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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

TANZANIA (Mainland)

Malaria Operational Plan FY 2020

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ABBREVIATIONS

ACD	Active case detection
ACT	Artemisinin-based combination therapy
ADDO	Accredited drug dispensing outlet
AL	Artemether-lumefantrine
ANC	Antenatal care
AS/AQ	Artesunate-amodiaquine
BMGF	Bill and Melinda Gates Foundation
CDC	Centers for Disease Control and Prevention
CHMT	Council Health Management Team
CHW	Community Health Worker
CY	Calendar year
DHIS2	District Health Information System 2
DHMT	District Health Management Team
DMSO	District Malaria Surveillance Officers
DQA	Data quality audit
eIDSR	Electronic Infectious Disease Surveillance and Response
eLMIS	Electronic Logistics Management Information System
EPI	Expanded Program on Immunizations
EUV	End-use verification
FANC	Focused antenatal care
FELTP	Field Epidemiology and Laboratory Training Program
FSN	Foreign Service National
FY	Fiscal year
GHI	Global Health Initiative
Global Fund/GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
GoTHOMIS	Government of Tanzania Hospital Management Information System
HCW	Health care worker
HIM	Health Information Mediator
HIS	Health Information System
HMIS	Health Management Information System
HSS	Health systems strengthening
IDSR	Infectious disease surveillance and response
IEC	Information, education, communication
IHI	Ifakara Health Institute
ILS Gateway	Integrated Logistic System Gateway
IPRS	Implementing Partner Reporting System
IPT	Intermittent preventive treatment
IPTi	Intermittent preventive treatment in infants

IPTp	Intermittent preventive treatment for pregnant women
IPTsc	Intermittent preventive treatment in school children
IRS	Indoor residual spraying
IT	Information Technology
ITN	Insecticide-treated mosquito net
LGAs	Local Government Authorities
LGRCIS	Local Government Revenue Collection Information System
LMU	Logistics Management Unit
M&E	Monitoring and evaluation
MCH	Maternal and child health
MCN	Malaria Case Notification System
MEEDS	Malaria Epidemic Early Detection System
MIP	Malaria in pregnancy
MIS	Malaria indicator survey
MoH	Ministry of Health
MOHCDGEC	Ministry of Health, Community Development, Gender, Elderly and Children
MOP	Malaria Operational Plan
mRDT	Malaria rapid diagnostic test
MSD	Medical Stores Department
MSDQI	Malaria Service and Data Quality Improvement project
NHLQATC	National Health Laboratory and Quality Assurance Training Center
NIMR	National Institute for Medical Research
NMCP	National Malaria Control Program
OPD	Outpatient department
OR	Operational research
OTSS	Outreach training and supportive supervision
PBO	Piperonyl butoxide
PEPFAR	U.S. President's Emergency Plan for AIDS Relief
PCR	Polymerase chain reaction
PCV	Peace Corps volunteer
PMI	U.S. President's Malaria Initiative
PO-RALG	President's Office – Regional Administration and Local Government
QA/QC	Quality assurance/quality control
RA	Resident Advisor
RBM	Roll Back Malaria
RCH	Reproductive and child health
RDT	Rapid diagnostic test
SBC	Social and behavior change

SMC	Seasonal malaria chemoprevention
SM&E	Surveillance, monitoring, and evaluation
SM MSP	Supplementary Malaria Midterm Strategic Plan
SNP	School net program
SP	Sulfadoxine/pyrimethamine
SPA/TSPA/SPAm	Service Provision Assessment/Tanzania Service Provision Assessment/Service/Provision Assessment for Malaria
TA	Technical assistance
TDHS	Tanzania Demographic and Health Survey
TES	Therapeutic efficacy study
THMIS	Tanzania HIV and Malaria Indicator Survey
TNVS	Tanzania National Voucher Scheme
TWG	Technical working group
UCC	Universal coverage campaign (of ITNs)
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization
ZAMEP	Zanzibar Malaria Elimination Program

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 Tanzania to end malaria. PMI has been a proud partner of Tanzania since 2006, helping to decrease child death rates by 40 percent through investments totaling over \$573 million.

The proposed PMI fiscal year (FY) 2020 budget for Tanzania is \$40 million. This Malaria Operational Plan (MOP) outlines planned PMI activities in Tanzania for FY 2020. Developed in consultation with the National Malaria Control Program (NMCP) and key stakeholders, proposed activities reflect national and PMI strategies, draw on best-available data, and align with the country context and health system. Proposed PMI investments support and build on those made by the Government of Tanzania as well as other donors and partners.

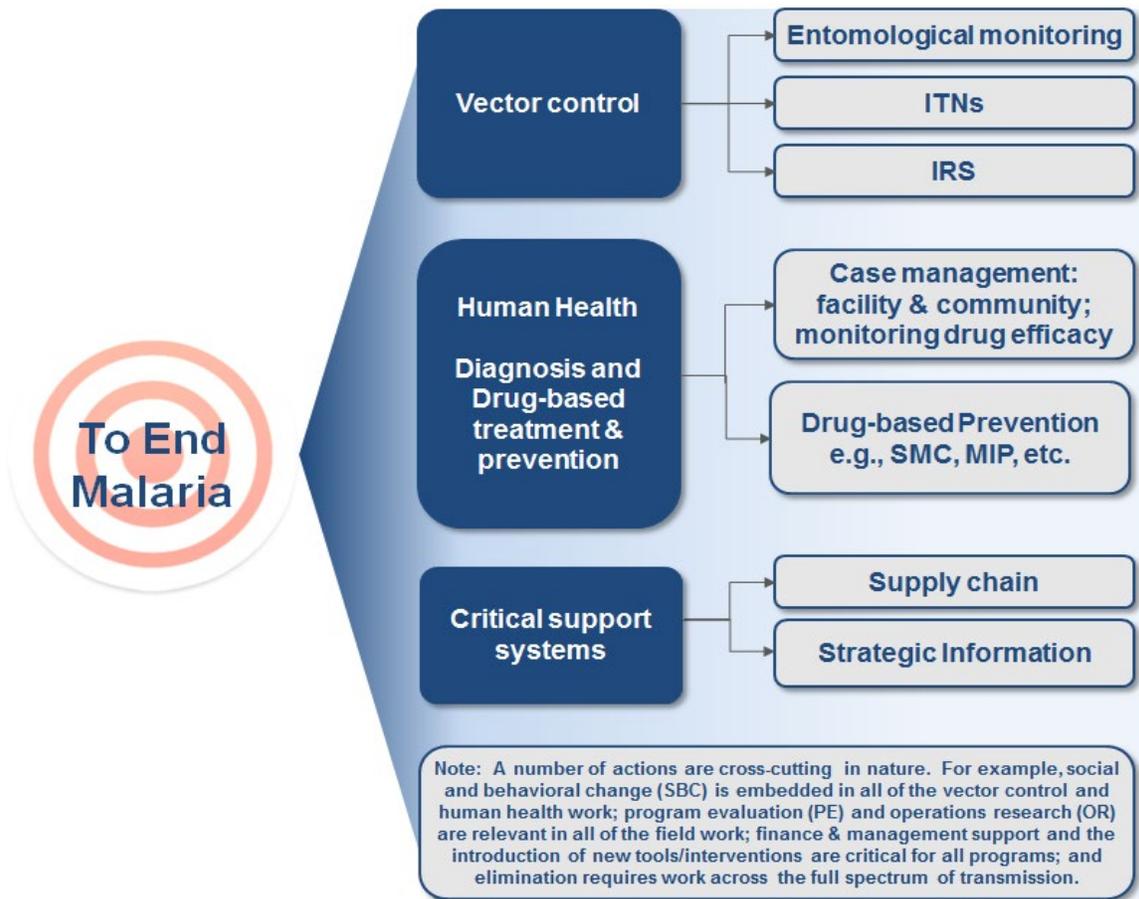
Tanzania at a glance

- **Geography:** Located in East Africa along the Indian Ocean with a land area of over 947,000 square kilometers. Comprised of the Mainland, Zanzibar (two islands, Unguja and Pemba), and a number of offshore islands.
- **Climate:** Largely tropical climate with regional variations due to topography, with cooler, less humid regions in the highlands. The north and east experience two rainy seasons in October - December and March - May, while the central, southern and western regions have one longer wet season from October through April or May.
- **Population in 2019:** 54,265,158 (National Bureau of Statistics)
- **Population at risk of malaria:** 100% (WHO)
- **Principal malaria parasites:** *Plasmodium falciparum* (NMCP, ZAMEP)
- **Principal malaria vectors:** *An. arabiensis*, *An. funestus* s.s., *An. gambiae* s.s. (National Institute of Medical Research; ZAMEP)
- **Malaria incidence per 1000 population:** 113/1000 (WHO)
- **Under-five mortality rate:** 67/1000 (2015/16 DHS)
- **World Bank Income Classification & GDP:** Low income - GDP per capita \$1,051 (World Bank Group)
- **Political system:** Multi-Party Democratic Republic
- **Trafficking in Persons designations, 2016-2018:** Tier 2 Watchlist Country (Department of State- Trafficking in Persons Report, June 2019)
- **Malaria funding and program support partners include (but are not limited to):**
 - Global Fund to Fight AIDS, Tuberculosis and Malaria (GF)
 - U.S. President's Malaria Initiative (PMI)

- World Health Organization (WHO)
- Swiss Development Corporation (SDC)
- Comic Relief
- **PMI Support of National Malaria Control Strategy:** As a major partner of the Tanzania National Malaria Control Program and the Zanzibar Malaria Elimination Program, PMI aims to help Mainland Tanzania reduce its malaria burden with a focus on the high to moderate regions, and to help Zanzibar push towards its goal of elimination. PMI supports most of the interventions laid out in both programs' strategic plans. (See III. Overview of PMI's support of Tanzania's Malaria Control Strategy for additional details)
- **PMI Investments:** Tanzania began implementation as a PMI focus country in FY 2006. The proposed FY 2020 PMI budget for Tanzania is \$40 million; that brings the total PMI investment to over \$610 million.

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

Figure 1. PMI's Approach to End Malaria



PMI's approach is both consistent with and contributes to USAID's Journey to Self-Reliance framework. Building and strengthening the capacity of Tanzania'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/Tanzania will continue to rely on and engage with local partners such as the National Institute of Medical Research (NIMR), Ifakara Health Institute (IHI), and Muhimbili University of Health and Allied Sciences (MUHAS). Finally, PMI/Tanzania is continuing to build private sector partnerships to extend case management and service delivery through Accredited Drug Dispensing Outlets (ADDOs) and working alongside other partners to advocate for the inclusion of mRDT testing in their suite of services offered.

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

II. MALARIA SITUATION AND MALARIA CONTROL PROGRESS IN TANZANIA

The entire population of Mainland Tanzania is considered at risk for malaria, although transmission varies significantly among and within regions. *Plasmodium falciparum* accounts for 96 percent of malaria infection in Tanzania. The principal vectors of malaria in Tanzania are mosquitoes of the *Anopheles gambiae* complex (*An. gambiae* s.s. and *An. arabiensis*), and more recently, *An. funestus*. Tanzania has made significant progress in malaria control in partnership with PMI, the Global Fund, DFID, the Swiss Development Corporation, research institutions, and others. Results from the 2017 Tanzania HIV and Malaria Indicator Survey (THMIS) showed that 7 percent of children under five years of age in Tanzania tested positive for malaria by mRDT, down from the 2011-2012 THMIS (9 percent) and 2015-2016 TDHS-MIS (14 percent). Prevalence on the Mainland varies by region from <1 percent in the highlands of Arusha to as high as 15 percent in the Southern Zone and 24 percent along the Lake and Western Zones. Other encouraging indicators from the 2017 THMIS include:

- 78 percent of households owned at least one insecticide-treated mosquito net (ITN), an increase from 38 percent in 2007-8.
- 54 percent of children slept under bed nets, an increase from 25 percent in 2007-8.
- 57 percent of pregnant women received medications to prevent malaria, an increase from 30 percent in 2007-8.

Figure 2. Trends in Malaria Prevalence

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

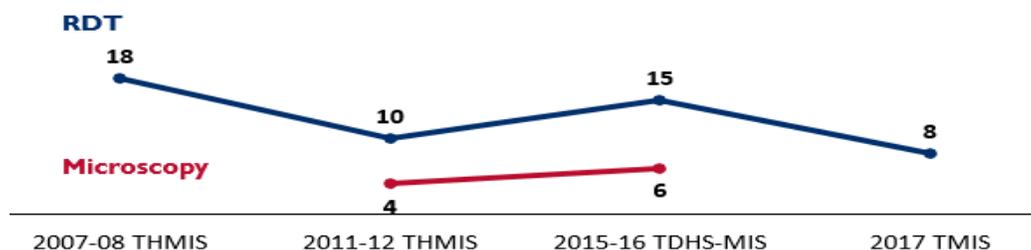


Figure 3. Trends in Prevalence of Low Hemoglobin

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

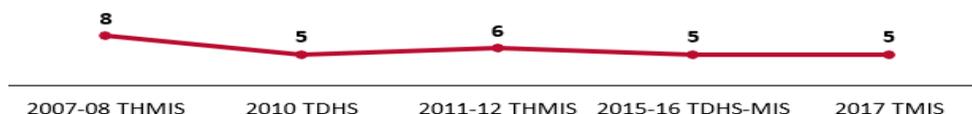
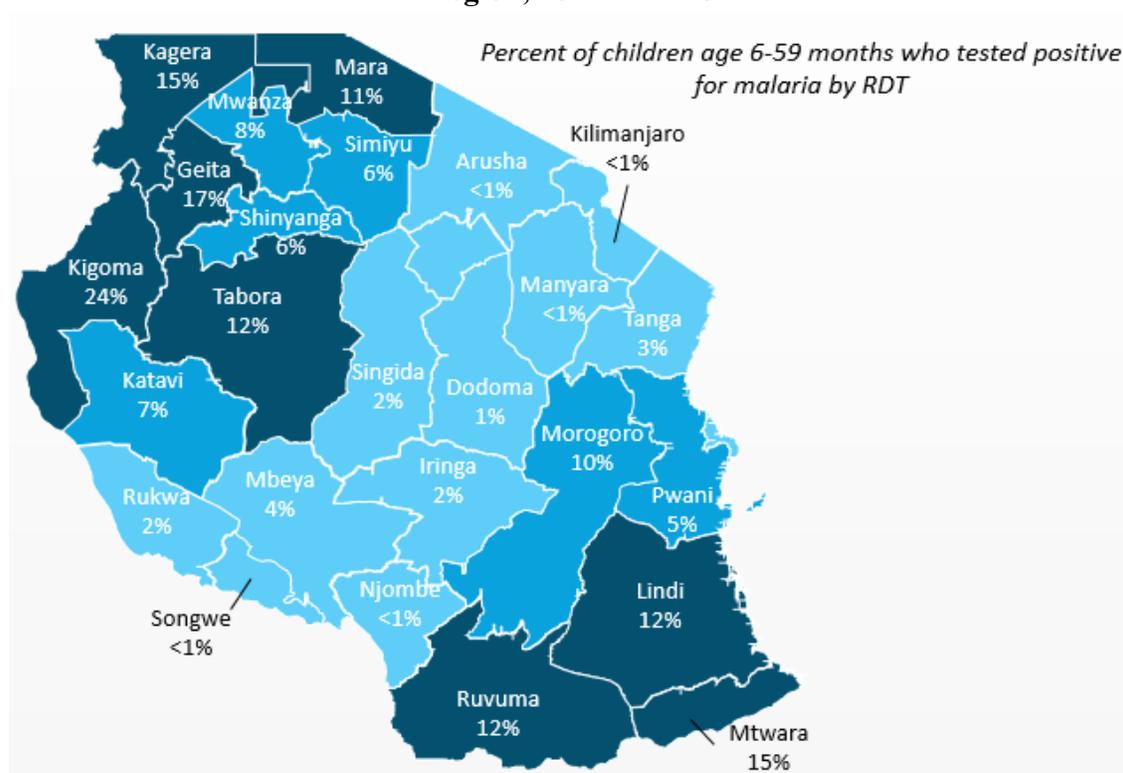


Figure 4. Malaria Parasite Prevalence among Children Under Five Years of Age by Region, 2017 THMIS



Source: 2017 THMIS

Figure 5. Key Indicators for Malaria Prevention, Treatment, Coverage, and Impact

Indicator	2004-05 TDHS	2007-08 THMIS	2010 TDHS	2011-12 THMIS	2015-16 TDHS- MIS	2017 THMIS
% Households with at least one ITN	23%	38%	63%	92%	65%	78%
% Households with at least one ITN for every two people	n/a	n/a	n/a	57%	39%	42%
% Population with access to an ITN	n/a	n/a	n/a	n/a	56%	53%
% Population that slept under an ITN the previous night*	n/a	n/a	45%	69%	49%	52%
% Children under five years of age who slept under an ITN the previous night*	16%	25%	64%	73%	54%	54%
% Pregnant women who slept under an ITN the previous night*	15%	26%	57%	76%	54%	51%
% Children under five years of age with fever in the last two weeks for whom advice or treatment was sought ¹	n/a	n/a	65%	78%	80%	75%
% Children under five with fever in the last two weeks who had a finger or heel stick	n/a	n/a	n/a	25%	36%	43%
% Children receiving an ACT among children under five years old with fever in the last two weeks who received any antimalarial drugs	n/a	n/a	n/a	61%	n/a	89%
% Women who received two or more doses of IPTp during their last pregnancy in the last two years ²	22%	30%	27%	33%	35%	57%
% Women who received three or more doses of IPTp during their last pregnancy in the last two years	n/a	n/a	n/a	n/a	8%	26%
Under-five mortality rate per 1,000 live births	133	112	93	n/a	79	n/a
% Children under five years of age with parasitemia (by microscopy , if done)*	n/a	n/a	n/a	4%	6%	n/a
% Children under five years of age with parasitemia (by RDT , if done)*	n/a	18%	n/a	10%	15%	8%
% Children under five years if age with severe anemia (Hb<8gm/dl)	n/a	8%	5%	6%	5%	5%

Source: Indicators from Demographic Health Surveys (DHS) and Malaria Indicator Surveys (MIS) from 2004-2017.

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

²Note that this indicator has been recalculated according to the newest definition, at least the specified number of doses of SP/Fansidar from any source.

*DHS surveys are generally fielded during the dry season, as opposed to MIS surveys, which are deliberately fielded during the high transmission season, which should be taken into consideration when interpreting these indicators.

Figure 6. Evolution of Key Malaria Indicators Reported through Routine Surveillance Systems

Indicator	2014	2015	2016	2017	2018
# Suspect malaria cases ¹	N/A	N/A	N/A	N/A	N/A
# Patients receiving diagnostic test for malaria ²	N/A	N/A	10,298,455	17,883,913	22,275,989
Total # malaria cases ³ (confirmed and presumed)	7,767,712	8,524,350	6,562,660	5,954,189	6,547,499
# Confirmed cases ⁴	4,912,345	6,009,819	5,542,505	5,658,839	6,438,519
# Presumed cases ⁵	2,855,367	2,514,531	1,020,155	295,350	108,980
% Malaria cases confirmed ⁶	63.2%	70.5%	84.5%	95%	98.3%
Test positivity rate (TPR) ⁷	N/A	N/A	53.8%	31.6%	28.9%
Total # <5 malaria cases ⁸	3,472,482	3,399,763	2,491,911	2,277,994	2,464,013
% Cases under 5 ⁹	44.7%	39.9%	38%	38.3%	37.6%
Total # severe cases ¹⁰	371,687	529,146	410,013	334,711	324,747
Total # malaria deaths ¹¹	699	5,429	4,068	3,680	2,541
# Facilities reporting ¹²	7,535	7,606	7,922	8,153	8,505
Data form completeness (%) ¹³	92.7%	98.7%	98.8%	99.7%	99.5%

Data sources and comments: HMIS/DHIS2

N/A = not available

Definitions:

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

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

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

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

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

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

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

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

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

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

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

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

¹³ Data completeness: Number of monthly reports received from health facilities/Number of health facility reports expected (i.e., number of facilities expected to report multiplied by the number of months considered).

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

PMI supports a comprehensive package of malaria control interventions in support of the NMCP's *National Malaria Strategic Plan 2014 - 2020*. The plan outlines a long-term vision of a society free from malaria. The mission articulated in the strategy is that all Tanzanians have access to quality, effective, safe, and affordable malaria interventions through timely and sustainable collaborative efforts with partners and stakeholders at all levels. The goal is to reduce the average country malaria prevalence from ten percent in 2012 to less than one percent in 2020. The strategy to achieve these targets consists of five core interventions:

- 1) integrated malaria vector control,
- 2) malaria diagnosis, treatment, preventative therapies, and vaccines,
- 3) promotion of malaria prevention and curative services through information, education, and communication,
- 4) surveillance monitoring, and evaluation, and
- 5) program management, partnership development, and resource mobilization.

Each intervention has a strategic objective and target and specific objectives and outcomes.

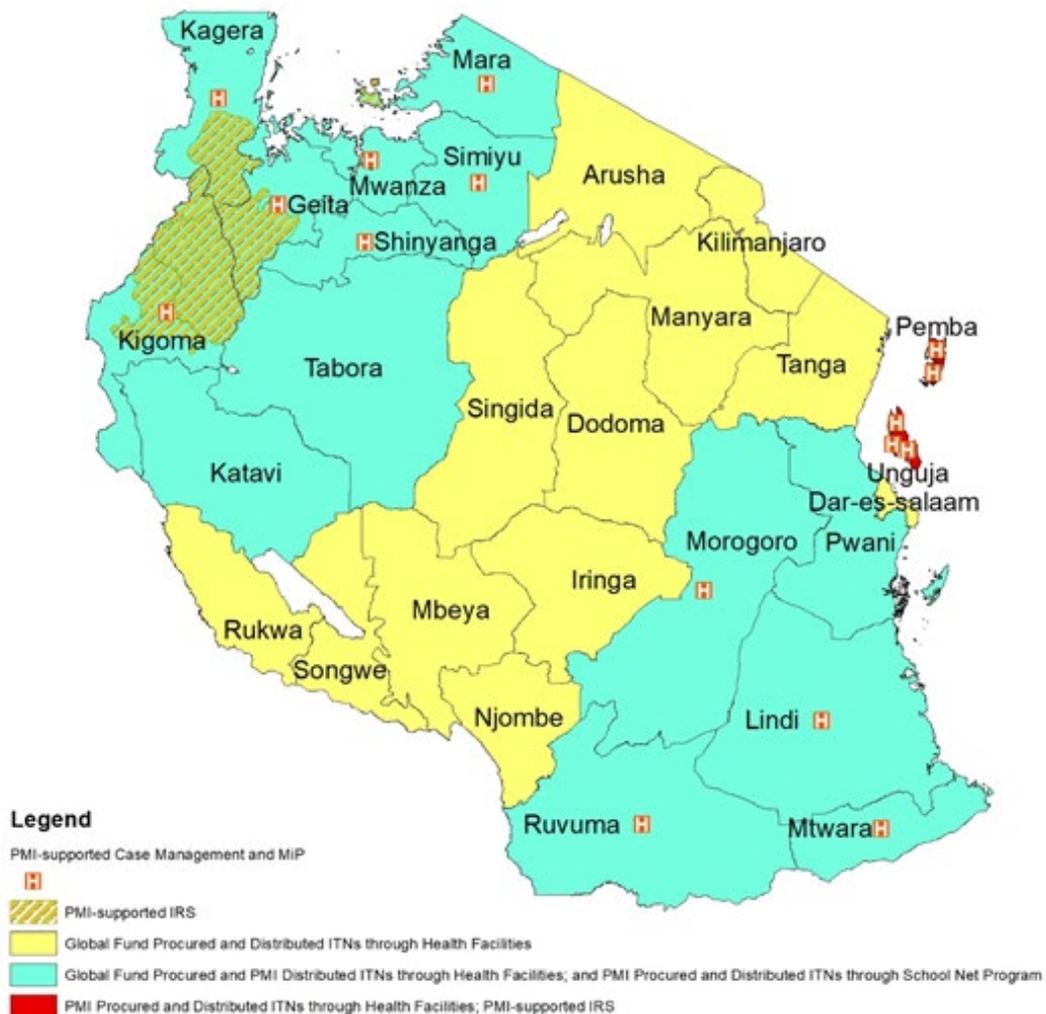
PMI focuses most of its technical assistance on 11 of 25 regions: seven high burden regions in the Lake/Western Zones and four high burden regions in the Southern Zone. Implementation support is provided by the Global Fund for interventions in the remaining 14 regions. Consistent with *PMI Technical Guidance*, PMI/Tanzania's investment strategy focuses on the promotion of high coverage of a set of high-quality, evidence-based malaria control interventions:

- 1) Indoor residual spraying, complemented by entomologic monitoring;
- 2) Insecticide treated mosquito nets, distributed continuously through clinics and schools;
- 3) Malaria in pregnancy interventions, including intermittent preventive treatment;
- 4) Case management of malaria, including prompt diagnosis and treatment and pharmaceutical supply chain strengthening;
- 5) Data for decision making, gleaned from surveillance, monitoring and evaluation, and operations research activities; and
- 6) Social and behavior change (SBC) activities, to promote consistent and correct use of interventions by high proportions of target populations and service providers.

In 2018, the NMCP created a *Supplementary Malaria Midterm Strategic Plan (SMMSP) 2018-2020* in response to recommendations arising from the 2017 Mid-Term Review, which was conducted in partnership with WHO. The major update is a stratification of malaria burden and

delineation of intervention packages tailored to each epidemiological stratum. Regions in the Lake, Western, and Southern Zones are largely classified in the moderate and high burden strata, where the NMCP priority remains burden reduction. PMI support for interventions, as listed above, largely aligns with the intervention packages and approaches recommended in the SMMSp for these strata. Exceptions to PMI support of the SMMSp intervention packages include bio-larviciding and seasonal malaria chemoprevention (SMC)/intermittent preventive treatment (IPT) in school children (IPTsc) and in infants (IPTi) using DHA-piperazine.

Figure 7. PMI-Supported Interventions, 2019



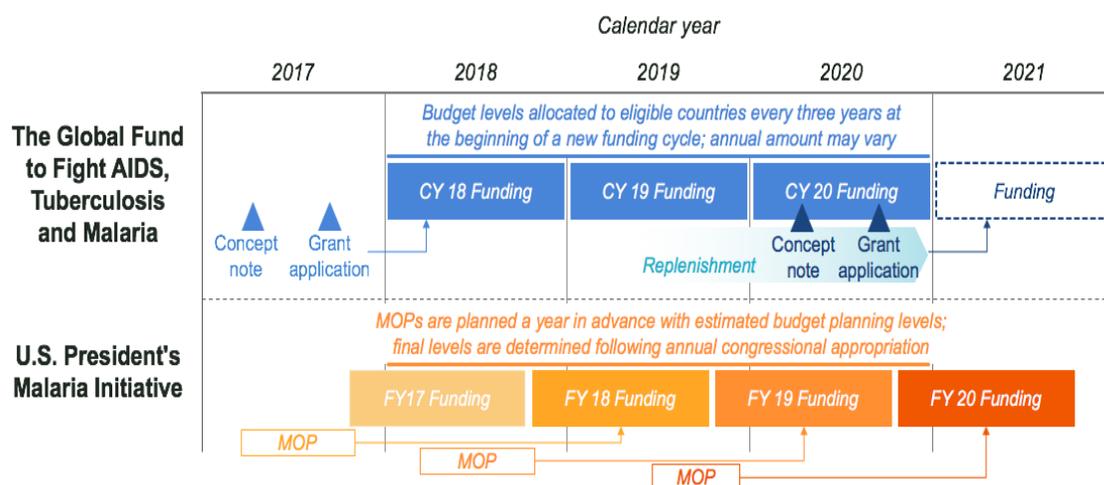
IV. PARTNER FUNDING LANDSCAPE

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 8 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 8. PMI and Global Fund Funding Cycle Alignment



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

Figures 9 and 10 summarize contributions by external partners and host country government in calendar years 2018-20, with the goal of highlighting total country investments. For Tanzania, data is available for PMI (FY 2017-2019) 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.

NOTE: PMI and Global Fund support below include combined funding for both Mainland and Zanzibar.

Figure 9. Annual Budget by Level 1 Category

Year ¹	Funder	Vector Control	Case Management	Drug-Based prevention ²	Supply Chain ³	Monitoring, Evaluation & Research	Other Cross-Cutting and Health Systems Strengthening	Total
FY17/ CY18	PMI	\$1.8M	\$3.3M	-	\$0.2M	\$0.9M	\$2.7M	\$5.9M
	Global Fund	\$9.6M	\$15.7M	-	\$3.3M	\$2.9M	\$14.3M	\$45.8M
	Total	\$11.4M	\$16M	-	\$3.5M	\$3.8M	\$17M	\$51.7M
FY18/ CY19	PMI	\$1.8M	\$3.3M	-	\$0.2M	\$1.0M	\$2.8M	\$6.1M
	Global Fund	\$53.7M	\$24.3M	-	\$1.6M	\$5.8M	\$17.7M	\$103.1M
	Total	\$55.5M	\$24.6M	-	\$1.8M	\$6.8M	\$20.5M	\$109.2M
FY19/ CY20	PMI	\$23.5M	\$5.5M	\$1.1M	\$0.7M	\$2.1M	\$5.1M	\$38.0M
	Global Fund	\$12.8M	\$24.4M	-	\$0.7M	\$1.7M	\$3.3M	\$42.9M
	Total	\$36.3M	\$29.9M	\$1.1M	\$1.4M	\$3.8M	\$8.4M	\$80.9M

Footnotes:

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

PMI budget data accurate as of Sept 1, 2019.

