resource Persons (TRPs) to conduct malaria mentorships directly with health workers at health facility sites and 5,613 health workers were mentored by them in 534 health facilities. TRPs are not malaria-specific; they have a broader integrated mandate, which includes MCH, TB, leprosy, EPI, etc. TRPs receive didactic/classroom training aimed at building their skills to an expert level so that they can mentor other health workers through on-site, hands-on training. PMI uses this TRP model to effectively address performance problems within the local context of health

facilities. Further, through PMI support the NMCD distributed 2,000 job aids in MIP and malaria case management, and printed and distributed 800 guidelines and 500 SBC materials (brochures for health facilities, key influencers, and IPC agents).

- PMI supports strengthening human resource systems for improved healthcare quality and health workforce management practices at the NMCD, DHMT and facility level by contributing to the following activities: 1) Technical assistance for wage analysis and recruitment plans for health workers; 2) drafting of workforce performance management guidelines, which were approved and implemented in all districts to improve health worker productivity; and 3) development of attendance tracking tools, which were established in all districts and resulted in a decreased absenteeism rate, thereby improving productivity.
- PMI also supported the recruitment of 903 new health workers to increase staffing levels, particularly in general and referral hospitals in 27 districts with budget provision for wage payments. PMI does not pay salaries for government health workers. PMI contributes to the overall USG efforts to fill critical gaps in health care workers and increase Uganda's health workforce by covering some of the upfront recruitment costs and progressively transitioning salary support to the GoU. The total cumulative contract staff recruited with USG support is 2,687, of which 1,469 (55 percent) have been transitioned and absorbed into public service. Supported interventions to strengthen human resources include:
    - Enhancing capacity for pre-service training for quality graduates
    - Strengthening the recruitment system to improve and maintain optimal staffing levels
    - Strengthening performance management system for productivity and accountability for the health workforce.
- PMI supported the NMCD to recruit two fellows under CDC's Public Health Fellows Program/FETP. This program offers training for the fellows in epidemiology and disease outbreak investigation. One fellow supports the NMCD's vector control and M&E units and the second fellow supports multiple malaria activities, including coordinating with partners and districts at the subnational level.
- PMI supported placement, training, and small-scale malaria projects through Peace Corps Volunteers (PCVs) and their counterparts at the community level. In the last 12-18 months, PCVs distributed 20,778 ITNs, helped in monitoring net use, participated in IPC, and continued moving from house-to-house in the 15 IRS districts as part of SBC to increase IRS acceptance levels.

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

PMI will continue supporting the capacity of the NMCD to manage and coordinate multi-sectoral malaria reduction efforts at all levels, including the continuation of regular NMCD technical and

management meetings, RBM in-country partnership coordination meetings, and review and planning meetings. PMI will also work with the NMCD to conduct an assessment and develop a long-term strategy for Uganda's HMIS strengthening activities to determine how PMI's investments can best contribute to improving surveillance capacity in Uganda.

In collaboration with PEPFAR and other USG health programs, PMI will continue to support regions and districts to improve health worker productivity, and staff training (pre-service and in-service). PMI will further engage the GoU to increase commitment, transparency, and accountability for resources for malaria control and to mainstream malaria activities into the health sector response. PMI will work with USAID's health system strengthening team through PEPFAR funding to improve efficiency and transparency in the current MoH allocated resources. To enhance the responsiveness of the health infrastructure and increase access to services, PMI will strengthen systems through the expansion of VHTs and iCCM in selected hard-to-reach areas. PMI will continue supporting the USAID/Uganda sector-wide initiative to address human resource shortages and develop the capacity of the health workforce at national and district levels. The evaluation

of this initiative pointed to the need to enhance the performance of the health workforce in terms of the quality of healthcare provision and productivity. In addition, PMI will continue to support performance-based financing, strengthen leadership and management, and harness private sector pre-service training capacity to meet priority HRH needs for malaria control. PMI's ICCM activities will be implemented through the existing VHT structure.

