

PMI

U.S. PRESIDENT'S MALARIA INITIATIVE

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

U.S. PRESIDENT’S MALARIA INITIATIVE

MADAGASCAR

Malaria Operational Plan FY 2020

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ABBREVIATIONS

ACT	Artemisinin-based combination therapy
AL	Artemether-lumefantrine
ANC	Antenatal care
AS/AQ	Artesunate-amodiaquine
ACPR	Adequate Clinical and Parasitological Response
BMGF	Bill and Melinda Gates Foundation
CDC	Centers for Disease Control and Prevention
CHV	Community Health Volunteer
CSB	<i>Centre de Sante de Base</i> /Basic Health Center
CU5	Children less than five years of age
CY	Calendar year
DDT	Dichlorodiphenyltrichloroethane
DHS	Demographic and Health Survey
EPI	Expanded Program on Immunizations
FY	Fiscal year
FF	Fludora Fusion
G6PD	Glucose-6-phosphate-dehydrogenase
GHI	Global Health Initiative
Global Fund	Global Fund to Fight AIDS, Tuberculosis and Malaria
IEC	Information, education, communication
IPTp	Intermittent preventive treatment for pregnant women
IRS	Indoor residual spraying
ITN	Insecticide-treated mosquito net
MIP	Malaria in pregnancy
MIS	Malaria indicator survey
MoPH	Ministry of Public Health
MOP	Malaria Operational Plan
NGO	Non-government Organization
NMCP	National Malaria Control Program
NMF	New Funding Model
NSP	National Strategic Plan
PBO	Piperonyl butoxide
PMI	U.S. President's Malaria Initiative
PECADOM	<i>Prise en charge à domicile</i> (Proactive Community Case Management)
RBM	Roll Back Malaria
RDT	Rapid diagnostic test
SBC	Social and behavior change
SM&E	Surveillance, monitoring, and evaluation
SOP	Standard Operating Procedure
SP	Sulfadoxine/pyrimethamine
SS	SumiShield

TA	Technical Assistance
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

I. INTRODUCTION

The U.S. President's Malaria Initiative (PMI)—led by the U.S. Agency for International Development (USAID) and implemented together with the U.S. Centers for Disease Control and Prevention (CDC)—delivers cost-effective, lifesaving malaria interventions alongside catalytic technical and operational assistance to support Madagascar to end malaria. PMI has been a proud partner of Madagascar since 2008, helping to decrease all cause child death rates by 23% and the number of children under five who reported sleeping under a bednet the previous night increased from 58% to 84% between 2008 and 2016 (Demographic and Household Survey [DHS] 2008 and Malaria Indicator Survey [MIS] 2016, respectively, recalculated to include only districts targeted for insecticide-treated bed net [ITN] distribution) through investments totaling almost \$ 286.4 million.

The proposed PMI fiscal year (FY) 2020 budget for Madagascar is \$24 million. This Malaria Operational Plan (MOP) outlines planned PMI activities in Madagascar 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 Madagascar, as well as other donors and partners.

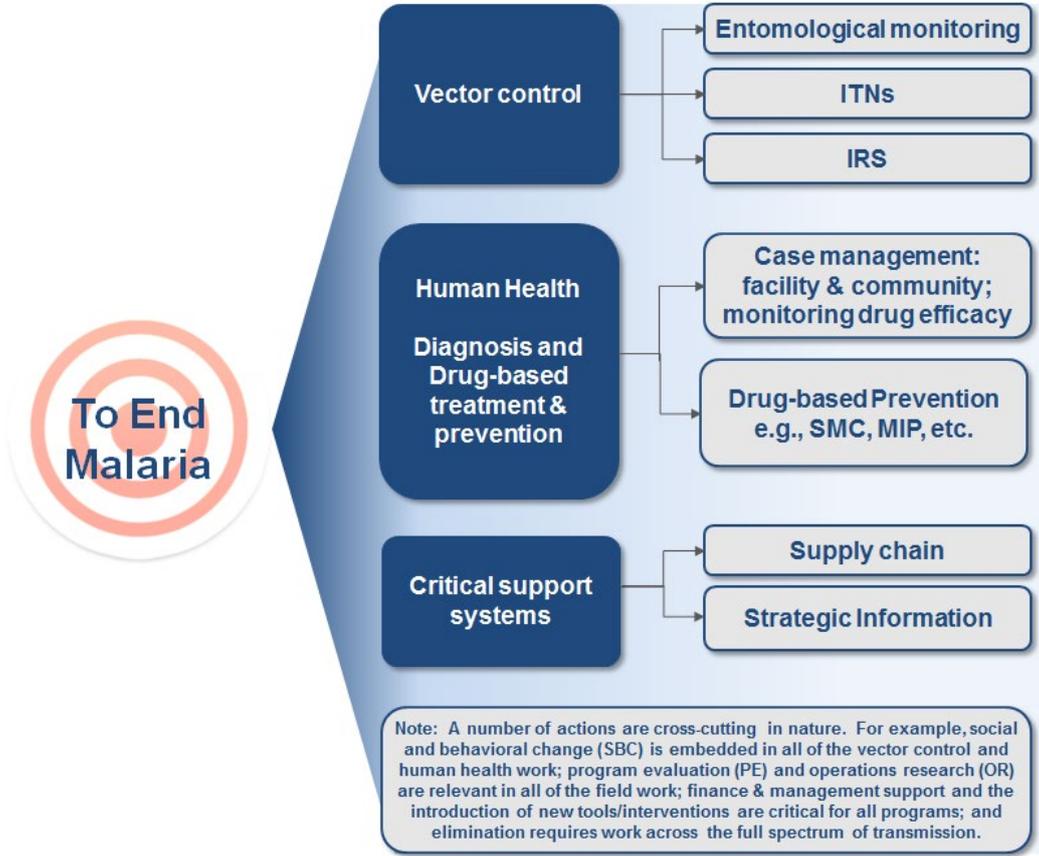
Madagascar at a glance

- **Geography:** Madagascar is an island nation situated in the Indian Ocean approximately 400 kilometers off the southeast coast of the African continent. It is 587,000 square kilometers and elevation ranges from sea level at the coast to over 1,800 meters in parts of the central highlands.
- **Climate:** There are two seasons in Madagascar separated by about a month of transition. The cool, dry season extends from approximately June through September, and the warm, rainy season from December through April. During the warm season, tropical depressions in the southern Indian Ocean can result in cyclones, particularly on the eastern side of the island.
- **Population in 2019:** 25,680,342 (National Census, 2018)
- **Population at risk of malaria:** 100%
- **Malaria incidence per 1000 population:** 37.83 (HMIS, Madagascar, 2018)
- **Under-five mortality rate:** 53.6 per 1000 live births (World Bank, 2018)
- **World Bank Income Classification & GDP:** Madagascar is a low income country with a GDP per capita of income of ~US\$ 460.8(World Bank 2018)
- **Political system:** Madagascar held elections in December 2018 and a peaceful transition of power occurred in January 2019
- **Trafficking in Persons designations, 2016-2018:** Madagascar was classified as a Tier 2 country in 2019 (Trafficking in Persons Report 2019, US Department of State)
- **Malaria funding and program support partners include (but are not limited to):**
 - Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund)

- National Malaria Control Program (NMCP)
- World Health Organization (WHO)
- **PMI Support of National Malaria Control Strategy:** PMI operates both nationally and in support of the NMCP planning, policies and malaria commodities (diagnostics, drugs, ITNs, IRS and others) and with direct program support in 10 regions of the country covering a population of approximately 12,500,000. (See III. Overview of PMI’s support of Madagascar’s Malaria Control Strategy for additional details)
- **PMI Investments:** Madagascar began implementation as a PMI focus country in FY 2008. The proposed FY 2020 PMI budget for Madagascar is \$24 million. The total PMI investment through FY 2020 is approximately \$286.4 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 Madagascar’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/Madagascar will continue to rely on and engage with

local partners such as the *Institut Pasteur* of Madagascar and additional public sector actors and is expanding its local partner base to reach more isolated populations. Finally, PMI/Madagascar will continue to rely on private sector partnerships such as those with local banks and telecommunication companies.

II. MALARIA SITUATION AND MALARIA CONTROL PROGRESS IN MADAGASCAR

Madagascar experienced a second year of increases in reported malaria cases and deaths in 2018. RDT-confirmed malaria cases increased from 471,599 in 2016 to 795,527 in 2017 to 965,390 in 2018 and malaria-related deaths from 449 in 2016 to 629 in 2017 to 927 in 2018 (NMCP). This increase is being investigated by the NMCP, and preliminary analysis suggests that the overall increase is being driven by increases in select areas with conditions favorable to transmission (climate, land use, asymptomatic infections) combined with challenges implementing prevention and control activities (remote locations, geographical barriers, security concerns). Other possible explanations for this increase include increased detection (e.g., increased use of health centers and RDTs), reporting (e.g., enhanced community-based efforts, and tablet-based systems), or changes in vector behavior (e.g., increased outdoor biting).

Figure 2. Trends in Malaria Prevalence, Percent of children age 6-59 months who tested positive for malaria by either microscopy or RDT

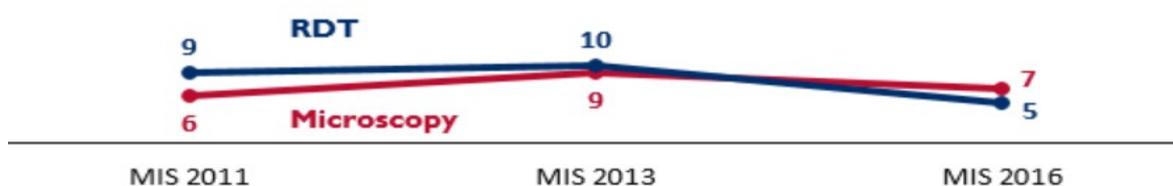
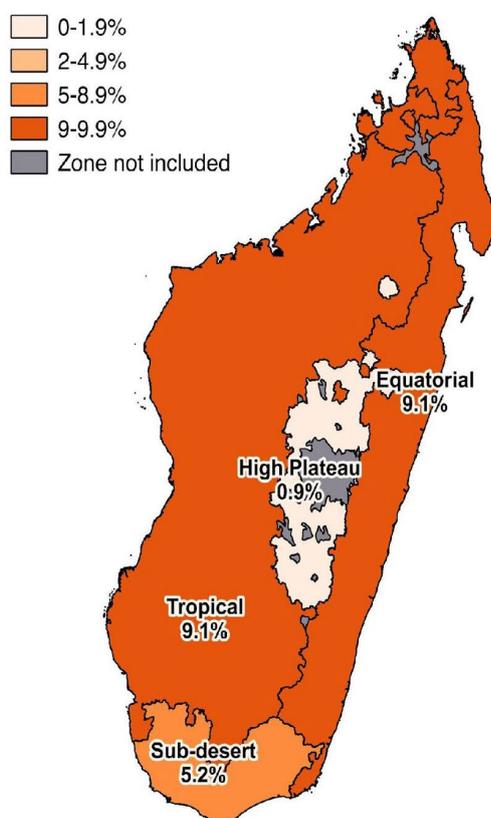


Figure 3. Trends in Prevalence of Low Hemoglobin, Percent of children age 6-59 months with moderate-to-severe anemia (hemoglobin < 8.0 g/dl)



Figure 4. Malaria parasite prevalence among children under five years of age by geographic area

Malaria Parasite Prevalence
by Microscopy, Children Aged
6-59 Months, Madagascar, 2016*



*Malaria Indicator Survey, 2016

Figure 5. Key indicators for malaria prevention and treatment coverage and impact indicators from Demographic Health Surveys (DHS) and Malaria Indicator Surveys (MIS) from 2008-2018.

Indicator	DHS 2008-2009	MIS 2011	MIS 2013	MIS 2016
% Households with at least one ITN	57	81	69	80
% Households with at least one ITN for every two people	19	33	29	44
% Population with access to an ITN	35	57	48	62
% Population that slept under an ITN the previous night	37	68	55	68
% Children under five years old who slept under an ITN the previous night	46	77	62	73
% Pregnant women who slept under an ITN the previous night	46	72	62	69

Indicator	DHS 2008-2009	MIS 2011	MIS 2013	MIS 2016
% Children under five years old with fever in the last two weeks for whom advice or treatment was sought ¹	47	43	54	56
% Children under five with fever in the last two weeks who had a finger or heel stick	n/a	6	13	16
% Children receiving an ACT among children under five years old with fever in the last two weeks who received any antimalarial drugs	5	19	54	17
% Women who received two or more doses of IPTp during their last pregnancy in the last two years ²	7	20	18	23
% Women who received three or more doses of IPTp during their last pregnancy in the last two years ²	n/a	n/a	n/a	11
Under-five mortality rate per 1,000 live births	72	n/a	n/a	n/a
% Children under five years old with parasitemia (by microscopy , if done)	n/a	6	9	7
% Children under five years old with parasitemia (by RDT , if done)	n/a	9	10	5
% Children under five years old with severe anemia (Hb<8gm/dl)	2	1	4	2

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

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

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

Figure 6. Evolution of key malaria indicators reported through routine surveillance systems

Indicator	2014	2015	2016	2017	2018
# Suspect malaria cases ¹	951,188	1,544,737 ¹⁴	1,667,277	2,181,219	2,606,443
# Patients receiving diagnostic test for malaria ²	926,998	1,488,647	1,496,990	1,974,518	2,290,797
Total # malaria cases³ (confirmed and presumed)	N/A	N/A	N/A	N/A	N/A
# Confirmed cases ⁴	374,110	738,428	471,599	795,527	965,390
# Presumed cases ⁵	N/A	N/A	N/A	N/A	N/A
% Malaria cases confirmed⁶	N/A	N/A	N/A	N/A	N/A
Test positivity rate (TPR) ⁷	40%	50%	32%	40%	42%
Total # <5 malaria cases⁸	139,500	289,037	165,723	266,222	309,331
% Cases under 5 ⁹	37%	39%	35%	33%	32%
Total # severe cases¹⁰	N/A	N/A	N/A	N/A	N/A

Indicator	2014	2015	2016	2017	2018
Total # malaria deaths ¹¹	561	866	449	629	927
# Facilities reporting ¹²	2,534	2,670	2,958	3,085	3,156
Data form completeness (%) ¹³	82%	83%	91%	95%	95%

Data Sources and comments: 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 (RDT or microscopy); no parasite species information is available. 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).