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

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

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

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

Level 1 Category	Level 3 Category	FY17/CY18 ¹		FY18/CY19 ¹		FY19/CY20 ¹	
		PMI	Global Fund	PMI	Global Fund	PMI	Global Fund
Vector Control	Procure ITNs for Continuous Distribution	\$8.7M	\$7.5M	\$10.8M	\$9.9M	\$8.2M	\$10.2M
	Distribute ITNs via Continuous Distribution	\$8.1M	\$0.2M	\$9.3M	\$0.3M	\$5.7M	\$0.3M
	Procure ITNs for Mass Campaigns	-	-	-	\$26.4M	-	-
	Distribute ITNs via Mass Campaigns	-	-	-	\$11.3M	-	-
	Other ITN Implementation*	-	-	-	-	-	-
	IRS Implementation ⁴	\$11M	-	\$6.3M	-	\$8.6M	-
	Procure IRS Insecticide ⁴	-	-	-	-	-	-
	Other IRS*	-	-	-	-	\$0.0M	-
	Entomological Monitoring	\$1.3M	\$0.3M	\$1M	\$0.3M	\$0.9M	\$0.3M
	SBC for Vector Control ⁵	-	\$0.5M	-	\$0.5M	-	\$0.6M
	Other vector control measures	-	-	-	-	-	-
Removing human rights- and gender-related barriers to vector control programs**	-	-	-	-	-	-	
Case Management	Active Case Detection**	-	\$0.1M	-	\$0.2M	-	\$0.2M
	Community-based case management	-	-	-	-	-	-
	Facility-based case management	-	\$0.7M	-	\$0.9M	-	\$0.8M
	Private-sector case management	-	\$0.8M	-	\$0.1M	-	\$0.1M
	Procure ACTs	\$2.0M	\$6.7M	\$1.5M	\$8.3M	-	\$7.9M

Level 1 Category	Level 3 Category	FY17/CY18 ¹		FY18/CY19 ¹		FY19/CY20 ¹	
		PMI	Global Fund	PMI	Global Fund	PMI	Global Fund
	Procure Drugs for Severe Malaria	-	-	\$0.5M	\$3.9M	-	\$4.3M
	Procure Other Diagnosis-Related Commodities	-	-	-	-	-	-
	Procure Other Treatment-Related Commodities	-	-	-	-	-	-
	Procure RDTs	-	\$4.5M	-	\$6.3M	-	\$6.5M
	Therapeutic Efficacy	\$0.3M	-	\$0.3M	-	\$0.3M	-
	SBC for Case Management ⁵	-	\$0.3M	-	\$0.2M	-	\$0.2M
	Other Case Management	\$4.1M	-	\$5.5M	-	\$5.2M	-
Drug-Based Prevention²	Procure SMC-Related Commodities	-	-	-	-	-	-
	SMC Implementation	-	-	-	-	-	-
	Prevention of Malaria in Pregnancy Implementation	\$1.2M	-	\$1.0M	-	\$1.1M	-
	Procure IPTp-Related Commodities	\$0.3M	-	-	-	-	-
	IPTi**	-	-	-	-	-	-
	SBC for Drug-Based Prevention ⁵	-	-	-	-	-	-
	Other Prevention**	-	-	-	-	-	-
Supply Chain³	In-Country Supply Chain ³	-	-	-	-	-	-
	Supply Chain Infrastructure	-	\$1.4M	-	\$0.6M	-	-
	Ensuring Quality	-	\$1.1M	-	\$0.7M	-	\$0.4M
	Pharmaceutical Management Systems Strengthening	\$0.9M	-	\$1M	-	\$0.7M	-
	Supply Chain System Strengthening	-	\$0.8M	-	\$0.3M	-	\$0.3M

Level 1 Category	Level 3 Category	FY17/CY18 ¹		FY18/CY19 ¹		FY19/CY20 ¹	
		PMI	Global Fund	PMI	Global Fund	PMI	Global Fund
Monitoring, Evaluation & Research	Reporting, Monitoring, and Evaluation	\$1.4M	\$0.5M	\$0.9M	\$1.1M	\$1.9M	\$0.7M
	Program and data quality, analysis and operations research	\$0.1M	\$2.1M	\$0.5M	\$2.9M	-	\$0.7M
	Surveys	-	\$0.1M	-	\$0.9M	-	\$0.1M
	Other Data Sources**	-	\$0.2M	-	\$0.8M	-	\$0.1M
	Support for FETP*	-	-	-	-	\$0.1M	-
Other Cross-Cutting and Health Systems Strengthening	Integrated service delivery, quality improvement, and national health strategies**	-	\$8.9M	-	\$8.4M	-	\$0.3M
	Financial management systems**	-	\$0.1M	-	\$0.6M	-	\$0.1M
	Community responses and systems**	-	\$0.5M	-	\$0.7M	-	\$0.3M
	Support for PCV and SPAs*	-	-	-	-	\$0.0M	-
	Cross-Cutting Human Resources for Health**	-	\$2.0M	-	\$5.1M	-	\$0.1M
	Central and Regional Program management ⁶	\$0.1M	\$0.2M	\$0.9M	\$0.3M	\$0.6M	\$0.2M
	In-Country Staffing and Administration*	-	-	-	-	\$2.3M	-
	Other Program Management**	-	\$2.7M	-	\$2.6M	-	\$2.4M
	SBC Unspecified ⁵	\$2.2M	-	\$1.5M	-	\$2.2M	-
Total		\$41.7M	\$45.7M	\$41M	\$103.0M	\$38.0M	\$42.9M

Footnotes:

- ¹ Each year's figures represent the FY for PMI and CY for Global Fund that most closely align. Global Fund budget data accurate as of July 1, 2019. PMI budget data accurate as of Sept 1, 2019;
- ² Drug-based prevention, including SMC and MIP where relevant;
- ³ Covers management of in-country warehousing & distribution of malaria commodities, except for ITNs which are separately captured under "Vector Control";
- ⁴ May include cost of IRS insecticides if full cost of IRS implementation including commodities was bundled within single line in prior year's Table 2;

⁵. SBC was not historically split in the PMI budget across intervention areas, hence the row "SBC (unspecified)" for the FY 2020 MOP cycle.

Going forward, SBC proposed activities will be categorized across vector control, case management, and prevention (new categories). 6.

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

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

* Category currently funded by PMI only

** Category currently funded by Global Fund only

Figure 11. Annual Budget, Breakdown by Commodity

Year ¹	Funder	ITNs for Continuous Distribution	ITNs for Mass Distribution	IRS Insecticide ⁴	ACTs	RDTs	Severe Malaria	SMC-Related	IPTp-Related	Total
FY17/CY18	PMI ²	\$8.7M	-	-	\$2.0M	-	-	-	\$0.3M	\$11M
	Global Fund ³	\$7.5M	-	-	\$6.7M	\$4.5M	-	-	-	\$18.8M
	Total	\$16.2M	-	-	\$8.7M	\$4.5M	-	-	-	\$29.4M
FY18/CY19	PMI ²	\$10.8M	-	-	\$1.5M	-	\$0.5M	-	-	\$11.6M
	Global Fund ³	\$9.9M	\$26.4M	-	\$8.3M	\$6.3M	\$3.9M	-	-	\$54.7M
	Total	\$20.7M	\$26.4M	-	\$9.8M	\$6.3M	\$4.4M	-	-	\$54.7M
FY19/CY20	PMI ²	\$8.2M	-	-	-	-	-	-	-	\$8.2M
	Global Fund ³	\$10.2M	-	-	\$7.9M	\$6.5M	\$4.3M	-	-	\$28.9M
	Total	\$18.4M	-	-	\$7.9M	\$6.5M	\$4.3M	-	-	\$37.1M

Footnotes:

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

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

³. Global Fund commodity costs in the table above only include ex-works commodity value in a given year. Additional costs, including quality control, freight, insurance, and customs totaled \$18.9 million over the CY2018-2020 period;

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

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

V. ACTIVITIES TO BE SUPPORTED WITH FY 2020 FUNDING

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

ANNEX A: INTERVENTION-SPECIFIC DATA

1. VECTOR CONTROL

NMCP objective
<p>The strategic objective of integrated malaria vector control as presented in the Tanzania National Malaria Strategic Plan 2015-2020 and Supplementary Malaria Midterm Strategic Plan; 2018-2020 is to reduce transmission of malaria by scaling-up and maintaining effective and efficient vector control interventions. The targets are to reduce the entomological inoculation rate to <0.1 by 2020 and increase the percentage of the population who slept under an ITN the previous night or in a dwelling sprayed with IRS in the past six months from 73 percent in 2012 to 90 percent in 2020. The specific objectives of integrated vector control are to:</p> <ol style="list-style-type: none">1) Ensure adequate access to LLINs among the population at risk according to transmission settings;2) Consolidate and expand IRS in epidemiologically and operationally suitable area;3) Implement appropriate, sustainable, and quality larval source management interventions in suitable epidemiological and operational areas;4) Promote effective environmental management for malaria control amongst targeted communities;5) Introduce new innovations in vector control products and information systems to manage insecticide resistance and address changing vector behavior; and6) Provide a strategic framework for coordination and continuous assessment for the implementation of evidence-based IMVC interventions.
NMCP approach
<p>The Supplementary Malaria Midterm Strategic Plan (2018- 2020) outlined vector control approaches that laid down the most appropriate methods or combinations of malaria vector control activities that will help the NMCP to achieve its goal of reducing the malaria parasite prevalence to less than 1 percent in 2020. The strategy also provided approaches and set up of implementation of intervention packages to match with malaria transmission diversity in the country. It provides a credible and realistic strategic approach towards malaria elimination in Tanzania mainland.</p> <p>The malaria vector control approaches are:</p> <ol style="list-style-type: none">1. Ensuring adequate access to ITNs among the population at risk according to transmission settings. Ensure by 2020 that 85 percent of the population of Tanzania has access to an ITN within their household, which will be achieved using deployment of ITNs by:

- Mass replacement campaign in all households in low, moderate and high strata areas
 - School net distribution in low, moderate, and high strata areas
 - ANC/EPI distribution countrywide
 - ITN distribution through socio-economic vulnerable populations countrywide
 - Reviving the commercial market
2. Consolidate and expand IRS in epidemiologically and operationally suitable areas, for example conduct IRS in endemic areas/councils with perennial high transmission and resilient to change. The strategic plan calls for:(a) capacity building in local government authorities and the private sector to plan, manage, implement, and evaluate IRS, and (b) application of IRS in selected areas.
 3. Appropriate, sustainable, and quality larval source management interventions in suitable epidemiological and operational areas.
 4. Provide strategic framework for coordination and continuous assessment for the implementation of evidenced-based integrated malaria vector control (IMVC) interventions, so that at least two new innovations for malaria control are adopted in Tanzania by 2021.
 5. Deployment of appropriate IMVC interventions suitable for “very low” epidemiological settings for elimination.

An ITN mass replacement campaign covering ten regions that have low malaria prevalence is scheduled for early 2020. All activities for mass replacement will be supported by the Global Fund.

PMI objective, in support of NMCP

PMI specifically supports three operational objectives:

1. PMI supports ITN coverage, including procurement and annual distribution of ITNs through a school net program (SNP) in the 14 regions with the highest prevalence of malaria. PMI also supports the distribution of Global Fund procured ITNs through reproductive and child health (RCH) channels (ANC/EPI) at all primary health facilities in the same 14 regions of the country.
2. PMI supports rapid assessment surveys to determine ITN coverage across the 14 regions that are included in the SNP.
3. PMI supports IRS, including procurement of insecticides and spray operation logistics for about six districts where there is a combination of high prevalence of malaria and vector resistance to pyrethroid insecticides. The IRS operation adheres to high standards for the protection of the environment and safe disposal of waste, in accordance with the approved Pesticide Evaluation Report and Safe Use Action Plans. Environmental inspection visits are

conducted regularly to assess compliance with U.S. Government and Tanzanian national environmental standards.

PMI supports entomological monitoring through three activities:

- 1) Yearly nationwide monitoring of resistance to insecticides used for vector control;
- 2) Monthly cone bioassay monitoring of residual insecticidal activity of the IRS program; and
- 3) Monitoring of vector species abundance and distribution, resting behavior, and sporozoite rates at established sentinel sites.

The NMCP, with Global Fund support, conducts monthly monitoring on vector species abundance and spatial/temporal distribution in 28 sites nationwide, mainly in areas not supported by PMI.

Larval source management and environmental management are not supported by PMI.

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

- PMI supported an assessment to determine the ITN coverage across the 14 regions that are included in the SNP. The findings were used to determine the ITN input required to maintain population access in the SNP regions at greater than 70 percent.
- PMI procured 1,849,937 standard ITNs and 1,261,238 PBO nets.
- Between October 2018 - September 2019, PMI supported the distribution of 1,261,238 PBO nets for SNP, as well as the distribution of Global Fund procured 2,547,788 standard ITNs through RCH channels in the SNP regions.
- PMI supported the coordination of NMCP and President's Office Regional Administration and Local Government (PORALG) in reviewing the malaria incidence data from DHIS2 that were used for selection of districts for IRS for spray rounds in late 2019/early 2020. The principal criteria used to determine which districts were included was: (1) overall malaria positivity rates, (2) incidence, as determined using DHIS2 and recent census data, (3) results from recent school-based surveys, and (4) evidence of vector resistance to pyrethroids. Operational factors were also considered.
- PMI supported blanket IRS in six districts in the Lake Zone reaching approximately 472,539 structures and protecting about 2.5 million people, under leadership from NMCP.
- PMI supported IRS efficacy and longitudinal entomological monitoring and laboratory support for sample processing and analysis. PMI support focuses on the national insecticide resistance monitoring program at 23 mainland sentinel sites.

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

- PMI is supporting rapid assessment surveys to determine the ITN coverage across the 14 regions that are included in the SNP. NetCALC, or other suitable software programs, will be used to determine the ITN input required to maintain population access in the SNP regions at greater than 70 percent.
- Procurement and distribution of ITNs for SNP, as well as support the distribution of Global Fund procured ITNs through RCH channels in the SNP regions. PMI will procure standard LLINs for six regions and PBOs nets for eight regions.
- Blanket IRS in six districts in the Lake Zone reaching approximately 470,000 structures and protecting about 2.5 million people. Under leadership from the NMCP, PMI will select an appropriate non-pyrethroid, long-lasting insecticide for use in the IRS round in late 2020 and/or early 2021.
- Entomologic monitoring: This includes longitudinal monitoring in the Lake Region in PMI-supported IRS areas and WHO bioassays to monitor insecticide residual efficacy. In the Lake Region where PMI is supporting the distribution of LLIN+PBO nets, the longitudinal monitoring will include areas where these nets will be implemented. PMI will continue to provide laboratory support for the analysis of entomological samples.
- National Insecticide Monitoring: Insecticide resistance monitoring at 23 national sentinel sites, and increased testing in regions where there may be the introduction of new interventions. Insecticides to be tested may include next generation insecticides that may be used in IRS or ITNs and insecticide resistance intensity testing expanded. This will provide a database of insecticide resistance and efficacy and increased monitoring of possible impact on IRS and ITNs for the NMCP and other partners.
- Technical assistance for SBC and entomological monitoring: PMI/CDC staff will conduct two (entomology) and one (SBC) technical assistance (TA) visits.
- PMI supported blanket IRS in six districts in the Lake Zone reaching approximately 472,539 structures and protecting about 2.5 million people, under leadership from NMCP.
- Refreshing and tailoring of promotional messages and materials to increase household readiness and acceptance of IRS in the lake zone and Zanzibar drawing from best practice experience.
- SBC activities such as intensified community theatre and radio program across PMI priority regions by further regionalizing content for these communication mediums. This will be achieved through a better understanding and prioritization of context specific ITN use social norm barriers and influencers.

- For IRS, SBC activities will be used to inform people where, when, and why IRS activities are being conducted in their community; inform people in areas where IRS was withdrawn why IRS was withdrawn and inform them of available methods of alternative protection; and, inform communities of the reasons why other insects appear after IRS.
- SBC activities, under the “*Chandarua Kliniki*” campaign, will be conducted in the 14 SNP regions to increase awareness of the SNP, increase awareness of the availability of ITNs in health facilities and promote correct and consistent net use and net care.

1.A. ENTOMOLOGICAL MONITORING

Key Goal

Determine the geographic distribution, bionomics, and insecticide resistance profiles of the main malaria vectors in the country to inform vector control decision-making

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

Funding levels are not expected to change. It is expected that the FY 2020 PMI investment in entomological surveillance in provinces where PMI is supporting IRS and the introduction of LLINs with PBO will be crucial to the development of future national strategies for malaria control and the mitigation of insecticide resistance for vector control strategies.

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

Key Question 1

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

Supporting Data

PMI supported insecticide resistance testing in a total of 13 provinces at 22 sites. In addition, PMI supported longitudinal entomological monitoring activities in the Lake Zone in 4 provinces at 11 sites.

Figure A1. Entomological Surveillance Sites for PMI-Supported IRS and LLINs in the Lake Zone from October 2018 – September 2019

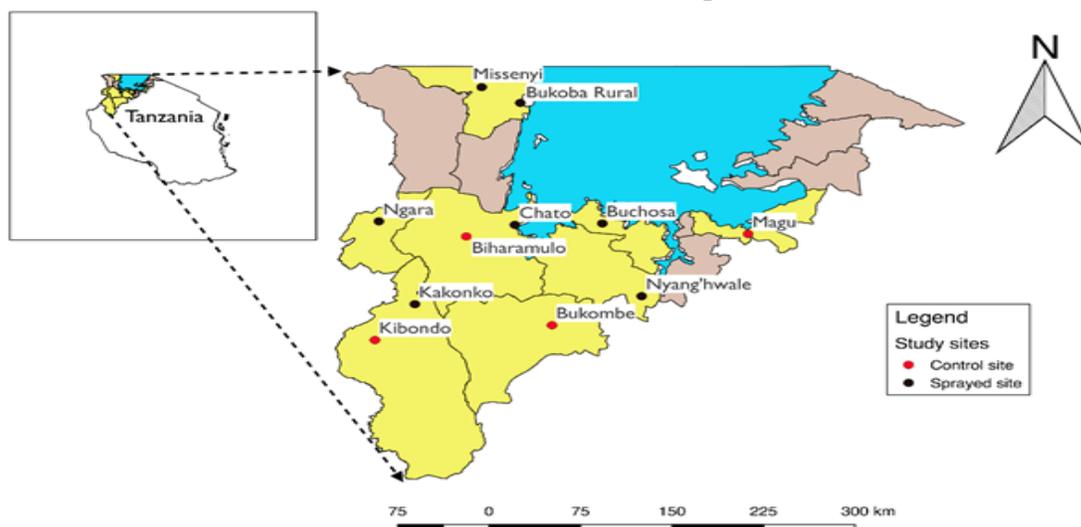


Figure A2. PMI-Supported Entomological Monitoring Activities for Mainland Tanzania for October 2018 – September 2019

Province	Total sentinel sites	Activities	Supported by
Kagera	4 (Missenyi, Bukoba Rural, Ngara, Biharamulo) 2(Missenyi, Biharamulo)	Longitudinal Monitoring (4) Resistance Monitoring (2)	PMI
Geita	3 (Chato, Nyang'hwale, Bukombe) 1 (Geita DC)	Longitudinal Monitoring (3) Resistance Monitoring (1)	PMI
Kigoma	2 (Kakonko, Kibondo) 3(Kakonko, Kasulu, Kibondo)	Longitudinal Monitoring (2) Resistance Monitoring (3)	PMI
Mwanza	2 (Buchosa, Magu) 1 (Ukerewe)	Longitudinal Monitoring (2) Resistance Monitoring (1)	PMI
Tabora	2 (Igunga and Sikonge)	Resistance Monitoring (2)	PMI
Pwani	1 (Kibaha DC)	Resistance Monitoring (1)	PMI
Simiyu	2 (Bariadi DC, Meatu)	Resistance Monitoring (2)	PMI
Lindi	2(Kilwa, Nachingwea)	Resistance Monitoring (2)	PMI
Mara	1 (Rorya)	Resistance Monitoring (1)	PMI
Mtwara	2(Newala, Tandahimba)	Resistance Monitoring (2)	PMI
Ruvuma	2 (Ruvuma, Tunduru)	Resistance Monitoring (2)	PMI

Province	Total sentinel sites	Activities	Supported by
Shinyanga	2 (Shinyanga DC, Ushetu)	Resistance Monitoring (2)	PMI
Morogoro	1 (Kilosa)	Resistance Monitoring (1)	PMI

Figure A3: Summary of vector bionomics from entomological surveillance in the Lake Zone from October 2018 – September 2019*

Site	Major Vector	Minor Vector	Peak Abundance	Preferred Biting Location	Preferred Resting Location	Preferred Host	Peak Sporozoite Rate
Missenyi	<i>An. gambiae</i> s.l.	<i>An. Funestus</i> s.l.	N/A	<i>An. gambiae</i> s.l. (I) <i>An. funestus</i> s.l.(I)	<i>An. gambiae</i> s.l. (I) <i>An. funestus</i> s.l. (I)	<i>An. gambiae</i> s.l. (Human) <i>An. Funestus</i> s.l. (Huma, Mixed)	2.7
Bukoba Rural	<i>An. gambiae</i> s.l.	<i>An. Funestus</i> s.l.	N/A	<i>An. gambiae</i> s.l.(O) <i>An. funestus</i> s.l. (O)	<i>An. gambiae</i> s.l. (O) <i>An. funestus</i> s.l. (Undetermined)	<i>An. gambiae</i> s.l. (Mixed) <i>An. funestus</i> .l. (Mixed)	2.4
Ngara	<i>An. gambiae</i> s.l.	<i>An. funestus</i> s.l.	N/A	<i>An. gambiae</i> s.l. (I+O) <i>An. funestus</i> s.l. (I+O)	<i>An. gambiae</i> s.l. (O) <i>An. funestus</i> s.l. (O)	0	0
Biharamulo (Unsprayed)	<i>An. gambiae</i> s.l.	<i>An. funestus</i> s.l.	<i>An. gambiae</i> s.l. (Mar - Jun) <i>An. funestus</i> s.l. (Feb-Mar)	<i>An. gambiae</i> s.l. (I) <i>An. funestus</i> s.l. (I)	<i>An. gambiae</i> s.l. (I) <i>An. funestus</i> s.l. (I)	<i>An. gambiae</i> s.l. (Animal, Mixed) <i>An. funestus</i> s.l.(Mixed)	3.7
Chato	<i>An. gambiae</i> s.l.	<i>An. funestus</i> s.l.	N/A	<i>An. gambiae</i> s.l.(O) <i>An. funestus</i> s.l.(O)	<i>An. gambiae</i> s.l. (O) <i>An. funestus</i> s.l. (O)	<i>An. gambiae</i> s.l. (Mixed) <i>An.</i>	0

Site	Major Vector	Minor Vector	Peak Abundance	Preferred Biting Location	Preferred Resting Location	Preferred Host	Peak Sporozoite Rate
						<i>funestus</i> s.l. (Mixed)	
Nyang'hwale	<i>An. funestus</i> s.l.	<i>An. gambiae</i> s.l.	N/A	<i>An. gambiae</i> s.l.(I) <i>An. funestus</i> s.l.(I)	<i>An. gambiae</i> s.l. (I) <i>An. funestus</i> s.l. (I)	<i>An. gambiae</i> s.l. (Human, Mixed) <i>An. funestus</i> s.l. (Human, Mixed)	0.9
Kibondo (Unsprayed)	<i>An. gambiae</i> s.l.	<i>An. Funestus</i> s.l.	<i>An.gambiae</i> s.l. (Feb - Mar) <i>An. funestus</i> s.l.(Feb - Jun)	<i>An. gambiae</i> s.l.(Undetermined) <i>An. funestus</i> s.l.(O)	<i>An. gambiae</i> s.l. (I) <i>An. funestus</i> s.l. (I)	<i>An. gambiae</i> s.l. (Mixed)	1.3
Bukombe (Unsprayed)	<i>An. gambiae</i> s.l.	<i>An. funestus</i> s.l.	<i>An. gambiae</i> s.l.(Feb-Mar, May)	<i>An. gambiae</i> s.l. (I) <i>An. funestus</i> s.l. (I)	<i>An. gambiae</i> s.l. (I) <i>An. funestus</i> s.l. (O)	<i>An. gambiae</i> s.l. (Human, Mixed) <i>An. funestus</i> s.l.(Human, Mixed)	1.2
Magu (Unsprayed)	<i>An. gambiae</i> s.l.	<i>An. funestus</i> s.l.	<i>An. gambiae</i> s.l.(Apr-May) <i>An. funestus</i> s.l.(Undetermined)	<i>An. gambiae</i> s.l. (I) <i>An. funestus</i> s.l. (I)	Undetermined	0	2.5

Site	Major Vector	Minor Vector	Peak Abundance	Preferred Biting Location	Preferred Resting Location	Preferred Host	Peak Sporozoite Rate
Buchosa	<i>An. gambiae</i> s.l.	<i>An. funestus</i> s.l.	N/A	<i>An. gambiae</i> s.l. (O) <i>An. funestus</i> s.l. (I)	<i>An. gambiae</i> s.l. (I+O) <i>An. funestus</i> s.l. (Undetermined)	<i>An. gambiae</i> s.l. (Human, Mixed) <i>An. funestus</i> s.l. (Human, Mixed)	0.5
Kakonko	<i>An. gambiae</i> s.l.	<i>An. Funestus</i> s.l.	N/A	<i>An. gambiae</i> s.l. (I) <i>An. funestus</i> s.l. (I)	<i>An. gambiae</i> s.l. (O) <i>An. funestus</i> s.l. (O)	<i>An. gambiae</i> s.l. (Human, Mixed) <i>An. funestus</i> s.l. (Human, Mixed)	1.5

Note: *Annual EIR was not calculated because a sub-sample of randomly selected mosquitoes from all collection methods were tested. Column not shown

Undetermined: mosquito collections too low to reach any conclusions

Mixed: blood meal composed of human/animal or animal/animal blood

Conclusion

From October 2018 – September 2019, PMI supported longitudinal entomological monitoring activities four regions in the Lake Zone in a total of eleven sentinel sites, seven of which were located in IRS districts (Ngara, Bukoba Rural, Missenyi, Nyang’hwale, Chato, Kakonko and Buchosa) and four in non-IRS districts as control sites (Biharamulo, Bukombe, Kibondo and Magu).[1] Clothianidin was the insecticide used in the four regions for the 2018-2019 IRS campaign. Control sites received ITNs (with deltamethrin) through the public schools and ANC/EPI. There is widespread deltamethrin resistance in the Lake Zone, however no resistance was detected for clothianidin (see insecticide resistance section).

Mosquito collections were made with CDC light traps, clay pot traps, Prokopac aspirators and CDC light traps with collection bottle rotators as proxy for human landing collection.

Morphological identification showed that *An. gambiae* s.l. was the most abundant vector species sampled by all collection methods in each IRS district, except for Nyang’hwale and Kibondo where *An. funestus* s.l. was the main vector species. Other anophelines collected included *An. pharoensis*, *An. coustani* and *An. rufipes*. 31 percent of the 14035 *Anopheles* collected were randomly selected across the collection methods and analyzed by molecular methods for species

identification and immunodiagnostic methods for detection of sporozoites. In general, the local vector population was predominantly *An. arabiensis* (53 percent), *An. gambiae* s.s. (13.9 percent), *An. funestus* s.s. (27.1 percent), and *An. parensis* (2.3 percent). The mean sporozoite rate was lower (1.4 percent), but not statistically different, in sprayed sites compared to unsprayed sites (2.3 percent). [1] *An. gambiae* s.s. had a higher sporozoite rate at 2.8 percent, followed by *An. funestus* s.s. at 2.1 percent and *An. arabiensis* at 1.4 percent [2]. Anopheles that fed on humans (including mixed blood meals on both humans and other animals) was 52.2 percent in IRS districts and 58.1 percent in non-IRS districts, indicating an opportunistic feeding behavior.

Assessment of vector biting showed that there is considerable outdoor biting risk in both the sprayed and unsprayed sites. The results show that the IRS is working in controlling malaria in the lake zone of Tanzania mainland. Application of IRS appears to shift biting patterns of *An. gambiae* s.l. to outdoors while there were unclear trends for *An. funestus* s.l. There was a general decrease in indoor biting rate in all sprayed sentinel sites following IRS operations (from October 2018 to September 2019) except for Kakonko. The rest of the sprayed districts maintained a low indoor biting rate. In unsprayed districts, indoor biting rate for both *An. gambiae* s.l. and *An. funestus* s.l. started to increase from January 2019, due to the rains in November-December 2018.

Key Question 2

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

Supporting Data

PMI supported insecticide resistance monitoring in 22 sentinel sites across Mainland Tanzania (Figure A4). The site selection was based on the WHO recommended criteria with priority given to areas of high malaria prevalence, evidence of insecticide resistance in previous surveys, areas with IRS in the Lake Zone, and districts bordering other countries with known insecticide resistance. As the areas covered by IRS in the Lake Zone have shifted over the years to focus on high malaria burden areas, so have some of the insecticide resistance testing sites. In the Lake Zone, for example, six of the eleven sites were the same as from previous years. The selection of the districts for resistance intensity testing was based on the high level of permethrin and deltamethrin resistance found during the insecticide resistance monitoring.

Figure A4. Map of the Distribution of 22 Sentinel Sites for Insecticide Resistance Monitoring in Mainland Tanzania from October 2018 – September 2019

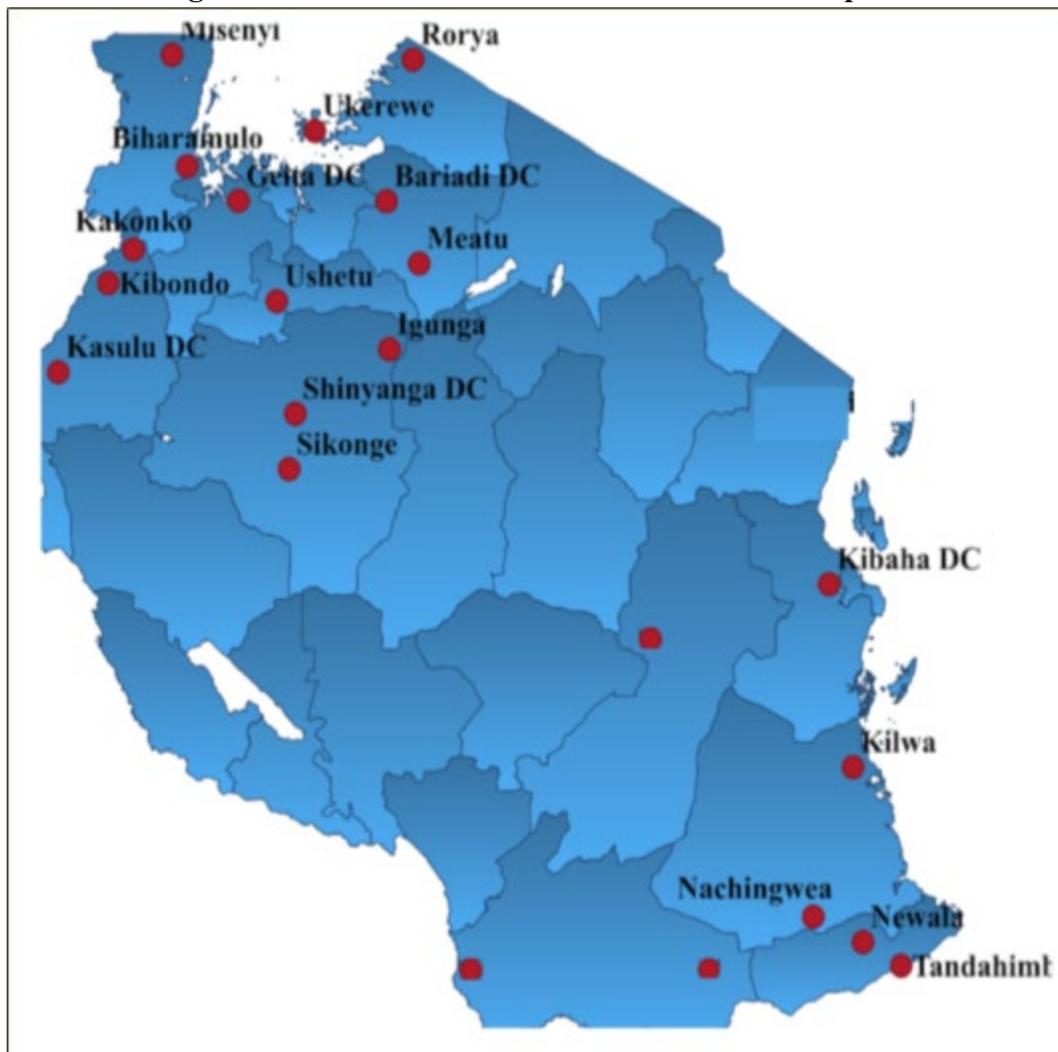


Figure A5. Insecticide Resistance from WHO Insecticide Resistance 24hr Mortality of Adult *An. gambiae* s.l from Larval Collections to a Range of Insecticides at Respective Diagnostic Concentrations.