USAID/Uganda's district-based programs will implement the HRH support package including leadership capacity development and performance management developed by the HRH initiative. The district HRH support package includes a minimum set of interventions that every district must implement with partner support to achieve and maintain acceptable staffing levels. The interventions include:

- Recruitment of health workers to reduce vacancy rates.
- Coordinated needs-based in-service training to reduce absence from the facility due to training.
- Performance management to enhance productivity.
- Maintaining functionality and use of Human Resource Information System (HRIS) for evidence-based decision making.

PMI's investment leverages over $2 million of PEPFAR and other USG health investments for this area of health system strengthening. This activity will also include support for national MoH leadership training.

PMI supports health facilities and district management teams to conduct and sustain improved malaria control interventions through in-kind grants based on performance on key malaria indicators. This activity currently targets the 52 districts that are covered by PMI/Uganda's malaria bilateral

project, MAPD. Seventeen health facilities have benefitted so far from performance-based in-kind grants and this will be scaled up to 50 health facilities in FY 2020. This is the only type of finance-based incentive activity that PMI currently supports. The rationale for this performance-based financing activity are:

- Recognition of best performing facilities,
- Drive positive competition and motivating low performers to improve,
- Motivate moderate performing facilities to become best performers and be a model for others to improve.

All facilities are ranked based on baseline performance compared to previous FY performance. Comparison is made using a grouped score made of malaria indicators in DHIS-2:

- Proportion of pregnant women attending ANC who received three or more doses of IPTp.
- Proportion of pregnant women receiving an ITN at ANC visit.
- Proportion of suspected malaria cases with a positive malaria test with ACTs prescribed.
- Proportion of patients tested negative for malaria and do not receive an anti-malarial treatment.
- Governance of health facility i.e. leadership and management including data use and reporting

Each facility is ranked as either declined (moderate or high) or improved (moderate or high). Health facilities in moderate and high improvement percentiles as well as high volume facilities are prioritized. Further, effort is made to distribute beneficiary health facilities across different regions so location (district) is also factored into the selection.

The assessment and grant making process is a collaborative effort between the PMI implementing partner and the district health management team. Facilities are briefed on the concept and type of support – in-kind items for malaria improvement, such as a microscope. They are provided a form to fill in; identifying their performance per indicator, outlining their malaria challenges, ranking their needs for in-kind support, setting targets for improvement on a six month basis (linked to the proposed in-kind grant request), and outlining what they would do to achieve the target within the timeframe. The form provides the types of in-kind grants applicable to frame the requests and manage expectations. The process is guided by a grants and sub-contract management manual approved by PMI.

Furthermore, PMI will continue supporting updating of the curriculum for malaria case management in key institutions that train clinical staff. This will include each cadre of health worker potentially addressing malaria (e.g., doctors, clinical officers, different levels of nurses, midwives, etc.). Once the curriculum is developed, it will be incorporated into the education curriculum in schools across Uganda. PMI also plans to support a platform for health teaching staff to share notes in formal and

informal forums across public and private health worker training institutions to increase the body of knowledge and encourage uniformity in training and practice around malaria case management, which anecdotal reports have shown to be a gap in the country.

PMI will also support the strengthening of national capacity for program planning, management, and monitoring through practical field placements of recent graduates in well-performing malaria programs where they can be mentored by experienced program managers in GoU and NGO institutions. Through these placements, graduates will receive on-the-job training. This initiative will fund two new fellows to follow the malaria track in the two-year FETP.

PMI will continue to support placement, training, and small-scale malaria projects through PCVs at the community level. Small-scale projects enable PMI through PCVs to build and sustain local capacity at the community level. The projects usually meet a pressing community need such as a gap in net distribution or IRS acceptance, and PCVs work with community members on how best to address the gap. The community usually identifies the gap and works with PCVs to arrive at a solution. The projects implemented demonstrate sustainability with communities being involved in the design and implementation and taking charge at project closure.