¹⁴ Figure 6 reflects the correction of a typographic error in the Madagascar 2019 MOP.

III. OVERVIEW OF PMI’S SUPPORT OF MADAGASCAR’S MALARIA CONTROL STRATEGY

Madagascar adopted its National Strategic Plan (NSP) 2018–2022 in November 2017, based on recommendations from a 2016 malaria program review and input from all malaria stakeholders. The NSP focuses on improving malaria control in higher-burden zones and initiating malaria elimination efforts in the very low-burden zones of the country. Zone classification was based on an epidemiologic stratification estimated from the 2016 MIS, malaria surveillance data, and a vulnerability index calculated from health care utilization and poverty data (Table 3). As of 2018, of the 114 districts in the country, 106 are classified by the NSP as control and 8 as elimination.

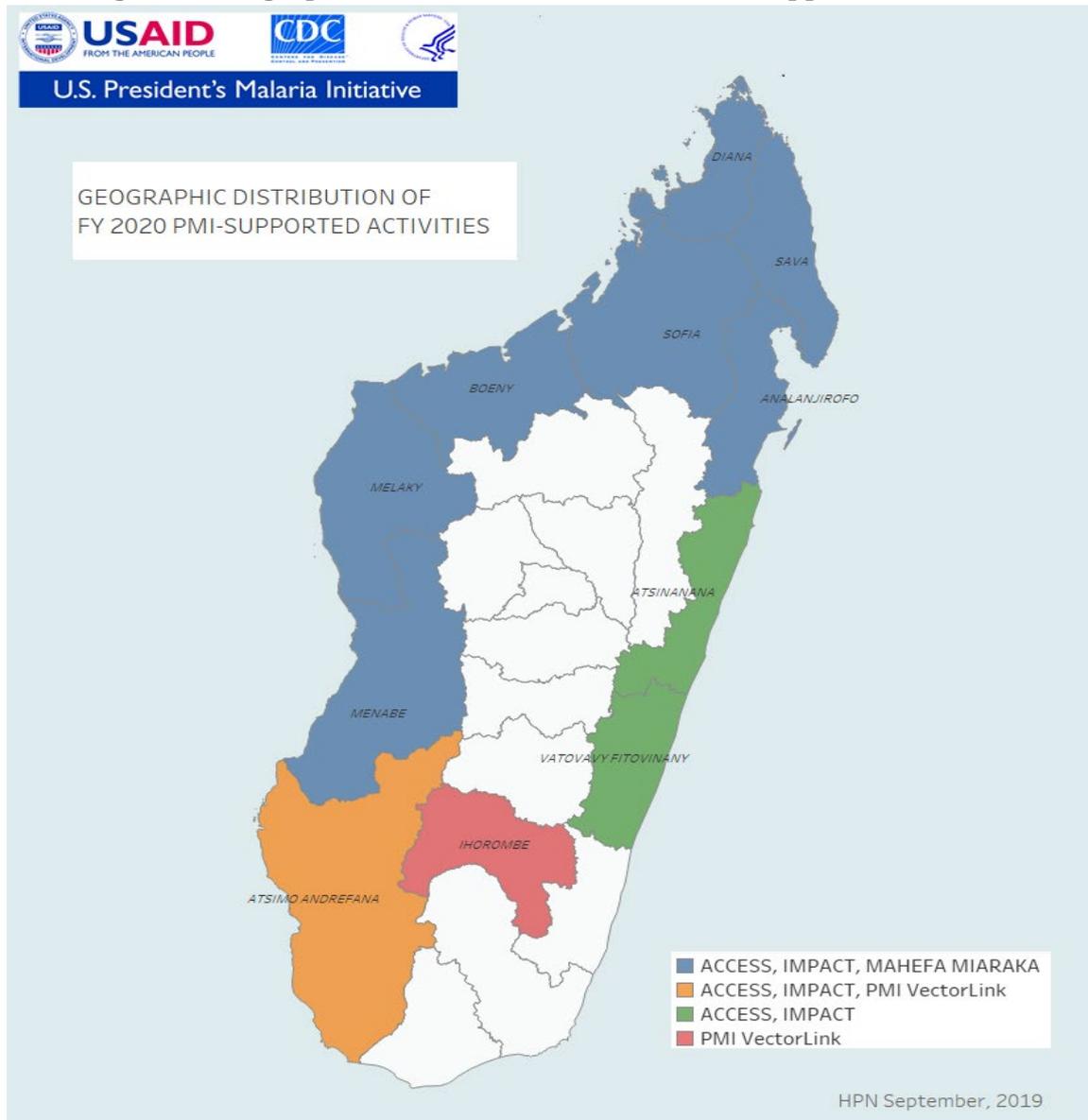
Figure 7. Epidemiologic Stratification of Malaria Infection Risk, 2017 (translated from French version, 2016 HMIS data)*

Cases per 1000 inhabitants	Zone	Objective	Interventions	No. Districts Targeted	Population (%)	Rapid Response
≥100 (High)	Control (Incidence ≥ 200/1,000 or Incidence ≥ 100 with Vulnerability index ≥ 4)	Reduce transmission below 100	ITNs, IPTp, Case management (CM), Surveillance, cross-cutting Interventions (SBC, M&E)	25	3,466,336 (14)	IRS if malaria increase/ outbreak or MDA if outbreak
	Control (Incidence < 200 or Incidence ≥ 100 with Vulnerability index < 4)	Reduce transmission below 100	ITNs, IPTp, CM, Surveillance, cross-cutting Interventions (SBC, M&E)	14	1,751,470 (7)	
50-100 (Moderate)	Control	Reduce transmission below 50	ITNs, IPTp, CM, Surveillance, cross-cutting Interventions (SBC, M&E)	25	5,366,047 (22)	
10-50 (Low)	Control	Reduce transmission below 10	ITNs, IPTp, CM, Surveillance, cross-cutting Interventions (SBC, M&E)	29	6,923,542 (29)	
1-10 and TP ≥5% (Very Low)	Control	Move towards pre-elimination	ITNs, IPTp, CM, surveillance, cross-cutting interventions (SBC, M&E)	13	3,132,994 (13)	
1-10 and TP < 5% (Very Low)	Pre-elimination	Move towards elimination	IRS for elimination, CM, malaria foci surveillance and targeted treatment and cross-cutting interventions	3	1,024,444 (4)	
< 1 (Free)	Elimination	Elimination	Active surveillance, case investigation around index cases; low dose primaquine**, cross-cutting interventions	5	2,484,673 (10)	

*When this table was developed, indoor residual spraying (IRS) was prioritized for elimination settings as the country was piloting the impact of IRS in higher-burden settings. Currently the NMCP prioritizes IRS for transmission reduction in high-burden areas; however, the document that includes this table has yet to be updated to include IRS in high/moderate transmission settings.

**When table was developed, low-dose primaquine was planned for elimination settings only

Figure 8. Geographic Distribution of FY 2019 PMI-Supported Activities



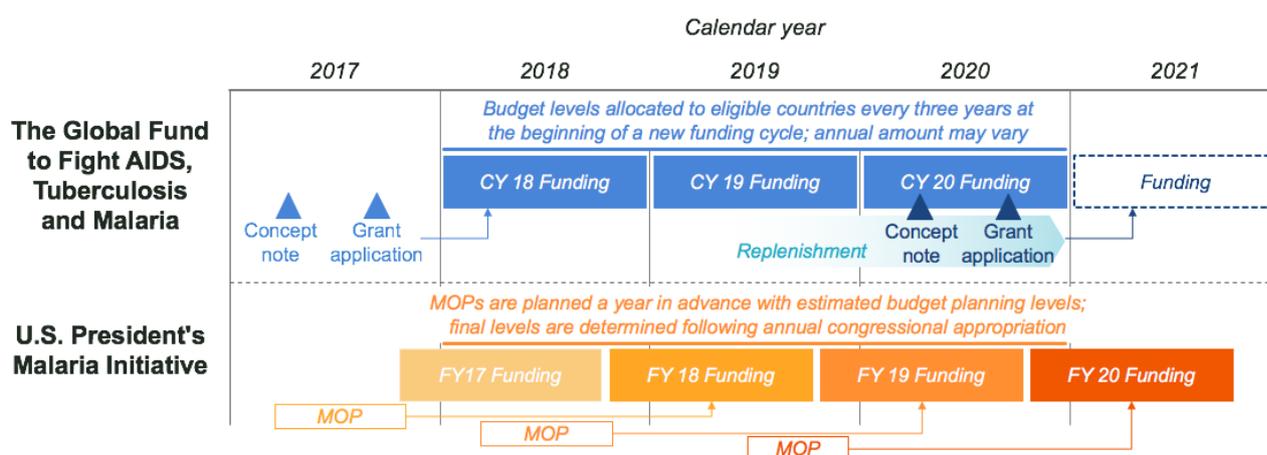
IV. PARTNER FUNDING LANDSCAPE

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 9 (below) visualizes the annual cycle of PMI funding and the MOP implementation year. As the figure illustrates, any given FY MOP funds activities that take place during the next FY. For example, a FY18 MOP funds implementation during FY19. Whereas Global

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

Figure 9. PMI and Global Fund Funding Cycle Alignment¹



The tables below summarize contributions by external partners and host country government in calendar years 2018-20, with the goal of highlighting total country investments. For Madagascar, data is available for PMI (FY 19) and Global Fund (CY 2018-2020). As the Global Fund 2021-2023 grant funding cycle is not yet underway at the time of this PMI FY 2020 MOP development, Global Fund country investments for the FY 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.

¹ 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.

Figure 10. Annual budget by Level 1 category

Year ¹	Funder	Vector Control	Case Management	Drug-Based prevention ²	Supply Chain ³	Monitoring, Evaluation & Research	Other Cross-Cutting and Health Systems Strengthening	Total
FY17/ CY18	PMI	\$17.8M	\$3.2M	\$0.9M	\$0.8M	\$1.4M	\$1.9M	\$26.0M
	Global Fund	\$20.4M	\$1.5M	\$0.1M	\$0.4M	\$0.2M	\$3.7M	\$26.2M
	Total	\$38.2M	\$4.6M	\$1.0M	\$1.1M	\$1.7M	\$5.6M	\$52.2M
FY18/ CY19	PMI	\$10.4M	\$6.8M	\$1.5M	\$1.8M	\$2.5M	\$3.1M	\$26.0M
	Global Fund	\$5.3M	\$3.0M	\$0.8M	\$1.1M	\$1.3M	\$3.6M	\$15.2M
	Total	\$15.7M	\$9.8M	\$2.3M	\$2.9M	\$3.8M	\$6.7M	\$41.2M
FY19/ CY20	PMI	\$10.6M	\$6.1M	\$0.7M	\$2.3M	\$1.4M	\$2.9M	\$24.0M
	Global Fund	\$1.9M	\$2.9M	\$0.9M	\$0.9M	\$0.9M	\$2.8M	\$10.3M
	Total	\$12.6M	\$8.9M	\$1.6M	\$3.2M	\$2.3M	\$5.7M	\$34.3M

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

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

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

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

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

Level 1 Category	Level 3 Category	FY17/CY18 ¹		FY18/CY19 ¹		FY19/CY20 ¹	
		PMI	GFATM	PMI	GFATM	PMI	GFATM
Vector Control	Procure ITNs for Continuous Distribution	-	\$0.6M	\$2.9M	\$4.3M	\$1.7M	\$1.5M
	Distribute ITNs via Continuous Distribution	-	\$0.1M	\$1.0M	\$0.4M	-	\$0.2M
	Procure ITNs for Mass Campaigns	\$6.6M	\$13.3M	-	-	\$2.4M	-
	Distribute ITNs via Mass Campaigns	\$4.7M	\$4.5M	-	-	-	-
	Other ITN Implementation*	-	-	-	-	\$0.2M	-
	IRS Implementation ⁴	\$6.0M	\$0.03M	\$6.1M	\$0.02M	\$5.8M	-
	Procure IRS Insecticide ⁴	-	-	-	-	-	-
	Other IRS*	\$0.0M	-	-	-	-	-

Level 1 Category	Level 3 Category	FY17/CY18 ¹		FY18/CY19 ¹		FY19/CY20 ¹	
		PMI	GFATM	PMI	GFATM	PMI	GFATM
	Entomological Monitoring	\$0.4M	\$0.1M	\$0.5M	\$0.2M	\$0.5M	\$0.1M
	SBC for Vector Control ⁵	-	\$0.1M	-	\$0.1M	-	\$0.03M
	Other vector control measures	-	-	-	-	-	-
	Removing human rights- and gender-related barriers to vector control programs**	-	-	-	-	-	-
Case Management	Active Case Detection**	-	-	-	-	-	-
	Community-based case management	-	\$0.03M	-	\$0.03M	-	\$0.03M
	Facility-based case management	-	\$0.1M	-	\$0.1M	-	\$0.01M
	Private-sector case management	-	\$0.1M	-	\$0.4M	-	\$0.4M
	Procure ACTs	-	\$0.3M	\$0.7M	\$0.3M	\$0.7M	\$0.3M
	Procure Drugs for Severe Malaria	-	-	\$0.2M	-	\$0.1M	-
	Procure Other Diagnosis-Related Commodities	\$0.1M	\$0.1M	\$0.1M	\$0.1M	\$0.05M	\$0.1M
	Procure Other Treatment-Related Commodities	-	-	-	-	-	-
	Procure RDTs	\$0.9M	\$0.5M	\$1.6M	\$1.4M	\$1.0M	\$1.4M
	Therapeutic Efficacy	\$0.3M	-	-	\$0.1M	\$0.3M	-
	SBC for Case Management ⁵	-	\$0.01M	-	\$0.04M	-	\$0.02M
	Other Case Management	\$1.9M	\$0.2M	\$4.2M	\$0.5M	\$4.0M	\$0.5M
Drug-Based Prevention²	Procure SMC-Related Commodities	-	-	-	-	-	-
	SMC Implementation	-	-	-	-	-	-
	Prevention of Malaria in Pregnancy Implementation	\$0.8M	\$0.003M	\$1.2M	\$0.03M	\$0.4M	\$0.03M
	Procure IPTp-Related Commodities	\$0.1M	\$0.1M	\$0.3M	\$0.7M	\$0.3M	\$0.8M
	IPTi**	-	-	-	-	-	-
	SBC for Drug-Based Prevention ⁵	-	-	-	-	-	-