District	Permethrin	Deltamethrin	DDT	Bendiocarb	Pirimiphos-methyl
Bariadi	99	98	100	100	100
Biharamulo	15	12	76	88	75
Geita	53	66	100	100	100
Igunga	84	82	100	100	100
Kibaha	10	5	98	96	100
Kilwa	33	78	100	100	100
Kilosa	98	100	100	93	100

District	Permethrin	Deltamethrin	DDT	Bendiocarb	Pirimiphos-methyl
Kibondo	10	25	25	96	100
Kakonko	46	80	96	100	100
Kasulu	15	19	29	100	100
Meatu	96	98	100	100	100
Misenyi	32	25	61	89	100
Newala	54	50	96	100	100
Nyasa	100	100	100	100	100
Rorya	43	58	96	99	100
Shinyanga DC	99	98	100	100	100
Tandahimba	39	30	85	100	100
Tunduru	65	70	100	100	100
Ukerewe	71	53	91	100	100
Ushetu	73	64	100	100	100

Footnotes:

98-100% = Susceptible, 90-97% = Suspected Resistance < 90% = Confirmed Resistance

Figure A6. Intensity of Insecticide Resistance of Adult *An. gambiae* s.l. to 1×, 5× and 10× the Diagnostic Concentration of Permethrin in Eight Sentinel Sites

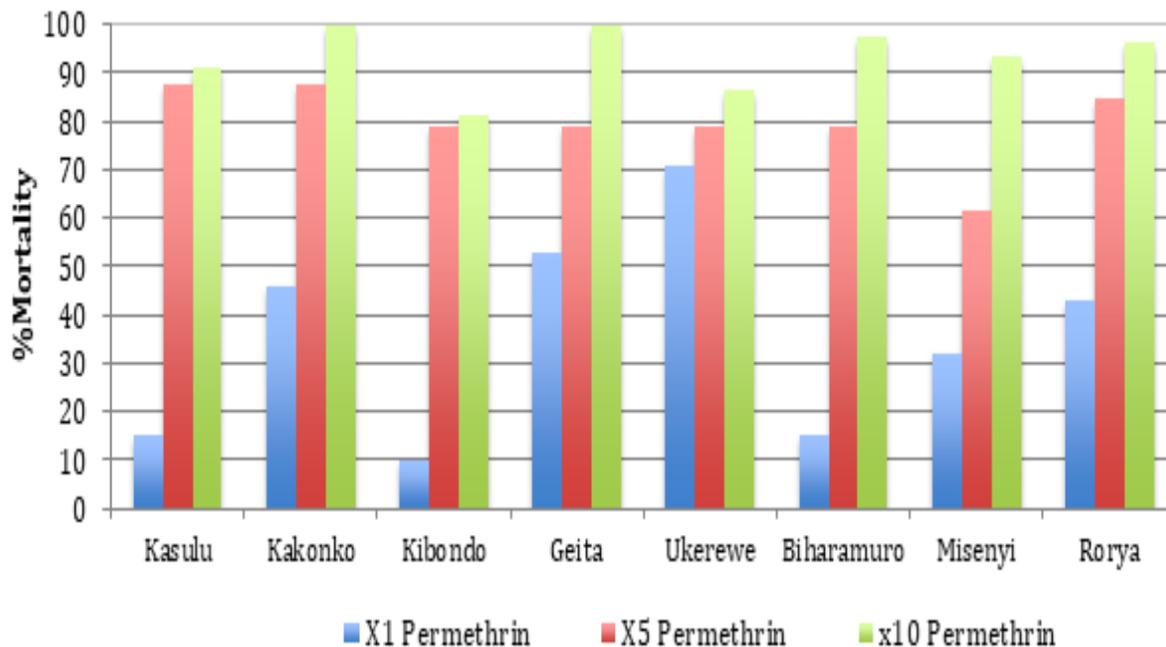


Figure A7. Intensity of Insecticide Resistance of Adult *An. gambiae* s.l. to 1×, 5× and 10× the Diagnostic Concentration of Deltamethrin in Eight Sentinel Sites

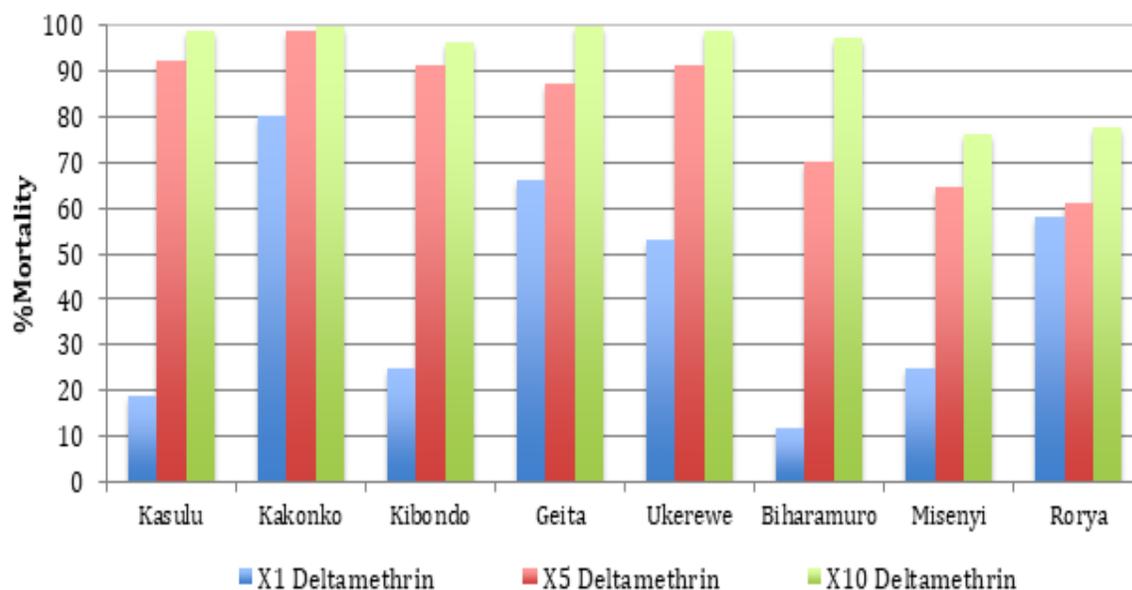


Figure A8. Insecticide Resistance Mechanism Testing for Permethrin in *Anopheles gambiae* s.l. Using Piperonyl Butoxide (PBO) Synergist in Eight Sentinel Sites

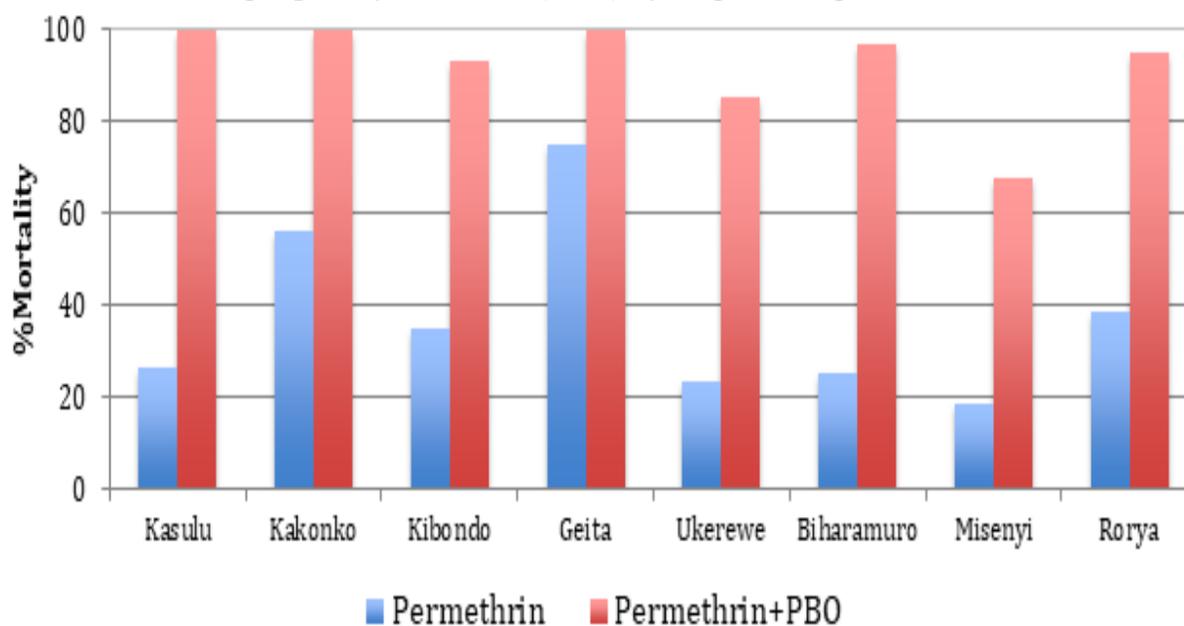
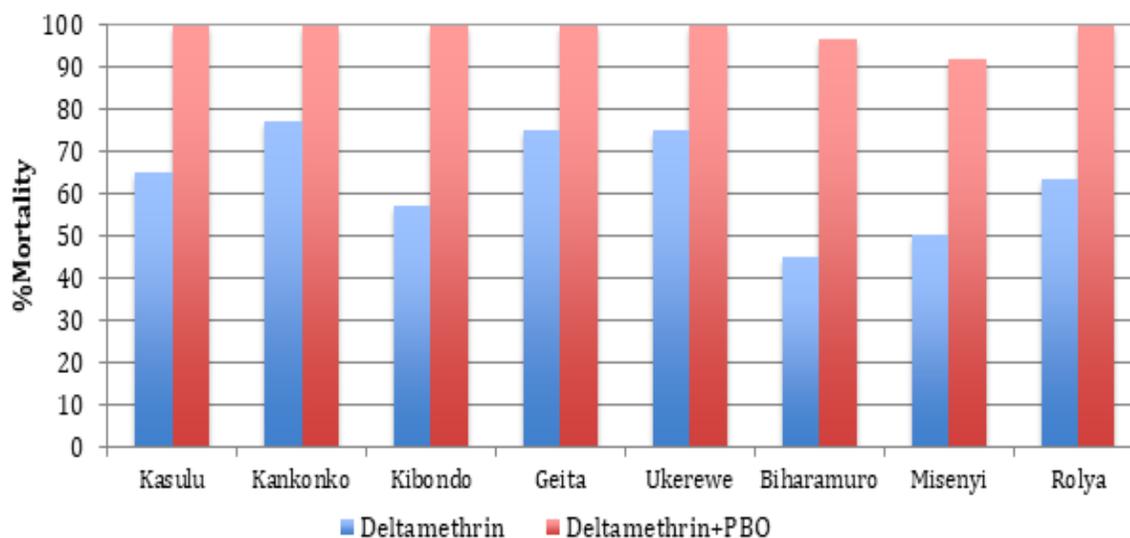


Figure A9. Insecticide Resistance Mechanism Testing for Deltamethrin *Anopheles gambiae* s.l. Using Piperonyl Butoxide (PBO) Synergist in Eight Sentinel Sites.



Conclusion

In 2019, insecticide resistance tested was carried out in 22 sentinel sites on *An. gambiae* s.l. adults from larval collections. Following WHO resistance assay guidelines, mortalities between 98-100 percent indicate that mosquitoes are susceptible, mortalities between 90-97 percent indicate possible resistance, while anything below 90 percent mortality indicates resistance. *Anopheles gambiae* s.l. shows widespread resistance to permethrin and deltamethrin in 15 sentinel sites distributed across the country. Resistance to DDT was recorded at 6 sites, to bendiocarb at one site and Pirimiphos-methyl in 2 sites. Clothianidin was tested at seven sentinel sites (Kasulu, Kakonk, Kibondo, Geita DC, Ukerewe, Rolya and Biharamulo) in the Lake Zone where clothianidin was used in PMI-supported spray operations in 2018. *Anopheles gambiae* s.l. were found to be fully susceptible to clothianidin.

Since permethrin and deltamethrin are main insecticides in the LLINs in Tanzania's bed net program, intensity of resistance testing was carried out in eight sentinel sites showing the highest resistance to these two insecticides. WHO defines resistance intensity as high if <90 percent mortality is recorded at 10× diagnostic dose, moderate if <90 percent mortality at 5× times the diagnostic dose (but >90 percent at 10×) and low if <90 percent mortality at 1× diagnostic dose (but >90 percent at ×5). Highest intensity of resistance was found in Kibondo and Ukerewe to permethrin and for deltamethrin, the highest intensity was in Misenyi and Rolya.

Pre-exposing malaria mosquitoes to PBO significantly improved their susceptibility to both permethrin and deltamethrin in all tested sites, suggesting the likelihood of mixed function oxidase involvement in pyrethroid resistance. However, Ukerewe and Misenyi, resistance to permethrin persisted and in Misenyi, resistance to deltamethrin also persisted after exposure to PBO, indicating that there may be another mechanism contributing to pyrethroid resistance in

these sites. Tanzania will be deploying pyrethroid-PBO LLINs in the Lake Zone and the data indicates that this should be effective in these areas where there increasing pyrethroid resistance has been documented over several years. The situation should be closely monitored as there may be a second insecticide resistance mechanism involved.

Key Question 3

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

Supporting Data

N/A

Conclusion

N/A

1.B. INSECTICIDE-TREATED NETS (ITNs)

PMI Goal

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

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

PMI will continue to support annual rapid assessment surveys to determine ITN coverage across the 14 regions that are included in the SNP. NetCALC, or other suitable programs, will be used to determine the ITN input required to maintain population access in the SNP regions at greater than 70 percent. PMI will support procurement and distribution of ITNs for SNP, as well as support the distribution of Global Fund procured ITNs through RCH channels in the SNP regions. The NMCP, through their 2018-2020 Global Fund grant, will procure all ITNs needed nationally for RCH distribution and will support the Medical Services Department (MSD) for distribution of ITNs through RCH in the 12 low prevalence regions.

Using the data generated from insecticide resistance monitoring, it was concluded that there has been an exponential increase of intensity and spread of insecticide resistance among malaria vectors over time. A high level of pyrethroid resistance through both target sites (*kdr*) and metabolic resistance mechanisms was observed; however, mosquitoes are still fully susceptible to both Pirimiphos-methyl and clothianidin. Eight (out of 14) PMI supported regions will deploy PBO nets that have shown

metabolic resistance. PMI will continue to monitor the changing dynamics of mosquito species composition and insecticide resistance.

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

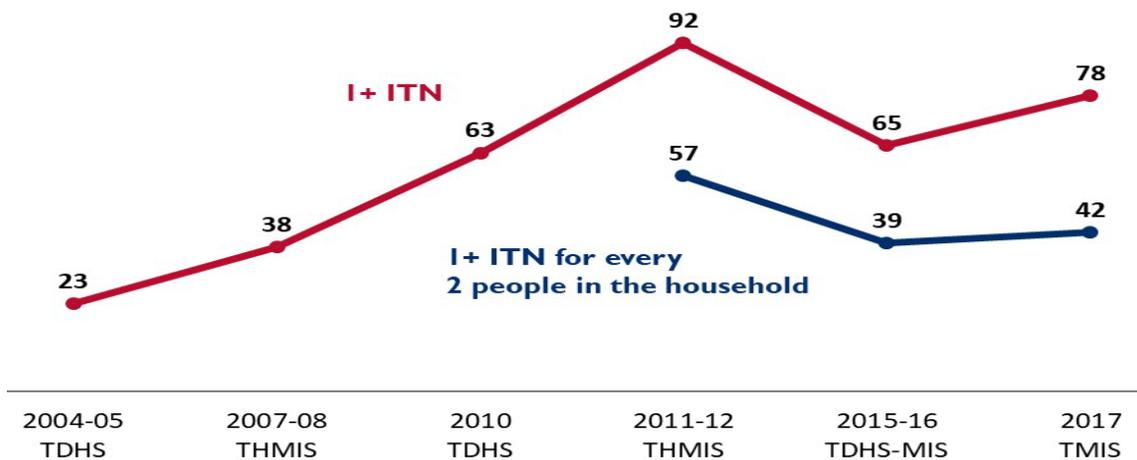
Key Question 1

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

Supporting Data

Figure A10. Trends in ITN Ownership

Percent of households



Conclusion

ITN ownership has steadily increased in Tanzania since it became a PMI focus country, reaching a peak of 92 percent of households with at least one ITN in 2011-12. It should be noted that the 2015-16 TDHS-MIS was conducted before completion of a mass distribution campaign, which likely contributed to the observed decrease. Continued high levels of coverage point to the effectiveness of the School Net Program.

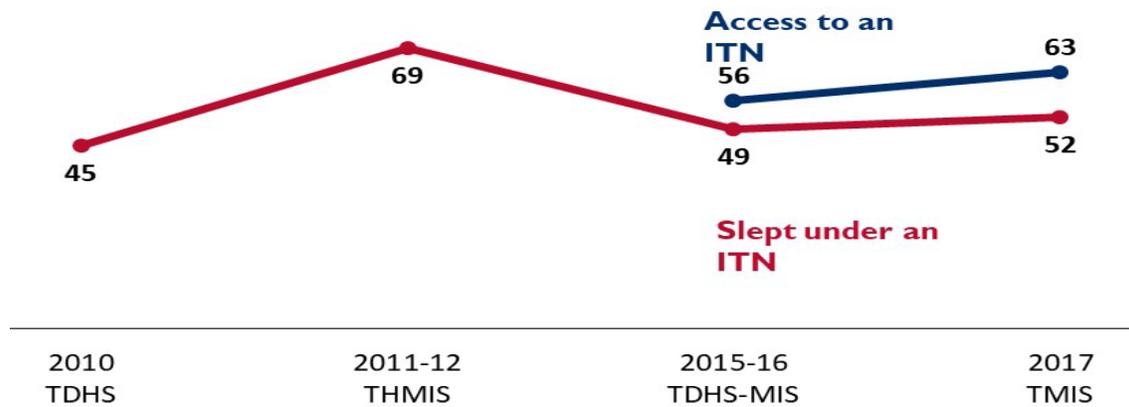
Key Question 2

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

Supporting Data

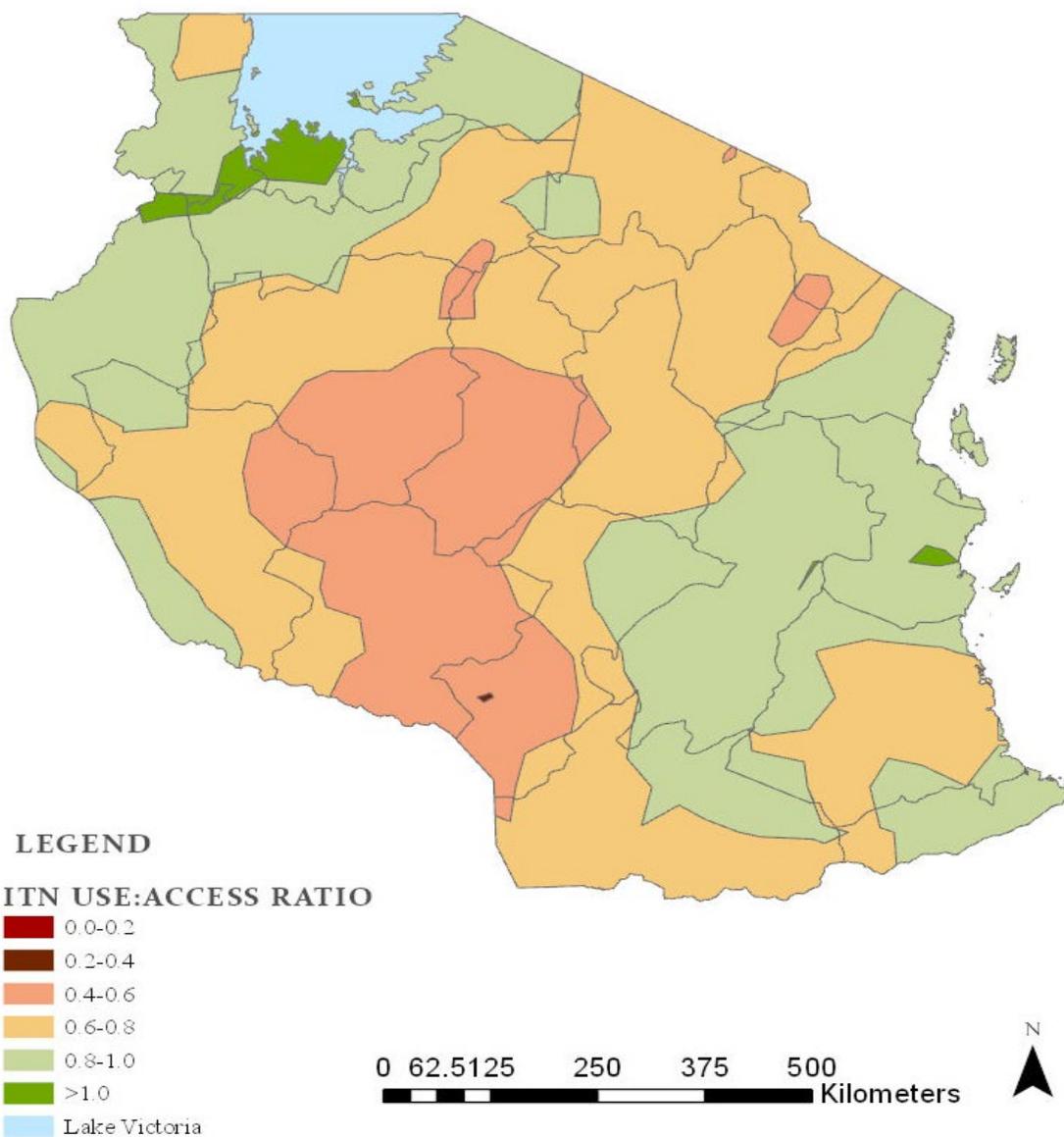
Figure A11. Trends in ITN Access and Use

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



Note: DHS surveys are generally fielded during the dry season, as opposed to MIS surveys, which are deliberately fielded during the high transmission season, which should be taken into consideration when interpreting the ITN use indicator.

Figure A12. Tanzania ITN Use: Access Ratio



Source: MIS 2017

Conclusion

The 2017 THMIS showed that 52 percent of the population had slept under an ITN the night before the survey. However, examining this indicator in the context of population-level access shows a ratio of use to access of 0.83. This indicates a strong culture of net use, with the exception of some lower use to access ratios in higher altitude areas. Efforts to extend access should be maintained, as should SBC efforts designed to maintain high levels of year-round ITNs use and promote net care.

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 A13. Key Barriers and Facilitators to ITN Use

Facilitator	Type of Factor	Data Source	Evidence
Positive attitudes toward malaria and malaria treatment	Internal	Tanzania MIS - 2017	92% of women reported positive attitude toward malaria and malaria treatment.
High levels of knowledge about malaria prevention	Internal	Tanzania MIS - 2017	87% of women knew that there is a way to avoid malaria and of those 98% mentioned LLINs.
Barrier	Type of Factor	Data Source	Evidence
Low malaria risk perception	Internal	Tanzania MIS - 2017	Only 57% of women believe malaria is the most serious health problem in their community.
Low rate of ITN net ownership	Environmental	Tanzania MIS 2017	Only 45% of households own at least one ITN for every two persons in the household.
Belief that IRS/ITNs cause an increase in bed bugs	Internal	Tulonge Afya Insight Summary Report	Most participants of a focus group discussion that using ITN cause agitation of/increase in bed bugs.

Conclusion

Data from the THMIS 2017 indicate that despite the fact that positive attitudes toward malaria and malaria treatment is high and knowledge about malaria prevention is high, there is low individual risk perception, some lingering negative beliefs about ITNs, and low ITN access. While attitude and knowledge are important, other determinants are also critical to ensuring adoption of desired behaviors. PMI will prioritize SBC activities geared towards promoting net use and care and addressing behavioral determinants, such as risk perception and self-efficacy. Where appropriate, PMI will also work to increase availability of ITNs in regions with low ITN access.

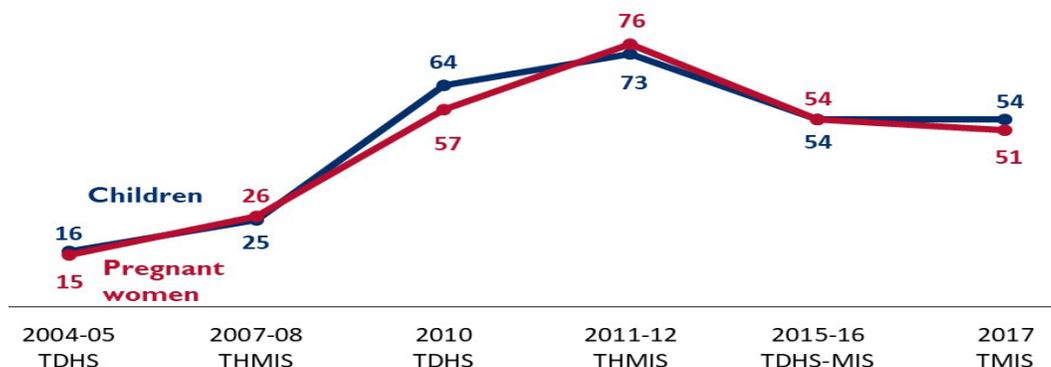
Key Question 4

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

Supporting Data

Figure A14. Trends in ITN Use among Children and Pregnant Women

Percent of children under 5 and pregnant women age 15-49 who slept under an ITN the night before the survey



Note: DHS surveys are generally fielded during the dry season, as opposed to MIS surveys, which are deliberately fielded during the high transmission season, which should be taken into consideration when interpreting these indicators.

Conclusion

Use of ITNs by children and pregnant women follows the same trends as ITN use by the general household population, with the latest estimates showing very similar percentages of use amongst all household members, children under five, and pregnant women. This indicates both success in SBC efforts to encourage net use by the entire population, as well as opportunities to better target messaging to ensure that children and pregnant women utilize ITNs.

Key Question 5

What channels are used to distribute ITNs?

Supporting Data

Figure A15. Quantity Distributed by Channel under PMI support by fiscal year

Channel	2015	2016	2017	2018	2019	2020	2021
EPI & ANC	X	335,720	1,235,160	2,092,528	2,547,788	2,547,788	2,547,788
Schools	494,407	1,152,715	921,607	3,467,086	3,111,175	3,111,175	3,500,000
Community	X	X	X	X	X	X	X
Mass Campaign	X	X	X	X	X	7,097,563	X

Conclusion

The NMCP deploys various ITN distribution channels with the objective of achieving and sustaining universal coverage. These include mass campaigns and routine distribution through public schools, and ANC/ EPI. These channels have resulted in improvements in coverage and access. The figures under calendar year 2020 and 2021 are based on projections/estimates.

Key Question 6

What was the estimated need for ITNs during calendar year 2019? What are the estimated ITN needs over calendar years 2020 and 2021? What volume of ITNs are available from partners and the public sector for the next three calendar years?

Supporting Data

Figure A16. Gap Analysis of Continuous Distribution Needs

Calendar Year	2019	2020	2021
Total Targeted Population	53,827,879	55,966,030	57,724,380
Continuous Distribution Needs			
Channel #1: ANC	2,180,029	2,266,624	2,337,837
Channel #1: EPI	1,738,640	1,807,703	1,864,497
Channel #2: SNP	3,023,540	3,118,385	4,209,693
Estimated Total Need for Continuous Channels	6,942,210	7,192,712	8,412,028
Mass Campaign Distribution Needs			
2019/2020/2021 mass distribution campaign(s)	0	7,097,563	0
Estimated Total Need for Campaigns	0	7,097,563	0
Total ITN Need: Routine and Campaign	6,942,210	14,290,275	8,412,028
Partner Contributions			
ITNs carried over from previous year	0	35,165	430,910
ITNs from MOH	0	0	0
ITNs from Global Fund	3,866,200	11,574,845	4,568,264
ITNs from other donors	0	0	0
ITNs planned with PMI funding	3,111,175	3,111,175	3,111,175
Total ITNs Available	6,977,375	14,721,185	8,110,349
Total ITN Surplus (Gap)	35,165	430,910	-301,678

Footnotes:

ANC ITN needs are based on pregnant women representing 4.5 percent of the total population annually, and ANC ITN delivery reaching 90 percent of pregnant women annually.

EPI ITN needs are based on under 1 children representing 3.8 percent of population annually, and EPI ITN delivery reaching 85 percent of children.

SNP ITN needs are based on MIS results and modeling to determine the gap between the ITNs needed to maintain 80 percent population access and the ITNs distributed through ANC and EPI channels.

Universal coverage campaign will cover all Global Fund-supported regions except Dar es Salaam (see vector control section).

Conclusion

ITN projections estimate for routine distribution for calendar year 2019 and 2020 projected a surplus of 35,165 and 430,910 ITNs respectively, and the planned ITNs for 2021 have been adjusted accordingly and projecting a gap of 301,678. The ITN deliveries in-country will be scheduled to avoid overstocks.

Key Question 7

What is the current status of durability monitoring?

Supporting Data

N/A

Conclusion

N/A

Key Question 8

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

Supporting Data

N/A

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

With FY 2020 funds, PMI will continue to support IRS in six districts in mainland Tanzania. The support includes the procurement of insecticide and operational cost covering about 470,000 structures.

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 A17. Mainland IRS Districts, 2019 - 2020

District	Funder	Insecticide
Bukombe	PMI	Clothianidin
Biharamulo	PMI	Clothianidin
Kakonko	PMI	Pirimiphos-methyl
Kasulu Rural	PMI	Pirimiphos-methyl
Kibondo	PMI	Pirimiphos-methyl
Ukerewe	PMI	Clothianidin

Conclusion

PMI is the only large-scale funder of IRS operations in Mainland Tanzania. The 2019 IRS districts were selected by the NMCP, in conjunction with PMI and other key malaria vector control stakeholders, such as the National Institute of Medical Research (NIMR), based on the available epidemiological and entomological data. These districts are within the Lake Zone region of Tanzania, which has among the highest prevalence of malaria in the Mainland.

Key Question 2

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

Supporting Data

Figure A18. PMI-Supported Spray Coverage 2015 - 2020

Calendar Year	Number of Districts Sprayed	District Names**	Number of Structures Sprayed	Coverage Rate	Population Protected
2015/2016	8	Bukoba Rural, Missenyi, Ngara, Sengerema, Kwimba, Musoma Rural, Butiama, Chato	508,704	95%	2,008,366
2016/2017	9	Bukoba Rural, Missenyi, Ngara, Sengerema, Kwimba, Musoma Rural, Butiama, Chato, Nyang'hwale	651,149	95%	2,478,004
2017/2018	9	Bukoba Rural, Ngara, Missenyi, Chato, Nyang'hwale, Butiama,	677,147	96%	2,506,212

Calendar Year	Number of Districts Sprayed	District Names**	Number of Structures Sprayed	Coverage Rate	Population Protected
		Musoma Rural, Kwimba, Sengerema			
2018/2019	7	Ngara, Missenyi, Bukoba Rural, Chato, Nyang'hwale, Kakonko, Buchosa	501,584	96%	1,926,767
2019/2020*	6	Bukombe, Biharamulo, Kakonko, Kasulu Rural, Kibondo, Ukerewe	472,539	TBD	2,531,237

*Denotes targets **If more than 15 districts, list regions/provinces.

Conclusion

Over the previous five years, IRS coverage has been maintained over 90 percent. For the year 2019/2020, the focus will be on meeting or exceeding the WHO standard of 85 percent coverage.

Key Question 3

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

Supporting Data

Figure A19. Residual Efficacy Monitoring (% Mean Mortality) using WHO Cone Wall Bioassays, for Clothianidin at Seven Sites for the 2018-2019 Mainland IRS Campaign



Conclusion

Residual efficacy testing to monitor IRS effectiveness was carried immediately after post-IRS application of clothianidin (within 24hrs), between October-November 2018, and thereafter on a monthly basis until the effectiveness was <80 percent. The monitoring was carried out at seven sites (Chato, Missenyi, Bukoba Rural, Ngara, Kakonko, Nyangw'ale and Buchosa) in the PMI-IRS supported regions in the Lake Zone, using WHO cone wall bioassay tests. Clothianidin is a slow acting insecticide formulation, therefore the WHO protocol for cone bioassays was modified so that mortality was recorded every 24 hours for six consecutive days after insecticide exposure, with the exposure time remaining at 30 minutes. A susceptible colony of *An. gambiae* s.s (Kisumu strain) from the insectary at NIMR-Mwanza was used for monitoring the insecticide efficacy on five types of wall surfaces.

The results show that the insecticide application was of high quality at all sites, as the assays conducted immediately post-IRS indicated 100 percent mortality between 2 – 6 days after the mosquitoes were exposed to the sprayed walls. Clothianidin maintained a >80 percent mortality for nine months on all wall surfaces for all the sites, which provided protection over the malaria transmission period. At 10 months post-IRS, there was a sharp decrease in residual efficacy of clothianidin at Chato (0-10 percent mortality) and Missenyi (10-20 percent mortality) for all wall types, however at the other sites, residual efficacy remained high (70-90 percent).