PMI will continue supporting two staff at the NMCD as part of its contribution to the implementation of the NMCD capacity development plan. These positions are malaria in pregnancy adviser and senior adviser entomologist. In addition, DFID, through UNICEF, will continue its support to the NMCD's capacity building plan, while the Global Fund will continue supporting one staff member. The long-term plan is for these staff to be rolled into the mainstream GoU/MoH payroll after four years of external support ending August 2021.

PMI Goal

To strengthen NMCD coordination capacity of malaria stakeholders; to support the review of policies, guidelines, manuals, and job aids for various malaria interventions; and provide technical assistance to support five major TWGs focused on M&E, integrated vector management, case management, MIP, and SBCC.

Key Question 1

How is PMI supporting the infrastructure of the health system?

Supporting Data

PMI Uganda is proposing small-scale rehabilitation/renovation of health facilities in target districts. The purpose of the renovation work on selected health facilities is to enhance the quality of malaria control services and improve malaria outcomes. USAID Uganda and the GoU committed about five years ago to invest in health facilities that were not able to deliver basic health care services due to structural issues. The proportion of PMI's contribution to this overall Mission effort is minimal in comparison to other health elements and funders such as PEPFAR. PMI is proposing to support five

to ten facilities with very modest improvements in areas like laboratories, storage space for ITNs, creating IPTp corners to provide IPTp services in a discreet environment at ANC, etc., with the overall intent of improving PMI-related indicators.

Conclusion

PMI will be providing limited funds to support the equipping, renovation, and rehabilitation of approximately 5-10 priority health facilities to enhance the provision of malaria services. USAID Uganda is working very closely with other Health Development Partners, MOH, and Ministry of Finance to increase host country health care financing including for renovations of facilities. Many initiatives are targeting transitioning these responsibilities to the GoU.

Key Question 2

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

Supporting Data

Uganda is hosting more than 1.4 million refugees and asylum-seekers, most fleeing war and human rights abuses in South Sudan, the Democratic Republic of the Congo, and Burundi, providing unique challenges for malaria control and the health system. Uganda has a long history of providing sanctuary to refugees and its policy of integrating refugees in local communities, rather than camps, is widely considered as an exemplary model. Acknowledging the support of local Ugandan communities in welcoming refugees, the humanitarian response in refugee-host areas ensures that at least 30 percent of their efforts go towards assisting local Ugandans. Malaria continues to be the leading cause of death among people living in refugee-host districts in Uganda.

Conclusion

Efforts have been made to tackle the problems linked to refugees, including ensuring that new cases of malaria are diagnosed early. Previously, PMI has donated ITNs and for the refugees settled in private houses and camps in Mid-West and West Nile regions continue benefit from PMI-supported health facilities.

ANNEX B: COUNTRY PROGRAM INVENTORY

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

Key:

Example score

Figure B1. Category: Vector Control

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

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

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
	Coverage of Government-Implemented Spray Campaign	N/A, no government-implemented spray campaign	Spray coverage not reported	85+% coverage in some government-sprayed areas	85+% coverage in most government-sprayed areas	85+% coverage in all government-sprayed areas

Figure B2. Category: Case Management

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

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
	Drug resistance monitoring	No TES performed in last 3 years	TES performed in last 3 years but results not available	Recent TES results available (within last 3 years) but no training in molecular testing	Recent TES results available (within last 3 years) and in-country staff trained in molecular testing	Recent TES results available (within last 3 years) and in-country capability for molecular testing

Figure B3. Category: Drug-Based Prevention

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
SMC (where applicable)	Geographic scope	No eligible districts receiving SMC		50% eligible districts receiving SMC		All eligible districts receiving SMC
	Coverage in targeted areas (% of eligible children 3-59 months who received complete SMC courses for all 4 rounds)	<60%	60-69%	70-79%	80-89%	90%+
	Institutionalization of funding	No resources	Only supported by external partners, no host government funding	Some host country government funding	>50% funded by host country government	Fully funded by host country government
MIP	National policy exists for malaria prevention in pregnancy	No policy	Policy exists but is not comprehensive (does not cover all aspects of MIP: ITN, IPTp and case management)	Comprehensive policy exists for prevention (ITNs, IPTp) and case management but not all WHO recommendations are included	Policy meets current WHO recommended MIP prevention	Comprehensive, WHO-aligned policy is actively implemented