		FY17/CY18 ¹		FY18/CY19 ¹		FY19/CY20 ¹	
Level 1 Category	Level 3 Category	PMI	GFATM	PMI	GFATM	PMI	GFATM
	Other Prevention**	-	-	-	-	-	-
Supply Chain ³	In-Country Supply Chain ³	-	-	\$0.6M	-	\$1.3M	-
	Supply Chain Infrastructure	-	\$0.1M	-	\$0.2M	-	-
	Ensuring Quality	-	\$0.0M	-	\$0.0M	-	\$0.0M
	Pharmaceutical Management Systems Strengthening	\$0.8M	-	\$1.2M	-	\$1.0M	-
	Supply Chain System Strengthening	-	\$0.2M	-	\$0.8M	-	\$0.9M
Monitoring, Evaluation & Research	Reporting, Monitoring, and Evaluation	\$1.0M	\$0.2M	\$1.5M	\$0.9M	\$0.8M	\$0.5M
	Program and data quality, analysis and operations research	-	\$0.1M	\$0.7M	\$0.3M	-	\$0.3M
	Surveys	\$0.4M	-	\$0.3M	\$0.1M	\$0.6M	\$0.05M
	Other Data Sources**	-	-	-	-	-	-
	Support for FETP*	\$0.1M	-	-	-	-	-
Other Cross-Cutting and Health Systems Strengthening	Integrated service delivery, quality improvement, and national health strategies**	-	\$0.3M	-	\$0.1M	-	\$0.01M
	Financial management systems**	-	-	-	-	-	-
	Community responses and systems**	-	\$0.7M	-	\$0.3M	-	\$0.03M
	Support for PCV and SPAs*	\$0.0M	-	\$0.0M	-	\$0.0M	-
	Cross-Cutting Human Resources for Health**	-	\$0.3M	-	\$0.7M	-	\$0.6M
	Central and Regional Program management ⁶	-	-	\$0.1M	-	-	-
	In-Country Staffing and Administration*	\$1.1M	-	\$1.5M	-	\$1.5M	-
	Other Program Management**	-	\$2.4M	-	\$2.5M	-	\$2.2M
	SBC Unspecified ⁵	\$0.8M	-	\$1.4M	-	\$1.4M	-
Total		\$26.0M	\$26.2M	\$26.0M	\$15.2M	\$24.0M	\$10.3M

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

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

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

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

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

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

* Category currently funded by PMI only

** Category currently funded by Global Fund only

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

Figure 12. Annual budget, breakdown by commodity

Year ¹	Funder	ITNs for Continuous Distribution	ITNs for Mass Distribution	IRS Insecticide ⁴	ACTs	RDTs	Severe Malaria	SMC-Related	IPTp-Related	Total
FY17/ CY18	PMI ²	-	-	-	-	\$0.9M	-	-	\$0.1M	\$0.9M
	Global Fund ³	\$0.6M	\$13.3M	-	\$0.3M	\$0.5M	-	-	\$0.1M	\$14.7M
	Total	\$0.6M	\$13.3M	-	\$0.3M	\$1.3M	-	-	-	\$15.6M
FY18/ CY19	PMI ²	\$2.9M	-	-	\$0.7M	\$1.6M	\$0.2M	-	\$0.3M	\$5.4M
	Global Fund ³	\$4.3M	-	-	\$0.3M	\$1.4M	-	-	\$0.7M	\$6.0M
	Total	\$7.2M	-	-	\$1.1M	\$2.9M	\$0.2M	-	-	\$11.4M
FY19/ CY20	PMI ²	\$1.7M	\$2.4M	-	\$0.7M	\$1.0M	\$0.1M	-	\$0.3M	\$5.8M
	Global Fund ³	\$1.5M	-	-	\$0.3M	\$1.4M	-	-	\$0.8M	\$3.2M
	Total	\$3.1M	\$2.4M	-	\$1.0M	\$2.3M	\$0.1M	-	-	\$9.0M

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

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

³ GFATM commodity costs in table above only include ex-works commodity value in a given year. Additional costs, including quality control, freight, insurance, and customs totaled \$2.7M over the CY 2018-2020 period;

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

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

V. ACTIVITIES TO BE SUPPORTED WITH FY 2020 FUNDING

Please see the FY 2020 budget tables (Tables 1 and 2) for a detailed list of activities PMI proposes to support in Madagascar 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

<p>NMCP objective</p> <p>Under the 2018–2022 NSP, Madagascar supports both ITNs and IRS vector control interventions, along with entomological monitoring in sites throughout the country. In an effort to mitigate insecticide resistance, entomological monitoring data, including insecticide susceptibility data, are used to inform insecticide selection for both IRS and ITN interventions. Both PMI and the Global Fund support various aspects of vector control interventions in Madagascar.</p>
<p>NMCP approach</p> <p>Madagascar has adopted one ITN for every two persons to achieve universal coverage for the 106 districts targeted for ITNs. Madagascar also supports continuous distribution through community channels and routine ITN distribution channels (via ANC and EPI visits). In 2019, Madagascar will distribute PBO ITNs in one district to integrate new insecticide tools to prevent malaria. The next mass ITN campaign is scheduled for 2021. Select high-burden malaria districts receive IRS in addition to ITN distribution. PMI supports blanket IRS and has been spraying in the southwestern coastal districts since 2018. Districts targeted for blanket IRS are selected by in-country stakeholders due to their high malaria burden despite universal ITN coverage. The NMCP, with Global Fund financing, implements focalized IRS for malaria outbreak response.</p>
<p>PMI objective, in support of NMCP</p> <p>PMI supports universal coverage of ITNs including procurement, warehousing, transportation to distribution sites (1 distribution site per 3 fokontany) and SBC. PMI leverages Global Fund resources to support distribution to beneficiaries during mass campaigns. PMI also supports blanket IRS in high-burden districts. In addition, PMI supports entomological monitoring, including insecticide resistance testing, in multiple sentinel sites throughout the country.</p>
<p>PMI-supported recent progress (past ~12-18 months)</p> <ul style="list-style-type: none"> • PMI procured and distributed approximately 6 million ITNs in 57 districts for the August 2018 mass distribution campaign. PMI also supported durability monitoring for a cohort of ITNs distributed during the 2018 mass campaign. • In 2018 PMI implemented blanket IRS in nine high-burden districts, covering 548,789 structures and protecting 2,232,097 people. Two long-lasting non-pyrethroid insecticide classes were sprayed: organophosphate (Actellic) and clothianidin (SumiShield), and subsequent monitoring indicated approximately 7-8 months of residual efficacy. • PMI supported entomological monitoring in 11 sites monitoring the standard and advanced indicators per PMI guidance. • Group and interpersonal communication activities were conducted at the household and community level to increase knowledge and improve attitudes regarding vector control interventions, including acceptance of IRS and the correct and consistent use of ITNs. • Peace Corps Volunteers supported SBC activities for the 2018 mass ITN distribution campaign.

PMI-supported planned activities (next ~12-18 months, supported by currently available funds)
<ul style="list-style-type: none"> ● With FY19 funds, PMI will procure approximately 667,000 ITNs and support warehousing, transportation to distribution sites and will ensure full distribution to beneficiaries via continuous distribution channels. PMI will also procure approximately 1 million ITNs in preparation for the 2021 mass distribution campaign. ● PMI will support blanket IRS in five high-burden districts covering approximately 350,000 structures using organophosphate and clothianidin formulations. An independent environmental compliance monitoring visit will take place during the 2019 IRS campaign. ● With FY 19 funds, PMI will continue longitudinal entomological monitoring in 11 sites, including resistance monitoring and residual efficacy in IRS areas. In order for Madagascar to have more representative entomological data across the country, two to three sites from 2018 will be swapped for new sites on the West Coast and in some of the NMCP’s elimination districts. The entomological monitoring in elimination district(s) will be used to monitor the vector trends and assess feasibility for additional vector control (see proposed feasibility in OR section below). A low transmission district that has historically experienced upticks in malaria will be a potential site for longitudinal monitoring, to again better maximize vector control prevention methods. ● PMI will support community mobilization in areas targeted for IRS. Efforts will emphasize the timing of IRS activities, what beneficiaries should expect during spraying, precautions beneficiaries should take (e.g. removal of household items before spraying), and the benefits of IRS. Materials such as posters and training guides will be developed to support the NMCP transitions IRS districts. ● Peace Corps Volunteers will support SBC activities for IRS activities where possible.

1.A. ENTOMOLOGICAL MONITORING

Key Goal
Determine the geographic distribution, bionomics, and insecticide resistance profiles of the main malaria vectors in the country to inform vector control decision-making
Do you propose to increase, decrease, or maintain funding allocation levels for this activity? Why, and what data did you use to arrive at that conclusion?
With FY 20 funds, PMI Madagascar is proposing to maintain funding allocation levels to support entomological monitoring across Madagascar. PMI plans to support 13 entomological monitoring sites, shifting to some new sites in 2019-2020 to accommodate districts targeted for elimination, and areas in the West Coast. PMI’s implementing partner will also provide technical assistance to the NMCP’s entomology department to build more in-country capacity. PMI will also continue the durability monitoring activity in four sites for the ITNs distributed in the 2018 mass campaign.
Please see Table 2 for a detailed list of proposed activities with FY 2020 funding.

Key Question 1

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

Supporting Data

Figure A1. Map of Distribution of Longitudinal, Entomological, and Resistance-Monitoring Sites.

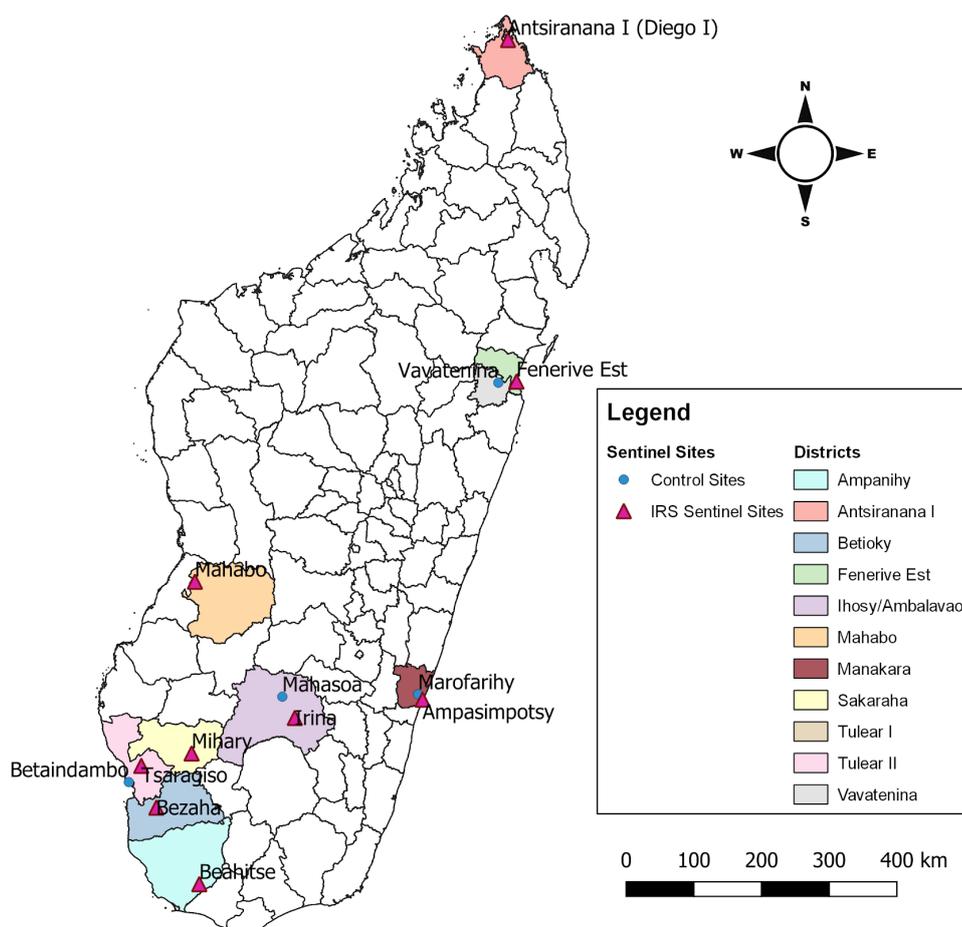


Figure A2. PMI-Supported Activities by Region

Regions	Districts	Sentinel sites	Control sites	Activities	Supported by
Analanirjofo (East Coast)	Fenerive Est	Fenerive Est		Longitudinal Monitoring (1); Resistance Monitoring (1)	PMI
	Vavatenina		Vavatenina	Longitudinal Monitoring (1); Resistance Monitoring (1)	PMI
Vatovavy Fito Vinany	Manakara	Ampasimpotsy		Longitudinal Monitoring (1); Resistance Monitoring (1)	PMI
		Marofarihy		Longitudinal Monitoring (1); Resistance Monitoring (1)	PMI

Regions	Districts	Sentinel sites	Control sites	Activities	Supported by
Ihorombe	Ihosal	Irina		Longitudinal Monitoring (1); Resistance Monitoring (1)	PMI
Haute Matsiatra	Ambalavao		Mahasoa	Longitudinal Monitoring (1); Resistance Monitoring (1)	PMI
Atsimo Andrefana	Ampanihy	Beahitse	Betaindambo	Longitudinal Monitoring (1); Resistance Monitoring (1)	PMI
	Betioky	Bezaha		Longitudinal Monitoring (1); Resistance Monitoring (1)	PMI
	Tulear II	Tsaragiso		Longitudinal Monitoring (1); Resistance Monitoring (1)	PMI
	Sakaraha	Mihary-Lamatihy		Resistance Monitoring (1) NB: for Sakaraha, only monthly residual efficacy testing and resistance monitoring	PMI
	Tulear I			Longitudinal Monitoring (1); Resistance Monitoring (1)	PMI
Menabe	Mahabo	Mahabo		Longitudinal Monitoring (1) Resistance Monitoring (1)	PMI
Diana	Antsiranana I	Antsiranana I (Diego I)		Longitudinal Monitoring (1) Resistance Monitoring (1)	PMI