Key Question 4

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

Supporting Data

Figure A20. Planned Insecticide Rotation 2017 - 2020

Year	Kagera Region	Mwanza Region	Mara Region	Geita Region
2017	Pirimiphos- methyl	Pirimiphos- methyl	Pirimiphos- methyl	Pirimiphos- methyl
2018	Pirimiphos- methyl	Pirimiphos- methyl	Pirimiphos- methyl & clothianidin	Pirimiphos- methyl
2019	clothianidin	clothianidin	clothianidin	clothianidin
2020*	TBD	TBD	TBD	TBD

*Denotes planned insecticide classes

Conclusion

With continued susceptibility to both clothianidin and Pirimiphos-methyl, Tanzania will consider deployment of both insecticides simultaneously. For instance, in the 2019 - 2020 IRS campaign

three districts will spray using Pirimiphos-methyl (Kasulu, Kakonko, and Kibondo) and the remaining three districts will spray clothianidin (Biharamulo, Bukombe, and Ukerewe). The entire process will be guided by the national insecticide resistance management plan which advocates for preemptive rotation.

Key Question 5

Are the NMCP and PMI considering withdrawing IRS from any PMI-supported? 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

Based on funding available for procurement and distribution of PBO nets and entomological data, PMI may consider withdrawing IRS after successfully being able to distribute PBO nets through all the available channels (i.e., public schools and ANC/EPI) for at least three years. These efforts will be supported by interpersonal communication activities, which leverage the community platform to increase utilization of PBO nets.

Conclusion

There are no changes proposed to the IRS implementation strategy in this MOP. IRS withdrawal will be considered in future MOPs.

Key Question 5

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

Supporting Data

N/A

Conclusion

N/A

2. HUMAN HEALTH

2.A CASE MANAGEMENT in health facilities and communities

NMCP objective
<ul style="list-style-type: none">• The case management goal of the National Malaria Strategic Plan 2015–2020 is to achieve universal access to high quality malaria diagnostic testing and treatment in both public and private health facilities.

- The national targets are to increase to 80 percent the proportion of people with suspected malaria who:
 - Receive appropriate diagnosis and treatment within 24 hours of onset of fever, and
 - Receive appropriate management of both uncomplicated and severe malaria according to the National Guidelines for the Diagnosis and Treatment of Malaria, 2013.

NMCP approach

- The National Guidelines for the Diagnosis and Treatment of Malaria, 2013 calls for parasitological confirmation by microscopy or mRDT for all patients with suspected malaria before initiation of treatment. The estimate for reliance on the private sector in mainland Tanzania is that approximately 40 percent of patients with fever seek treatment at private health facilities. Microscopic examination of Giemsa-stained blood films remains an important component of malaria diagnosis throughout Tanzania, but in the public sector is only available at regional and district hospitals and some health centers (about 20 percent of all health facilities), whereas about 70 percent of malaria cases in the private sector are confirmed via blood smears. Within the Dar Es Salaam region, however, over 50 percent of malaria cases are diagnosed by microscopy in public facilities. HMIS data show that on average in 2018, 86 percent of malaria cases were confirmed by mRDT, 12 percent by microscopy, and two percent were unconfirmed in outpatient departments. In the inpatient departments in 2018, 96 percent of malaria cases were confirmed by mRDT or microscopy, while four percent were unconfirmed. The rate of unconfirmed cases has been steadily declining from 36 percent in 2014 to two percent in 2018.
- A national malaria microscopy quality assurance and quality control (mMQA/QC) was established in 2017 following the completion of the slide bank at the Malaria Reference Laboratory within the NHLQATC. The mMQA/QC system includes monthly blinded cross-checking of blood slides by a district supervisor and periodic external QA via blinded positive and negative samples sent from the slide bank. District supervisors also monitor mMQA/QC and mRDT QC at the health facility level through the Malaria Services and Data Quality Improvement (MSDQI) program, which is designed to improve microscopy and mRDT diagnostic quality via routine monitoring and training by district and regional supervisors and mentorship. Lot testing of mRDT kits is coordinated by the NMCP using a WHO protocol and random samples are sent to the NHLQATC, and WHO-identified, qualified laboratories in Cambodia or the Philippines.
- The use of ACTs in mainland Tanzania began in 2006 with artemether-lumefantrine (AL) as the first-line drug for the treatment of uncomplicated malaria. In 2013, the NMCP revised the National Diagnostic and Treatment guidelines to include injectable artesunate for the

treatment of severe malaria. The guidelines call for referral of patients with severe malaria from lower level facilities to the nearest health center after first giving the patient an intramuscular injection of artesunate. Intramuscular artemether or quinine can be used as second-line drugs if artesunate is not available. Use of pre-referral rectal artesunate at peripheral health facilities is also permitted if injection is not available yet in practice does not occur as rectal artesunate is not procured by either the GoT or its partners.

- The NMCP has participated in renewed efforts by MOHCDGEC in the development of the National Community Based Health Program to further expand health services using Community Health Workers (CHW). The proposal from the Technical Advisory Committee is for CHW to perform mRDTs and provide first-line antimalarials to confirmed cases, but this strategy has not yet been approved by the relevant GoT authorities. The NMCP included a proposal within their 2018–2021 Global Fund grant to implement iCCM in five priority regions based on the following criteria 1) malaria transmission using prevalence estimates from the 2017 school malaria parasitological survey (SMPS 2017), 2) access to health facilities based on walking distance time, and 3) population served per health facility. The top five priority regions were Katavi, Kagera, Geita, Kigoma, and Ruvuma, all PMI-supported regions. The proposal was approved by The Global Fund during reprogramming and implementation will begin before the end of calendar year 2019 led by NMCP through this funding source.
- NMCP works with both the public and private sector to promote universal access to mRDTs and ACTs. Through the support of the Global Fund and first-line buyers, the availability of quality, affordable ACT is facilitated in the private sector via a co-pay mechanism. NMCP’s strategies, though not currently approved by MOHCDGEC, include expansion of mRDT diagnostic services to Accredited Drug Dispensing Outlet (ADDOs) of which there are over 6,000 in mainland Tanzania. The majority are located in rural areas where access to malaria commodities and testing services is limited. However, despite a pilot program that demonstrated the feasibility of mRDT introduction to ADDOs and consensus between the MOHCDGEC and various development and implementing partners that the program should be scaled-up, the relevant regulatory bodies have not yet approved the introduction of mRDT testing in ADDOs.

PMI objective, in support of NMCP

See below planned activities.

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

- In the 11 PMI-supported regions for case management, MSDQI supervisors from the regional/council health management teams use the comprehensive electronic MSDQI checklists through tablet devices to evaluate and provide immediate onsite feedback and

mentorship in case management to healthcare workers. In PMI supported regions in fiscal year 2019, MSDQI supportive supervision visits were conducted in 1,462 (80 percent) facilities across seven regions (51 councils) of the Lake and Western Zones, and 1,044 (87 percent) health facilities across 4 regions (32 councils) in the Southern Zone. By the end of fiscal year 2019, PMI partners have strengthened the capacity of 171 MSDQI supervisors in the Lake and Western Zones, and 120 in the Southern Zone to provide onsite mentoring in case management with MSDQI. Across the 11 regions, PMI partners procured and distributed 263 tablets for the conduct of MSDQI. In addition, PMI partners have supported quarterly district and regional-level workshops to provide facility-level results from the MSDQI visits and share lessons learned on MSDQI implementation. During fiscal year 2019, NMCP scaled-up the electronic MSDQI tool in the non-PMI supported regions with Global Fund support.

- Using MSDQI data to identify and prioritize gaps in case management within PMI-supported regions in fiscal year 2019, an additional 2,251 healthcare workers received training on malaria case management and mRDT QC and 40 laboratory technicians received training on microscopy in the Lake and Western Zones, and 600 healthcare workers in the Southern Zone received training on malaria case management and mRDT QC.
- PMI continued to support the microscopy external quality assurance system using the National Malaria Slide Bank implemented by PMI in 2017 for proficiency testing of microscopists at health facilities.
- PMI supported capacity building in ADDOs to improve their ordering, supply chain management, financing, and data reporting. Although ADDOs are not yet approved to conduct mRDT testing, these activities are laying the groundwork for improved quality of services and reporting.

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

- The NMCP's planned activities for 2020, are to improve the quality of diagnostic and case management services in the public and private sectors; to maintain and improve antimalarial drug supplies in the public and private sectors; to strengthen the pharmacovigilance system; and to strengthen therapeutic drug efficacy monitoring.
- Tanzania procures most of its malaria commodities through the Global Fund and intends to procure 100 percent of mRDT for FY 2020 through the same mechanism. PMI supports drug procurement for a portion of the ACTs and injectable artesunate required by the public sector and helps fill unexpected gaps throughout the year.
- PMI has fully funded the establishment of the National Malaria Slide Bank, the foundation of the microscopy external quality assurance system, and maintenance of the bank will be

provided largely by the Global Fund where PMI will procure non-falciparum slides. PMI FY 2020 support will include microscopy training and administration of the National Competency Assessment and recertification for the three national referral laboratories.

- Optimizing case management of febrile illness remains an ongoing challenge in Tanzania as it is throughout much of Africa. PMI will continue to support improvement of malaria case management with an emphasis on integration of service delivery with other major health priorities. PMI funds will be used to support the continued implementation of the MSDQI package including the electronic tablet-based system for recording, reporting, and using data in the Lake, Western, and Southern Zones. Implementation of the MSDQI package in other regions of mainland Tanzania will be funded by the Global Fund with partial support from PMI via funds allotted to the NMCP and PO-RALG for integrated supportive supervision and technical oversight.
- Programmatic decisions regarding changes to malaria treatment policy require continuous data to demonstrate that first and second-line regimens remain effective at treating malaria parasitemia. In FY 2020, PMI will continue to support drug efficacy monitoring following the standard WHO protocol at four sentinel sites in mainland Tanzania and will include molecular testing of antimalarial resistance markers.
- PMI will support SBC activities to increase demand for mRDTs by clients, improve acceptance of and adherence to mRDT results by providers, promote prompt care seeking, and improve adherence to national malaria case management guidelines.

PMI Goal

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

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

PMI will continue supporting case management activities in the high burden regions. More focus will be on supporting Local Government Authorities (LGA) to implement supportive supervision and mentorship through MSDQI. PMI will continue to provide technical guidance on reviewing MSDQI data to prioritize and coordinate supportive supervision visits to health facilities.

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

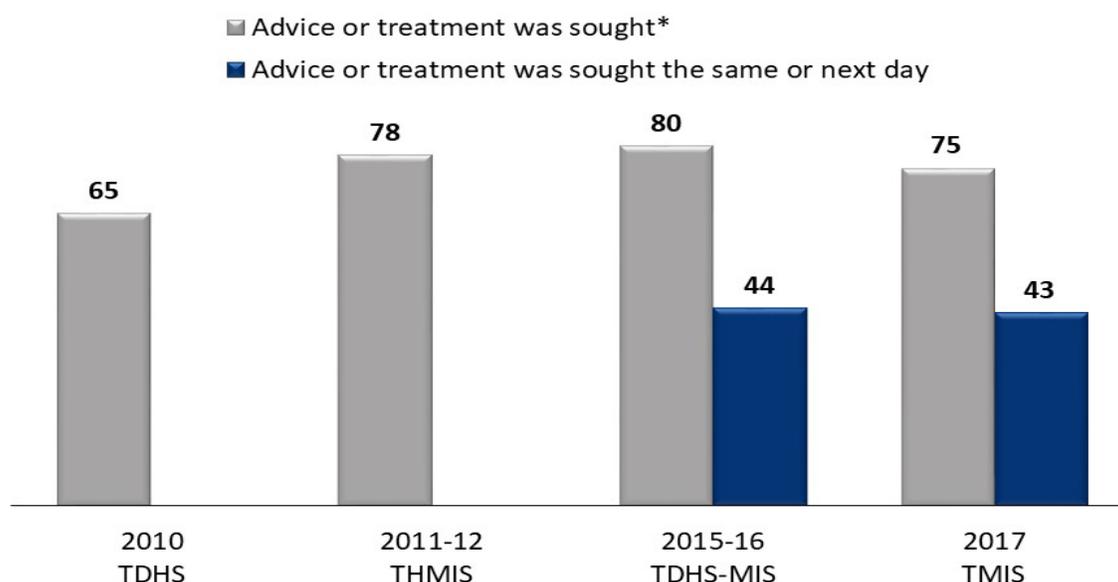
Key Question 1

What is the status of care-seeking?

Supporting Data

Figure A21. Trends in Care-Seeking for Fever

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



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

Conclusion

Self-reporting care-seeking for children under five years of age with fever is relatively high; however, the two latest surveys conducted in 2015 and 2017 indicate a gap between overall care-seeking and prompt care-seeking behavior. These results encourage programming to increase access to care as well as social behavior change around the importance of prompt treatment.

Key Question 2

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

Supporting Data

Figure A22. Key Barriers and Facilitators to Prompt Care-Seeking

Facilitator	Type of Factor	Data Source	Evidence
High levels of knowledge about appropriate testing practices	Internal	Tanzania MIS - 2017	92% of women 15-49 years strongly agree that the only way to be sure someone has malaria is to test their blood.

Facilitator	Type of Factor	Data Source	Evidence
High self-efficacy in relation to care-seeking for fever for children under five years of age	Internal	Tanzania MIS - 2017	72% of caretakers of children under five strongly agree that they can get treatment if their child gets malaria.
Barrier	Type of Factor	Data Source	Evidence
Decreasing care seeking behavior	Internal	Tanzania MIS - 2017	75% of children under age five who had fever sought advice or treatment from health provider. This has decreased by 5% from 80% in DHS-MIS 2015/16.
Limited availability of malaria testing and treatment commodities	Environmental	NMCP's Communication Guide for Malaria Control Interventions 2015-2020I	Stock out of supplies and commodities at health facilities, resulting from either improper ordering by the facilities or logistic issues from the supplier (i.e., MSD), is a challenge. Patients and community members are not aware that they have the right to ask in case of stock out and can influence the availability.

Conclusion

Future programming will ensure a positive attitude toward malaria diagnosis and treatment, as well as focusing on provider behavior in adhering to recommended antimalarials treatment.

Key Question 3

How have malaria testing and treatment practices evolved over time?

Supporting Data

Figure A23. Trends in Diagnosis and Treatment of Children with Fever

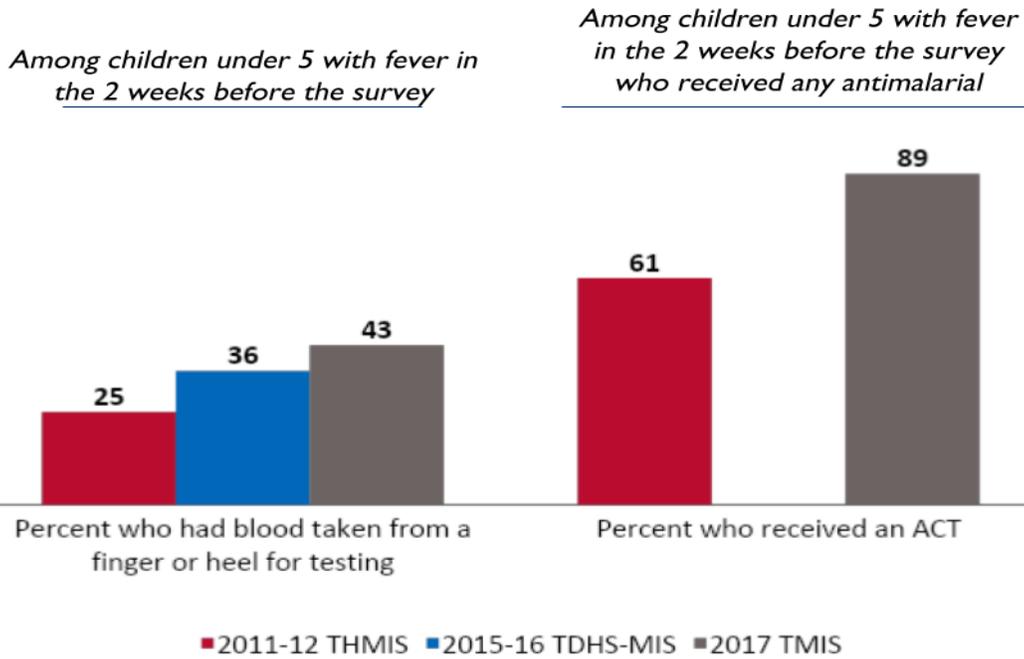


Figure A24. Malaria Cases Disaggregated by Type of Diagnosis, Tanzania

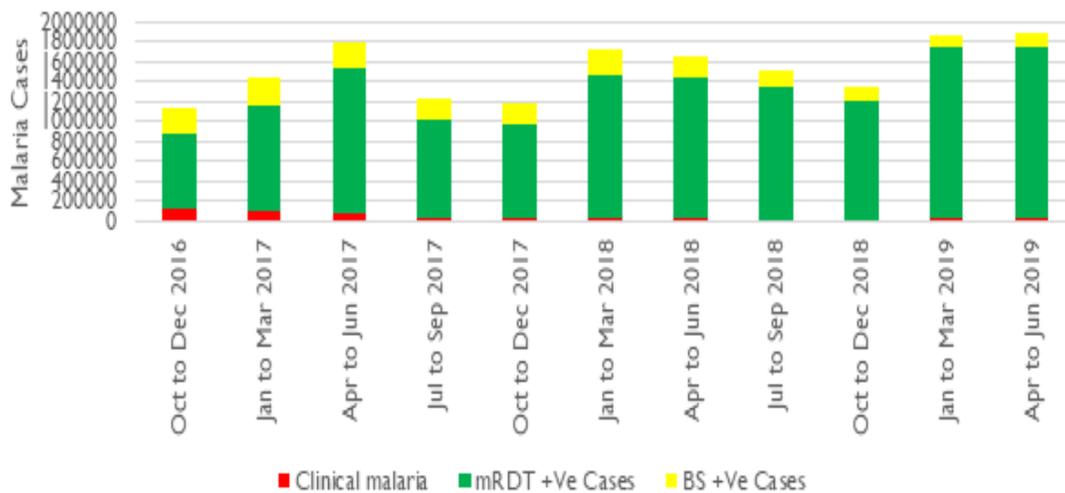


Figure A25. Malaria Cases Disaggregated by Type of Diagnosis and Region, Tanzania, July -September 2019

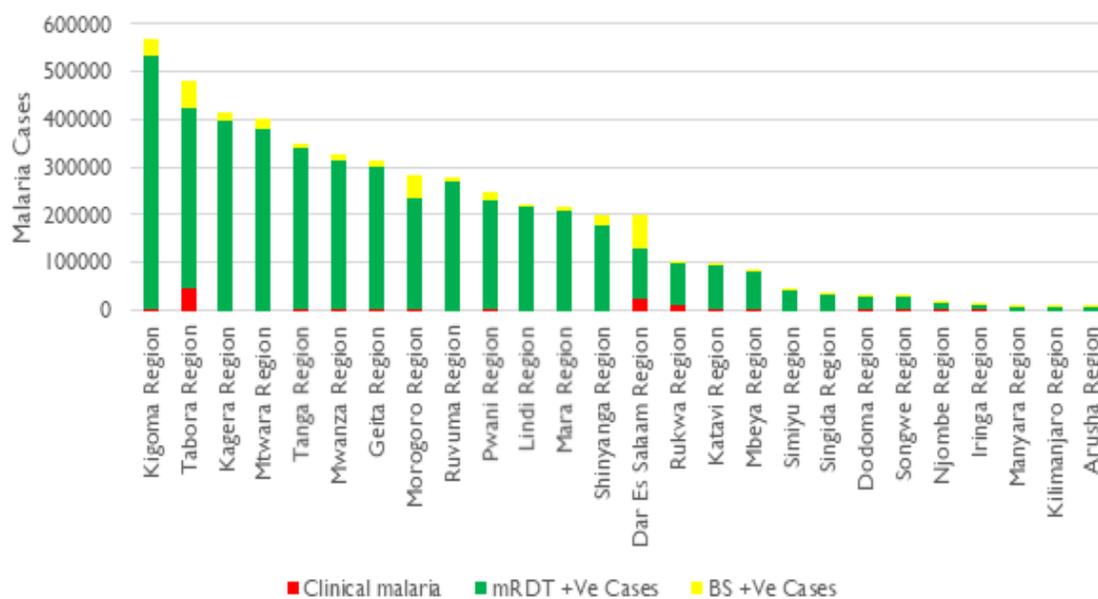
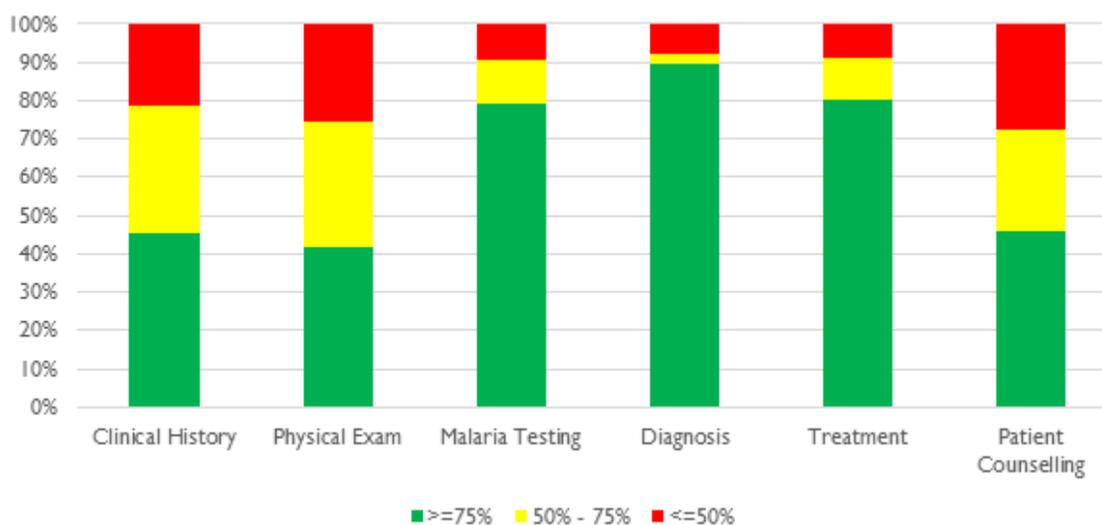
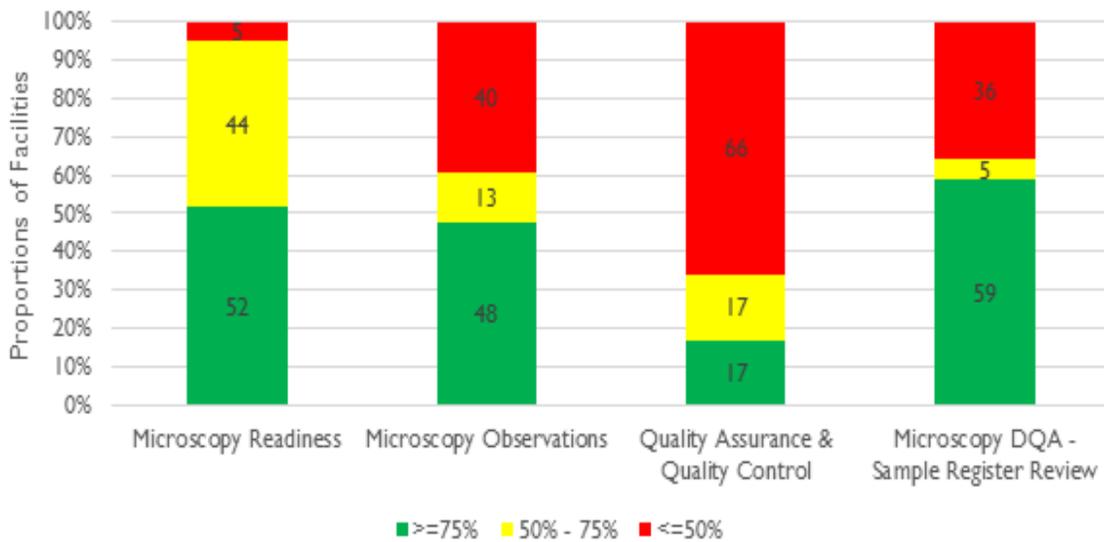


Figure A26. Proportion of Outpatient Department Clinical Management <5 Years, July – September 2019



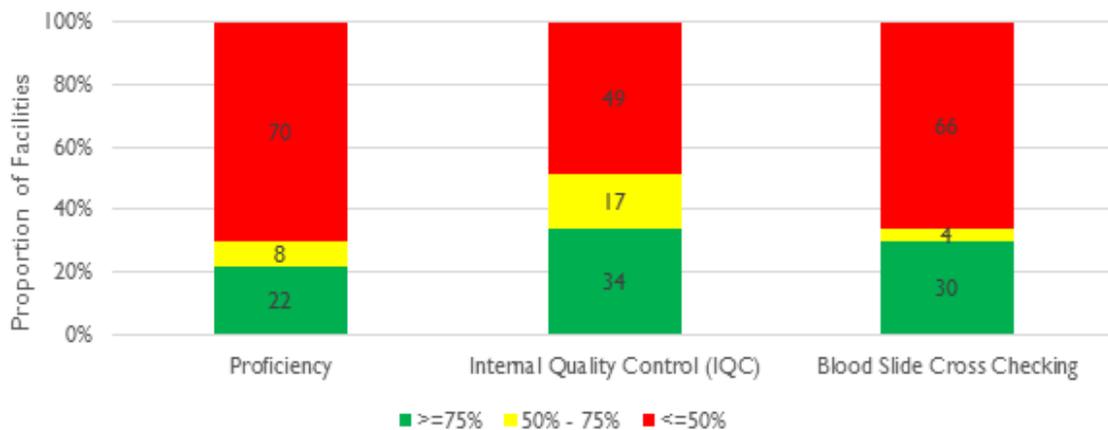
Source: Malaria Services and Data Quality Improvement tool among 2,092 health facilities (NMCP).

Figure A27. Proportion of Laboratory Core Indicator Performances, July – September 2019



Source: Malaria Services and Data Quality Improvement tool among 753 health facility laboratories (NMCP).

Figure A28. Quality Assurance and Quality Control Microscopy, July – September 2019



Source: Malaria Services and Data Quality Improvement tool among 733 health facility laboratories (NMCP).

Conclusion

While there has been an overall reduction in the burden of malaria in Tanzania Mainland between the two most recent surveys, on average there are 1.2-1.9 million cases per quarter, with the largest number of cases reported in decreasing order in Kigoma, Tabora, Kagera, and Mtwara regions. Confirmation of malaria by mRDT or microscopy has increased nation-wide such that fewer than two percent of malaria cases are reported as clinical cases (not confirmed by a diagnostic test).

Data collected during supervision using the Malaria Services and Data Quality Improvement tool indicate that appropriate testing, diagnosis, and treatment for malaria is prevalent across health facility outpatient departments (which largely rely on RDTs), but that major challenges remain in

the quality of microscopy and in clinical skills such as history taking, physical examination, and patient counseling.

Key Question 4

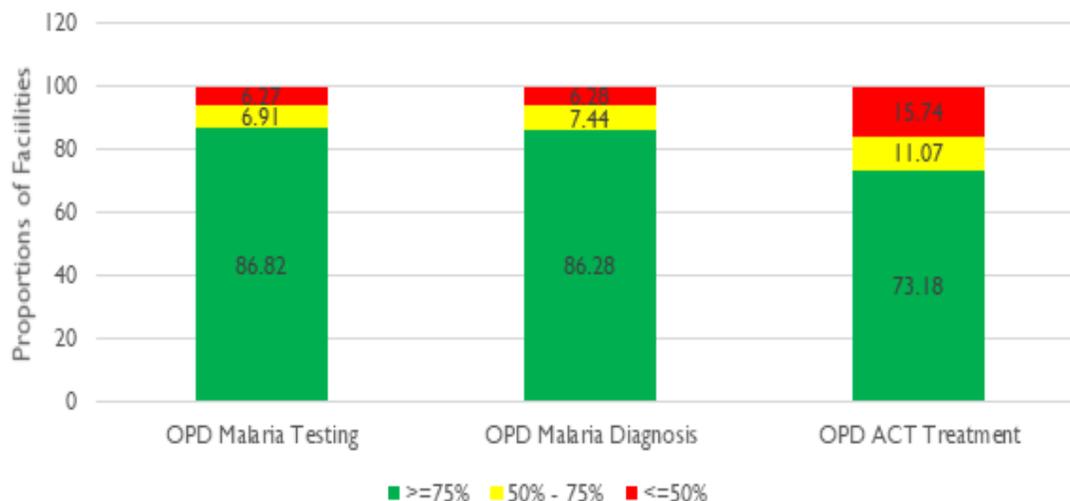
What is known about provider behavior in relation to testing and treatment practices?

Supporting Data

Figure A29. Key Barriers and Facilitators to Appropriate Testing and Treatment Practices

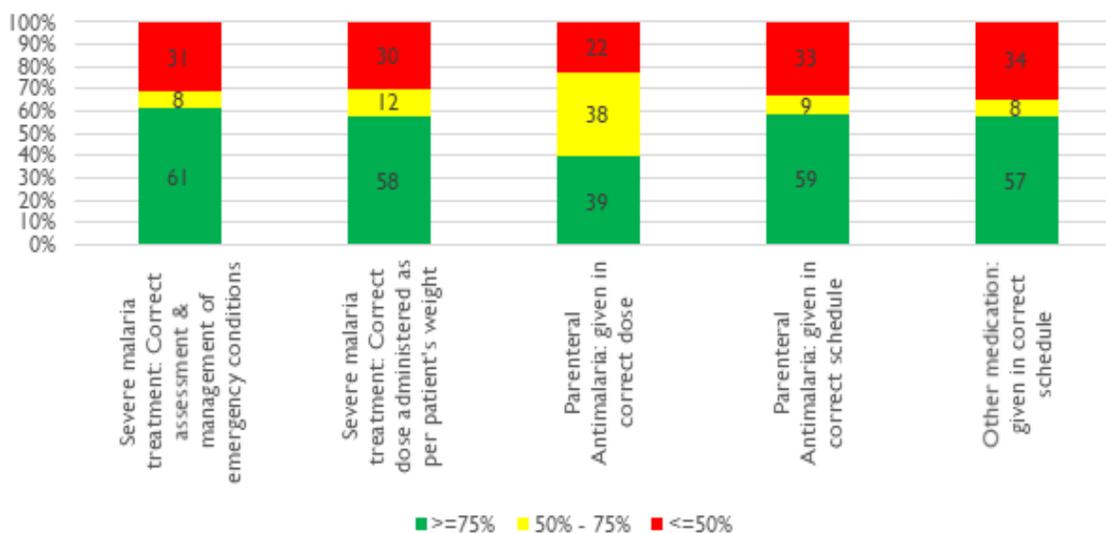
Facilitator	Type of Factor	Data Source	Evidence
Increasing the use of recommended antimalarials by healthcare provider	Environmental (accessibility of services)	Tanzania MIS 2017	89% of children under age five who had fever who took antimalarials took ACT. This is a 28% increase compared to 2011-2012 survey.
Barrier	Type of Factor	Data Source	Evidence
Limited availability of malaria testing and treatment commodities in health facilities	Environmental	NMCP Communication Guide for Malaria Control Interventions 2015-2020	There is stock out of supplies and commodities at health facilities that are resulting in either improper ordering by the facilities or logistic issues from the supplier (i.e., MSD). Patients and community members are not aware they have the right to ask in case of stock out and influence the availability.
Tendency to default to presumptive treatment especially when malaria mRDT results are negative	Internal / Social	Mubi, et al. 2013. <i>Malaria Journal</i> , 12 (293).	Antibiotics were more likely to be prescribed to patients with negative test results compared to patients with positive results (81 vs 39%, $p < 0.01$) and among non-tested compared to those tested for malaria (84 vs 69%, $p = 0.01$).