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
	Country policy adoption/adaptation of ANC guidelines with at least 4 recommended contacts	No policy	Country has started discussions and consultations for adopting the new ANC guidelines and recommendations	Country has policy specifying ANC contacts but no provision for early delivery of IPTp and is not able to systematically track ANC visits in HMIS	Country policy specifies ANC contacts and has provision for delivery of IPTp at 13-16 weeks but cannot track all ANC visits in HMIS	Country policy specifies the number of contacts be delivered during pregnancy and has a provision for delivery of IPTp at 13-16 weeks and is able to track ANC visits in HMIS.
	National MIP working group established and coordinating effectively	No working group established	Working group formed and meets on an ad hoc basis, TORs are established	Working group engages in regular coordination but does not have mechanisms to ensure programmatic integration across technical areas	Working group coordinates at the national level only with Malaria and Maternal Health and has limited mechanisms for ensuring programmatic integration across technical areas	Working group engages in regular coordination at national and sub-national level with Malaria and Maternal Health and has mechanisms to ensure programmatic integration across technical areas.
	Supportive MIP supervision conducted	No HFs regularly supervised in MIP	0-25% of HFs regularly supervised in MIP	25-50% of HFs regularly supervised in MIP	50-75% of HFs regularly supervised in MIP	75-100% of HFs regularly supervised in MIP
	Routine SP resistance monitoring via biomarkers conducted	No SP resistance monitoring conducted	SP resistance monitoring conducted in the last 6-10 years	SP resistance monitoring conducted in the last year 4-5 years	SP resistance monitoring conducted in the last year 3 years	SP resistance monitoring conducted in the last 3 years and results published or being published.

Figure B4. Category: Supply Chain

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
Supply Chain	Forecasting and Procurement Planning	Ad hoc forecasting based on poor, inadequate, or inaccessible data Insufficient skills for selecting and implementing appropriate forecasting methodologies. Procurement plans are not developed from forecasts No coordination among procurers	Annual forecasting and supply planning done but is based on poor, inadequate, or inaccessible data Locally based skills in quantification are developing Review of procurement plans is irregular. Coordination among procurers is limited	Annual forecasts incorporate service and/or/consumption data Supply plans updated semi-annually and incorporate review/revisions of available funding Coordinated procurement planning done at the national level (and regional level, if the health system is decentralized) and among procurers	Semi-annual forecasts incorporate service and/or/consumption data, account for seasonality Supply plans updated quarterly and incorporate review/revisions of available funding Coordinated procurement planning done at the national level (and regional level, if the health system is decentralized). Identified commodity gaps effectively communicated to stakeholders for purposes of resource mobilization	Near real-time demand/consumption, enhanced with additional programmatic contributions, drives monthly forecasting Forecasting and supply planning-specific software used and outputs visible across networks. Supply plans updated monthly and incorporate review/revisions of available funding Coordinated procurement planning done at the national level (and regional level, if the health system is decentralized). Identified commodity gaps effectively communicated to stakeholders for purposes of resource mobilization. Outputs shared through global platforms