Figure A3. Geographic Distribution of Malaria Vectors and Bionomical Data²

Site	Major Vector	Minor Vector	Peak Abundance	Preferred Biting Location	Peak Sporozoite Rate	Annual* EIR
Vohitrambato	<i>An. gambiae</i> s.l.	<i>An. mascarensis</i>	N/A	<i>An. gambiae</i> s.l. (O) <i>An. mascarensis</i> (O)	<i>An. gambiae</i> s.l. (0.88) <i>An. funestus</i> s.l. (3.3)	<i>An. gambiae</i> s.l. (0.02) <i>An. funestus</i> s.l. (0.01)
Ambodifaho	<i>An. gambiae</i> s.l.	<i>An. mascarensis</i>	N/A	<i>An. gambiae</i> s.l. (O) <i>An. mascarensis</i> (O)	<i>An. gambiae</i> s.l. (0.79)	<i>An. gambiae</i> s.l. (0.02)

² For additional information, please refer to the Entomological monitoring report that can be found at: <https://www.pmi.gov/how-we-work/technical-areas/entomological-monitoring>

Site	Major Vector	Minor Vector	Peak Abundance	Preferred Biting Location	Peak Sporozoite Rate	Annual* EIR
Mahambo	<i>An. gambiae</i> s.l.	<i>An. mascarensis</i>	NA	<i>An. gambiae</i> s.l. (O) <i>An. mascarensis</i> (O)	--	--
Vavatenina (Control)	<i>An. mascarensis</i>	<i>An. gambiae</i> s.l.	<i>An. gambiae</i> s.l. (Oct) <i>An. mascarensis</i> (Sept-Oct, May)	<i>An. gambiae</i> s.l. (O) <i>An. mascarensis</i> (I)	<i>An. gambiae</i> s.l. (1.72)	<i>An. gambiae</i> s.l. (0.02)

Note: Data on Preferred Resting Location and Preferred Host not available
Key: O - Outdoor, I - Indoor

Conclusion

The 2017-2018 entomological monitoring activities were conducted in nine sentinel sites including six IRS sites (Vohitrambato, Ambodifaho, Mahambo, Manambotra Sud, Lanivo, Ambohimirina II) and three non-IRS sites (Vavatenina, Lopary and Tsaravary). Data on vector species composition, density and behavior was collected using various mosquito-sampling methods including pyrethrum spray catch (PSC), human landing catch (HLC) and aspirator collections. The main vector species recovered were *An. gambiae* s.l., *An. funestus* s.l., and *An. mascarensis*. *An. coustani*, a potential vector, was also recovered. *An. gambiae* s.l. was the predominant vector collected in 8 of the 9 sites and 93.4% of those were *An. gambiae* s.s. In general, *An. gambiae* s.l., *An. funestus* s.l., and *An. coustani* showed outdoor biting tendencies in all sites. *An. mascarensis* biting occurred both indoors and outdoors. Mosquito resting densities from indoor PSC and outdoor aspirations from natural and pit shelters were too low to draw conclusions on preferred resting locations.

Key Question 2

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

Supporting Data

Figure A4. 2018 Insecticide Susceptibility Tests Using WHO Tube Tests for *An.gambiae* s.l. in the East.

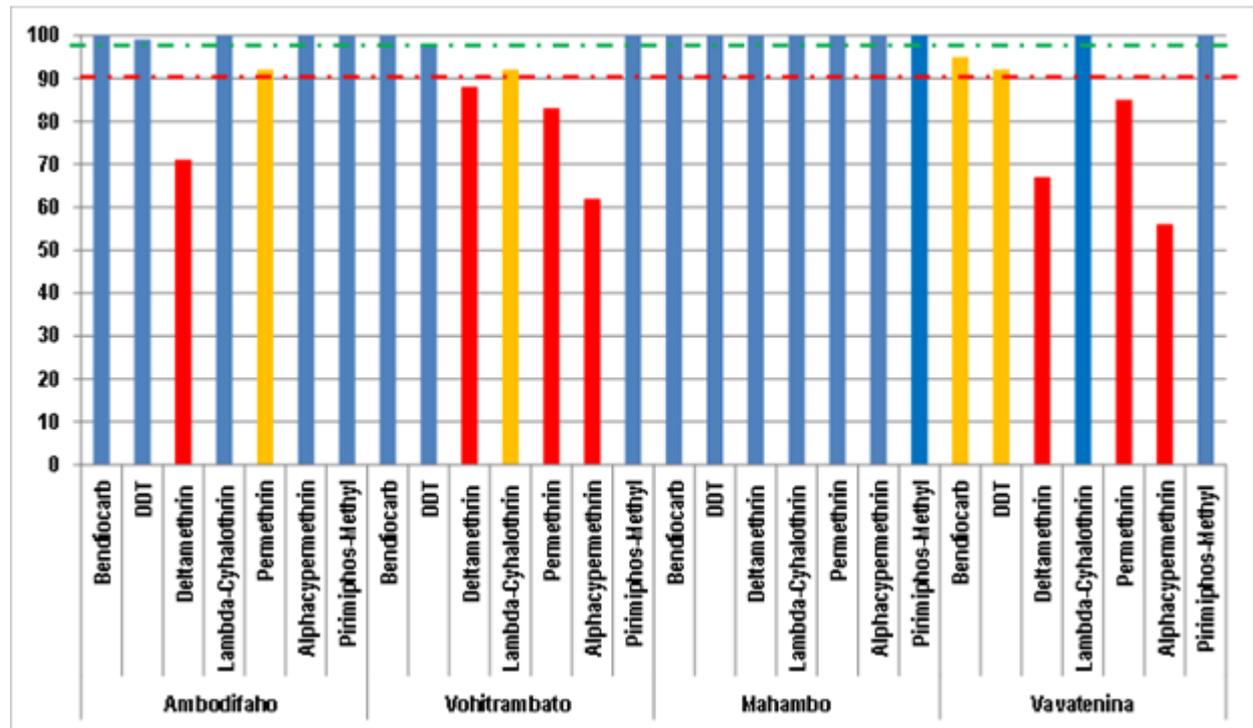
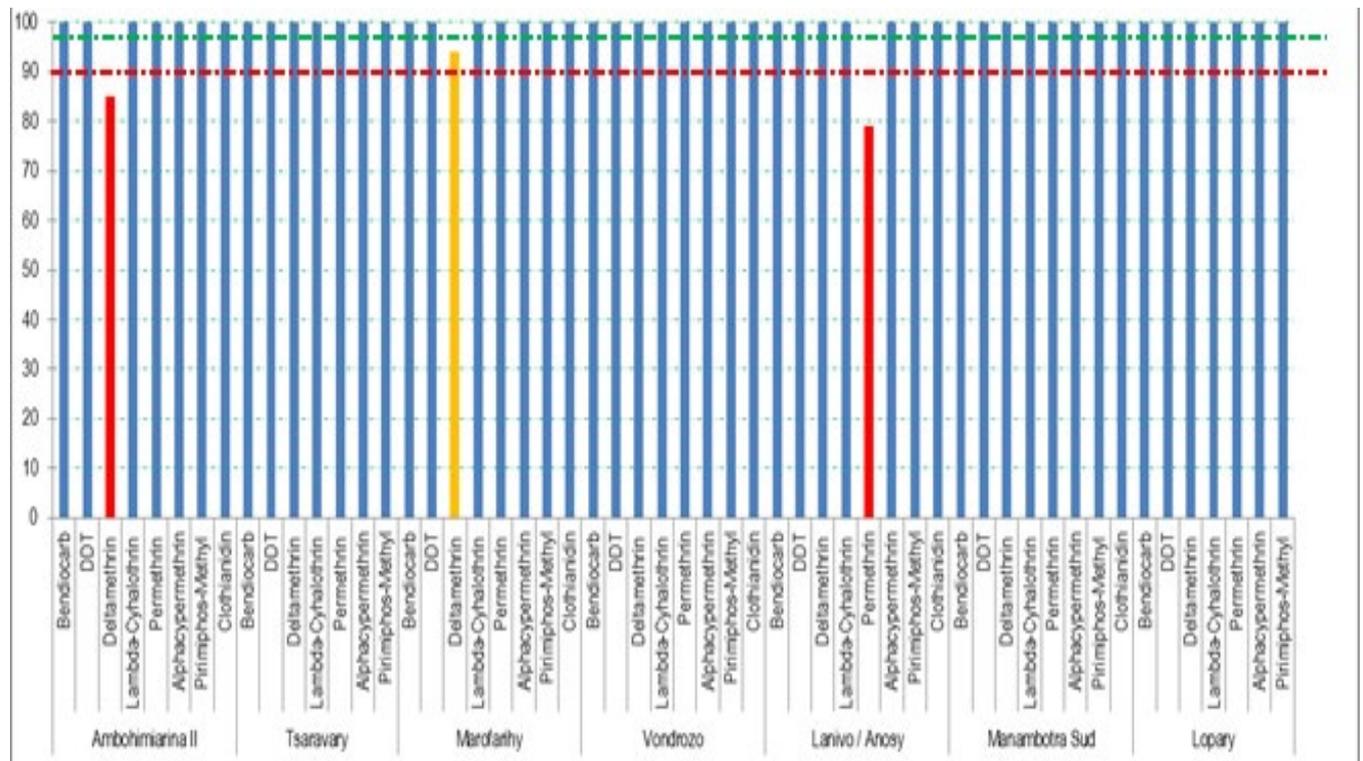


Figure A5. 2018 Insecticide Susceptibility Tests Using WHO Tube Tests for *An. gambiae* s.l. in the South East.



Conclusion

An. gambiae s.l. adults raised from larval collections from 11 sentinel sites, including the nine sentinel sites where comprehensive entomological monitoring was conducted, were tested for insecticide resistance. Following WHO guidelines, mortalities between 98-100%, 90-97% and below 90% indicate susceptibility, possible resistance and resistance, respectively. The results of the vector susceptibility tests indicated full susceptibility of *An. gambiae* s.l. to pirimiphos-methyl and clothianidin in all areas where the tests were conducted. The test results also showed that *An. gambiae* s.l. had developed resistance to permethrin in Lanivo/Anosy, Vavatenina and Vohitrambato; to deltamethrin in Ambodifaho, Vohitrambato, Vavatenina and Ambohimiarina II; and to alpha-cypermethrin in Vavatenina. Suspected resistance of *An. gambiae* s.l. to DDT was noted in Vavatenina; for permethrin in Ambodifaho; for deltamethrin in Marofarihy (Manakara); for lambda-cyhalothrin in Vohitrambato and for bendiocarb in Vavatenina

An. funestus s.l. resistance testing was carried out in six sites. The vector was susceptible to all insecticides tested including pirimiphos-methyl in Manambotra Sud, Ambohimiarina II, Tsaravary, Marofarihy, Vohitrambato and Vavatenina; bendiocarb in Ambohimiarina II, Tsaravary and Marofarihy; permethrin and deltamethrin in Marofarihy and DDT in Ambohimiarina II and Tsaravary.

An. mascarensis was susceptible to pirimiphos-methyl in Ambodifaho, Vohitrambato and Vavatenina, and to bendiocarb in Mahambo.

These tests were performed to inform insecticide-based malaria vector control programming. The results show that there is still susceptibility of the malaria vectors, *An. gambiae* s.l., *An. funestus* group, *An. mascarensis*, and the potential vector, *An. coustani*, to pirimiphos-methyl in all sprayed areas where the tests were conducted. Three of the four insecticide classes (organophosphates, carbamates and pyrethroids) approved by the WHO for IRS and one new insecticide, clothianidin, a neonicotinoid class, are eligible for use in Madagascar. For resistance prevention and management, rotation of insecticide using a new insecticide such as clothianidin is being used to preserve the efficacy of existing insecticide-based vector control tools.

Key Question 3

What are the in-country considerations (e.g. in-country staffing capacity, political climate, security concerns) that impact your funding allocation in this category? If there is a specific budget line item in Table 2 that is not covered by the above questions, please address here.

Supporting Data

PMI/Madagascar is proposing to maintain the same funding allocation, as an indication of continued support to the NMCP to advance the use of robust entomological data to guide vector control decision making in Madagascar.

Conclusion

Based on the data presented above, entomological monitoring activities remain a key area of support for PMI/Madagascar, particularly as the country moves toward malaria elimination.

1.B. INSECTICIDE-TREATED NETS (ITNs)

PMI Goal

Achieve high ITN coverage and usage of effective ITNs 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).

Are you proposing to increase, decrease, or maintain funding allocation levels for ITN distribution and SBC activities? Why? What data did you use to arrive at that conclusion?

The PMI/Madagascar team is proposing an increase in funding levels in FY 2020 to support the 2021 mass ITN distribution campaign. Funds will be used to procure, warehouse and distribute approximately two million ITNs. For the mass campaign, Global Fund resources will be leveraged for distribution to beneficiaries and to support SBC at the community level regarding daily ITN use and proper ITN care.

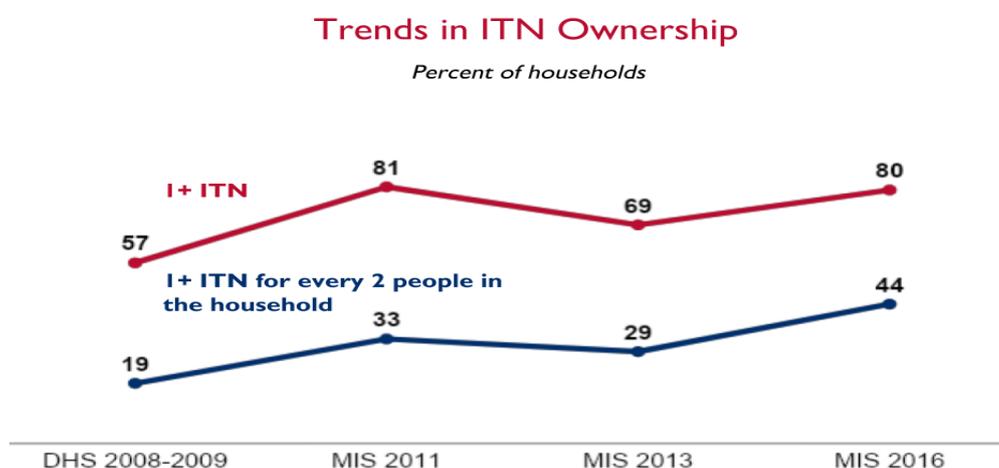
Please see Table 2 for a detailed list of proposed activities with FY 2020 funding.