Figure A30. Proportion of OPD Adherence to Guidelines, 2017 - 2019



Source: Malaria Services and Data Quality Improvement tool among 2,231 health facilities (NMCP).

Figure A31. Proportion of Adherence to Guidelines for Severe Malaria



Source: Malaria Services and Data Quality Improvement tool among 477 health facilities (NMCP).

Conclusion

Programming will ensure a positive attitude toward malaria and malaria treatment and providers' behavior in adhering to recommended antimalarials and malaria treatment regimen.

Per MSDQI data nationally, adherence to malaria testing and treatment using ACT is high at outpatient departments (OPD), which is also observed in the routine HMIS data (i.e., increase in proportion of confirmed malaria and decrease in clinical malaria cases).

Per MSDQI data nationally, adherence to management of severe malaria cases at IPD showed a significant number of facilities performing below 50 percent, which could be due to poor record keeping or low quality of services at IPD.

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 A32. PMI Supported Health Facility Case Management and MiP, Tanzania 2019

PMI supports interventions to improve quality of case management and MiP in 11 regions and Zanzibar



Conclusion

- PMI supports improvement of malaria case management at health facilities across the 11 highest malaria burden regions. PMI funds will be used to support the continued implementation of the MSDQI package including the electronic tablet-based system for recording, reporting, and using data in the Lake, Western, and Southern Zones. Implementation of the MSDQI package in other regions of mainland Tanzania will be

funded by the Global Fund with partial support from PMI via funds allotted to the NMCP and PO-RALG for integrated supportive supervision and technical oversight.

- The main activity in the community is advocacy on awareness of malaria and early health seeking behavior.

Key Question 6

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

Supporting Data

Figure A33. Gap Analysis of RDT Needs

Calendar Year	2019	2020	2021
RDT Needs			
Total country population	54,265,158	55,966,030	57,724,380
Population at risk for malaria ¹	51,551,900	53,167,729	54,838,161
PMI-targeted at-risk population	51,551,900	53,167,729	54,838,161
Total number of projected fever cases	21,661,887	22,744,982	23,882,231
Percent of fever cases tested with an RDT	95%	95%	95%
Total RDT Needs²	24,329,421	24,329,421	25,584,756
Partner Contributions (to PMI target population if not entire area at risk)*			
RDTs carried over from previous year	11,727,825	19,619,304	20,784,308
RDTs from Government	0	0	0
RDTs from Global Fund	32,220,900	25,494,425	25,584,756
RDTs from other donors	0	0	0
RDTs planned with PMI funding	0	0	0
Total RDTs Available	43,948,725	45,113,729	46,369,064
Total RDT Surplus (Gap)	19,619,304	20,784,308	20,784,308

Footnotes:

¹) Data shared is from the national quantification conducted in November 2019. The national quantification did not use the demographic method described by PMI. Geographic coverage is estimated as 95% of total population at-risk for malaria.

²) mRDT needs are calculated based on historical data recorded in HMIS/DHIS2 on mRDTs consumed in OPD, IPD, and ANC, and estimated for interventions such as therapeutic efficacy studies, school malaria parasitological studies, active case detection, and iCCM.

Conclusion

For CY 2020, NMCP estimates a surplus of 20 million mRDT's for mainland Tanzania.

Tanzania uses combination mRDTs procured by Global Fund. Tanzania's supply chain system requires a minimum of 7 and a maximum of 13 months of stock to ensure consistent supply of

commodities. In this table, a "surplus" of approximately one years' worth of product is expected for supply chain functionality.

Key Question 7

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

Supporting Data

Figure A34. Gap Analysis of ACT Needs

Calendar Year	2019	2020	2021
ACT Needs			
Total country population	54,265,158	55,966,030	57,724,380
Population at risk for malaria	51,551,900	53,167,729	54,838,161
PMI-targeted at-risk population ¹	51,551,900	53,167,729	54,838,161
Total projected number of malaria cases	8,235,472	7,516,449	8,238,177
Total ACT Needs²	9,700,672	9,700,672	8,251,776
Partner Contributions (to PMI target population if not entire area at risk)¹			
ACTs carried over from previous year	5,516,640	9,241,736	10,792,534
ACTs from Government	0	0	0
ACTs from Global Fund	10,630,368	11,251,470	
ACTs from other donors	0	0	0
ACTs planned with PMI funding	2,795,400		
Total ACTs Available	18,942,408	20,493,206	10,792,534
Total ACT Surplus (Gap)	9,241,736	10,792,534	2,540,758

Footnotes:

¹) Data shared is from the national quantification conducted in November 2019. The national quantification did not use the demographic method described by PMI. Geographic coverage is estimated as 95% of total population at-risk for malaria.

²) ACT needs are calculated based on historical data recorded in HMIS/DHIS2 on ACTs consumed in OPD, IPD, ANC, therapeutic efficacy studies, school malaria parasitological studies, active case detection, and iCCM.

³) Tanzania's supply chain system requires a minimum of 7 and a maximum of 13 months of stock to ensure consistent supply of commodities. In this table, a "surplus" of approximately one years' worth of product is expected for supply chain functionality.

Conclusion

In 2020, NMCP estimates a surplus of 10.7 million ACTs for mainland Tanzania. Tanzania's supply chain system requires a minimum of seven and a maximum of 13 months of stock to ensure consistent supply of commodities. In this table, a "surplus" of approximately one years' worth of product is expected for supply chain functionality.

Key Question 8

What was the estimated need for severe malaria treatment and any other treatments as applicable during calendar year 2019? What is the estimated need for calendar years 2020 and 2021?

Supporting Data

Figure A35. Gap Analysis of Injectable Artesunate Needs

Calendar Year	2019	2020	2021
Injectable Artesunate Needs			
Projected number of severe cases ¹	332,083	302,015	291,522
Projected # of severe cases among children	98,871	88,473	70,038
Projected # of severe cases among adults	233,212	213,542	221,484
Total Injectable Artesunate vials Needs²	2,606,508	1,750,177	1,689,370
Partner Contributions			
Injectable artesunate vials carried over from previous year	1,942,260	2,247,013	1,895,262
Injectable artesunate vials from Government	0	0	0
Injectable artesunate vials from Global Fund	1,624,985	1,398,426	1,079,247
Injectable artesunate vials from other donors	0	0	
Injectable artesunate vials planned with PMI funding	1,286,276		
Total Injectable Artesunate vials Available	4,853,521	3,645,439	2,974,509
Total Injectable Artesunate vials Surplus (Gap)	2,247,013	1,895,262	1,285,139

Footnotes:

- 1) Data shared is from the national quantification conducted in November 2019. The estimated number of severe cases are projected using historical data recorded in HMIS/DHIS2.
- 2) The average number of vials needed per severe case is 6 vials.
- 3) Tanzania's supply chain system requires a minimum of 7 and a maximum of 13 months of stock to ensure consistent supply of commodities. In this table, a "surplus" of approximately one years' worth of product is expected for supply chain functionality.

Figure A36. Gap Analysis of Artesunate Suppository Needs

Calendar Year	2019	2020	2021
Artesunate Suppository Needs			
Number of severe cases expected to require pre-referral dose at community level ¹		58,982	46,692
Total Artesunate Suppository Needs²		117,964	93,384
Partner Contributions³			
Artesunate suppositories carried over from previous year	0	0	0
Artesunate suppositories from Government	0	0	0
Artesunate suppositories from Global Fund	0	0	0

Calendar Year	2019	2020	2021
Artesunate suppositories from other donors	0	0	0
Artesunate suppositories planned with PMI funding	0	0	0
Total Artesunate Suppositories Available	0	0	0
Total Artesunate Suppositories Surplus (Gap)	0	-117,964	-93,384

Footnotes:

- 1) Data shared is from the national quantification conducted in November 2019. For FY 2020 and 2021 estimates, NMCP conducted their first quantification of rectal artesunate. The estimated number of severe cases are projected using historical data recorded in HMIS/DHIS2. The estimate of the number of severe cases in children less than 5 years in the public sector assumes 60% of severe cases in the community.
- 2) Estimates two suppositories per case. Estimates do not include quantities required to fill commodity pipeline (minimum 7 months and maximum 13 months). The NMCP is awaiting approval from the GoT to implement iCCM and the use of rectal artesunate in select priority regions (see objectives in case management section).
- 3) In practice rectal artesunate has not previously been procured by either the GoT or its partners.

Conclusion

- For CY 2020, NMCP estimates a surplus of 1.9 million injectable artesunate doses for mainland Tanzania.
- Use of pre-referral rectal artesunate at peripheral health facilities is permitted in the national malaria diagnosis and treatment guidelines if injection is not available. In addition, the NMCP is awaiting approval from the GoT to implement iCCM and the use of rectal artesunate in select priority regions (see objectives in case management section). In practice rectal artesunate has not previously been procured by either the GoT or its partners. For FY 2020, NMCP conducted the first quantification of RAS. PMI would be supportive of procuring rectal artesunate when the guidelines incorporate implementation of rectal artesunate consistent with WHO recommendations.

Key Question 9

Are the first-line ACTs effective and monitored regularly?

Supporting Data

Figure A37. Most Recently Completed and Ongoing Antimalarial Therapeutic Efficacy Studies

Year	Sites	Treatment arms	PCR-corrected ACPR>90%?	Where molecular resistance work was completed or the plan, if any, for molecular resistance work
2018 ¹	Mzuki, Kibaha, Mlimba, Ujiji	AL	Yes	National Institute for Medical Research, Tanga, Tanzania

Year	Sites	Treatment arms	PCR-corrected ACPR>90%?	Where molecular resistance work was completed or the plan, if any, for molecular resistance work
2019	Ipinda, Igombe, Nagaga, Simbo	AL	NA	National Institute for Medical Research, Tanga, Tanzania

Footnotes - ACPR: adequate clinical and parasitological response; AL: artemether-lumefantrine.

Tanzania supports 8 TES sites, conducting surveys in 4 of the sites each year.

Conclusion

Current evidence demonstrates that AL continues to be effective in Tanzania.

Key Question 10

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

Supporting Data

N/A

Conclusion

N/A

Key Question 11

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

Supporting Data

N/A

Conclusion

N/A

2.B. DRUG-BASED PREVENTION

NMCP objective
<ul style="list-style-type: none"> • Achieve 80 percent coverage of 2 doses of IPTp, and 60 percent of 3+ doses of IPTp. • Achieve 85 percent use of ITNs by pregnant women, and 100 percent prompt case management of malaria infections in pregnancy.

NMCP approach

- The MOHCDGEC has adopted the updated WHO policy of IPTp3+, which is to give three or more doses of SP monthly until the day of delivery, administered as directly observed therapy during ANC visits. In 2014, MOHCDGEC started implementation of a policy to screen all women with an mRDT at their first ANC visit, irrespective of symptoms, and treat those who test positive according to national guidelines. If a woman is treated for malaria with an antimalarial at the ANC visit or in the four weeks before, it is not necessary to give her SP. Instead, she should be instructed to return in about a month for her next ANC visit and IPTp-SP should be given at that time.
- Iron/folate combination (ferrous sulphate 200mg + folic acid 0.25mg) is provided at ANC according to national policy for prevention and treatment of anemia. High-dose folic acid is procured and provided for pediatric indications only and is not provided at ANC.
- Case management of uncomplicated malaria in pregnancy follows WHO recommendations. For severe malaria in the first trimester, current national guidelines include injectable quinine (refer to case management section). The NMCP is currently revising the malaria diagnosis and treatment guidelines to include injectable artesunate as the treatment of choice for severe malaria in the first trimester as recommended per WHO guidelines.
- The Malaria Services and Data Quality Improvement (MSDQI) package is used in health facilities to observe and evaluate diagnostic and treatment practices of providers at ANC. Facilities with low performance are targeted for supportive supervision and mentorship, and performance is monitored using data from the MSDQI package and DHIS2. MSDQI mentors support facility HCWs to appropriately assess danger signs, take an adequate clinical history, conduct a sufficient physical examination, provide adequate counseling and communication, and ensure data quality in the HMIS register, tally, summary that are entered into DHIS2. More details on MSDQI package are in the case management section.

PMI objective, in support of NMCP

PMI supports the WHO recommended three-pronged approach to reduce the burden of malaria infection among pregnant women:

- Intermittent preventive treatment of malaria during pregnancy;
- Insecticide-treated nets; and
- Effective case management of malaria illness and anemia.

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

- PMI supported Council Health Management Teams (CHMTs) conducted supervision visits and training to improve the quality of MIP services using NMCP's quality improvement MSDQI package in 1,462 (80 percent) health facilities in all seven regions of Lake and

Western Zones and 1,044 (87 percent) in the four regions of the Southern Zone. The ANC readiness is among the checklist that are conducted at ANC. Data from all facilities including PMI supported facilities between July and September 2019 showed that staffing levels, availability of equipment and medicine, and IT system readiness performed well. Staff training and malaria reference materials performed poorly. There is a need to improve the availability of malaria reference materials, such as malaria guidelines, job aids, and algorithms. In addition, quality improvement teams continue to improve competencies on management of pregnant women. Gains have been made in clinical physical examination, diagnostics, treatment, and counselling. CHMTs will continue to build competencies of healthcare workers on these key areas of care through continuous supervision and education to clinicians and nurses on provision of standard quality of care.

- PMI partners performed quarterly tracking of SP stocks at health facilities and conducted feedback meetings with Regional and District Health Management Teams to improve SP availability.

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

- PMI’s funding will contribute to a larger effort funded by other U.S. Agency for International Development (USAID) health programs to improve the demand for and the quality of ANC on the Mainland, including malaria prevention and treatment of acute infections.
- In collaboration with the National Ministry Trainers and Region and Council Health Management Teams (R/CHMTs), PMI will continue to support cascading of MSDQI mentorship to ANC healthcare providers across the Lake and Southern Zones.
- PMI will support continued training and supervision for IPTp3+ and case management integrated with family planning, maternal and child health, and HIV programming. Support for SBC to increase ITN use, ANC attendance, and IPTp uptake will continue as well.
- PMI will support provision of long-lasting ITNs to pregnant women through continuous distribution at ANC on the Mainland (more details in the ITN section).

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

PMI Goal

Support the national strategy for MIP, which includes provision of ITNs at first antenatal care (ANC) visit, intermittent preventive treatment for pregnant women (IPTp) to all pregnant women in malaria

endemic areas 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 expanding, contracting, or changing any MIP activities? If so, why and what data did you use to arrive at that conclusion?

PMI will continue supporting MIP activities in high burden regions. More focus will be on supporting Local Government Authorities (LGA) to implement supportive supervision and mentorship through MSDQL.

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

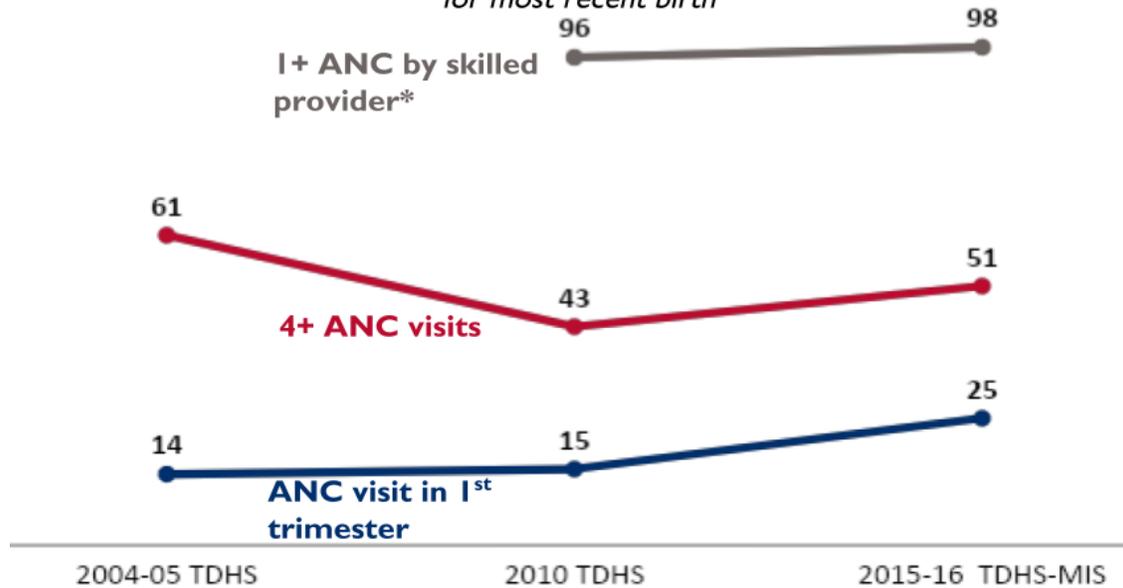
Key Question 1

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

Supporting Data

Figure A38. Trends in ANC Coverage

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



Note: Skilled provider includes doctor/assistant medical officer (AMO), clinical officer, assistant clinical officer, nurse/midwife, assistant nurse, and maternal child health (MCH) aide

Figure A39. Key Barriers and Facilitators to ANC Attendance

Facilitator	Type of Factor	Data Source	Evidence
Exposure to ANC messages	Environmental	Baseline Evaluation of USAID Tulonge Afya Project in Tanzania - 2018	Proportion of those who recall messages on the importance of ANC were more likely to complete four visits (p<.05).
Positive Attitude toward attending ANC early	Internal	Tanzania MIS - 2017	96% of women strongly agree that women should attend ANC early in their pregnancy.
Positive attitude toward frequent ANC attendance	Internal	Tulonge Afya Annual Sentinel Survey - 2019	60% of the surveyed participants showed a positive attitude towards the statement that attending ANC early and more than four times is beneficial to them and their baby.
Barrier	Type of Factor	Data Source	Evidence
Women are often unable to participate in household decision-making	Social	Tulonge Afya MNCH Audience Insights: Summary Report - 2018	28% and 36% of surveyed individuals strongly agree and agree respectively that the decision of pregnant women to attend antenatal care entirely depends on their husband or male partner, and only 36% of the surveyed participants strongly agreed that men are supportive to their partners to attend antenatal care.
Mistreatment of pregnant patients by providers	Environmental	USAID Tulonge Afya MNCH Audience Insights: Summary Report - 2018	Some women during a focus group discussion reported mistreatment of pregnant patients (neglect, extortion, verbal abuse) by providers.

Conclusion

The proportion of women receiving at least one ANC visit from a skilled provider is very high, yet only half make four or more visits, and only one-quarter make their first visit during the first trimester, indicating significant gaps in knowledge about the importance of, or access, to early and frequent antenatal care.

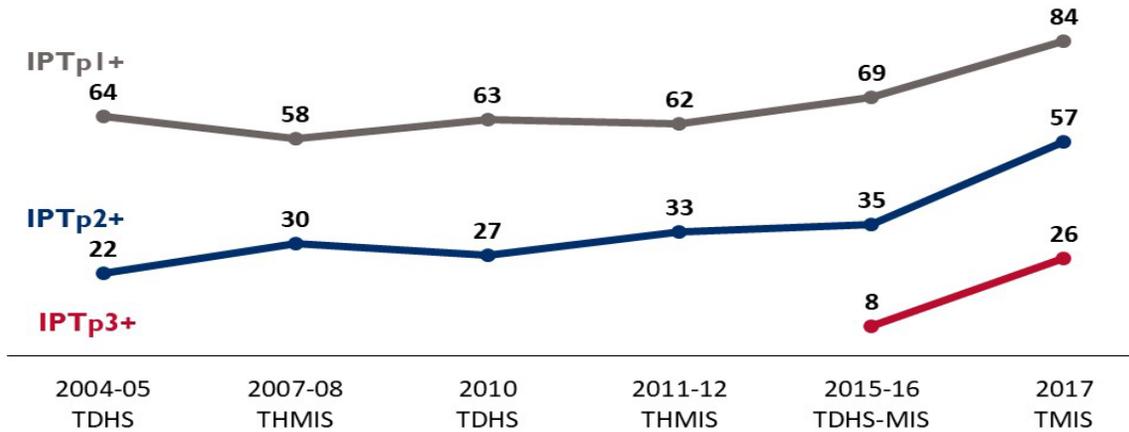
Key Question 2

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

Supporting Data

Figure A40. 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 that, wherever possible, this indicator has been recalculated according to the newest definition, the specified number of doses of SP/Fansidar from any source

Figure A41. Proportion of Women Receiving IPTp2 and IPTp3 during ANC Attendance

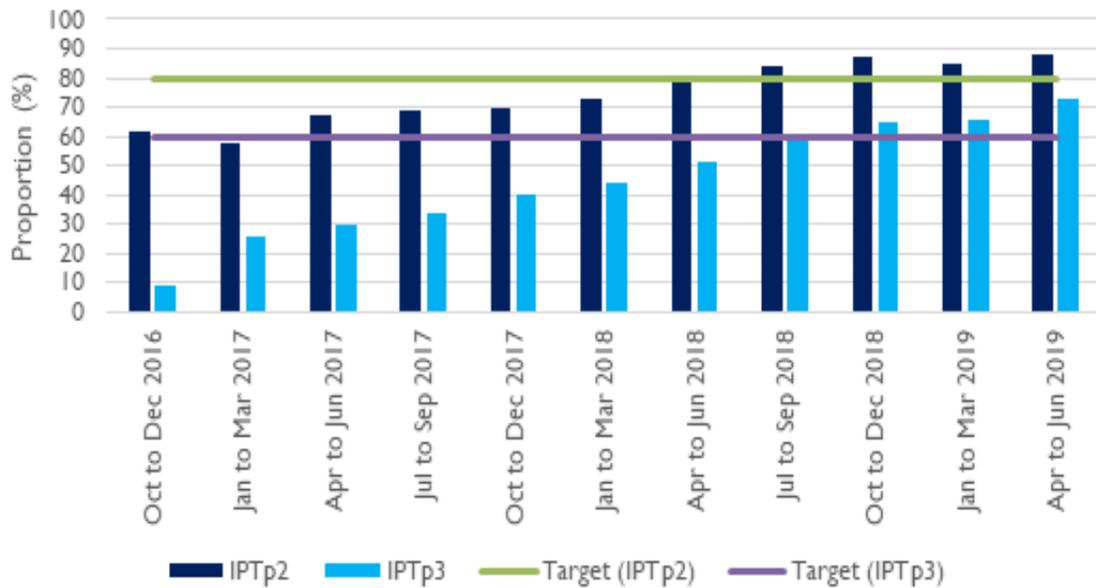
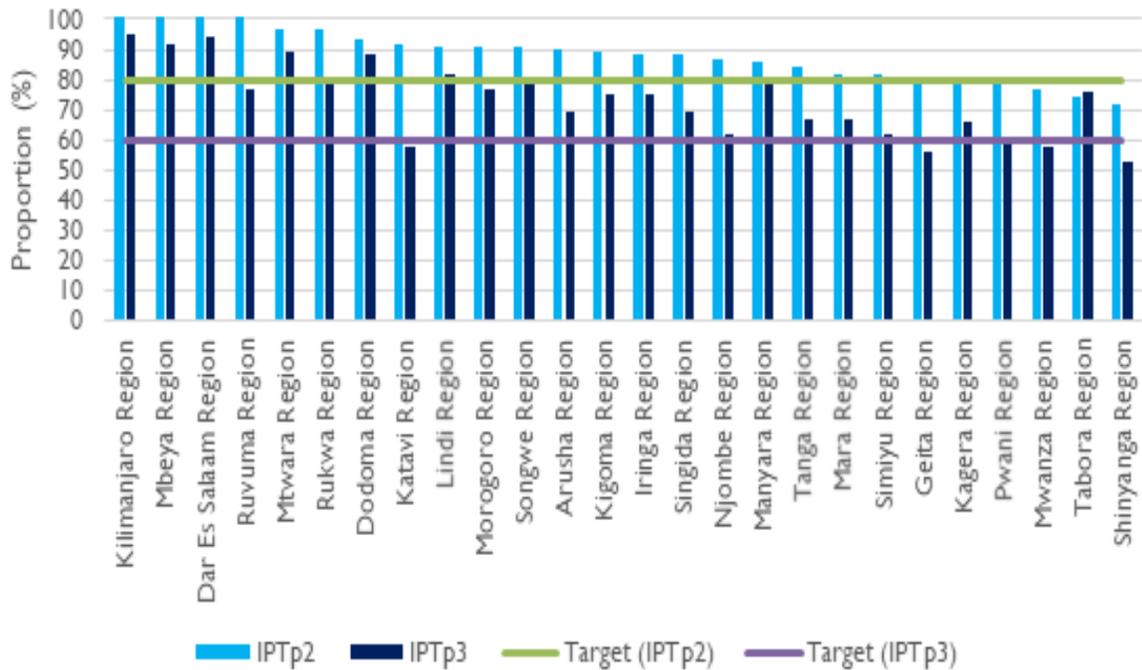


Figure A42. Proportion of Women Receiving IPTp2 and IPTp3 during ANC Attendance, July – September 2019



Conclusion

Since 2016, there has been an increase in the proportion of pregnant women who receive IPTp2 and 3 reported in HMIS/DHIS2, with nearly every region achieving the national targets of 80 percent for IPTp2 and 60 percent for IPTp3 among women attending ANC.

Survey data between the 2005 DHS and 2017 MIS show both steady increases in self-report of women who receive all doses of IPTp, as well as gaps between the proportion of women receiving at least one dose (84 percent) and those receiving three or more doses (26 percent).

Key Question 3

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

Supporting Data

Figure A43. Missed Opportunities for IPTp

Percent of women age 15-49

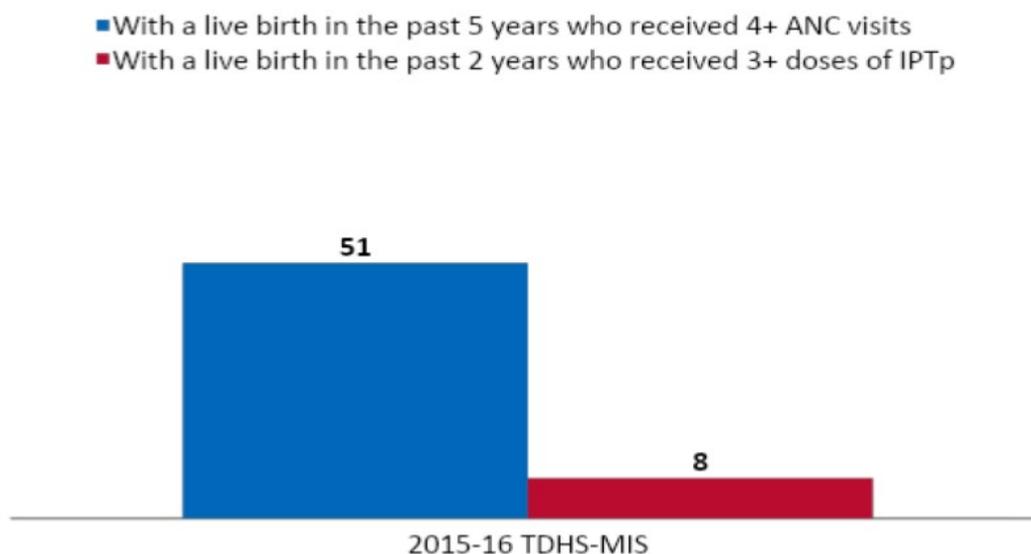


Figure A44. Key Barriers and Facilitators to IPTp Administration at ANC Visits

Facilitator	Type of Factor	Data Source	Evidence
Dialogues on IPTp use among pregnant women, partners, and family members	Internal	Tulonge Afya Baseline Survey - 2018	Pregnant women who took IPTp were more likely ($p < .05$) to have discussed preventing malaria in pregnancy (past 6 months) than those who did not.
Barrier	Type of Factor	Data Source	Evidence
Consistently availability of IPTp drugs	Environmental	Communication guide on malaria prevention and control	There is a problem of stock out of supplies and commodities at health facilities that are resulting due to either improper ordering by the facilities or logistic issues from the supplier (MSD). Patients and community members are not aware that they have the right to ask in case of stock out and influence stock availability.
Bias around administration of SP	Internal / Social	Boresha Afya Project Reports	Project reports suggest that provider bias around the provision of SP persists.

Conclusion

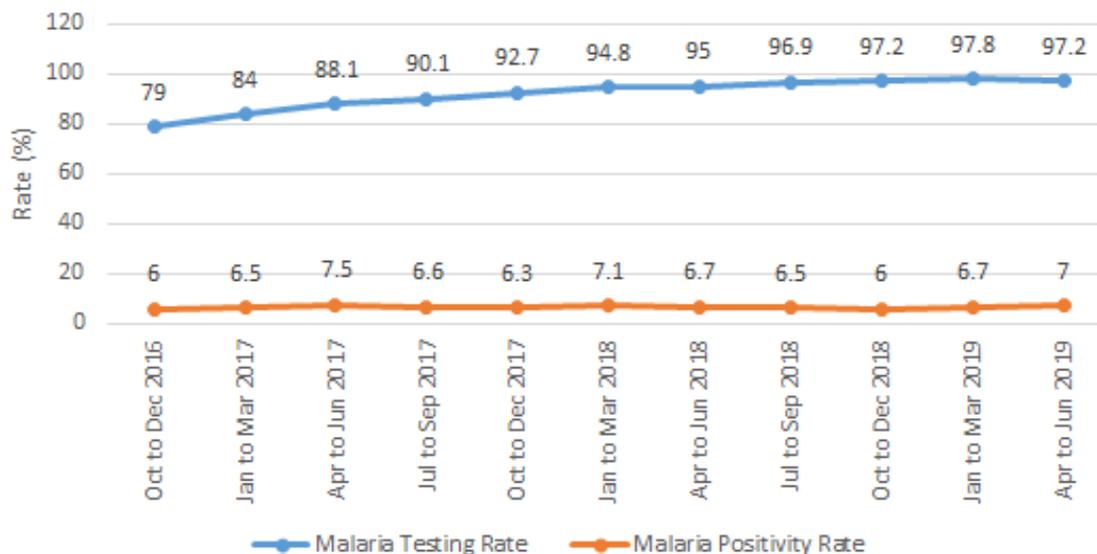
Based on self-reported information in the 2015-16 DHS/MIS, 51 percent of women attended four or more ANC visits but only 8 percent received three or more doses of IPTp. However, based on information from MIS 2017, 26 percent of women self-reported receiving three or more doses of IPTp. In addition, routine HMIS data through June 2019 shows that among women who attend ANC, over 75 percent of women receive three or more doses of IPTp (see key question 3 above). The programs will continue interventions that address providers' behavior in adhering to recommended treatment regimen and increasing advocacy on malaria commodities availability. NMCP and PMI must reinforce the messaging on the importance of pregnant women to take IPTp and encouraging positive attitude towards IPTp among pregnant women, their partners and community at large.

Key Question 4

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

Supporting Data

Figure A45. Overall Malaria Testing and Positivity Rate in ANC



Note: fever is not captured on HMIS

Conclusion

No data are currently available on pregnant women with fever being diagnosed with malaria. However, the above graphs shows malaria testing rates among pregnant women attending ANC have increased over time, and this could be attributed to the improved availability of malaria commodities and adherence to diagnostic and treatment guidelines.

Key Question 5

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

Supporting Data

Figure A46. Gap Analysis of SP Needs

Calendar Year	2019	2020	2021
Population at Risk of Malaria	51,551,900	53,167,729	54,838,161
SP Needs			
Total number of pregnant women ¹	2,170,606	2,238,641	2,308,975
Total SP Need² (in treatments)³	7,488,591	7,723,311	7,965,964
Partner Contributions			
SP carried over from previous years	3,792,533	0	89,547
SP from Government	1,879,200	7,812,858	8,196,862
SP from Global Fund	0	0	0
SP from Other Donors	0	0	0
SP planned with PMI funding	0	0	0
Total SP Available	5,671,733	7,812,858	8,286,409
Total SP Surplus (Gap)	-1,816,857	89,547	320,445

Footnotes:

¹) The total number of pregnant women is estimated at 4% of the total population.