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
	Warehousing/ Storage	Quality of infrastructure and operations at all stock holding levels (Central, Sub-central/facility) compromises ability to ensure commodities are adequately protected from damage, deterioration and loss. Unable to locate stock by batch in central/mid-level stores/warehouses.	Quality of infrastructure and operations in at least one stock holding level (Central, Sub-central/facility) ensures that commodities are adequately protected from damage, deterioration and loss. Paper-based inventory management system. No SOPs.	Quality of infrastructure and operations in at least two stock holding levels (Central, Sub-central/SDP) ensures that commodities are adequately protected from damage, deterioration and loss. Warehousing SOPs exist. Able to track inventory level with central level WMS but information is not routinely shared across warehouses. Some maintenance occurring Limited ability to scale storage capacity	Quality of infrastructure and operations at all stock holding levels (Central, Sub-central/SDP) ensures that commodities are adequately protected from damage, deterioration and loss Stock data is digitized in at least two stock holding levels Some routine maintenance occurring Storage capacity scaled through contracting of third party logistics providers (3PLs)	Quality of infrastructure and operations at all stock holding levels (Central, Sub-central/SDP) ensures that commodities are adequately protected from damage, deterioration and loss. Storage infrastructure and operations adhere to Good Warehousing Practices and/ or meet in-country compliance standards Stock data is digitized at all stock holding levels and near real-time stock visibility available across networks Routine and predictive maintenance budgeted for and institutionalized Storage capacity is logically located and can be effectively scaled with 3PLs

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

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
	Logistics Management Information System	System to aggregate, analyze, validate and display data (from all levels of the logistics system) that can be used to make logistics decisions and manage the supply chain not institutionalized or followed No facility level records or not maintained. Low reporting rates. No visibility into CHW supplies. No visibility by central level on facilities and none by facility level on central level.	Stand-alone, program specific LMIS processes and structures defined but no formal or ongoing monitoring or measurement protocol exists. Some visibility of facility level inventory and consumption, low reporting rates, mostly paper-based	The country has documented LMIS processes and structures. The structures are functional. Metrics for performance monitoring, quality improvement, and evaluation are systematically used. Migration of data collection and reporting from a paper system to an electronic system at the district level and above. A documented mechanism is in place for maintaining data quality throughout the data supply chain.	Government and stakeholders use the national LMIS systems for key performance monitoring and follow standard practices. Facility inventory and consumption data is digital at facility level, upstream data available to facilities, System alerts for low stock/expiry, use of master product list and master facility list Interoperability with other information systems (e.g., warehouse management, medical records, laboratory management, enterprise resource planning systems, and health information management systems)	Near real time visibility into inventory and consumption data at all levels, data from multiple systems feed into common platform/control tower (automated process), predictive analytics. The government and stakeholders routinely review interoperability activities and modify them to adapt to changing conditions. Compliance with standards for data exchange, messaging, and security is regularly reviewed. The regulatory framework is reviewed and updated to reflect best practices for data exchange, messaging, and systems security.
	Regulatory, Policy and Governance	Legal basis to enable a medicines (and related health commodities - e.g., devices, vaccines, etc.) regulatory agency to function is absent or inappropriate	Medicines framework exists and is sufficient to support basic regulatory functions including clinical dossier review (licensing) and	All SDP levels have in place policies that address STG, quality assurance and HR. Management policies for the supply chain system are in place at the MOH level.	Strong policy and strategic leadership by government, with firm grasp of budgets and financial sustainability Robust implementation plans, and supportive supervision, capacity building and guidance	The MOH leads strategic functions such as, policy formulation, quality assurance and overseeing the funds required for policy implementation. Ability to ensure product quality, automated drug

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
		Formal organizational structure regarding in-country stakeholders and relevant agencies to whom authority is delegated, is absent or inadequate (e.g., up-to-date organogram of MOH). Human and financial capacity to enable regulatory functionality, weak or absent No approved supply chain strategic plan	marketing authorization with registration. Documented domestic financial support to enable regulatory activities - including human resources Approved supply chain strategic plan but not updated recently. Poorly implemented strategic plan	Policy and strategic leadership is not always translated into robust implementation plans, and supportive supervision, capacity building and guidance to managers within the system. No consistent approach to pharmacovigilance or a standard reporting structure for pharmacovigilance events Overall quality management system in place to support interface of product licensing, registration, manufacturing, post-marketing surveillance. Approved (and up to date) supply chain strategic plan. Partially implemented	to managers within the system. Regulatory and policy bodies in alignment to support quality product availability National and standardized Pharmacovigilance or a standard reporting structure for pharmacovigilance events in place, not fully functional. Approved (and up to date) supply chain strategic plan (contains clear roles and responsibilities, stakeholder mapping, costs).	registration process, clear/transparent importation process, robust post-market surveillance system and, track and trace regulations developed and/or in the process of implementation. Approved (and up to date) supply chain strategic plan (contains clear roles and responsibilities, stakeholder mapping, costs). Includes risk mitigation plan.