Key Question 1

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

Supporting Data

Figure A6. Trends in ITN Ownership



Conclusion

Overall, ITN ownership in Madagascar has been increasing. In 2013, ITN ownership dips; this likely reflects the period of USG restrictions in Madagascar which limited PMI's ability to work with the MoH on ITN and malaria prevention campaigns. PMI/Madagascar will continue to support technical assistance for ITN campaigns in addition to other distribution methods including routine (e.g., first ANC visit, immunization and ill-child outpatient visits) and community-based programs. In preparation for the 2021 mass ITN distribution campaign, PMI/Madagascar will also support efforts to increase ITN ownership through improved census, quantification, and community mobilization activities.

Key Question 2

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

Supporting Data

Figure A7. Trends in ITN Access and Use

Trends in ITN Access and Use

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

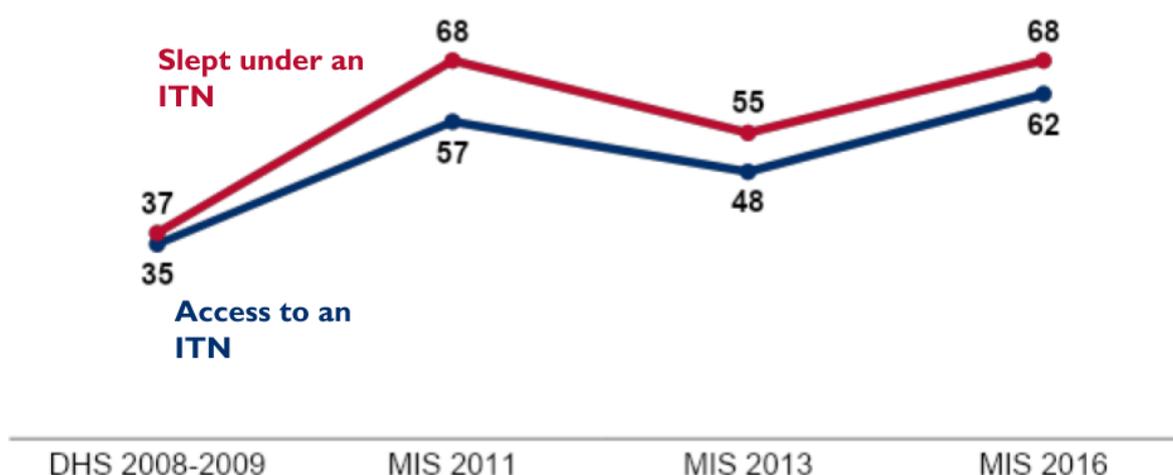
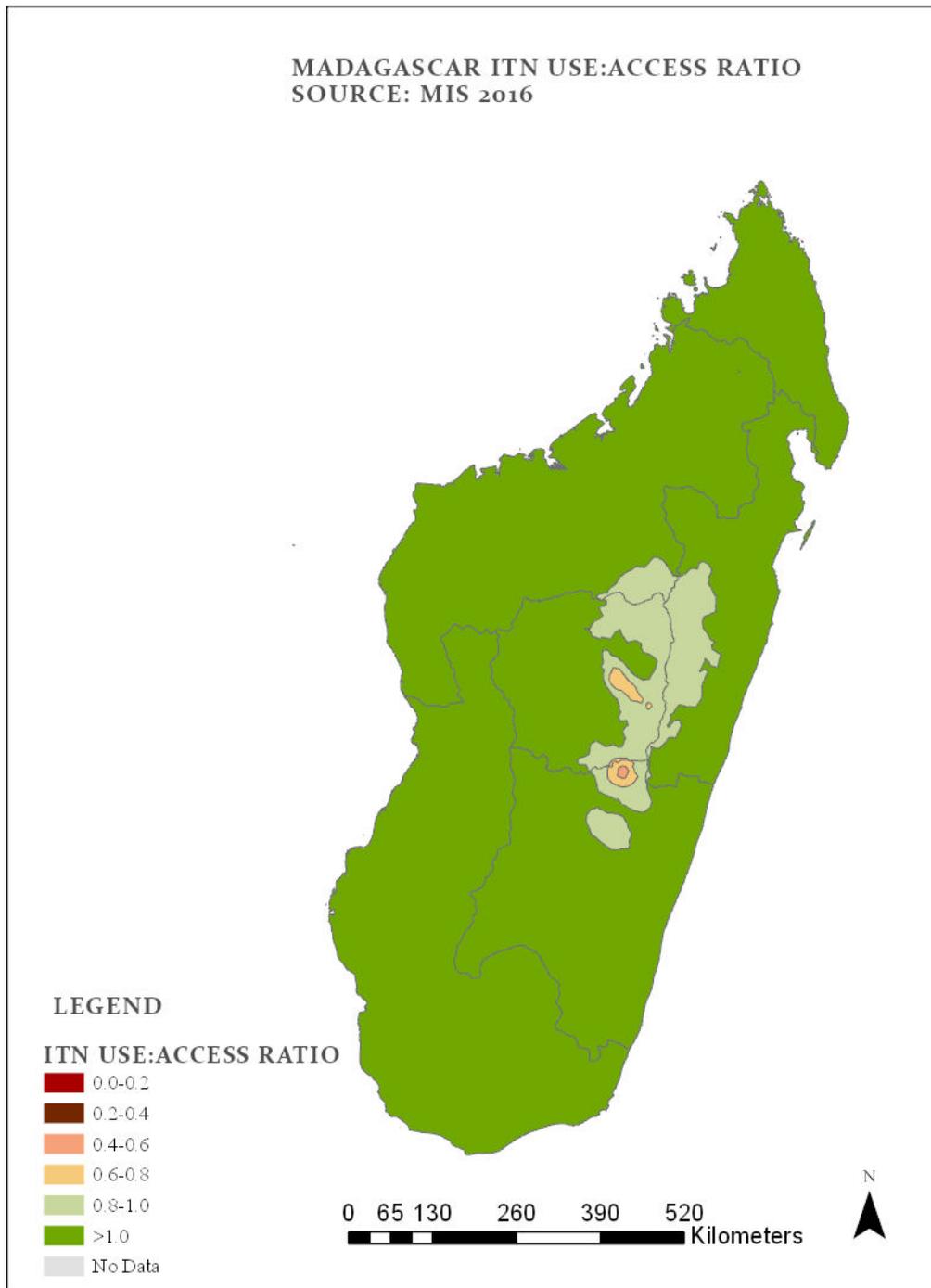


Figure A8. Use:Access Ratio, from MIS 2016



Conclusion

Overall, Madagascar has a strong culture of ITN use, with the highest ITN use:access ratio of any PMI country. While there are a few areas in the Central Highlands and Fringe Districts where the use:access ratio is slightly lower, these are not areas where PMI partners are working. Rather, they are elimination/pre-elimination areas that have not historically been targeted for ITN distribution campaigns, with the exception of the 2018 mass ITN distribution campaign. Given the high use:access ratio throughout the country, PMI/Madagascar will focus its SBC efforts around maintenance and care of ITNs. SBC

activities will emphasize the behaviors necessary to obtain and maintain the appropriate number of ITNs in a household.

Key Question 3

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

Supporting Data

Figure A9. Facilitators and Barriers to ITN Use

Facilitator	Type of Factor	Data Source	Evidence
Social Norms Around Net Use	Social	Institut Pasteur de Madagascar's Qualitative Study on Malaria: Ownership and Use of LLINs in Madagascar – 2016. Associations Between Ideational Variables and Bed Net Use in Madagascar, Mali, and Nigeria - 2018	A recent qualitative survey concluded that “community members [in Madagascar] spoke positively about mosquito nets, with the majority of respondents mentioning it is their most preferred method for protection against insects.” Similarly, a recent household survey found that “female caregiver’s belief that net use was the norm in her community increased the odds of household member’s net use by 39%.”
High Perceived Self-Efficacy to Prevent Malaria	Internal	Associations Between Ideational Variables and Bed Net Use in Madagascar, Mali, and Nigeria - 2018	A household survey conducted between 2014-2015 found that “residents of households where the female caregiver demonstrated perceived self-efficacy to prevent malaria were 57% more likely to sleep under a net than those in households where the female caregiver did not demonstrate such beliefs.”
Households in Close Proximity to Distribution Sites	Environmental	Site Monitoring Visit Reports	Distribution sites are located close to communities. This limits the need for travel and leads to increased net ownership, which facilitates increased net use.
Barrier	Type of Factor	Data Source	Evidence
People Sleeping Away from Home	Environmental / Social	Institut Pasteur de Madagascar's Qualitative Study on Malaria: Ownership and Use of LLINs in Madagascar - 2016	A recent qualitative survey found that it is not uncommon for people not to sleep under ITNs for a period of one or more nights due to insecurity or social events such as wakes and parties.

Poor Attitudes About Net Use	Internal	MIS – 2016 Institut Pasteur de Madagascar’s Qualitative Study on Malaria: Ownership and Use of LLINs in Madagascar – 2016	A dislike of ITNs and complaints about the heat were two reasons frequently cited for non-use of ITNs in the 2016 MIS. These findings are supported by qualitative data, which found that heat impacted net use and that some communities associate the nets burial practices.
Not Enough Nets in the Household	Environmental	MIS – 2016	The 2016 MIS found that among households with at least one ITN not having enough nets was the primary reason for non-use (46%).

Conclusion

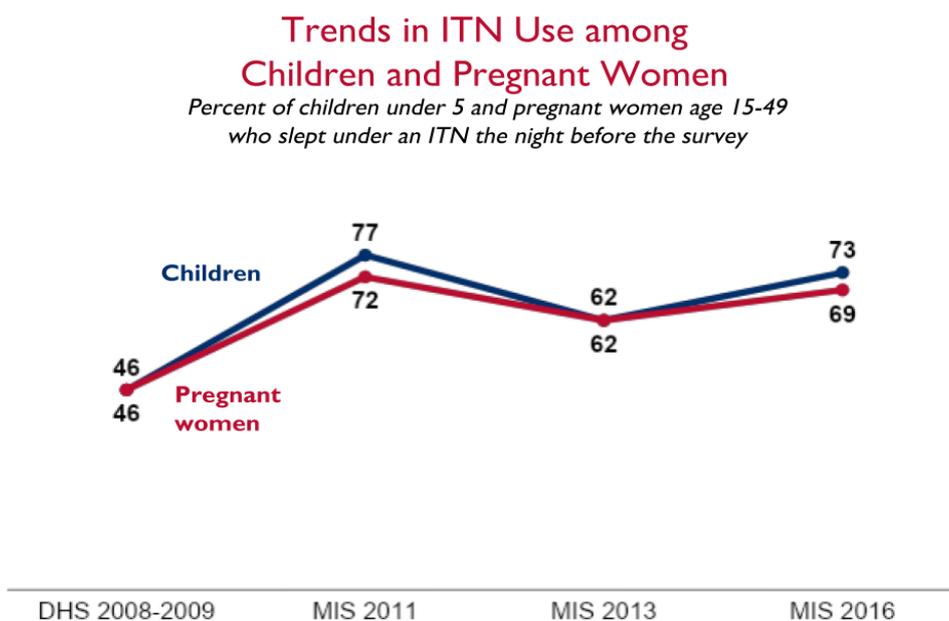
As noted under Key Question 3, Madagascar has a strong culture of ITN use. Strong positive social norms around net use have contributed to this culture, as has high perceived self-efficacy. A notable challenge that still exists is ensuring that households have a sufficient number of ITNs for all members of the household. To promote correct use and care practices, SBC efforts will focus on known facilitators including self-efficacy and promoting positive social norms around ITN use.

Key Question 4

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

Supporting Data

Figure A10. Trends in ITN Use among Children and Pregnant Women



Conclusion

As the above data indicates, ITN use among children and pregnant women is moderately high. The dip in 2013 likely reflects the period of USG restrictions in Madagascar which limited PMI's ability to support the MOH malaria prevention activities.

Key Question 5

What channels are used to distribute ITNs?

Supporting Data

Figure A11. ITN Distribution Channels, 2015 - 2021

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

Conclusion

To complement the mass ITN distribution campaigns that occur every three years, PMI/Madagascar leverages Global Fund's support to the NMCP for routine distribution via ANC and EPI. Additionally, during non-campaign years, PMI supports community-based continuous distribution, which will be scaled up to 20 districts by FY 2020. Distribution via routine channels (through EPI and ANC) and community-based initiatives is intended to increase ITN coverage. Distribution efforts are supported by CHVs who conduct community sensitization activities. Community sensitization is accomplished through mass media and interpersonal communication and emphasizes that ITNs must be used by the whole family, all year long, every night.

Key Question 6

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

Supporting Data

Figure A12. Estimated ITN Need for 2019 - 2021

Calendar Year	2019	2020	2021
Total Targeted Population ¹	22,629,407	23,310,552	24,012,200
Continuous Distribution Needs			
Channel #1: ANC ²	835,025	891,629	940,078
Channel #2: EPI ³	1,628,095	1,677,101	1,727,582
Channel #3: <i>Continuous distribution at community level</i> ⁴	1,259,664	1,294,934	0

Calendar Year	2019	2020	2021
Channel #4: Social marketing ⁵	628,098	749,384	894,090
<i>Estimated Total Need for Continuous Channels</i>	4,350,882	4,613,047	3,561,749
Mass Campaign Distribution Needs			
2019/2020/2021 mass distribution campaign(s) ⁶			14,674,122
<i>Estimated Total Need for Campaigns</i>	0	0	14,674,122
Total ITN Need: Routine and Campaign	4,350,882	4,613,047	18,235,871
Partner Contributions			
ITNs carried over from previous year	413,050		
ITNs from MOH			
ITNs from Global Fund ⁷	1,182,750	747,395	
ITNs from other donors			
ITNs planned with PMI funding ⁸	1,000,000	1,677,000	2,000,000
Total ITNs Available	2,595,800	2,424,395	2,000,000
Total ITN Surplus (Gap)	-1,755,082	-2,188,652	-16,235,871

Footnotes: Add any additional explanations/footnotes in this section to clearly explain the entries in your table. Remember to explain how numbers are derived and specify data sources. Please draw from a validated national malaria quantification if it exists for your country.