²) The number of treatments should be calculated using the total number of pregnant women attending ANC and estimating the percentage who will attend ANC1, ANC2, ANC3, ANC4 to receive IPTp. For example, if the total number of pregnant women is 1000 and 90% attend ANC1, 60% attend ANC2 and 40% attend ANC3, and 30% attend ANC4, then total number of SP treatments needed for IPTp is 900+600+400+300=2200 SP treatments.

³) Please enter the number of treatments and not the number of tablets. One treatment of IPTp is comprised of 3 SP tablets.

Conclusion

The GoT has committed to procuring SP as part of its investments in maternal and child health. There is no current commitment from GoT for 2020 and 2021. The figures shown in the table are from national quantification of need to ensure treatment and stock availability. There have been challenges in distributing SP to peripheral health facilities. PMI is working with the NMCP and providing support for supply chain management to help address this problem and ensure availability at facilities with ANC clinics. PMI also will support implementation of the Group ANC study which is aimed at assessing the impact and quality of group antenatal care (ANC) on the uptake of intermittent preventive therapy in pregnancy (IPTp) compared to standard individual ANC (more details found in operation research section).

Key Question 6

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

Supporting Data

N/A

Conclusion

N/A

3. CROSS-CUTTING AND OTHER HEALTH SYSTEMS

3.A. SUPPLY CHAIN

NMCP objective
<p>Strategic objective: To prevent the occurrence of severe morbidity and mortality related to malaria infection through promotion of universal access to appropriate early diagnosis and prompt treatment and provision of preventive therapies in vulnerable groups so that case fatality rate will be reduced to less than 1 percent by 2020.</p>
<p>Specific objectives:</p> <ul style="list-style-type: none">● Provide universal access to appropriate, quality and timely malaria diagnosis to all people with signs and symptoms of malaria● Provide universal access to appropriate, quality and timely treatment to all people who have malaria● Ensure that commodities used in malaria patient care and prevention are consistently safe, quality assured and available at the points of care
<p>Strategic objective: To provide timely and reliable information to assess progress towards the set global and national targets, to ensure resources are used in the most cost-effective manner, and to account for investments made in malaria control.</p>
<p>Specific objective:</p> <ul style="list-style-type: none">● Improve quality, completeness, and timeliness of malaria indicators within the routine health information system to reach 90 percent of health facilities reporting monthly through the HMIS by 2020

NMCP approach

To improve continuous accessibility to diagnostics, the supply chain and logistics system will be strengthened, from quantification and procurement process up to delivery and service points.

- The NMCP approach will focus on facilitating the malaria commodities procurement process as indicated by the comprehensive annual quantification, through the provision of timely ordering and clear delivery schedule to the selected procurement agency. This includes the following implementation priorities/approach:
 - Perform semi-annual adjusted consumption-based quantification for all antimalarials and diagnostics in collaboration with Medical Store Department (MSD), and implementing technical partners;
 - Maintain efficient logistics for appropriate storage and timely transportation and delivery of malaria commodities to public health facilities through the delegated country authority (MSD)
 - Improve management of the supply chain through improved capacity of healthcare workers;
 - Maintain private-sector access to affordable and quality facilities for malaria case management by facilitating low-cost/subsidized schemes through global partnerships.
- Improve logistic information system to facilitate the commodities supply chain from MSD to healthcare facilities and to respond to stock-outs. This includes the following implementation priorities/approach:
 - MSD level - NMCP and partners will constantly monitor the flow of information, expected shipments, received goods, stock levels, and distribution to zonal stores and healthcare facilities;
 - NMCP level - a system to monitor accessibility and availability of malaria commodities will be consolidated and used through the existing electronic platforms (SMS for Life [SFL] and integrated logistics system [ILS] gateway) and regular stock verification at the zonal MSD level;
 - District and health facility levels - specific, periodic surveys will be promoted to monitor the efficiency of the logistic system in the public and private sectors. The current and anticipated initiatives will include (1) assessment of service provision at healthcare facilities; (2) spot-checks at all levels of the supply chain; and (3). Specific periodic surveys will be promoted to monitor the efficiency of the logistic system in the public and private sectors. Pharmaceutical Services Section (PSS) and NMCP, in collaboration with implementing partners, will promote and maintain a system for ordering, supply, accounting, and loss of malaria commodities.

PMI objective, in support of NMCP

Supply chain strengthening work falls under PMI’s strategic area 5: Building capacity and health systems. PMI contributes to NMCP’s strategy and larger Government of Tanzania health supply chain strategies and prioritized interventions. PMI provides nationwide support for supply chain strengthening.

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

PMI through implementing partners provides overall technical assistance to the Government of Tanzania on supply chain strengthening. Malaria commodities are included as part of the integrated logistics system (ILS); so generally, support to malaria is part of overall support to supply chain strengthening. The following activities have been supported over the past 12 months to improve malaria commodity availability at the last mile. Activities are presented according to intervention areas, and are not exhaustive of all supply chain work completed.

Plan for transition from donor-funded support:

- Produced the health commodity revolving fund guidelines, which aim to ensure the sustainability of financing of medicines and medical supplies at health facility level by tapping into complementary funds, and retaining revenues generated by facilities through health commodities sales. Facilities are directed to use their funding to procure SP and quinine tabs; when implemented, the health commodity revolving fund guidelines will enable facilities to utilize their funding to procure these commodities.
- Conducted activity to investigate the potential implications of Direct Health Facility Financing (DHFF), particularly on product availability. With the rollout of DHFF, facilities manage funding streams directly, which they can use to procure commodities (either from MSD or from the Prime Vendor). This analysis found that since the rollout of DHFF, overall product availability has increased. Of all health spending at facilities, roughly 23 percent was spent on health commodities.
- Developed a transition plan for the eLMIS, so that Government of Tanzania (GoT) will eventually assume all management, governance, and support of eLMIS

Strengthen supply chain management Information System (MIS):

- Managed the eLMIS, which supports the collection, management and use of critical supply chain data (including consumption and stock on hand) including all malaria commodities; data are from ~5,000 health facilities
- Maintained high eLMIS reporting rates (around 99 percent)
- Created dashboards within the eLMIS to facilitate decision-making

- Enabled the visibility of various funding sources within eLMIS, so facilities can see their balances, and choose the funding source for orders

Strengthen and streamline quantification:

- Supported national malaria commodities quantification
- Conducted forecast accuracy analysis for Oct 18 – Sep 19: 79 percent
- Provided technical assistance to NMCP

Improve supply chain performance against key indicators:

- Facilitated the redesign of the ILS, which includes malaria commodities. Major changes to the system include a switch to monthly reporting and every other month resupply. The facility level minimum and maximum stock levels were lowered from 4 months and 6 months of stock to 2 months and 4 months of stock, respectively. Mwanza zone began implementation in January 2019; plan for implementation is under development for national roll out.
- Developed national supply chain key performance indicators (KPI) reference manual, which includes malaria commodities.

Increase data use and improve data quality:

- Implemented Information Mobilized for Performance Analysis and Continuous Transformation (IMPACT) Approach: a sustainable, structured approach to problem solving which encourages commodity managers and other stakeholders (such as R/CHMTs) to use data to check progress against key KPIs, conduct root cause analyses, develop action plans for improvement, and recognize facilities for good performance. The approach has been rolled out to 13 regions and 103 IMPACT teams established. An assessment planned for the last week of October; any changes that need to be made will be incorporated prior to rollout to the rest of the country.

Increase skills of key counterparts, including mentorship of transitioned Logistic Management Unit (LMU):

- Strengthened capacity of the directorate of health and nutrition at PORALG to enhance its oversight and capacity building role to Local Government Authority (Council Health Management Teams CHMTs and primary health care facilities).
- Supported development of harmonized supply chain supportive supervision tools which includes malaria commodities.
- In prior years, the project provided operational support to the LMU, who worked to improve the availability of malaria commodities by: improving data visibility and quality, and use, conducting supportive supervision and alleviating stock imbalances. USAID funding for the

LMU ended June 30. In preparation for the transition of the LMU to GoT structures, the project developed and implemented a transition plan, updated Charter and Standard Operating manual, and conducted series of capacity building trainings targeting transferring and newly recruited staff

Establish a culture of collaboration and information sharing:

- Convened annual Tanzania Health Supply Chain Summit, which included a session on linking supply chain data with health outcomes, including malaria
- Participated in a range of technical working groups, and provided supply chain data across stakeholders

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

- Support for data analysis and visualization, including comparing eLMIS and DHIS2 data, lead time analysis, and root cause analysis of data quality issues for ACTs
- Reinvigoration of quantification processes and governance around them (i.e. advocating for more frequent supply planning updates, collaborative approach to forecasting)
- Transition eLMIS into a decision support system (including specific visualizations) encouraging eLMIS data use by NMCP
- IMPACT Approach implementation and utilizing data for problem identification and resolution
- Support development of a supply chain portal to promote data visibility across different sources for a common understanding across stakeholders
- Continuing improvements to eLMIS and related visualizations, and implementing activities to encourage data use

PMI Goal

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

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

In FY2020, PMI/Tanzania proposes to maintain the allocation for supply chain to support:

- Strengthening of the logistics management information system (LMIS) which includes all records and reports used for managing commodities, such as stock cards, dispensing registers, and paper-based reports
- Continued efforts to build the capacity of the transitioned Logistic Management Unit (LMU) through mentorship and support supervision of key LMU staff.
- Increased culture of data use for decision making, continue supporting IMPACT Approach implementation and utilizing data for problem identification and resolution. PMI will increase data visualizations to inform targeted supervision and that malaria commodity stocks and orders would be maintained at required level of stocks.
- Strengthening of quantification processes and governance of malaria commodities. PMI efforts will be directed to support advocacy for more frequent supply planning updates and collaborative approach to forecasting at all levels.

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

Key Question 1

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

Supporting Data

Figure A47. Central Stock Levels for ACTs

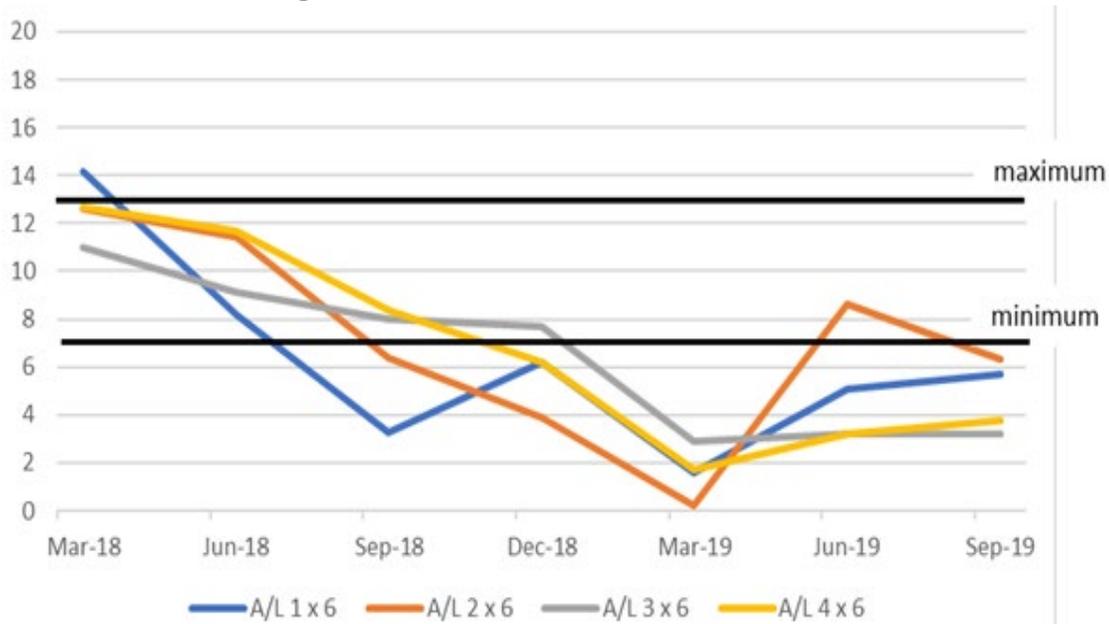


Figure A48. Central Stock Levels for mRDTs and SP

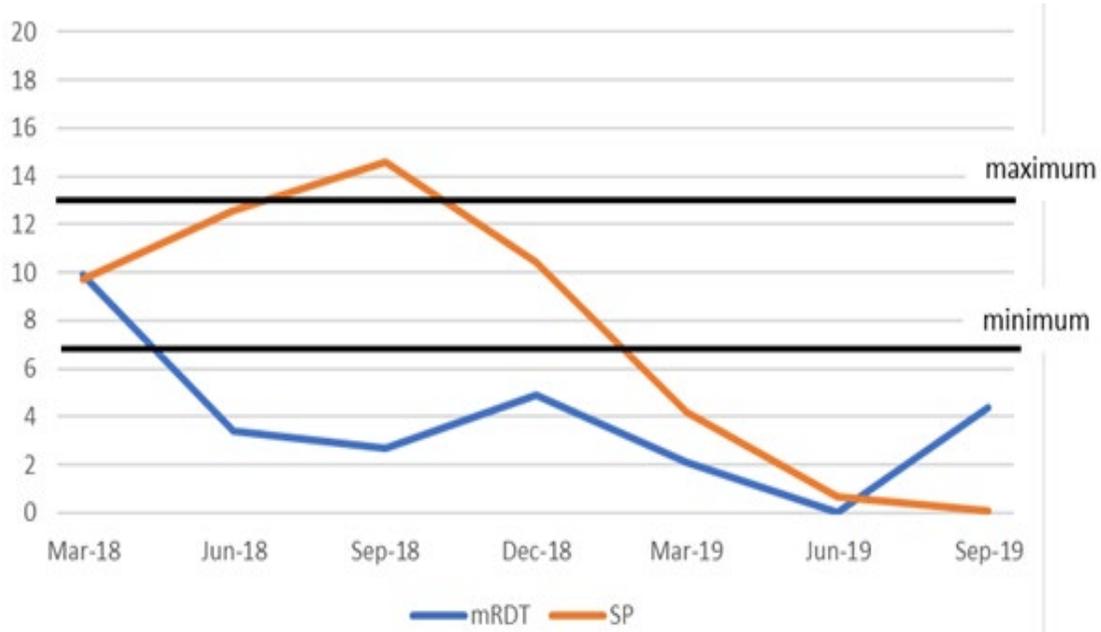
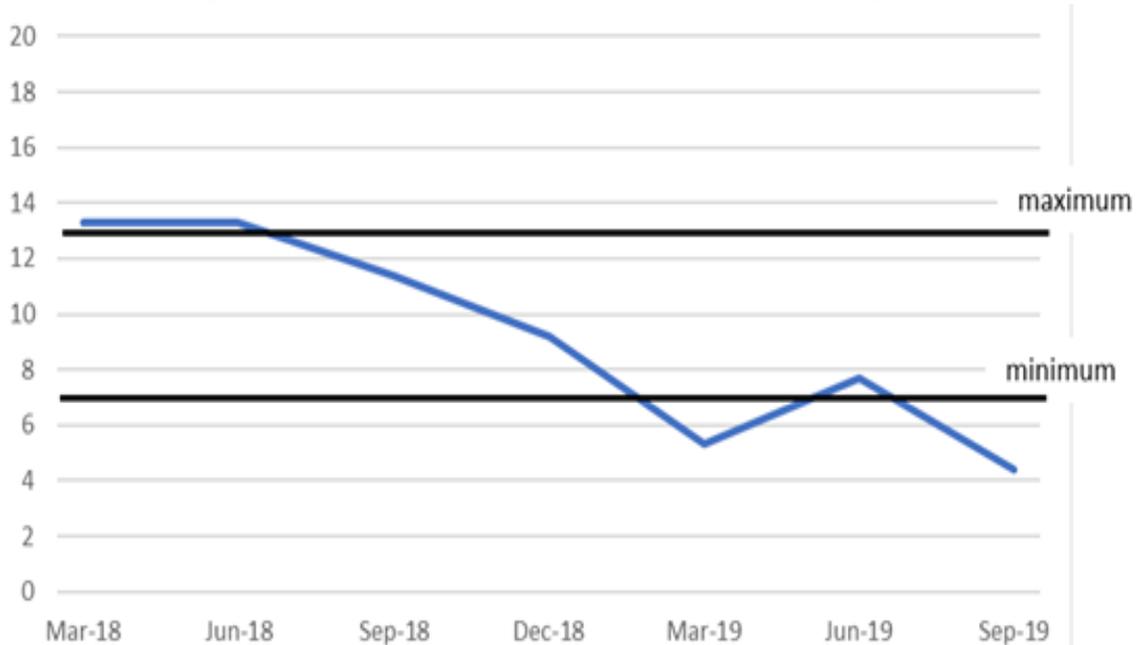


Figure A49. Central Stock Levels for Artesunate Injection



Conclusion

- ACTs have frequently been under minimum stock levels over the past year; however, several Global Fund shipments are expected between November 2019 and March 2020 that will put the stock levels of all ACTs between minimum and maximum. Shipment status for ACTs in 2021 are unknown, although its possible they will be covered by GF.

- RDTs were stocked out at the central level in June 2019 while awaiting a global fund shipment. RDT orders from the Global Fund are expected between November 2019 and April 2020, which will put stocks between minimum and maximum
- Artesunate injection was overstocked in 2018 while quinine injection was in the process of being phased out. As of November 2019, the months of stock was 1.1, with upcoming orders from the Global Fund in December 2019 and March 2020.
- PMI will continue supporting NMCP in pipeline monitoring and updating, highlighting required shipments or changes to existing shipments to ensure the stocks are maintained between minimum and maximum.

Key Question 2

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

Supporting Data

Data are only provided for facility level.

Figure A50. Stockout Rate of Malaria Commodities by Produce

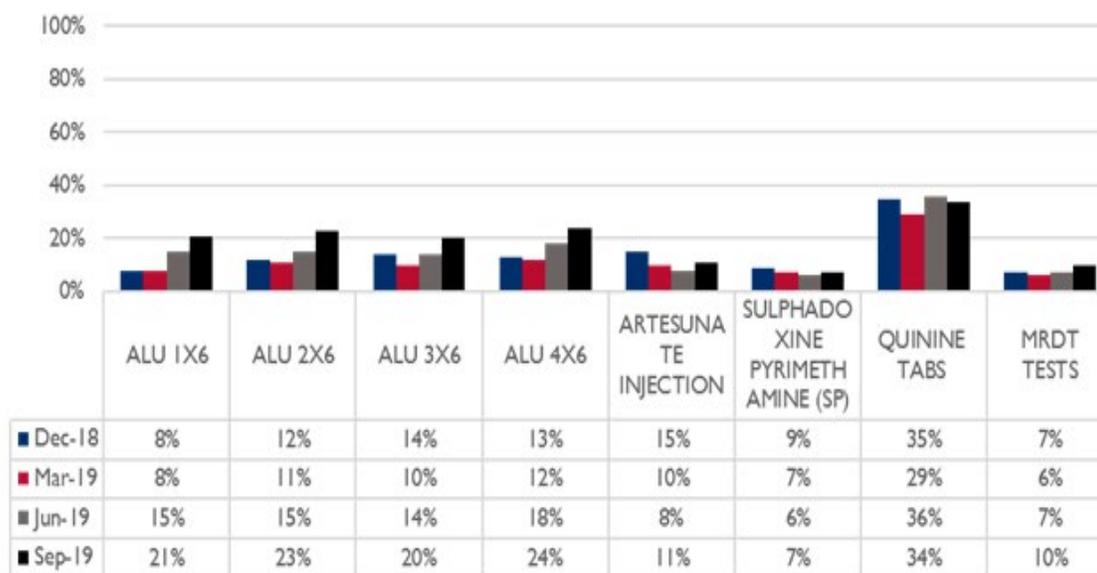


Figure A51. Overall Stockout Rate of Malaria Commodities

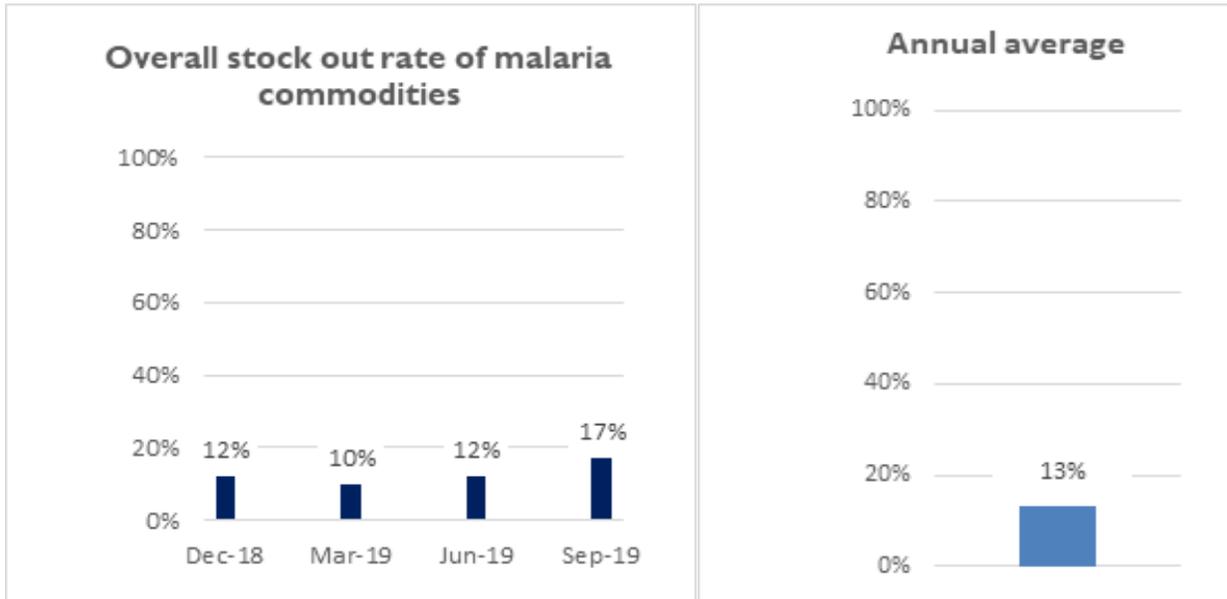
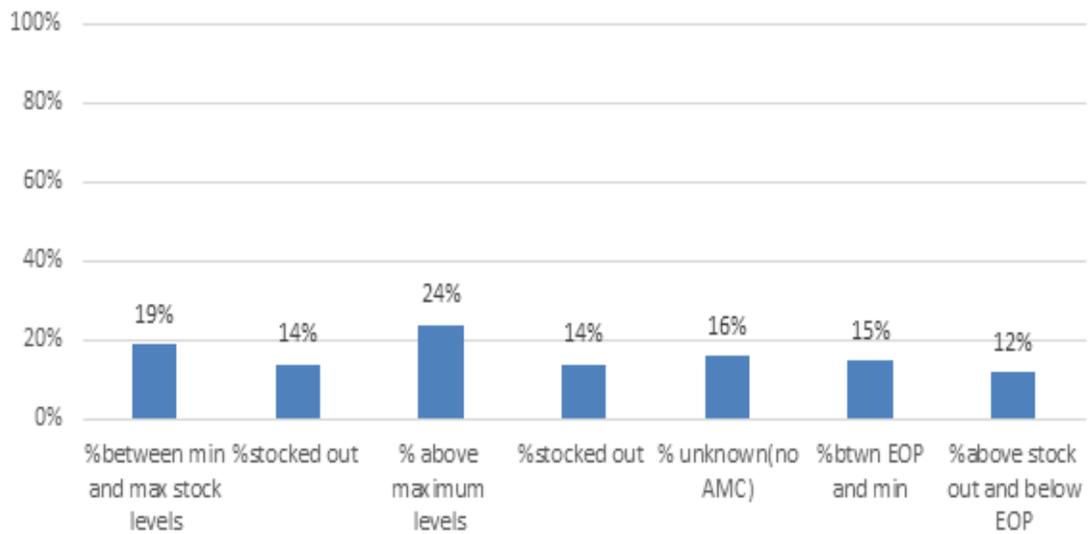


Figure A52. Stocked According to Plan and Other Reported Incidences for Malaria Commodities Q4, July – September 2019



Note: Data are shown for all 4 quarters of FY 19.

Conclusion

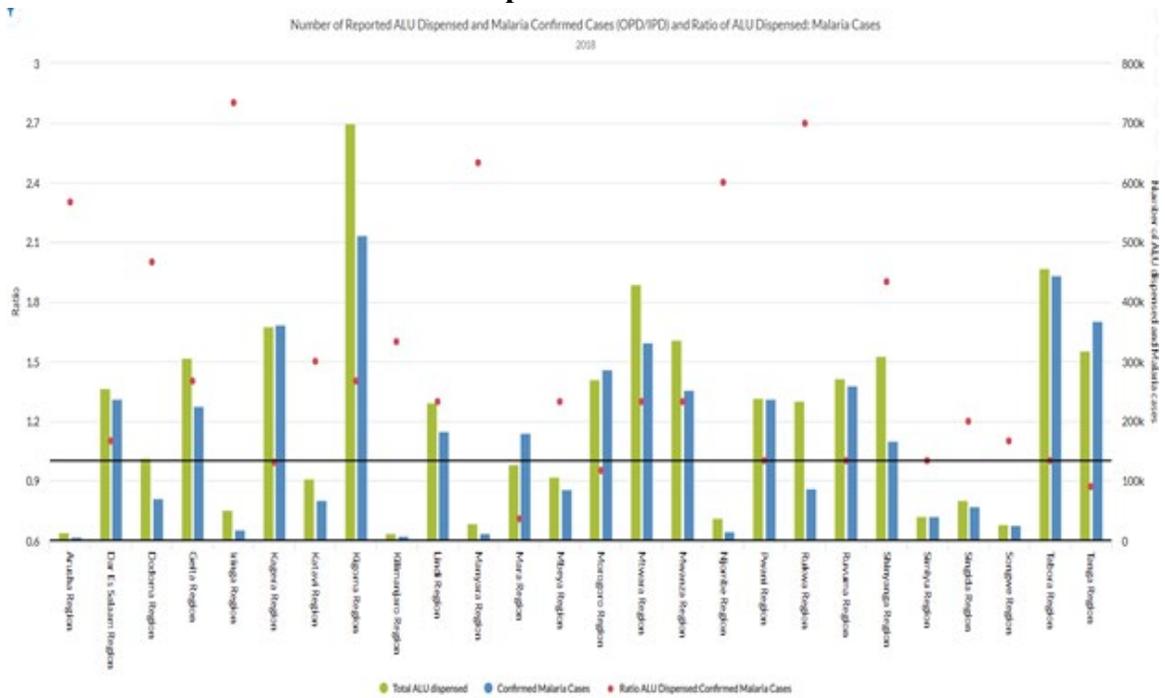
- Over the past year, Q4 had an overall stock out rate of 17 percent for malaria commodities, the highest of all quarters. In all four quarters, the target of ≤ 5 percent was not reached. Stock out rate averaged 13 percent.
- Quinine tablets have been most frequently out of stock. In addition, during Q2, there were stock outs of Quinine at MSD central which led to stock outs at zones. ACTs have also shown high stock out rates, particularly in Q4. It has been reported that most facilities do not manage all four AL presentations, which affects data quality during reporting. For RDTs, there have been shortages at the health facilities; in Q4 there was 1 Month of stock (MOS) in July 2019. Additionally, there were stock outs of SP countrywide attributed to supplier challenges.
- There is a need to improve the availability of needed commodities at all levels. PMI will continue to support NMCP to conduct quantification exercises and the quarterly review of the supply plan to improve coordination and procurement planning across development partners. PMI will also continue to support monitoring of stock levels of ACTs, mRDTs, and SP across all MSD zones through routine physical counts and use of Epicor 9 and eLMIS data, to ensure on-time and in-full distribution of all orders. PMI will continue to support the improvement of data quality within the eLMIS and ILS Gateway to ensure increased data visibility and use for routine supply chain decision-making (rollout of IMPACT teams) across all levels.

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?

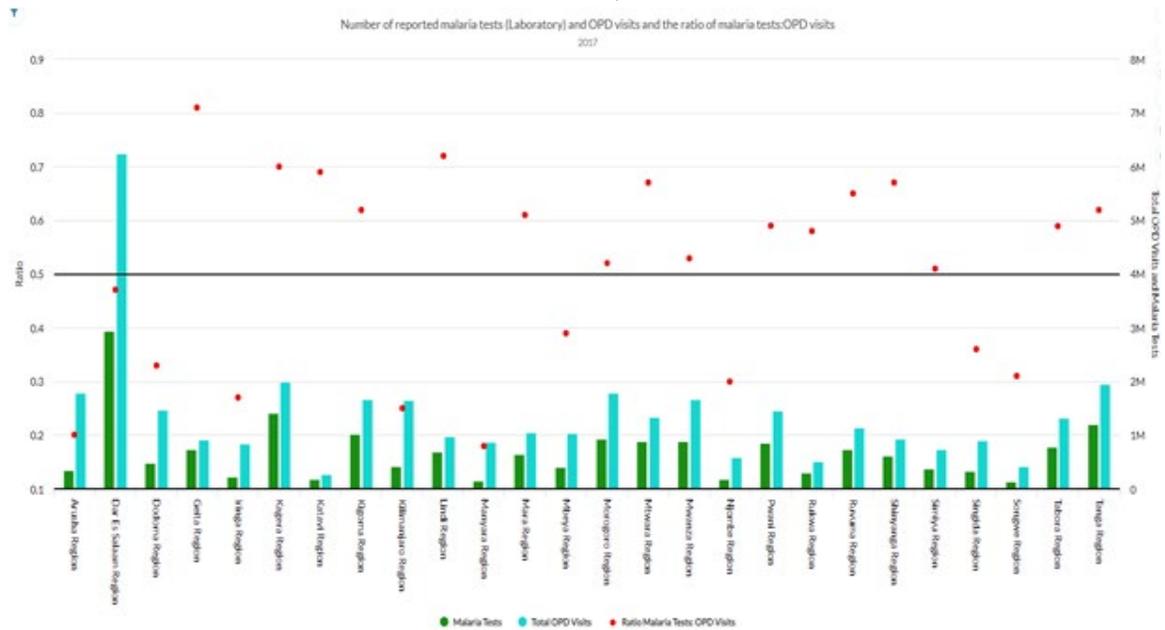
Supporting Data

Figure A53. Number of Reported ALU Dispensed and Malaria Confirmed Cases and Ratio of ALU Dispensed: Malaria Cases



Note: Data were shared at the Tanzania Health supply chain summit, comparing ACT consumption (green) with confirmed malaria cases (blue)

Figure A54. Number of Reported Malaria Tests (Laboratory) and OPD Visits and the Ratio of Malaria Tests; OPD Visits 2017



Note: malaria tests (green) compared to the OPD visits (blue)

Conclusion

DHIS2 collects information on AL dispensed and confirmed malaria cases. Overall, more AL is dispensed compared to confirmed malaria cases. There may also be under-reporting of confirmed malaria cases, or other data quality issues. In cases where there are more cases reported than AL treatments dispensed, this could be because of stockouts, or other data quality issues.