Figure B5. Category: Strategic Information

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
Data, Surveillance, Monitoring & Evaluation	Overall HMIS reporting rate (CY 2018)	<60%	60-69%	70-79%	80-89%	90%+
	Element specific reporting rate: "Confirmed malaria cases among children under 5" (CY 2018)	<60%	60-69%	70-79%	80-89%	90%+
	HMIS data quality assurance and quality control	Few standards exist for data collection, assembly, & analysis. Data quality reviews and audits are ad hoc for specific data needs. No data-quality assurance plan and national coordinating body exist.	Standards used for data collection, assembly & analysis in limited settings. Some electronic tools used for data quality review and audit. Data-quality assurance plan is available.	Standards defined and implemented for data collection, assembly, analysis, and used nationally. Data quality reviews and audits scheduled and include a remediation process to address identified issues. SM&E staff are seconded to NMCP	Data reviews and audits are integrated in strategic plans, conducted on a regular schedule. Regular meetings held by national data-quality governing body; issues identified are addressed through an established remediation process.	Continuous review and auditing through automated and manual processes, to ensure defined levels of data quality. Data quality metrics are used for continuous improvement. The data-quality assurance plan is reviewed periodically by a national coordinating body and appropriate stakeholders.

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
	Reporting Systems	Data collection tools are not standard and procedures are not consistently followed; data are collected and stored in an unstructured format. NMCP does not have access to malaria data from HMIS.	Data systems support longitudinal health data (clinical, surveillance, M&E) in limited settings. The data are available for centrally mandated reporting. A parallel malaria reporting system may exist.	Most data platforms/applications ensure data availability at all levels for decision support and M&E for authorized users. No parallel malaria reporting system exists. NMCP has access to malaria data from HMIS.	The data systems in use ensure reliable and appropriate access to data at all levels for authorized users. Changes in reporting requirements are accommodated with minimal disruption to data availability. Data systems support secondary use of data and NMCP has access.	Data availability is monitored for continuous improvements and to meet emerging health sector needs. Reporting is available from private facilities and community-level providers and can be disaggregated.
	Data collection	Data collection is not done at the most peripheral level (CHWs) and is irregular and inaccurate at rural and more central health facilities. System is entirely paper based, but registers may be absent	Data collection is well managed at HF level, but incomplete at community level (CHWs); most collection is paper based and aggregation is paper based; registers generally available; timeliness and completeness remain challenges	Data collection is well managed at HF level and at community level (CHWs); most collection is paper based, aggregation is electronic; registers available; timeliness and completeness >80%, feedback to collectors limited	Data collection at all levels); collection is electronic and sometimes paper based, aggregation is electronic; registers include all program-critical data; timeliness and completeness >80%, feedback to collectors is standardized	Data collection occurs at all levels, is transmitted in real time with timely feedback to those collecting and those using the data; data checks exist at point of collection; electronic transmission is the norm, including to data collectors