¹ Of 114 total districts in Madagascar, 106 are targeted for ITN distribution. The total population of these 106 districts represent 85.74% of the total Malagasy population. An annual growth of 3.01% is applied to these population estimates.

² 4.5% of population living in the 106 ITN-targeted districts is estimated to be pregnant women. Based on NSP target, 82% of pregnant women are expected to attend ANC in 2019, 85% in 2020 and 87% in 2021 (cf. table of Performance framework NSP 2018-2022 -Page 123)

³ 18% of the population in the 106 ITN-targeted districts are infants and children under 5 years (reference: Manuel des indicateurs - December 2014, Page 8). Among this population, 29.83% of children < 5 years of age and 10.14% of children < 1 year of age had outpatient visits according to HMIS data (due to how the data is collected, it is not possible to distinguish between those <5 and those <1; thus there may be duplicates, and a small overestimate of need.) In Madagascar, each child presenting to an outpatient clinic with a PCIMEC disease (malaria, pneumonia, diarrhea) receives an ITN.

⁴ The NSP (Page 68) targets 39 districts in malaria control zones (>100 cases/1,000 residents) for this intervention. The population in these 39 districts is estimated to be 5,217,806. NETCalc software was used to calculate ITN estimates for this intervention (assumptions: 80% ITN coverage, average household size is 4.5 persons, annual population growth is 3.01%). In 2021, during the mass ITN distribution campaign, no continuous-distribution ITNs will be procured.

⁵ Based on historical data of PSI sales 2015-2018. Baseline sales in 2018 was 526,442; a sales of 19.31% per year is assumed.

⁶ The country plans to conduct a mass distribution campaign in 2021 in the same 106 districts that were targeted in 2018. To achieve universal coverage, the estimated ITN quantity is based on 1 ITN for every 1.8 persons plus a 10% buffer stock.

⁷ Global Fund grant NMF2 will be used to procure ITNs for ANC, EPI, Social marketing & ITN

⁸ MOP FY 2019 proposes 677,000 ITNs for the 2020 continuous-distribution intervention and 1 million for the 2021 mass-distribution campaign

Conclusion

A large ITN gap remains for the 2021 ITN mass distribution campaign, despite PMI's commitment to procure three million ITNs with FY19 and FY20 funds. Discussions with Global Fund and MoH/NMCP are ongoing to resolve the gap.

In 2019, one district will be receiving ITNs treated with piperonylbutoxide (PBO) combined with a pyrethroid-based insecticide. Additional procurements of ITNs with novel insecticides and insecticide combinations will depend on entomological monitoring results.

Key Question 7

What is the current status of durability monitoring?

Supporting Data

Figure A13. Status of Durability Monitoring

Campaign Date	Sites	Brands	Baseline (1-month)	6-month	12-month	24-month	36-month
Aug 2018	<i>Bekily</i>	Dawa Plus	X		X		
Aug 2018	<i>Maintirano</i>	Dawa Plus	X		X		
Aug 2018	<i>Farafangana</i>	Dawa Plus	X				
Aug 2018	<i>Fort-Dauphin</i>	Permanet 2.0			X		
Sept 2018	Ihosy	Safe Net	X	X	X		
Sept 2018	Manakara	Safe Net	X	X	X		
Sept 2018	Fénérive Est	Safe Net	X	X	X		
Sept 2018	Miarinarivo	Safe Net	X	X	X		

Conclusion

Monitoring is ongoing. Conclusions will be presented at the end of the monitoring activity.

Key Question 8

What are the in-country considerations (e.g. in-country staffing capacity, political climate, security concerns) that impact your funding allocation in this category? If there is a specific budget line item in Table 2 that is not covered by the above questions, please address here.

Supporting Data

To maintain universal ITN coverage, PMI/Madagascar and the Global Fund will support the NMCP's 2021 mass distribution campaign. Global Fund support will depend on a smooth transition between Global Fund grants (the current grant, NFM2, and the next grant, NFM3). PMI assumes that the NFM3 grant will be funded with sufficient resources to fill the ITN gap. PMI/Madagascar will continue discussions with the Global Fund and the MoH/NMCP (domestic resource mobilization) to resolve the gap; additional PMI funding is not required at this time.

Conclusion

ITN remains a key and effective vector control intervention in Madagascar as the ITN use rate is very high. Based on the trend of malaria epidemiology over the past years, combined strategies of ITN continuous distribution in 2019 and 2020 and ITN mass campaign distribution in 2021 should continue to target the 106 districts that were targeted during the 2018 mass campaign. PMI and GF will continue to work together along with the MoH/NMCP to leverage resources and cover the country needs.

1.C. INDOOR RESIDUAL SPRAYING (IRS)

Key Goal

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

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

Due to existing pipeline with the PMI vector control partner, there is a modest decrease in the funding allocation for this activity. PMI/Madagascar is proposing to continue IRS implementation in five high-burden districts with long lasting, non-pyrethroid insecticides, covering approximately 300,000 structures. An independent environmental compliance visit will also be supported with FY 2020 funds. In addition, PMI's bilateral community partners and Peace Corps will work together in order to facilitate community mobilization campaigns aimed at increasing IRS acceptance and compliance with post-IRS guidance.

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

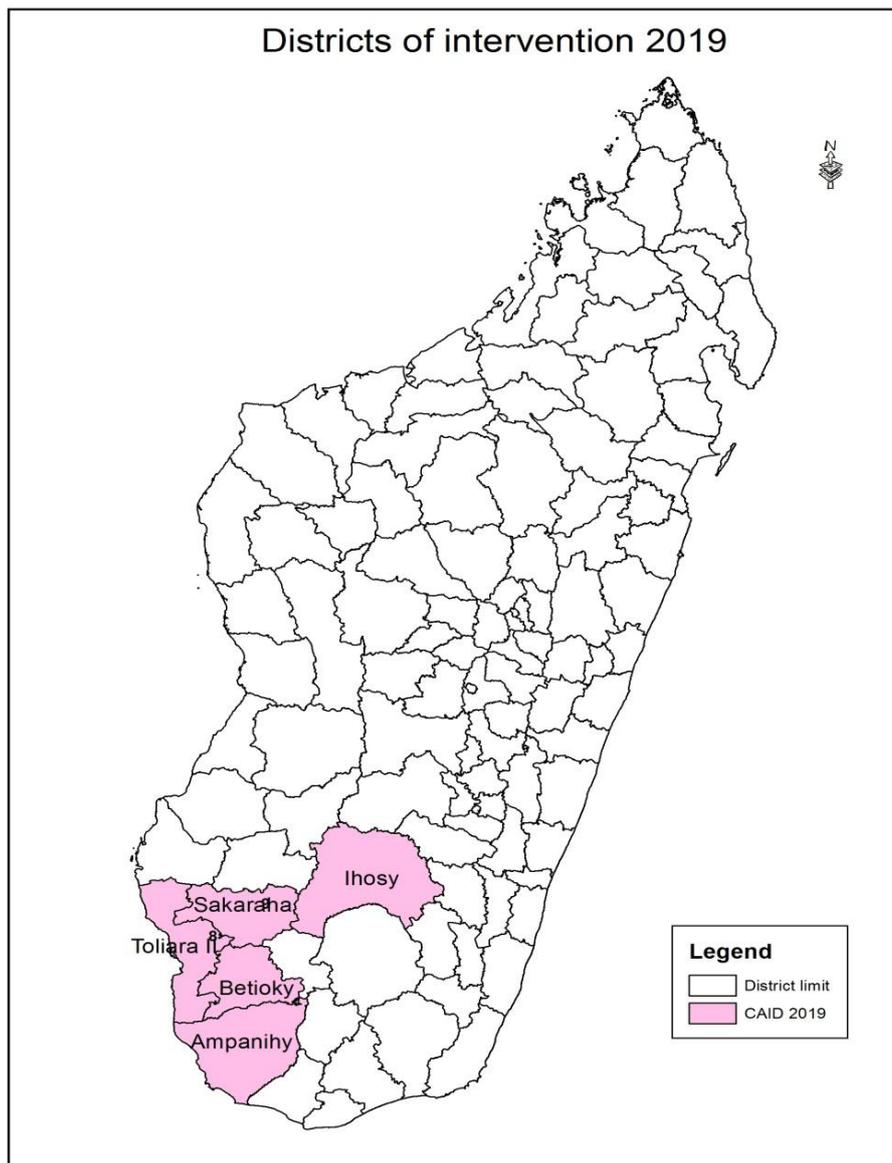
Key Question 1

What areas are targeted for IRS and why?

Supporting Data

PMI/Madagascar conducts blanket IRS in select high-burden areas; currently targeted areas are located in the Southwest coast and South of Madagascar. Targeted districts are selected by the NMCP and vector control stakeholders. District selection is based on epidemiologic and entomological data and other contextual factors such as the presence of sensitive environmental areas. PMI has historically provided technical assistance (TA) to the NMCP-led IRS activities; PMI partners will continue to provide TA as needed. The map below shows the 2019 planned spray areas supported by PMI.

Figure A14. Districts of Intervention, 2019



Conclusion

PMI, in collaboration with the NMCP and stakeholders, will continue to support blanket IRS in select high-burden districts.

Key Question 2

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

Supporting Data

Figure A15. Spray Coverage Rates 2016 - 2020

Calendar Year	Number of Districts Sprayed	District Names**	Number of Structures Sprayed	Coverage Rate	Population Protected
2016	5	Brickaville, Tamatave II, Fenerive Est, Farafangana, Vohipeno	310,426	94%	1,257,036
2017	8	Brickaville, Tamatave II, Fenerive Est, Farafangana, Vohipeno, Mananjary, Manakara, Vondrozo	487,636	95%	2,008,963
2018	9	Brickaville, Tamatave II, Fenerive Est, Farafangana, Vohipeno, Mananjary, Manakara, Tulear II, Sakaraha	548,775	94%	2,232,097
2019*	5	Tulear II, Sakaraha, Ampanihy, Betioky Sud, Ihosy	275,470	TBD	1,355,293
2020*	5	Ampanihy, Betioky Sud, Ihosy, Tulear II and Sakaraha	300,000	TBD	TBD

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

Conclusion

PMI/Madagascar proposes to continue IRS in five high-burden districts to reduce the malaria burden.

Key Question 3

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

Supporting Data

Figure A16. Residual Efficacy Data, from the 2018 PMI-supported IRS campaign using Actellic CS

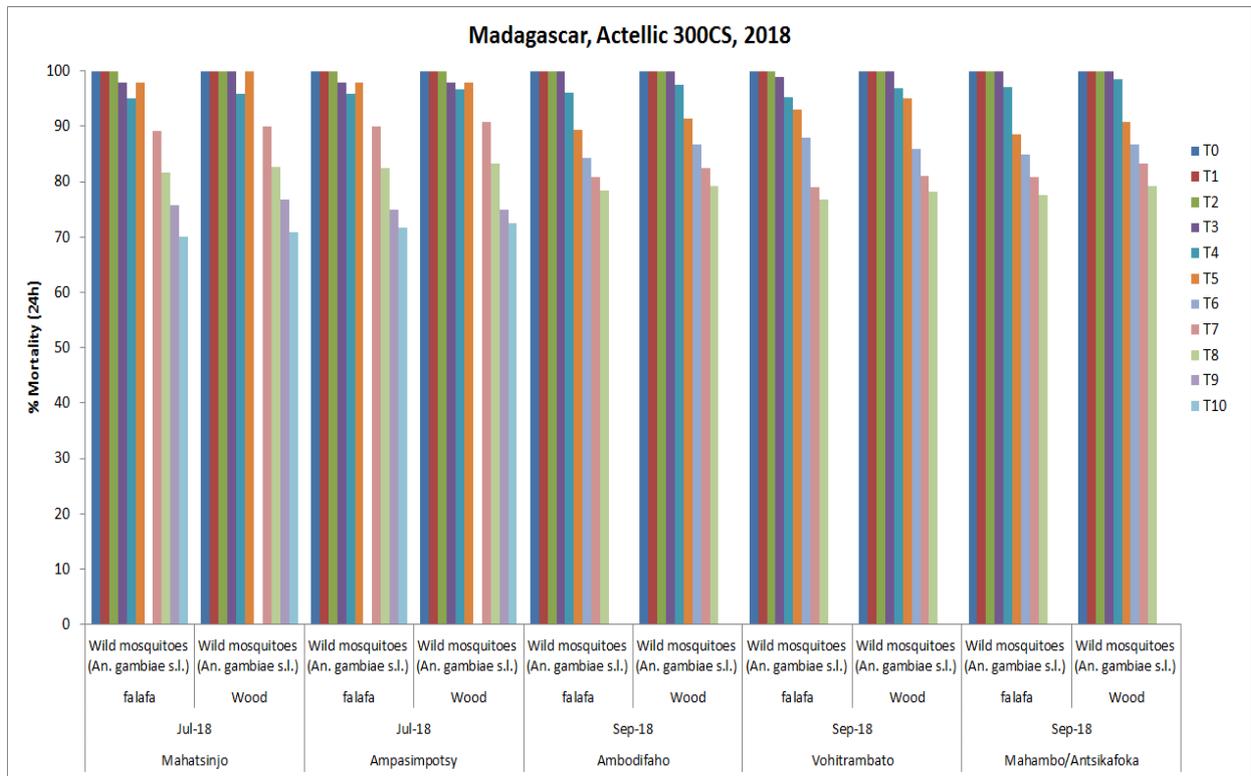
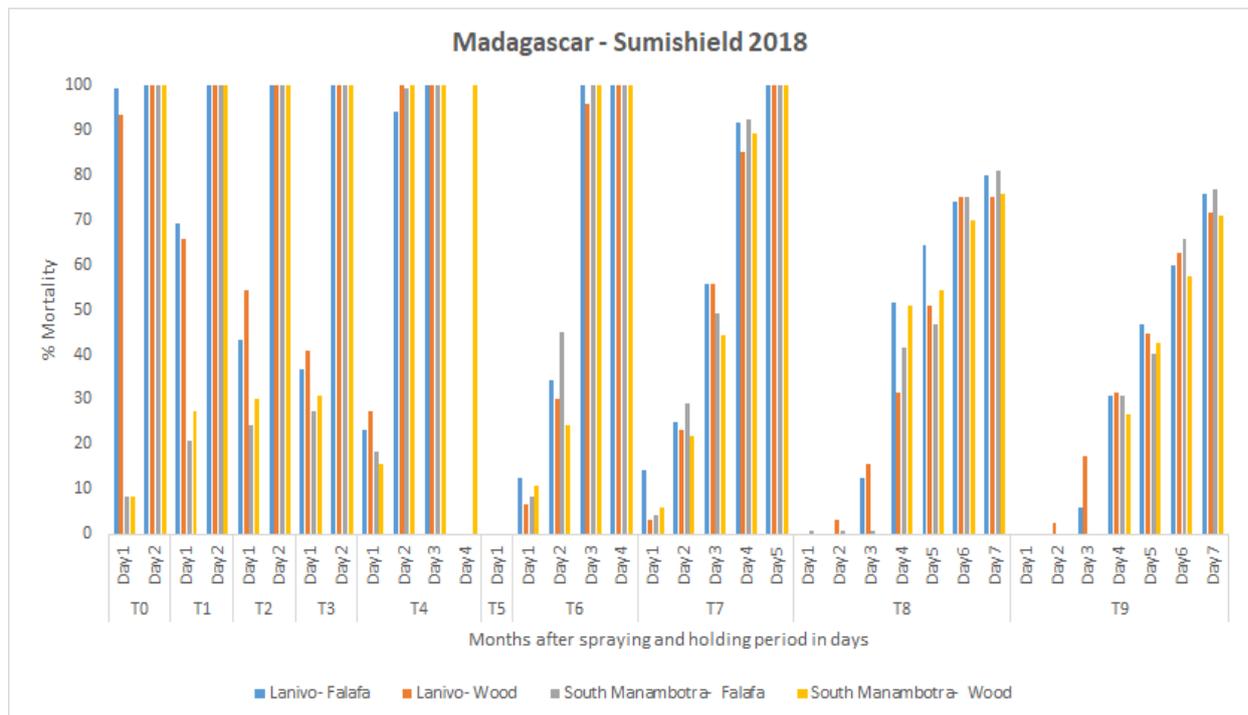