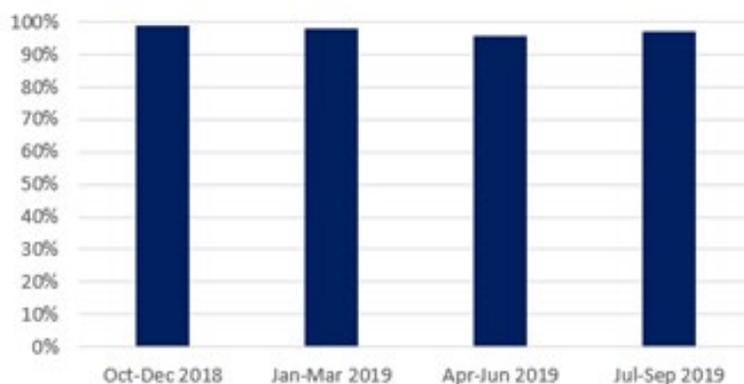
Ideally, the number of confirmed malaria cases would match the quantity of AL treatments dispensed. To help align these figures, analysis can be done to identify those regions/districts/facilities where there are significant discrepancies, and targeted support can be provided.

Key Question 4

What are the trends in LMIS reporting rates?

Supporting Data

Figure A55. Timely Reporting Rates



Conclusion

Reporting rates have been consistently high. From July 2018 to June 2019, the average rate for on-time reporting was 97 percent.

PMI will continue to strengthen the logistics management information system (LMIS), which includes all records and reports used for managing commodities, such as stock cards, dispensing registers, and paper-based reports. The electronic logistics management information system (eLMIS) is a database and visualization tool that captures key logistics data for all facilities receiving commodities through the public sector. The eLMIS is available through:

<https://elmis.co.tz>. Facilities that have internet access are able to enter their data directly into the eLMIS. All district, regional, and referral level facilities as well as those in urban areas, enter the data directly into eLMIS. For other facilities without internet access, they complete a paper-based Report and Requisition (R&R) Form. This report is submitted to the District Pharmacist, who enters the data into the eLMIS and approves the orders.

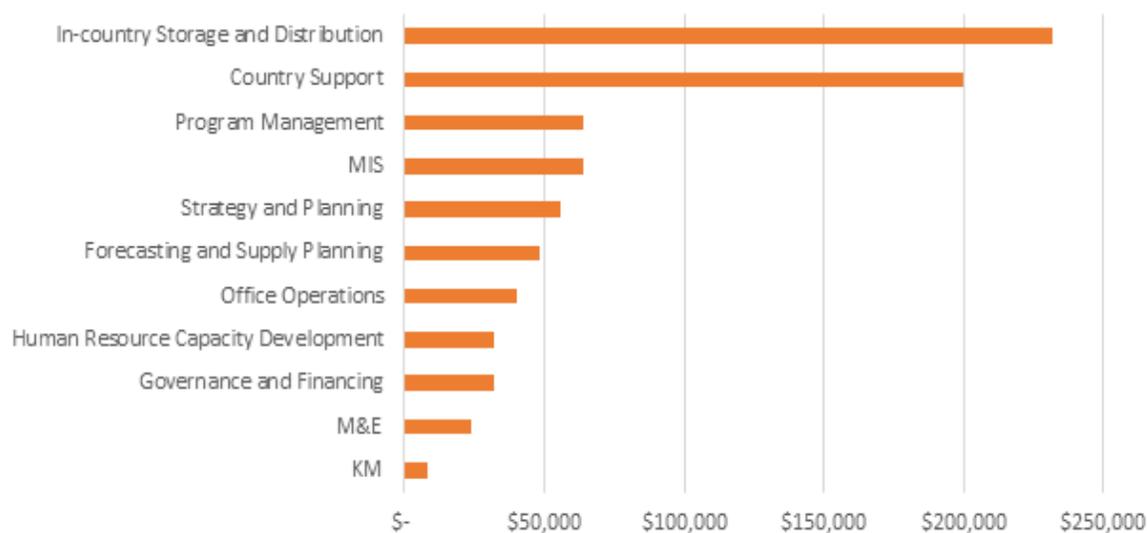
Key Question 5

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

For supply chain TA, PMI funding has been directed to support strategy and planning, human resources development and capacity building, in country storage and distribution, governance and financing and forecasting, and supply chain management. Funding is broken down as shown in Figure A56.

Figure A56. GHSC TA-TZ FY 19 PMI Investments



Conclusion

- PMI will continue supporting efforts to strengthen forecasting, supply planning, strategy and planning, in country storage and distribution, monitoring and evaluation as well as human resources capacity building, support management information systems such as LMIS.
- PMI will continue with efforts to strengthen the transitioned LMU unit to continue with monitoring of stock levels of all malaria commodities at MSD central and zones and health facilities through routine physical counts.
- PMI will continue to support NMCP to conduct quantification exercises and the quarterly review of the supply plan to improve coordination and procurement planning across development partners

- PMI will continue to support the improvement of data quality within the eLMIS and ILS Gateway to ensure increased data visibility and use for routine supply chain decision-making (rollout of IMPACT teams) across all levels.

Key Question 6

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

Supporting Data

N/A

Conclusion

N/A

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

NMCP objective
<ul style="list-style-type: none"> • NMCP’s overarching goal of surveillance, monitoring, and evaluation (SME) is to provide timely and reliable information for assessing progress; ensure cost-effective uses of resources; and account for investments made in malaria control. • The Malaria Surveillance, Monitoring, and Evaluation Plan 2015–2020 strategy emphasizes four specific objectives, which target funding and guide the implementation of SME activities throughout the mainland. <ul style="list-style-type: none"> ○ Objective 1: Improve quality, completeness, and timeliness of malaria indicators within the routine health information system to reach 90 percent of health facilities reporting monthly through the HMIS by 2020 ○ Objective 2: Establish a comprehensive framework for collecting, processing, and storing essential malaria indicators from periodic service delivery and programmatic surveys ○ Objective 3: Establish and maintain a comprehensive and effective malaria knowledge management system to collate, interpret, disseminate, and promote the use of quality malaria data for evidence-based decision making at national and district levels ○ Objective 4: Design and support the implementation of a comprehensive malaria surveillance and response system for epidemic-prone districts to ensure that 80 percent of malaria epidemics are responded to within two weeks from the onset by 2020.
NMCP approach

- The comprehensive malaria surveillance framework in mainland includes four major elements:
 - Malaria disease surveillance: This includes passive monthly HMIS and weekly electronic IDSR (eIDSR) reporting through health facilities, and active case detection (ACD).
 - Malaria programmatic surveillance: This includes malaria commodities supply management tracking, routine malaria preventive services, and insecticide resistance and therapeutic efficacy monitoring.
 - Malaria transmission surveillance: This includes parasitological, such as sentinel population surveillance, malaria indicator and school malaria parasitological surveys, and antenatal clinic surveillance; entomological (malaria vector) surveillance, and meteorological monitoring.
 - Malaria quality services surveillance: This includes malaria services data quality improvement, data quality assessment, and health product QA/QC.
- Malaria disease surveillance includes all routine malaria information reported by health facilities at monthly (HMIS) and weekly (IDSR) intervals. These two components constitute the foundation of passive surveillance and are well established in the mainland's health care delivery system. NMCP plans to implement a community-based ACD system and a facility-based Malaria Early Epidemic Detection System (MEEDS), such as those used in Zanzibar, for mainland that can detect sudden increases in malaria cases in low and very low prevalence locations.
- The HMIS data from health facilities are typically recorded and reported in a paper-based format, whereas a mobile phone-based reporting system has been introduced for eIDSR. At larger health facilities and at the district level, HMIS data are entered by dedicated staff into DHIS2. A data quality audit process has been integrated into the MSDQI tool to improve the quality and use of routine malaria data reported from health facilities to HMIS nationwide (see case management section). Routine data is reviewed and used for decision making by Regional and Council Health Management Teams (R/CHMTs), NMCP, and partners.
- NMCP has developed two distinctly separate but complementary electronic platforms within DHIS2 for the storage, analysis, visualization, interpretation, and utilization of aggregated malaria-related data. These are the 'Malaria Dashboard' and 'Malaria Composite Database.'
- The Malaria Dashboard displays and provides access to five categories of indicators, populated primarily with data from the HMIS and service delivery departments. The categories include,
 - Uncomplicated malaria diagnosis through outpatient department (OPD),

- Malaria testing,
- Malaria commodities, or pharmaceuticals,
- Severe malaria morbidity and mortality through inpatient department (IPD), and
- Preventive services through reproductive and child health (RCH), including provision of insecticide treated bednets (ITNs).
- The Malaria Composite Database is designed to systematically organize and integrate malaria-related information collected outside the routine HMIS. It is being developed in partnership by the University of Dar Es Salaam College of Information and Communication Technologies. The data sources for the composite database are from
 - Programmatic and operational studies (e.g., Therapeutic Efficacy and Insecticide Resistance Monitoring),
 - Survey and surveillance outcomes (e.g., entomological and parasitological surveillance),
 - Vector control performance indicators (e.g., ITN, LSM, and IRS distribution),
 - Malaria commodities accountability through the electronic Logistics Management Information System (eLMIS),
 - The malaria services and data quality improvement (MSDQI) package and SBC monitoring, and
 - The Tanzania Meteorological Agency (TMA) for evaluating climatic variations and suitability for malaria transmission.
- For a description of the NMCP approach for entomological surveillance and insecticide resistance monitoring, see the vector control section. For a description of the malaria commodities supply management tracking (e.g., eLMIS), see supply chain section. For a description of the therapeutic efficacy studies (TES), see the case management section.

PMI objective, in support of NMCP

- The PMI objectives are to support malaria surveillance system strengthening and monitoring and evaluation of malaria interventions with a focus on high malaria burden regions. PMI also provides technical guidance, but not direct implementation, for SM&E of malaria interventions in lower malaria burden regions.
- See NMCP approach and PMI-supported planned activities.

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

- As part of a strategy to improve HMIS data availability and use, PMI has provided technical assistance and support to the NMCP in reviewing monthly HMIS data after each reporting

period; training on the DHIS2 malaria dashboard; preparing, printing and disseminating quarterly and annual malaria bulletins using HMIS data; and revising, printing, and disseminating HMIS supervision tools.

- PMI supported the electronic IDSR surveillance system across 10 regions through 2017 and transitioned support for implementation to the Government of Tanzania in 2018. In 2019, PMI partners conducted an analysis of the national eIDSR data 2014-2018 to target programmatic improvements in the quality and timeliness of malaria indicators reported through eIDSR and ascertain its usefulness as a tool for case-based surveillance and epidemic detection. Results from this analysis are pending.
- As part of the eHealth Strategy implementation, PMI has supported the integration of the multiple vertical health information systems used in mainland, such as HMIS and eIDSR to achieve a uniform National Health Information Exchange (HIE) architecture to improve integration and interoperability of health data, including data from the DHIS2 malaria dashboard and composite database. PMI has also provided technical guidance on the visualization of malaria indicators in the DHIS2 malaria dashboard.
- PMI supported the malaria indicator survey (MIS) and school malaria parasitological survey (SMPS) conducted in 2017 (see key indicator results in the introduction section).
- In an effort to strengthen human resource capacity to use malaria-related data for decision-making, PMI supported additional training and attendance in short courses on topics such as epidemiology, data analysis and interpretation, and scientific writing; and three surveillance officer trainees from high-burden malaria regions in the Frontline (Basic) Field Epidemiology Training Program (FETP). For a description of the FETP activities, see the health system strengthening section.
- With PMI support, NMCP reconstituted and continued the Surveillance, Monitoring & Evaluation Technical Working Group meetings, which occurs on a quarterly basis.
- For a description of the progress of PMI-supported activities for entomological surveillance and insecticide resistance monitoring, see the vector control section. For a description of the progress of PMI-supported activities for therapeutic efficacy studies, see the case management section. For additional description of support

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

- The core of the routine malaria surveillance system in mainland is the HMIS and IDSR systems, which are both on the DHIS2 platform. In coordination with other partners supporting routine surveillance in the mainland, PMI will support improving data quality in HMIS through the continued implementation of MSDQI (see case management section) and support to routine Health Information System strengthening (see health system strengthening

section). With FY 2020 funds, PMI will support district and regional strengthening of routine data collection, quality, and use in high malaria burden regions.

- PMI will provide technical guidance but not direct implementation on the continued development of eIDSR as a possible tool for management of surveillance data for early epidemic detection and ACD in lower malaria burden regions. This will include establishing eIDSR thresholds for lower malaria burden settings, and technical guidance on the development of standard operating procedures.
- PMI will continue to support efforts to:
 - Strengthen the malaria-related data integration and management systems (i.e., DHIS2 malaria dashboard and composite database), tools (e.g., eIDSR), and unit within the NMCP to analyze and disseminate information for decision making,
 - Hold regular meetings and attend TWG's to review and discuss SM&E activities, and
 - Make regular SM&E supervisory visits to the field.
- PMI will support the inclusion of malaria indicators in periodic national representative household surveys (i.e., DHS and MBS) and school-based (i.e., SMPS) surveys planned for calendar year 2020.
- PMI will support three participants for the FETP Frontline (Basic) course with an emphasis on selecting participants working in malaria, such as surveillance officers, malaria focal persons, and data quality improvement liaisons. For a description of FETP activities, see the health system strengthening section.
- For a description of PMI support for entomological surveillance and insecticide resistance monitoring, see the vector control section. For a description of PMI support for therapeutic efficacy studies, see the case management section. For a description of PMI support for operational research and program evaluation, see the operational research section.

PMI Goal

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

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

PMI will continue to support SM&E activities at the same funding level.

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 A57. Data Sources and Collection Activities 2015 - 2023

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

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

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

Conclusion

PMI has supported GoT to build their capacity to conduct surveillance as a core malaria intervention and monitor interventions using high quality data from both surveys and routine health information systems for decision making and real-time program adjustments.

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 A58. HMIS-Supported Activities in Tanzania

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	x		
Data quality assessments (separate from supervision – funding for travel to lower levels)	x	x	x		
Program monitoring and technical assistance (funding for travel to lower levels)	x	x	x		

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		
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		
Human Resources (secondment of person in NMCP for SM&E, office/team for SM&E)					
Data Use (analysis, interpretation, visualization (dashboards, bulletins, dissemination/feedback to lower levels, decision-making)	x	x	x		
Policy guidelines and coordination (updating policies, guidelines, supporting sub-committee meetings, supporting participation in sub-committee meetings)	x	x	x		
External relations/Communications/Outreach (support travel to international meetings and publications)	x	x	x		
Support to annual operational plans for national malaria program	x	x	x		
Desk review to catch “logic errors system” (provide TA to catch logic errors)	x	x	x		
Region Level					
Registers (warehousing, printing, distribution)	x	x	x		
Data quality assessments (separate from supervision – funding for travel to lower levels)	x	x	x		
Program monitoring and technical assistance (funding for travel to lower levels)	x	x	x		
Training (funding for District staff to conduct training at lower levels, capacity building (i.e. on the job training for District level staff)	x	x	x		
Human Resources (secondment of person for malaria SM&E, office/team for SM&E)					

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

Conclusion

PMI supports HMIS activities across all administrative levels except the secondment of staff on the mainland. Community-level malaria surveillance and case management is not currently implemented in mainland.

Key Question 3

What are the outcomes of HMIS strengthening efforts?

Supporting Data

Figure A59. Outcomes of HMIS Strengthening Efforts

		2017	2018
Timeliness	% of reports received on time	95.5%	97%

		2017	2018
Completeness	"Confirmed malaria cases for children under 5 years of age" was reported in X% of facility-months	76%	75%
Accuracy	Populate with most recent DQA data	32.1%	17% - 75%*

Note: *(depending on service area)

Conclusion

- Over >95 percent of HMIS reports from health facilities are submitted on time (i.e., 15th of every month) through DHIS2.
- In 2017, 6,206 health facilities reported on malaria cases in children under the age of five years out of the expected 8,153, giving a completeness score of 76 percent. For 2018, there were 6,409 health facilities that reported on malaria cases in children under the age of five years out of the expected 8,505 health facilities, giving a completeness score of 75 percent.
- The accuracy of data is determined by Council Health Management Teams (CHMTs) who routinely visit the health facilities using the Malaria Service Data Quality Improvement (MSDQI) checklists. Checklists are available for various areas of service at health facilities (e.g., outpatient, inpatient, ANC, logistics, laboratory microscopy, and mRDT). Each checklist has a DQA module that is divided into subsections to measure various elements of data quality. One section is the data consistency section that measures data accuracy. It compares data from the facility paper-based registers to what was entered in the last month of the most recent quarter for which DHIS2 data has been submitted. Scores are then calculated for the correct values and aggregated. Results are shown in the MSDQI dashboard within DHIS2. Health facilities that score 75 percent and above are deemed to have high data accuracy. In 2017, out of 84 health facilities that underwent an MSDQI visit for outpatient services, 32 percent scored high in data accuracy. In 2018, 888 health facilities underwent an MSDQI for outpatient services, with 38 percent of those scoring high in data accuracy, and an additional 27 percent scored between 50-75 percent. In 2018, out of 843 health facilities that underwent MSDQI for ANC services, 75 percent scored high in data accuracy; among 415 health facilities that underwent MSDQI for IPD services, 17 percent high in data accuracy.
- For a description on the use of MSDQI data, review the case management section.

Key Question 4

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

Supporting Data

PMI will support PORALG central staff to conduct periodic supervision visits and attend zonal feedback meetings to review MSDQI data and program performance. For a description of MSDQI supportive supervision, review the case management section.

Conclusion

N/A

3.C. SOCIAL AND BEHAVIORAL CHANGE (SBC)

NMCP Objective
<p>The NMCP’s Communication Guide for Malaria Control Interventions 2015-2020 aims to promote positive human behaviors for malaria control in mainland Tanzania. The NMCP’s SBC strategies serve as a guide to coordinate SBC efforts, messages, and activities for all malaria implementing partners. The NMCP’s SBC strategy aligns with the Supplementary Malaria Midterm Plan 2018–2020, which acknowledged SBC as a major cross cutting intervention. The communication guide identifies behavioral challenges for all malaria control interventions and potential strategies for addressing those challenges. Specific objectives are laid out below.</p>
NMCP Approach
<p>Tanzania’s approach to malaria SBC is guided by the Malaria Communication Strategy 2015–2020, which provides a framework for advocacy, communication, and social mobilization activities. The strategy emphasizes how human behavior is complex and results from a combination of context-specific influences, including environmental factors, social norms, health policies, the quality of health services and individual knowledge. Consequently, the malaria communication strategy applies to SBC that refers to a substantial set of cross-cutting health behavior change communication strategies whose emphasis is on improving health and social outcome through positive influence.</p> <p>SBC reflects a strategic shift from providing IEC as a tool in order to influence individual behaviors. SBC is a multifaceted process that addresses broader social systems and environments that influence behavior. An SBC approach generates evidence and feedback to develop and monitor the multi-level, multimedia health communication and behavior change interventions that are part of the strategic plan. The Supplementary Malaria Midterm Plan 2018–2020 outlined SBC approaches as:</p> <ul style="list-style-type: none">● Reinforce and update knowledge and practice amongst all community members about appropriate malaria prevention, testing, and treatment, and promote and influence social norms about desired healthy behaviors.● Maintain high levels of knowledge and improve good practices amongst vulnerable groups - or their caretakers - with elevated risk of malaria infection about their specific risk and the prevention and treatment options available to them.

- Encourage communities to initiate and implement community-based malaria control initiatives.
- Create strong SBC public-private partnerships to maximize efforts and ensure consistency in the fight against malaria.

All malaria SBC activities are coordinated by the NMCP’s SBC Unit. The SBC Unit holds quarterly TWG meetings that all malaria SBC implementing partners attend to review progress of the activities including reviewing and approving all new activities. The Health Promotion Section attends all SBC TWG meetings.

PMI and Global Fund are the major donors that are funding malaria SBC activities in Tanzania. PMI is supporting comprehensive SBC activities in 14 regions (where malaria burden is highest) and Global Fund covers the remaining 12 regions. Both funders support the same campaigns and messages.

PMI Objective in Support of NMCP

- PMI supports the NMCP SBC efforts that aims to promote positive human behaviors for malaria prevention and control in mainland Tanzania. The key focus is on increasing the utilization of appropriate malaria interventions among vulnerable populations. PMI provides support for these efforts at the national, district, and community levels.
- PMI supports behavioral objectives that include correct and consistent ITN use, ITN care, ANC attendance, IPTp uptake, prompt care-seeking, and adherence to national case management and MIP guidelines. PMI/Tanzania also supports the SBC strategy that promotes high level political and local government advocacy for planning, budgeting, and coordination of malaria prevention and control interventions.
- PMI supports capacity strengthening activities and the development of materials and relevant guidelines, such as the Malaria Communications Strategy. At the district level, PMI support is focused on building the capacity of health promotion coordinators. The majority of PMI’s SBC activities, however, are directed at the community level in the 14 PMI focus regions. Through partnerships with local organizations, PMI supports the NMCP SBC efforts to expand community level interpersonal communication activities aimed at increasing correct and consistent use of ITNs, increased uptake of IPTp, prompt care-seeking, acceptance of IRS, and addressing misconceptions around IRS and ITNs.

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

- Strengthened the coordination of malaria SBC activities within the NMCP and Health Promotion Section of the Ministry of Health at national and district level in 29 districts.
- Supported the World Malaria Day events at the national and district level.

- Supported districts to include SBC activities within the council comprehensive health plan.
- PMI supported a malaria audience insight gathering activity to ensure quality implementation of community activities and strengthen service referrals/linkages. The findings were used to design malaria SBC activities.
- Using the integrated health SBC platform called Naweza, PMI supported the roll out of a pregnancy and childbirth package to promote: early ANC attendance and at least eight contacts, IPTp3, sleeping under an ITN, and male partner involvement in 29 districts within 12 regions. This included refining, localizing, and deploying messages, materials, and toolkits under the Naweza platform to better address persistent social norms.
- Supported intensive malaria SBC interventions during the heavy rainy season in all 14 PMI regions where community engagement, mass media, and clinic talks were implemented to address key behaviors like use of IPTp for pregnant women, the importance of sleeping under an ITN every night, early ANC attendance among pregnant women, and seeking health services early for a sick child.
- Supported SBC activities during the SNP bed net distribution in four regions. The activities focused on the use and care of ITNs.
- Developed SBC materials and implemented targeted support to increase ITN use for children aged <14 years as part of the PAMVEC study (see OR section) that is being conducted in Misungwi district.

Overall, PMI supported the following communication channels used for SBC:

- Integrated health platform (Naweza) (Over 2,650 placements)
- Thematic radio spots (Over 15,000 placements)
- A total of 1,916 community theater performances were conducted
- 16 Community radio programs were aired
- 22,050 Small group dialogue sessions were conducted
- Almost 100,000 print materials, client facing materials, IPC toolkits, and implementation guides

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

PMI will continue to support SBC interventions across the four core malaria interventions, focusing resources and support towards addressing behaviors around ITN, IRS, MIP and case management.. The key behavioral objectives that PMI will address are:

- Early ANC attendance and increased uptake of IPTp3.

- Sleeping under an ITN every night, including pregnant women and children under five
- Seeking prompt and appropriate care for children under five years of age with a fever, including the use of a rapid diagnostic test (mRDT) to confirm malaria.

PMI will support:

- NMCP and Health Promotion Section coordination platforms at national and regional levels to ensure proper coordination and implementation of SBC activities at all levels.
- Refreshing and tailoring of promotional messages and materials to increase household readiness and acceptance of IRS in the lake zone and Zanzibar drawing from best practice experience.
- SBC activities such as intensified community theatre and radio program across PMI priority regions by further regionalizing content for these communication mediums. This will be achieved through a better understanding and prioritization of context specific ITN use social norm barriers and influencers.
- Messages, materials, and toolkits developed in FY 19 for under five years packages will be refined, localized, and redeployed across mass media, mid media, and community-level channels.
- Creation of demand and the use of IPTp- 3 among pregnant women will continue to be promoted under the integrated SBC platform “*Naweza*” through updated mass media and print materials content.
- For IRS, SBC activities will be used to inform people where, when, and why IRS activities are being conducted in their community; inform people in areas where IRS was withdrawn why IRS was withdrawn and inform them of available methods of alternative protection; and, inform communities of the reasons why other insects appear after IRS.
- SBC activities in the 14 SNP regions to increase awareness of SNP, increase awareness of the availability of ITN in health facilities which is known as “*Chandarua Kliniki*”, and promote correct and consistent net use and net care.
- Activities to increase demand for mRDTs by clients, improve acceptance of and adherence to mRDT results by providers, promote prompt care seeking, and improve adherence to national malaria case management guidelines.
- Activities to increase ANC attendance, IPTp uptake, and adherence to national MIP guidelines. For IPTp, based on an understanding that provider bias against SP provision persists, SBC activities will address provider bias and barriers to SP provision. To isolate the behavioral challenge and ensure the success of SBC activities to increase the uptake of IPTp, coordination with service delivery partners is crucial to ensure that stock outs of SP and other

malaria commodities are rare. Opportunities for integrated SBC activities will be identified and prioritized where possible and appropriate.

- Mass media, especially radio shows promoting care seeking for fevers, diagnosis confirmation, and treatment adherence will be implemented on national and regional radio. Print materials designed to further prompt and reinforce recommended malaria testing, diagnosis, and treatment behaviors among health care workers will be rolled out and deployed across PMI regions that implement service delivery activities.
- PMI/Tanzania will support the implementation of Malaria Behavior Survey. The findings from this survey will inform the future SBC activities.

PMI Goal

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

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

With FY 2020 support SBC activities will continue to address the behavior factors that influence acceptance of IRS, the correct and consistent ITN use, ITN care, prompt care seeking, ANC attendance, IPTp uptake, and adherence to malaria case management and MIP guidelines. SBC activities will be tailored according to the national malaria epidemiological stratification, as outlined in the NMCP's Supplementary Malaria Mid Term Strategic Plan 2018-2020 and Communication Guide for Malaria Control Interventions 2015-2020. PMI will support activities that address identified factors that are known to influence the practice of key malaria-related behaviors.

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

Key Question 1

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

Supporting Data

Figure A60 Prioritized Behaviors with FY2020 Funds

Behavior	Target Population	Geographic Focus	Justification
Prompt Care-Seeking for Children Under Five Years of Age	Mothers of Children Under Five Years of Age	14 PMI supported regions	In the 2017 Tanzania MIS, 75% of under-five children who had fever sought advice or treatment from a health provider. This was a 5% decrease from the DHS-MIS 2016. This suggests a need for increased SBC activities promoting prompt care seeking.
Adherence to Case Management Guidelines	Health Facility Based Providers	14 PMI supported regions	Nationally, health worker adherence to diagnostic and treatment guidelines at facilities where malaria diagnostics and treatment were available is still very low.
Early ANC Attendance	Pregnant women, caregivers and children under 5	14 PMI supported regions	There is still a gap in IPTp3+ uptake. As MIS 2017 showed, only 26% of women found to have taken three or more doses of SP. The 2017 MTR concluded that this gap was largely due to late starting of ANC, with women who received IPTp1 delivering by the time they were due for IPTp2.

Conclusion

The program will address the above objectives by integrating messages into existing SBC platforms. Specific strategies will also be developed to target health care providers.

Tanzania has been at the forefront in promoting consistent and appropriate ITN use and care. Relatedly, under the Case Management (2.A.) and MIP (2.B.) Sections, respectively, there appears to be an urgent need to promote both early care-seeking and early ANC attendance. Drawing on this data, PMI Tanzania proposes prioritizing early care-seeking and early ANC attendance with FY 2020 funds. Additional attention will also be given to adherence to case management guidelines through a provider behavior change focused intervention. As noted in the Case Management Section (2.A.), adherence to case management guidelines is currently suboptimal. While some challenges are regulatory in nature, available data suggests behavioral factors also likely play a role. Unfortunately, at present, these factors are not widely understood. PMI Tanzania will support efforts to better understand the role that behavioral factors play in the testing and treatment practices in Tanzania and to address those factors through continued training, mentorship, and supportive supervision.

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 A61. Summary of Determinants and Gaps for FY2020 Prioritized Behaviors

Behavior	Key Facilitators	Key Barriers	Knowledge Gaps
Prompt Care Seeking for Children Under Five	Belief that seeking treatment immediately is Important	Preference for home treatment or treatment at pharmaceutical retailer Perception that treatment is not affordable	More information on facilitators to prompt care-seeking would help better tailor SBC interventions.
Adherence to Case Management Guidelines	Strong Knowledge of First-Line Treatment for Malaria Among Registered Facilities	Limited Knowledge About Recommended Treatment for Malaria Unknown	Behavioral barriers to adherence to case management guidelines have not been well studied
Early ANC Attendance	Perceived Risk of Malaria on Pregnant Women	Lack of Information from Providers on the Importance of IPTp Limited Risk Perception in the Absence of Illness Preference for Seeking Initial Care from Traditional Birth Attendants	No major gaps identified at this time.

Conclusion

The data available to better understand the factors influencing low uptake are summarized in the table above. A provider focused malaria SBC campaign is needed in order to improve case management behaviors. There is a wealth of experience on provider focused SBC activities; however, specific data is needed on determinants of provider behavior around testing and treatment for malaria, as well as on facilitators to prompt care-seeking. In order to improve and design appropriate provider behavior change interventions, PMI will examine the ideational factors associated with provider adherence to case management guidelines using existing tools and data, including supportive supervision checklists, and related monitoring tools. Also,

PMI/Tanzania is supporting the Malaria Behavior Survey, which will generate data that will be used to understand the factors that are key to increase the uptake of services/interventions and which will be used to inform the design of new interventions and approaches.

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

In 2018, PMI conducted an SBC capacity assessment of NMCP, ZAMEP, and the Health Promotion Section. The assessment looked at individual capacity and available coordination systems. The assessment was able to identify the key areas that the SBC implementing partner would focus on. The significant challenges were in the areas of how to conduct formative assessments to inform the design/development of SBC activities, individual capacity for the design of materials, as well as coordination from the national to district level.

As part of continuous building of institutional capacity, PMI supported hands-on mentorship to the Health Promotion Section and District Health Promotion Coordinators. Also, SBC staff from NMCP and Health Promotion Section have been engaged at all phases of SBC activities design, implementation, and monitoring. Feedback meetings and training continuously improve the SBC staff capacity.

There is still a need to support the Health Promotion Section to be able to: (1) establish SBC coordination structures down to District Health Promotion Sections and (2) strengthen the regional and district health promotion coordinators who will coordinate SBC activities in their respective regions. These structures would create more efficiencies, knowledge and recommendations on appropriate strategic approaches that will help to achieve the set targets.

Conclusion

There is a need for continued SBC capacity building at both the national and sub-national levels. To bolster Tanzania's capacity for the design, implementation, and evaluation of SBC activities, PMI/Tanzania will continue supporting:

- Coordination at the national level through the SBC working group;
- County-specific SBC planning aimed at increasing regional and district coordination and ensuring the impact of SBC investments;
- Alignment of SBC implementation efforts with country monitoring and evaluation plans;
- Advocacy at the community and facility level through partnerships with local organizations;

- Strengthening of individual capacity of key players at both the national and sub-national level in order to ensure effective SBC activity implementation; and
- Advocacy with national and county level leadership in order to increase support for malaria control and prevention efforts, especially with the current stratification drive.

Key Question 4

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

Supporting Data

N/A

Conclusion

N/A

3.D. PROGRAM EVALUATION AND OPERATIONAL RESEARCH

NMCP objective
The National Malaria Strategic Plan 2015-2020 indicates that a national malaria operational research agenda will be developed by NMCP and research partners to guide the strategic plan implementation and provide evidence for innovative initiatives. The agenda and the identified operational research priorities will form the basis for resource mobilization.
NMCP approach
NMCP addresses potential OR/PE topics during the program and data reviews conducted during the various thematic technical working groups (e.g., vector control, case management, SM&E, SBC, etc.).
PMI objective, in support of NMCP
PMI works together with NMCP, implementing partners, and other donors and research institutions to support relevant OR/PE.
PMI-supported recent progress (past ~12-18 months)
<ul style="list-style-type: none"> ● PMI supported an OR study titled, “Determining the effect of holes of different sizes and varying concentrations of insecticide in bednets on personal and community protection using Pyrethroid resistant and Pyrethroid susceptible <i>Anopheles arabiensis</i> as well as pyrethroid susceptible <i>Anopheles gambiae</i>,” between April 2017 and May 2018. The study explored the relationship between net damage, remaining insecticide, and feeding inhibition in susceptible and resistant vectors in hut trials. The results were used to define a) the cut-offs to be used to

determine “end of useful life” of bednets and b) how the cut-offs need to be adjusted with increasing vector resistance.