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
	Data use	Activities (analysis, interpretation, visualization) to ensure data use are rarely implemented	Limited data use activities are implemented (bulletin has been developed but analysis and interpretation for decision- making needs to be strengthened)	Country conducts regular data use activities (review meetings, bulletin at least quarterly, at least at the central level).	Country conducts regular data use activities at all levels (review meetings, bulletins, dashboard at least quarterly).	Country has developed their own high- quality dashboard to facilitate data use, and data-informed decision making is evident at all levels, on a frequent basis.
OR/PE	PMI in-country OR experience	No previous PMI OR experience in country	PMI team has prepared concept notes (CNs) but has not completed protocols or conducted OR	PMI team has completed protocols and received approval for OR; studies in planning, underway, or recently completed	PMI team and/or other country partners have completed a OR study and prepared and shared reports	Multiple OR studies completed in country that address malaria program implementation bottlenecks with publication and sharing of results, with involvement from MOH co-investigators
	Country mechanisms for OR/PE review	No in-country process for research review, determination or IRB processes	Limited in-country processes for research review, determination and IRB oversight	Processes in place for research and IRB review with federal-wide assurance approval; no previous PMI in-country OR experience	Processes in place for research and IRB review with federal-wide assurance approval; previous PMI in-country OR experience	Full complement of research review, approval, oversight processes including data safety and monitoring boards and systems for results sharing
	In-country partnerships for OR	No in-country partners (academic, NGO, or other) with OR experience	1-2 in-country partners with OR experience, but no malaria specific experience	3+ in-country partners with OR experience; 1+ with some malaria expertise; no current PMI-linked OR work	3+ in-country partners with OR experience; 1+ with malaria expertise; current or recent work with PMI OR	Multiple in-country partners with specific malaria experience in PMI OR, including completed past work and reporting on malaria OR

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
	Conceptualization of problems needing scientific evaluation	No experience	Some but limited experience in identifying programmatic problems and prioritization	Experience with identifying program problems and prioritizing PE and OR	Experience with identifying problems needing PE or OR and developing study approaches with partners	Extensive experience with problem identification, prioritization, proposal development and conducting PE or OR

Figure B6. Category: Support Systems

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
SBC	National Malaria SBCC Strategy used to guide design and implementation of malaria SBC activities	No strategy exists.	Strategy exists but there is no evidence that it has been used to guide design or implementation.	Strategy exists and is used from time-to-time to guide design and implementation, but is of poor quality and does not include any of the key elements identified in the RBM SBCC Working Group National Malaria SBCC Strategy Template.	Strategy is used from time-to-time to guide design and implementation, but lacks alignment with the broader National Malaria Strategy and only incorporates a couple of the key elements identified in the RBM SBCC Working Group National Malaria SBCC Strategy Template.	Strategy is well aligned with the broader National Malaria Strategy, includes the key elements identified in the RBM SBCC Working Group National Malaria SBCC Strategy Template, and is used to guide design and implementation.
	SBC Technical Working Group coordinates effectively	No technical working group exists.	The SBC Technical Working Group exists on paper, but has not been operationalized.	The SBC Technical Working Group has significant resource and staffing gaps and does not have clear pathways for coordination.	The SBC Technical Working Group lacks some needed resources/staff and generally only coordinates at the national level only.	The SBC Technical Working Group is well resourced and staffed and engages in regular coordination at both the national and sub-national level.

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
	High-quality formative assessments used to inform intervention design	No high-quality, formative assessment conducted in the last five years.	Formative assessment conducted, but significant quality issues in the design and no evidence that data was used to inform intervention design.	High-quality, formative assessment conducted, but no evidence that data was used to inform intervention design.	Data from prior projects used exclusively to guide intervention design; no new data collected.	High-quality, formative assessment conducted and data used to inform intervention design.
Elim (relevant only for countries actively pursuing elimination	Elimination planning to implementation	No elimination or pre-elimination targets in the national strategic plan	Risk stratification conducted using latest incidence data and interventions targeted	Readiness assessment/ capacity inventory conducted	Capacity built and systems in place to initiate elimination activities	Elimination activities implemented fully in targeted areas
	Surveillance system readiness to track all cases	Monthly, aggregate data from public sector only	At least monthly, aggregate data from public, private, and community levels	Case-based reporting initiated	Real-time, case-based surveillance inclusive of all sectors and levels in targeted areas	Real-time, case-based reporting and response activities implemented
General Infrastructure	Staffing	No staff	Manager and a few technical staff; not all intervention areas are covered	Manager and technical staff for each intervention area; many staff have limited training and experience ; limited program support staff	Full staffing of program areas and support systems but some staff need further training to optimize their effectiveness; limited plans and opportunities for such training	Fully staffed with personnel with relevant training and experience; complete plan for professional development

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