Figure A17. Residual Efficacy Data, from the 2018 PMI-supported IRS campaign using SumiShield.



Conclusion

Residual efficacy of IRS varies slightly by site, insecticide formulation, and structure material; however, efficacy generally lasts seven to eight months.

Key Question 4

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

Supporting Data

Figure A18. Insecticide Rotation Plan, 2017 - 2020

Location	2017	2018	2019	2020*
Brickaville	organophosphate	organophosphate	No IRS	No IRS
Tamatave II	organophosphate	organophosphate	No IRS	No IRS
Fenerive Est	organophosphate	organophosphate	No IRS	No IRS
Farafangana	organophosphate	clothianidin (SS)	No IRS	No IRS
Vohipeno	organophosphate	clothianidin (SS)	No IRS	No IRS
Mananjary	organophosphate	organophosphate	No IRS	No IRS
Manakara	organophosphate	organophosphate	No IRS	No IRS
Vondrozo	organophosphate	No IRS	No IRS	No IRS
Tulear II	No IRS	organophosphate	clothianidin (SS)**	clothianidin*
Sakaraha	No IRS	organophosphate	clothianidin (SS)	clothianidin*
Ampanihy	No IRS	No IRS	organophosphate	clothianidin*
Betioky Sud	No IRS	No IRS	organophosphate	clothianidin*
Ihosal	No IRS	No IRS	clothianidin (FF)***	organophosphate*

*Denotes planned insecticide classes, TBD based on residual efficacy of 2019 IRS campaign and unit cost of insecticide

** SS:SumiShield

***FF: Fludora Fusion

Conclusion

As part of Madagascar's insecticide resistance management plan, the NMCP is interested in considering the use of new, WHO pre-qualified insecticides to determine their susceptibility and residual efficacy in Madagascar. PMI/Madagascar will continue to support the NMCP to monitor insecticide resistance, and develop insecticide rotation plans in accordance with the Global Plan for Insecticide Resistance Management (GPIRM) and based on local data.

Key Question 5

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

Supporting Data

With FY 2020 funds, PMI will support IRS in five districts. For the seven districts where IRS will not be continued, an exit strategy was developed; this will be implemented by the NMCP with support from PMI. The exit strategy includes SBC on consistent ITN use and prompt care seeking, ensuring continued availability of commodities, and surveillance. These districts will also benefit from the PMI-funded community-based continuous distribution of ITNs planned for January/February 2020. PMI requested its IRS partner to conduct a robust epidemiologic analysis to describe the impact of IRS.

Conclusion

Together with the NMCP, PMI and stakeholders will continue to target IRS in high-burden areas, and reinforce malaria prevention methods such as ITN use and case management in areas where IRS has been discontinued.

Key Question 6

What are the in-country considerations (e.g. in-country staffing capacity, political climate, security concerns) that impact your funding allocation in this category? If there is a specific budget line item in Table 2 that is not covered by the above questions, please address here.

Supporting Data

Funding for IRS will slightly decrease because of the current PMI partner's existing pipeline for this activity, and since there will not be capital costs for starting up new operations sites.

Conclusion

PMI/Madagascar would consider increasing IRS funds if IRS remains an NMCP priority, and additional PMI funds became available.

2. HUMAN HEALTH

2.A CASE MANAGEMENT in health facilities and communities

NMCP objective
The goal of the NMCP is to provide correct case management, according to malaria case management guidelines, for all cases of malaria at all levels of the health system, including at the community level and in the private sector.

NMCP approach

Madagascar's case management guidelines are aligned with WHO recommendations and adapted to the local context. All malaria diagnosis and treatment in public facilities is free. The objective is to correctly diagnose (RDT or microscopy) and treat 100% of suspected cases. Madagascar uses microscopy at the hospital level and RDTs at the health facility and community levels. For elimination-targeted districts, the elimination plan indicates that in addition to RDTs used for treatment decision-making, specimens for microscopy will be collected to identify parasite species. This plan has not yet been implemented due to lack of resources. Slide banks will be used to aid in quality assurance of microscopy. In pre-elimination and elimination districts, treatment for uncomplicated malaria includes an ACT plus low-dose primaquine (for treatment of gametocytes) except among pregnant women in their first trimester, who receive only quinine. Low-dose primaquine is contraindicated in pregnant women and among lactating women whose infants are less than six months of age. In control districts, treatment for uncomplicated malaria includes an ACT except among pregnant women in their first trimester who receive quinine. First-line treatment is artesunate-amodiaquine (ASAQ), and second-line treatment is artemether-lumefantrine (AL). According to the country's case management guidelines, *P. vivax* malaria should be treated with ASAQ followed by a 14-day course of primaquine; however, this has not been implemented because of limited availability of microscopy at health facilities to determine parasite species, and lack of G6PD testing nationwide. Severe malaria cases are treated with injectable artesunate followed by ACT. Rectal artesunate was recently introduced at the community level for pre-referral treatment of children less than five years of age (CU5) with severe disease.

Madagascar has an extensive community health volunteer (CHV) program with approximately 36,000 CHVs covering the country (two CHVs per *fokontany*, lowest administrative level). CHVs conduct sensitization activities on the prevention of communicable diseases, including malaria. They also provide integrated community case management (iCCM) services, including malaria testing and treating, to approximately 4.5 million CU5. Although CHVs have been trained on the use of rectal artesunate, limited supplies of this medication only recently became available in Madagascar, and the NMCP is finalizing plans for distribution and use in remote high-burden areas. Additionally, the NSP calls for CHVs working in remote high-burden areas to expand testing and treatment for malaria among children up to 15 years of age; however, this has not yet been formally implemented.

According to the 2016 MIS, 60% of CU5 with a febrile illness in the previous two weeks sought care in a health facility. Of these, 46% were treated in a public health facility and 11% were taken to a private facility. Use of traditional healers is common in rural areas of Madagascar.

Private sector facilities (e.g., faith-based and non-government organization [NGO]) are more prevalent in urban and peri-urban areas, and account for approximately 40% of service provision in these areas. Guidelines for malaria case management in the private sector mirror guidelines in the public sector, and the NMCP attempts to include private providers in malaria case management trainings. For example, the NSP targets the inclusion of 1,250 private health providers for these trainings by the end of 2019.

PMI objective, in support of NMCP

From 2009–2014, PMI was only able to support private health facilities and CHVs given USG restrictions on engaging with the Malagasy government at that time. Since 2014, PMI has been supporting CHVs and public health facilities. This support includes refresher trainings, supervision, provision of case management commodities, laboratory quality assurance activities, and training on iCCM and SBC. PMI’s current case management support in Madagascar is largely through its two bilateral USAID projects covering a total of 10 of Madagascar’s 22 regions which represents an estimated 12,500,000 persons. These regions include an estimated 17,319 CHVs, 2,995 health workers, 1,524 public and private health facilities and 118 hospitals. In addition, PMI has been supporting laboratory technical training, development and implementation of standard operating procedures, and laboratory equipment maintenance. The Global Fund has been supporting the development and implementation of the NMCP plan for laboratory quality assurance/quality control.

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

From January 2018 to July 2019, PMI supported the NMCP to undertake the following activities:

- Training of trainers for the regional and district health management teams in iCCM in six regions, as well as training for new CHVs in six regions
- Reinforcement of a referral and counter-referral system between CHVs and health facilities
- Training new health workers on malaria case management
- Periodic integrated supervision of district teams by regional health management teams
- Periodic integrated supervision of health facilities and hospitals by the district level
- Trained (as intended trainers) 20 NMCP and regional staff, on microscopy
- Trained 60 district staff on microscopy
- Drafted a manual for point of care malaria diagnostics (microscopy and RDT) manual; final edits are being made
- Identified two districts for a PMI-supported comprehensive elimination pilot to take place starting in 2019
- Procured, transported and stored more than 2 million RDTs and more than 1.5 million ACTs in 2018
- Drafted an elimination strategy

Key case management challenges include the following:

- Late care-seeking and self-medication by community members
- Non-systematic ascertainment of fever by health workers
- Stockouts of key malaria commodities, mainly at the health facility level, due to weak supply chain management

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

Activities currently planned or underway with current funds include:

- Introduce rectal artesunate at the CHV level in 44 districts (district selection is being finalized) and scale up progressively
- Implement supportive supervision and coaching for health providers (public, private, and community)
- In three regions (22 districts), introduce 124 clinical aides to assist the health facility in-charge with health facility operations and recruit 118 community health liaisons³ to assist the health facility in-charge with community activities and supervision, in collaboration with the regional and district health management teams
- Train approximately 1,400 CHVs in iCCM for CU5
- Train 60 additional districts in malaria microscopy (60 already trained)
- Conduct refresher training on malaria case management for CHVs
- Conduct trimestrial integrated supervision from central to regional, from regional to district, and district to CSB levels
- Carry out periodic supervision specific to elimination and preelimination zones from the central level
- Support the USAID bilaterals to implement proactive community case management of malaria (Pro-CCM) in three districts
- Support the district management team to train the health facility staff situated in elimination areas on case management and active case detection.

PMI Goal

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

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

We propose to keep funding for malaria case management roughly the same in FY 2020 as in FY 2019. The majority of the funding will go towards supporting the two USAID bilateral projects working in a total of 10 regions in Madagascar and will support community-based and facility-based malaria case management. (More emphasis will be placed on facility-based case management going forward, as one of the partners takes on this work in additional geographic areas). PMI will also invest in procurement of RDTs as well as a small number of ACTs and drugs for severe malaria, along with lab supplies and reagents to support functional microscopy in approximately half of the districts in the country. Finally, PMI will continue support of two important activities recently

³ The National Strategy for Community health plans to put this new position at Basic Health Center to support the Head of Center to carry out community activities.

started: support for a comprehensive pilot in two elimination districts, and support for supervision and refresher training for laboratory technicians at national, regional, and district levels.

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

Key Question 1

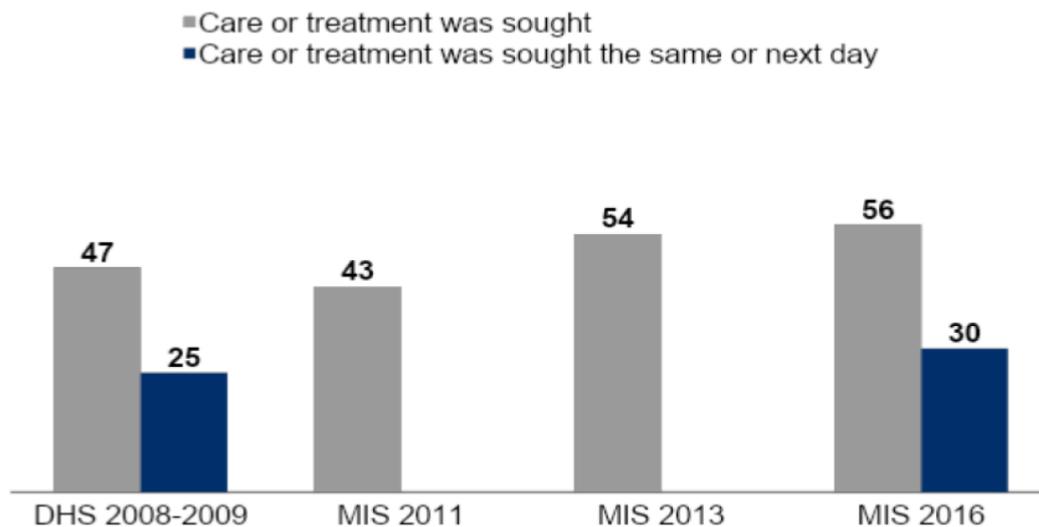
What is the status of care-seeking?