- PMI supported an OR study titled, “Determining the concurrence of telephone based surveys with household surveys for monitoring ITN coverage,” between September 2017 and October 2018. This study is designed to assess the use of mobile phone based surveys for the rapid monitoring of ITN coverage in Tanzania. The study was designed to
 - Assess the use of mobile phone-based surveys for the rapid monitoring of ITN coverage in Tanzania,
 - Determine population-level and inter-rater reliability of mobile phone-based surveys versus household surveys for measuring ITN ownership, access, and use, and
 - Identify the potential use of post-hoc adjustment methods, including post-stratification and survey ‘raking’, to increase the representativeness and accuracy of random digit dialed mobile phone-based surveys in these settings.

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

Group ANC study

- PMI will continue with implementation of the group ANC study (GANC) in Geita region which is expected to end in May 2021.
- The study is implemented in collaboration with NMCP and Reproductive and Child Health Section (RCHS) from the Ministry of Health, Community Development, Gender, Elderly and Children (MOHCDGEC) and President Office Regional Administration and Local Government (PORALG).

The aim of the study is to assess the impact and quality of GANC on the uptake of IPTp compared to standard individual ANC. The study will also pilot the collection of data on the use of malaria prevention measures from pregnant women at first ANC visit, and validate whether the results obtained from this population are representative of the general population. As part of the study, there will also be two cross-sectional surveys conducted 18 months apart in selected households and testing for malaria by mRDT among children under age five years. The request for the additional mRDT’s and ACT’s is to support these cross-sectional surveys.

PMI Goal

PMI will conduct OR/PE that helps: to evaluate coverage of population at-risk, quality of intervention(s), and efficiency in intervention delivery, or study reducing remaining malaria

transmission and disease burden, test effectiveness of new or evolved priority interventions and strategies, or explore new metrics and mechanisms to assess the impact of interventions.

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

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

N/A

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

Key Question 1

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

Supporting Data

Figure A62. PE/OR Currently Conducted in Country with USG, Global Fund, Multilaterals or Other Major Donors.

Source of Funding	Implementing institution	Research Question/Topic	Current status/timeline
Global Fund	Ifakara Health Institute (IHI)	Evaluation of Dihydroartemisinin-Piperaquine as intermittent preventive treatment in infancy (IPTi) in high transmission settings	Ongoing with planned completion by the end of the Global Fund 2018-2020 grant implementation
Global Fund	Muhimbili University of Health and Allied Sciences (MUHAS)	Evaluation of Dihydroartemisinin-Piperaquine for seasonal malaria chemoprevention (SMC) in seasonal malaria transmission settings (i.e., based on 60% of rainfall in less than 3 months and 60% of malaria cases in less than 4 months)	Ongoing with planned completion by the end of the Global Fund 2018-2020 grant implementation

Source of Funding	Implementing institution	Research Question/Topic	Current status/timeline
Global Fund; and USG (NIH Grant)	National Institute of Medical Research (NIMR)-Tanga	Evaluation of Dihydroartemisinin-Piperaquine as intermittent preventive treatment in school children (IPTsc) in high transmission settings	Ongoing with planned completion by the end of the Global Fund 2018-2020 grant implementation
Bill and Melinda Gates Foundation; and the UK Department of Health and Social Care, the Department for International Development (DFID), the Medical Research Council, and Wellcome Trust	LSHTM, Kilimanjaro Christian Medical University College (KCMUCo), NIMR-Mwanza, and University of Ottawa	Study title: Efficacy of different types of bi-treated long lasting insecticidal nets and deployment strategy for control of malaria transmitted by pyrethroid resistant vectors. Short title: PAMVEC Study See description of study questions in conclusions.	April 2018 - June 2022

Conclusion

- PMI is not supporting NMCP in the implementation of ITPi, SMC, and ITPsc as the proposed interventions are not currently recommended by the WHO Global Malaria Program:
 - The current recommendation for ITPi is for use in areas of moderate to high malaria transmission using SP given three times in infancy. Alternative medicines, such as Dihydroartemisinin-Piperaquine, are not currently recommended as evidence of efficacy and safety as well as potential effects on the immunogenicity of EPI vaccines have not yet been evaluated.
 - The current recommendation for SMC is 3-4 treatment courses of AQ+SP to children <5 years in areas of highly seasonal malaria transmission. There are no areas of seasonality identified in the NMCP epidemiological stratification as presented in the supplementary malaria strategic plan for mainland Tanzania, and alternative medicines, such as Dihydroartemisinin-Piperaquine, are not currently recommended for SMC.
 - There currently isn't a WHO policy recommendation for ITPsc for either the approach in its use or choice of medication.
- PMI provided one-time support for SBC preceding the initial distribution of the PAMVEC study between November and December 2018. The primary objective of the

PAMVEC study is to evaluate the efficacy of 3 novel bi-treated ITNs as compared to standard ITNs across the lifespan of the ITNs (3 years) on malaria infection prevalence in children from six months to 14 years in an area of Western Tanzania where the main malaria vectors are resistant to pyrethroid insecticide. The hypothesis is that malaria prevalence will be lower in the intervention arms with bi-treated ITNs than in the control arm. The secondary objectives are to evaluate the efficacy of the three bi-treated ITN as compared to standard ITN are:

1. Prevalence of moderate and severe anemia in children under 5 years old,
 2. Malaria case incidence in children from 6 months to 10 years, and
 3. The entomological inoculation rate (EIR) as proxy for malaria transmission.
- Additional objectives are to assess net usage, net survivorship, fabric integrity, duration of insecticidal activity, and safety of the new type of ITN. The study will also assess the incremental cost-effectiveness of each of the trial arms relative to one another and current practice, as well as the budget and equity implications of each net type. Finally, the study will also compare insecticide resistance selection, if any, between the 4 types of ITNs and evaluate the impact of the new type of ITN on other entomological outcomes (species composition, blood feeding, resting/feeding behavior, and ovary development).

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

Under a 2018 Presidential Directive, all local government authorities (councils) in mainland are implementing larval source management (LSM), specifically bio-larviciding using Bti (refer to vector control section). PMI does not support any aspect of bio-larviciding. However, OR or PE to evaluate the impact of LSM on a broader scale, and determination of cost-effectiveness, would be helpful to the Tanzania malaria program.

Conclusion

N/A

Key Question 3

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

Supporting Data

N/A

Conclusion

N/A

3.E. OTHER HEALTH SYSTEMS STRENGTHENING

NMCP objective
<p>According to the NMCP Supplemental Strategic Plan, objectives under health system strengthening include:</p> <ul style="list-style-type: none">● Efficient programmatic and financial management of malaria control interventions at all levels, implemented through effective and accountable partnerships to assure adequate and sustainable resources● Raise the profile of malaria amongst policy and decision makers at all levels so that national, regional and district plans include appropriate interventions and sufficient budget to implement the malaria strategy● Strengthen capacity of the NMCP by building staff knowledge and skills via attendance at conferences, participation in short-term trainings, study tours and other educational programs, and other needs as determined by the teams.
NMCP approach
<p>As per the Supplemental Strategic Plan:</p> <ul style="list-style-type: none">● Improve the effectiveness and accountability of malaria control implementation by strengthening partnerships and cooperation with malaria control stakeholders at all levels● Improve coordination and governance structures at all levels to strengthen coordination, communication, governance and close follow up of all malaria related interventions● Strengthen human resources capacity for effective strategic plan implementation at national and LGA levels● Enhance well structured, coordinated and harmonized supervision and verification system involving implementing entities at various levels● Advocate RHMTs /CHMTs to budget for malaria interventions according to respective level and target (malaria elimination or burden reduction)● Develop and update comprehensive business and operational plans for malaria control● Update comprehensive resource mobilization plan to attract adequate funding to support malaria implementation from domestic and development partners sources. <p>President’s Office Regional Administration and Local Government approach:</p>

- The Health, Social Welfare, and Nutrition Services in the President’s Office Regional Administration and Local Government (PORALG) is responsible for the interpretation of policies and coordination of policy implementation at the Regional and Local Government Authorities. There is a decentralized structure of management of health services with the Regional Health Management Teams at the regional level holding responsibility for conducting supportive supervision and mentorship for the district councils. The Council Health Management Teams (CHMT) at district level will be responsible for ensuring that health programs are implemented according to the design. CHMTs are also responsible for providing technical assistance to the primary healthcare facilities.

PMI objective, in support of NMCP Infrastructure

- PMI and other malaria control partners support the NMCP to build and strengthen health systems to ensure malaria control efforts are sustainable, country owned, and integrated into the health system. By supporting health systems interventions, PMI, the NMCP, and malaria partners aim to continue progress in the achievement of malaria control objectives and to sustain malaria control gains as Tanzania moves towards elimination. In particular, in alignment with the WHO HSS building blocks, PMI has prioritized support in the following areas:
 - Addressing critical health workforce shortages by improving recruitment, deployment, and retention systems for health workers;
 - Improving the availability of needed skills in the workforce to lead malaria control efforts by strengthening the capacity of staff at the NMCP;
 - Reducing drug stock outs by improving supply chain management and commodity forecasting, procurement, and distribution;
 - Decreasing donor dependency for financing of malaria control efforts through innovative domestic resource mobilization activities and public private partnerships;
 - Strengthening accountability and management for delivery of health services; and
 - Improving data for decision-making by continuing to support improvement of routine information systems including HMIS and eLMIS.

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

Capacity building for NMCP:

- NMCP has engaged in various activities to increase the capacity of NMCP staff in various areas, including participation in international and national-level trainings. Representatives from the NMCP also participated in international meetings, such as the annual American Society of Tropical Medicine and Hygiene meetings, Roll Back Malaria Technical Working

Group meetings, including Social and Behavior Change Communication working groups. NMCP staff were coauthors on presentations that reported the use of MSDQI data to improve the quality of malaria services, and efficacy and safety of AL.

FELTP:

- The African Field Epidemiology Network, the USAID Global Health Bureau, CDC-Atlanta, and CDC-Tanzania (with PEPFAR funding) have all worked with PMI and PEPFAR since 2008 to develop and strengthen the Tanzania FELTP. This is a public health training program to build competencies in applied epidemiology, implementation, evaluation, and management of disease interventions, surveillance strengthening, epidemic preparedness and response, and leadership skills. The program is managed by the MOHCDGEC in collaboration with Muhimbili University of Health and Allied Sciences and NIMR.
- In the past 12 months, FELTP graduated its ninth cohort of 14 residents and enrolled in the tenth cohort (21 residents) which makes a total of 130 residents graduated since the program started in 2008.
- A majority, 109, have returned to government institutions and work under various capacity such as: Head of Vector Control (NMCP), Case Management Officer (NMCP), Epidemiology Units in Tanzania mainland and Zanzibar; Malaria Coordinator - President Office Regional Administration and Local Government (PORALG), Program Manager (Zanzibar Integrated HIV Hepatitis), TB- and Leprosy program (Zanzibar); Strategic Information Coordinator (Zanzibar Integrated HIV Hepatitis, TB and Leprosy program), Strategic Information manager (PMTCT-RCH mainland), Head Port health (MoHCDGEC), Head Integrated RCH program (Zanzibar), Hepatitis Control and Prevention Coordinator (MoHCDGEC); Head Disease Surveillance (MoHCDGEC); Emergency Operation Center Manager (MoHCDGEC), Influenza Program Coordinator (MoHCDGEC), Head and Deputy Head of Laboratory Services (PORALG); while others have been promoted to be District and Regional Medical Officers (D/RMO).
- In the past 12 months, residents have undertaken field placement assignments and conducted evaluations of various malaria activities including: Evaluation of health information systems including Integrated Diseases Surveillance and Response (IDSR), Malaria Case Notification (MCN), malaria bed net distribution in Antenatal and Immunization Clinics and Evaluation of AL post market surveillance system and data Quality Assessment. Residents also conducted research on case management topics such as Adherence to Malaria Case Management Guidelines and The Quality of Malaria Case Management Under Different Transmission Settings in Tanzania,
- Between 2017 and 2019 residents participated in 23 outbreak investigations including a dengue outbreak (Dar es salaam and Tanga) and a suspected malaria outbreak in Misenyi

District. Residents presented their findings at local and international conferences. All residents wrote and defended their dissertation before they graduated.

- The FELTP also organizes seminars and dissemination meetings for residents to present and discuss their malaria projects. In 2019, there was one seminar and one dissemination meeting facilitated by staff from PMI and NMCP on the aforementioned and other selected topics including malaria epidemiology and current trends, overview of various malaria data sources and surveillance systems, current policy and implementation challenges in malaria diagnosis and case management, status of current malaria interventions in the Mainland and Zanzibar, and key priorities in the new National Malaria Strategic Plan.
- PMI staff coordinates with the CDC-Tanzania FELTP program and work with the Tanzania FELTP Resident Advisor (RA) to facilitate linkages between Tanzania FELTP residents, the NMCP and ZAMEP, and implementing partners to ensure that residents take advantage of the available opportunities and experiences in the area of malaria control in Tanzania. PMI staff helps to identify meaningful and appropriate field placements and research areas that allow the residents to select thesis topics around malaria.

PEACE CORPS:

- Peace Corp volunteers (PCVs) and their counterparts conducted social and behavior change communication activities, including the use of mobile video, bonanza, skits and games to promote ITN use, care and repair, bed net survey, prompt care seeking, uptake of IPTp.
- Volunteers and their counterparts also implemented malaria prevention education activities at facility, community-and school. PCVs were engaged in World Malaria Day events and supported PCVs and communities engaged with the malaria month challenge where several malaria competitions were conducted, and malaria kits prizes contributed by PMI were presented to the winners.
- The PMI-supported Peace Corps Volunteer Leader for health, a third-year volunteer based in Dar es Salaam, and health committee were involved in coordinating, planning support malaria activities. By serving as a liaison between the PMI team, NMCP, malaria stakeholders, and Peace Corps, the Peace Corps Volunteer Leader has helped to enhance coordination of Peace Corps-supported malaria control activities. Among other tasks, the Peace Corps Volunteer Leader has facilitated training session for Peace Corps Trainees.
- Eight volunteers and their eight counterparts from government entities, community- based organizations, and the community attended the malaria training of trainers. The continually evolving training of trainers ensures that PCVs and their counterparts have the knowledge, skills, and resources to conduct education and SBC activities related to malaria in their host communities. This initiative has led to all 1109 PCVs (51 Education, 28 Agriculture, and 30 Health) being trained.

- PCVs implemented 11 community-led grants in 2017 to support community-based malaria control activities.

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

Support capacity building for NMCP staff

- NMCP will be supported to engage in various activities to increase capacity of NMCP staff in various areas, including participation in international and national-level trainings.

Support for FELTP

- PMI will continue support to the FELTP program and contribute to the advanced training of Tanzanian epidemiologists for a 12-month period. The trainees will receive assistance from Resident Advisors (RAs) and participate in malaria field assignments and investigations throughout Mainland and Zanzibar. PMI will continue to track the placement of FELTP graduates into post-training MOHCDGEC assignments that directly influence malaria control policies and practices. In addition, PMI through implementing partners will support training for district level health officers through the CDC FETP-Frontline course. The budget for these district level officers will be included in implementing partners work plans. PMI will ensure that the frontline training does not duplicate ongoing PMI supported training and capacity building efforts supported by implementing partners. PMI and partners will consult the in-country FETP Program for exact costs, but it is expected that the implementing partner will need to budget no more than \$10,000 per student.

Peace corps support:

- PMI will support up to three PCVs to work with the NMCP and PMI implementing partners. PMI will provide funds for Small Project Assistance grants that are available on a competitive basis to support PCVs' community-based malaria SBC activities.

Additional efforts to strengthen accountability and management for delivery of health services, through improvements in planning, budgeting and reporting processes:

- PMI will support health systems strengthening initiatives that will improve data for decision-making by supporting the rollout, scale-up and improvement of routine information systems including the Health Management Information System (HMIS) and the electronic Logistics Management Information System (eLMIS). PMI will support strengthening of interoperability functions of several Government of Tanzania information management systems to inform decision making including DHIS2 with Government of Tanzania Hospital Management Information System (GoTHOMIS), Planning and reporting system (PlanRep) with Facility Financial Accounting and Reporting System (FFARS) and the Local Government Revenue Collection Information System.

- GoTHOMIS is currently in 500 health facilities and PMI will co- fund with other USAID investments to support the GoT's efforts to scale up this intervention in select priority areas. Through GoTHOMIS and Local Government Revenue Collection Information System (LGRSIS), Local Government Authorities (LGAs) and health facilities have increased domestic revenue collection in the past reporting period. PMI funds will support LGAs and facilities to prioritize the use of these increased resources to support priority health areas such as management of malaria disease burden, purchase of relevant commodities and appropriate use of incentives for deserving health workers. It will also focus on increasing budget execution levels for allocated health budgets. This initiative will help to decrease donor dependency for financing of malaria control efforts through innovative domestic resource mobilization activities.
- Support for PORALG to strengthen supportive supervision and capacity building for CHMTs and RHMTs. PMI funds will be used to strengthen the capacity of PORALG to provide high quality malaria services as follows:
 - To assess implementation of MSDQI action plan implementation post-review meeting and through MSDQI report.
 - To verify the distribution of LLINs was made as per distribution manifesto plan (spot check for selected school when deemed necessary) at regional level.
 - To advocate for IRS activities to leaders at all levels and ensure that it is operated in a streamlined manner.
 - To assess IRS application performance, find out challenges and assist in finding their solutions.
 - Conduct mentorship to RHMTs, CHMTs to effectively translate the national malaria strategy, plan and allocate resources for better targeting of malaria interventions.
 - To conduct capacity building on governance and leadership to CHMT and RHMT in 184 councils in 26 regions

PMI Goal

PMI's support for HSS is aligned with USAID's Vision for Health Systems Strengthening 2015-2019, which defines four strategic outcomes to achieving universal health coverage (defined as a condition where all the people who need health services receive them without financial hardship):

1. Financial protection: reducing financial barriers to access life-saving services for the poor
2. Essential services: ensuring that priority maternal, newborn, infectious disease services, etc. Are included in the national essential benefits packages

3. Population coverage: attaining coverage for people in the bottom wealth quintile and for other marginalized people
4. Responsiveness: improving the satisfaction of poor and marginalized people with provision of essential services.

Key Question 1

How is PMI supporting the FELTP and Peace Corps programs?

Supporting Data

In collaboration with the Ministry of Health and other stakeholders, PMI will continue to support the capacity development of Tanzania work force at both national and local government levels to enhance technical and managerial knowledge to effectively implement malaria intentions.

PMI in collaboration with PEPFAR and Muhimbili University of Allied Sciences will support the Field Epidemiology and Laboratory Training Program (FELTP). Residents will be exposed to both classroom lectures and field placements in order to gain practical experience on epidemiology, knowledge of Tanzania surveillance systems, data collection, management, and analysis and outbreak investigation and response. PMI will also support the front line FELTP program which will target malaria focal persons and district and regional surveillance officers from high burden regions. PMI will also support PCVs who work with local counterparts to implement malaria activities in their workplaces.

Conclusion

The gains achieved in malaria control in Tanzania can only be sustained if there are strong health systems and local capacity. Hence, systems strengthening and capacity building are intrinsic in all PMI intervention-specific activities previously mentioned (e.g., training and supervision of health workers, technical assistance for planning and monitoring interventions, etc.)

Key Question 2

What support is PMI providing to build MoH, Government of Tanzania, and NMCP capacity in malaria programs?

Supporting Data

PMI has allocated funding to support health systems strengthening initiatives supported by USAID. Through these, PMI will continue supporting capacity building to increase capacity of workforce in Tanzania and strengthening financial and accountability system for local government authorities and health facilities to be able to sustainably implement malaria activities.

Conclusion

- PMI funds will be used to improve planning, budgeting and reporting processes for over 5,000 health facilities in Mainland Tanzania through strengthening Facility Financial Accounting and Reporting System (FFARs). The improved system also better defines the role of community members in determining priorities and use of resources in the facilities' annual plan. FY 2020 MOP support will be provided for community participation in planning and accounting for malaria interventions using domestic resources using the established systems.
- PMI will support initiatives that will address critical health workforce shortages by improving recruitment, deployment, and retention systems for health workers. Though implementing partners, PMI will support The President's Office, Public Service Management and PORALG at a central level to use evidence of malaria disease burden among other factors to allocate health workers based on need and priority interventions.

ANNEX B: COUNTRY PROGRAM INVENTORY –

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

Note: Mainland Inventory may be made public with the following watermark: “Working draft undergoing consultation”

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

	Regular* supervision of public HFs in CM	No HFs regularly supervised in CM	0-25% of HFs regularly supervised in CM	25-50% of HFs regularly supervised in CM	50-75% of HFs regularly supervised in CM	75-100% of HFs regularly supervised in CM
	Drug resistance monitoring	No TES performed in last 3 years	TES performed in last 3 years but results not available	Recent TES results available (within last 3 years) but no training in molecular testing	Recent TES results available (within last 3 years) and in-country staff trained in molecular testing	Recent TES results available (within last 3 years) and in-country capability for molecular testing

Figure B3. Category: Drug-Based Prevention

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
SMC (N/A - not currently implemented)	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 to be delivered during pregnancy and has a provision for delivery of IPTp at 13-16 weeks and is able to track ANC visits in HMIS.
	National MIP working group established and coordinating effectively	No working group established	Working group formed and meets on an ad hoc basis, TORs are established	Working group engages in regular coordination but does not have mechanisms to ensure programmatic integration across technical areas	Working group coordinates at the national level only with Malaria and Maternal Health and has limited mechanisms for ensuring programmatic integration across technical areas	Working group engages in regular coordination at national and sub-national level with Malaria and Maternal Health and has mechanisms to ensure programmatic integration across technical areas.
	Supportive MIP supervision conducted	No HFs regularly supervised in MIP	0-25% of HFs regularly supervised in MIP	25-50% of HFs regularly supervised in MIP	50-75% of HFs regularly supervised in MIP	75-100% of HFs regularly supervised in MIP
	Routine SP resistance monitoring via biomarkers conducted	No SP resistance monitoring conducted	SP resistance monitoring conducted in the last 6-10 years	SP resistance monitoring conducted in the last year 4-5 years	SP resistance monitoring conducted in the last year 3 years	SP resistance monitoring conducted in the last 3 years and results published or being published.

Figure B4. Category: Supply Chain

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
Supply Chain	Forecasting and Procurement Planning	<p>Ad hoc forecasting based on poor, inadequate, or inaccessible data</p> <p>Insufficient skills for selecting and implementing appropriate forecasting methodologies.</p> <p>Procurement plans are not developed from forecasts</p> <p>No coordination among procurers</p>	<p>Annual forecasting and supply planning done but is based on poor, inadequate, or inaccessible data</p> <p>Locally based skills in quantification are developing</p> <p>Review of procurement plans is irregular.</p> <p>Coordination among procurers is limited</p>	<p>Annual forecasts incorporate service and/or/consumption data</p> <p>Supply plans updated semi-annually and incorporate review/revisions of available funding</p> <p>Coordinated procurement planning done at the national level (and regional level, if the health system is decentralized) and among procurers</p>	<p>Semi-annual forecasts incorporate service and/or/consumption data, account for seasonality</p> <p>Supply plans updated quarterly and incorporate review/revisions of available funding</p> <p>Coordinated procurement planning done at the national level (and regional level, if the health system is decentralized). Identified commodity gaps effectively communicated to stakeholders for purposes of resource mobilization</p>	<p>Near real-time demand/consumption, enhanced with additional programmatic contributions, drives monthly forecasting</p> <p>Forecasting and supply planning-specific software used and outputs visible across networks.</p> <p>Supply plans updated monthly and incorporate review/revisions of available funding</p> <p>Coordinated procurement planning done at the national level (and regional level, if the health system is decentralized). Identified commodity gaps effectively communicated to stakeholders for purposes of resource mobilization. Outputs shared through global platforms</p>
	Warehousing/Storage	<p>Quality of infrastructure and operations at all stock holding levels (Central, Sub-central/facility) compromises ability to ensure commodities are adequately protected</p>	<p>Quality of infrastructure and operations in at least one stock holding level (Central, Sub-central/facility) ensures that commodities are</p>	<p>Quality of infrastructure and operations in at least two stock holding levels (Central, Sub-central/SDP) ensures that commodities are adequately protected from damage, deterioration and loss. Warehousing SOPs exist. Able</p>	<p>Quality of infrastructure and operations at all stock holding levels (Central, Sub-central/SDP) ensures that commodities are adequately protected from damage, deterioration and loss</p>	<p>Quality of infrastructure and operations at all stock holding levels (Central, Sub-central/SDP) ensures that commodities are adequately protected from damage, deterioration and loss.</p>

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
		<p>from damage, deterioration and loss.</p> <p>Unable to locate stock by batch in central/mid-level stores/warehouses.</p>	<p>adequately protected from damage, deterioration and loss.</p> <p>Paper-based inventory management system.</p> <p>No SOPs.</p>	<p>to track inventory level with central level WMS but information is not routinely shared across warehouses.</p> <p>Some maintenance occurring</p> <p>Limited ability to scale storage capacity</p>	<p>Stock data is digitized in at least two stock holding levels</p> <p>Some routine maintenance occurring</p> <p>Storage capacity scaled through contracting of third party logistics providers (3PLs)</p>	<p>Storage infrastructure and operations adhere to Good Warehousing Practices an/ or meet in-country compliance standards</p> <p>Stock data is digitized at all stock holding levels and near real-time stock visibility available across networks</p> <p>Routine and predictive maintenance budgeted for and institutionalized</p> <p>Storage capacity is logically located and can be effectively scaled with 3PLs</p>
	Routine distribution/resupply between stock holding levels	<p>No routine requisition and resupply schedule between stock holding levels</p> <p>No resources routinely available and allocated for transportation from higher to lower stock holding levels</p>	<p>Routine requisition and resupply between at least two stock holding levels according to a schedule</p> <p>Resources for transportation from higher to lower stock holding levels provided on ad hoc basis</p>	<p>Routine resupply between all stock holding levels according to a schedule</p> <p>Allocated resources for transportation from higher to lower stock holding levels provided on an irregular basis and resupply often achieved through unplanned means</p> <p>Resupply performance monitored post-activity</p>	<p>Routine resupply between all stock holding levels according to a schedule shared with all levels and informed by accurate demand signals</p> <p>Allocated resources for transportation provided on a regular basis and augmented with 3PLs</p> <p>Resupply performance monitored real-time</p>	<p>Routine resupply between all stock holding levels according to a schedule shared with all levels and informed by accurate, timely, demand signals</p> <p>Robust emergency and inter-facility resupply mechanisms are in place</p> <p>Allocated resources for transportation available internally or outsourced with 3PLs.</p> <p>Resupply transaction data is digitized for all stock transfers</p>

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
						<p>Near real-time visibility into upstream and downstream activities</p> <p>Resupply operations adhere to GDP and or meet in-country compliance standards for maintaining quality during distribution</p>
	Logistics Management Information System	<p>System to aggregate, analyze, validate and display data (from all levels of the logistics system) that can be used to make logistics decisions and manage the supply chain not institutionalized or followed</p> <p>No facility level records or not maintained. Low reporting rates. No visibility into CHW supplies. No visibility by central level on facilities and none by facility level on central level.</p>	<p>Stand-alone, program specific LMIS processes and structures defined but no formal or ongoing monitoring or measurement protocol exists.</p> <p>Some visibility of facility level inventory and consumption, low reporting rates, mostly paper-based</p>	<p>The country has documented LMIS processes and structures. The structures are functional. Metrics for performance monitoring, quality improvement, and evaluation are systematically used.</p> <p>Migration of data collection and reporting from a paper system to an electronic system at the district level and above. A documented mechanism is in place for maintaining data quality throughout the data supply chain.</p>	<p>Government and stakeholders use the national LMIS systems for key performance monitoring and follow standard practices.</p> <p>Facility inventory and consumption data is digital at facility level, upstream data available to facilities, System alerts for low stock/expiry, use of master product list and master facility list</p> <p>Interoperability with other information systems (e.g., warehouse management, medical records, laboratory management, enterprise resource planning systems, and health information management systems)</p>	<p>Near real time visibility into inventory and consumption data at all levels, data from multiple systems feed into common platform/control tower (automated process), predictive analytics.</p> <p>The government and stakeholders routinely review interoperability activities and modify them to adapt to changing conditions.</p> <p>Compliance with standards for data exchange, messaging, and security is regularly reviewed. The regulatory framework is reviewed and updated to reflect best practices for data exchange, messaging, and systems security.</p>

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
	Regulatory, Policy and Governance	<p>Legal basis to enable a medicines (and related health commodities - e.g., devices, vaccines, etc.) regulatory agency to function is absent or inappropriate</p> <p>Formal organizational structure regarding in-country stakeholders and relevant agencies to whom authority is delegated, is absent or inadequate (e.g., up-to-date organogram of MOH).</p> <p>Human and financial capacity to enable regulatory functionality, weak or absent</p> <p>No approved supply chain strategic plan</p>	<p>Medicines framework exists and is sufficient to support basic regulatory functions including clinical dossier review (licensing) and marketing authorization with registration.</p> <p>Documented domestic financial support to enable regulatory activities - including human resources</p> <p>Approved supply chain strategic plan but not updated recently. Poorly implemented strategic plan</p>	<p>All SDP levels have in place policies that address STG, quality assurance and HR.</p> <p>Management policies for the supply chain system are in place at the MOH level.</p> <p>Policy and strategic leadership is not always translated into robust implementation plans, and supportive supervision, capacity building and guidance to managers within the system.</p> <p>No consistent approach to pharmacovigilance or a standard reporting structure for pharmacovigilance events</p> <p>Overall quality management system in place to support interface of product licensing, registration, manufacturing, post-marketing surveillance.</p> <p>Approved (and up to date) supply chain strategic plan. Partially implemented</p>	<p>Strong policy and strategic leadership by government, with firm grasp of budgets and financial sustainability</p> <p>Robust implementation plans, and supportive supervision, capacity building and guidance to managers within the system.</p> <p>Regulatory and policy bodies in alignment to support quality product availability</p> <p>National and standardized Pharmacovigilance or a standard reporting structure for pharmacovigilance events in place, not fully functional.</p> <p>Approved (and up to date) supply chain strategic plan (contains clear roles and responsibilities, stakeholder mapping, costs).</p>	<p>The MOH leads strategic functions such as, policy formulation, quality assurance and overseeing the funds required for policy implementation.</p> <p>Ability to ensure product quality, automated drug registration process, clear/transparent importation process, robust post-market surveillance system and, track and trace regulations developed and/or in the process of implementation.</p> <p>Approved (and up to date) supply chain strategic plan (contains clear roles and responsibilities, stakeholder mapping, costs). Includes risk mitigation plan.</p>

Figure 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
	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.

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

Activity	Metrics/ Criteria	Relative Continuum, for discussion purposes				
		1	2	3	4	5
	Surveillance system readiness to track all cases	Monthly, aggregate data from public sector only	At least monthly, aggregate data from public, private, and community levels	Case-based reporting initiated	Real-time, case-based surveillance inclusive of all sectors and levels in targeted areas	Real-time, case-based reporting and response activities implemented
Additional Health Systems Strengthening	Staffing	No staff	Manager and a few technical staff; not all intervention areas are covered	Manager and technical staff for each intervention area; many staff have limited training and experience ; limited program support staff	Full staffing of program areas and support systems but some staff need further training to optimize their effectiveness; limited plans and opportunities for such training	Fully staffed with personnel with relevant training and experience; complete plan for professional development
	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

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