Supporting Data

Figure A19. Trends in Care Seeking for Fever

Trends in Care Seeking for Fever

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



**Excludes treatment or advice from a traditional practitioner*

Conclusion

National MIS surveys and qualitative studies indicate that prompt care-seeking in health facilities for febrile illness remains low. Additional investments in SBC promoting prompt care-seeking and efforts to improve access to care remain an important focus of the NMCP and PMI.

Key Question 2

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

Supporting Data

Figure A20. Facilitators and Barriers to Care-Seeking

Facilitator	Type of Factor	Data Source	Evidence
Favorable Views of CHVs	Internal / Social	JHPIEGO/MCSP Care-Seeking Behavior Study - 2018 Institut Pasteur de Madagascar's Study on the Determinants of the Care of Pregnant Women and Children – 2018	Recent qualitative data suggests that community members have favorable attitudes toward CHVs, as they distribute ITNs and vitamins and provide advice and advocacy. This facilitates community-based care-seeking.
Antimalarial Drugs and Services Offered Free of Charge	Environmental	JHPIEGO/MCSP Care-Seeking Behavior Study - 2018 Site Monitoring Visit Reports	Antimalarial drugs and services are offered for free at public health centers, which facilitates care-seeking.
Social Norms Related to Prompt Care-Seeking	Social	Associations Between Malaria-Related Ideational Factors and Care-Seeking Behavior for Fever Among children under Five in Mali, Nigeria, and Madagascar - 2018	A household survey conducted from 2014-2015 that social norms related to caregiving were consistently important in Madagascar and that 78% of caregivers reported that bringing their child promptly to a health facility was a norm in their community.
Barrier	Type of Factor	Data Source	Evidence
Social Norm of Self-Medication Prior to Care-Seeking	Social	JHPIEGO/MCSP Care-Seeking Behavior Study - 2018 Institut Pasteur de Madagascar's Study on the Determinants of the Care of Pregnant Women and Children – 2018	Recent qualitative data suggests that it is typical for self-medication to be the first step in caring for children who present with a fever. More data is needed on the extent of this practice.
Cost of Services/Medication, Especially for the Poorest	Environmental	JHPIEGO/MCSP Care-Seeking Behavior Study - 2018 Institut Pasteur de Madagascar's Study on the Determinants of the Care of Pregnant Women and Children – 2018	Cost cited as a barrier for seeking care in the private sector.

Perceived Quality of Care at Health Facilities	Environmental	Institut Pasteur de Madagascar's Study on the Determinants of the Care of Pregnant Women and Children – 2018	Recent qualitative data suggests the use of health facilities is rare and is considered only in the case of severe illness. This is due, in part, to the perceived quality of the care received.
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Conclusion

Community members generally hold favorable views of CHVs and prompt care-seeking is generally perceived as a social norm in Madagascar, yet prompt care-seeking in the formal health sector remains low for children with febrile illness and self-medication is common. Ensuring prompt and appropriate malaria case management remains a challenge. To address this, PMI/Madagascar will continue to support a range of communications activities including radio spots, songs, community theater, and school-based messaging to promote prompt care-seeking and continue to bolster social norms around self-medication. In addition, PMI is supporting efforts to improve the quality of care at health facilities to address concerns raised by beneficiaries.

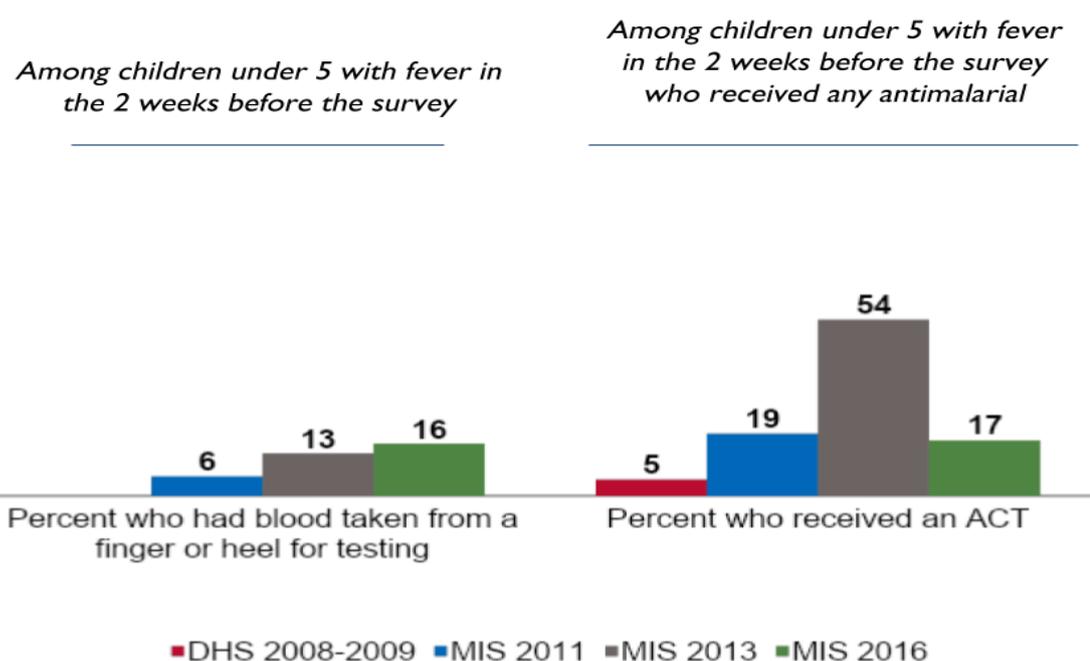
Key Question 3

How have malaria testing and treatment practices evolved over time?

Supporting Data

Figure A21. Trends in Diagnosis and Treatment of Children with Fever

Trends in Diagnosis and Treatment of Children with Fever



Conclusion

Testing for malaria and treatment with ACTs has not improved substantially in the last ten years. This may be partly explained by low rates of care-seeking in the formal public sector. Furthermore, health providers are not adequately adhering to the national policy of systematically ascertaining fever and testing all fever cases with and RDT, particularly in low-transmission areas (e.g., 34% in Analamanga region, 51% in Itosy vs. 90% in many high-transmission areas). Difficulty with stock-outs at health facilities, as well as retention of health workers in hard-to-reach areas exacerbates this problem.

Key Question 4

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

Supporting Data

Figure A22. Facilitators and Barriers to Testing and Treatment

Facilitator	Type of Factor	Data Source	Evidence
CHVs Officially Part of MoH Structure	Environmental	National Community Health Policy - 2018	The country's community health strategy has been updated. CHVs now fall under the supervision of health provider, which helps to ensure standardization of testing and treatment practices.
Availability of Equipment and Drugs for Malaria	Environmental	JHPIEGO/MCSP Health Facility Assessment - 2018	In surveyed health facilities, equipment and malaria medications were available 90% of the time, which serves to facilitate testing and treatment practices.
Barrier	Type of Factor	Data Source	Evidence
Low Provider Self-Efficacy Due to Limited Training and Supervision	Internal	JHPIEGO/MCSP Health Facility Assessment - 2018	A recent health facility assessment found limited training and supervision of providers. Only 42% of surveyed health providers reported a supervision visit on malaria the last six months and 45% reported they had not received any malaria training in two years. As a result, provider self-efficacy around malaria testing and treatment practice is limited.
Insufficient Staffing of Health Facilities	Environmental	SARA Survey - 2019	The results of a recent SARA survey show a significant shortfall in staff, with three-quarters (74%) of basic health centers having only one paramedic and roughly half (49%) of having no doctor. This is below required staffing standards.

Conclusion

Various surveys and site monitoring visits revealed gaps in support for health providers, including limited training and supervisory visits. Furthermore, surveys revealed staffing shortages in many facilities. These challenges may explain poor knowledge of the case management strategy among providers. To address this weakness, PMI/Madagascar will support strengthening of supportive supervision and training activities for providers in PMI-supported districts and assure that providers have the guidance and standard operating procedures they need to be able to do their jobs. In addition, providers will receive refresher trainings and job aids aimed at increasing their service communication skills. These trainings will emphasize how to promote desired behaviors, manage rumors, and maintain public confidence in the health system.

Key Question 5

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

Figure A23. Coverage of PMI Support



PMI provides case management support through two USAID bilateral programs, currently one of which covers three regions in the east, west, and south and the second of which covers seven regions in the north and west at the community level. In mid-to late-2020, the bilaterals will be consolidated into one, which will cover both facility- and community-level case management in these 10 regions (60 districts). The 10 regions include approximately 17,317 CHVs, 2,995 health facility staff, 1,524 health facilities, and 118 district hospitals, and cover approximately 12.4 million people. The Global Fund supports the remaining 12 regions in the Central Highlands, Fringes areas, and the south. The PMI-supported bilateral agencies conduct malaria case management training for new facility-based providers and CHVs and regular refresher training (in IMCI and iCCM) of current facility providers and CHVs,

respectively. One of the bilateral partners will include two new positions, complying with the National Strategy for Community Health: *accompagnateur communautaire* (community aide), whose role will be to support the community activities of CHVs affiliated with the health center, and an *aide clinique* (clinical aide), whose role will be to support the clinician-in-charge at the health facility. Two new initiatives currently underway include the rollout of rectal artesunate for pre-referral treatment of severe malaria among children < 5 years of age at CHV level in select districts and the introduction of pro-active community case management of malaria (known as PECADOM in Madagascar) in two to three districts. Of note, the NMCP is aware of WHO recommendations for use of rectal artesunate for pre-treatment of severe disease among children up to age six years in the community; however, the current NMCP and MOH guidelines for community case management of malaria include only those children up to age five years. The NMCP opted for a rectal artesunate policy consistent with national community case management guidelines. In 2019, PMI began supporting the development of a national malaria diagnostics quality assurance/quality control manual, and the training of hospital-level laboratory technicians in microscopy. PMI will also continue to procure key malaria case management commodities, including RDTs, ACTs, injectable artesunate, and microscopes and microscopy reagents.

Conclusion

Since care-seeking at health facilities remains low in Madagascar, the NMCP is expanding the scope of community services (e.g., through rectal artesunate and pilot introduction of Pro-CCM in several districts) while seeking to improve facility-based services and use. More emphasis will be placed on integrated supportive supervision, improving stock management, and use of routine data collection tools. Investment in high quality microscopy at hospital levels through procurement of reagents and training of lab technicians will be especially important as the country moves progressively to malaria elimination.

Key Question 6

What is the estimated need for RDTs for FY 2020?

Supporting Data

Figure A24. Estimated RDT Need, 2020

Calendar Year	2019	2020	2021
RDT Needs			
Total country population	26,453,320	27,249,565	28,069,777
Population at risk for malaria ¹	26,453,320	27,249,565	28,069,777
PMI-targeted at-risk population	26,453,320	27,249,565	28,069,777
Total number of projected fever cases ²	5,730,122	5,847,475	5,959,349
Percent of fever cases tested with an RDT ³	100%	100%	100%
Other needs ⁴	249,069	253,040	257,122
Total RDT Needs⁵	5,979,191	6,100,515	6,216,471

Calendar Year	2019	2020	2021
Partner Contributions (to PMI target population if not entire area at risk)*			
RDTs carried over from previous year	3,754,769	164,803	
RDTs from Government			
RDTs from Global Fund ⁶	1,389,225	1,816,056	1,852,622
RDTs from other donors			
RDTs planned with PMI funding	1,000,000	2,290,325	2,000,000
Total RDTs Available	6,143,994	4,271,184	3,852,622
Total RDT Surplus (Gap)	164,803	-1,829,331	-2,363,849

Footnotes: Add any additional explanations/footnotes in this section to clearly explain the entries in your table. Remember to explain how numbers are derived and specify data sources. Please draw from a validated national malaria quantification if it exists for your country.

¹The entire population of Madagascar is at risk for malaria

²We have assumed that approximately 50% of outpatient consultations will be tested with an RDT.

³All fever cases should be tested for malaria.

⁴Studies, blood-bank screening, and supply chain committee (GAS committee) assumptions for active case detection activities

⁵These numbers reflect the estimate of need; they do not account for maintaining minimum (12months) and maximum (19 months) stock levels.

⁶The Global Fund contribution has not yet determined

Conclusion

PMI will increase its support for procurement of RDTs in FY 2020 to fill estimated gaps.

Key Question 7

What is the estimated need for ACTs for FY 2020?

Supporting Data

Figure A25. Estimated ACT Need for FY 2020

Calendar Year	2019	2020	2021
ACT Needs¹			
Total country population	26,453,320	27,249,565	28,069,777
Population at risk for malaria	26,453,320	27,249,565	28,069,777
PMI-targeted at-risk population	26,453,320	27,249,565	28,069,777
Total projected number of malaria cases ²	911,285	1,479,380	1,813,868
Total ACT Needs³	911,285	1,479,380	1,813,868
Partner Contributions (to PMI target population if not entire area at risk)			
ACTs carried over from previous year	1,023,908	1,364,573	1,739,170
ACTs from Government			
ACTs from Global Fund ⁴	551,950	69,502	69,802
ACTs from other donors			
ACTs planned with PMI funding	700,000	1,784,475	250,000
Total ACTs Available	2,275,858	3,218,550	2,058,972
Total ACT Surplus (Gap)	1,364,573	1,739,170	245,105

Footnotes: Add any additional explanations/footnotes in this section to clearly explain the entries in your table. Remember to explain how numbers are derived and specify data sources. Please draw from a validated national malaria quantification if it exists for your country.

¹For uncomplicated malaria cases estimates, thus ACT estimates, 2 sources were considered: (1) NSP estimates and (2) HMIS data. To prevent stock outs, the higher of the two estimates was used (HMIS).

²The assumptions used in malaria case quantification and approved by the MoH are based on trends from 2015 to 2018 (HMIS). From 2015 to 2016, malaria cases decreased by 42.18% after a mass ITN distribution campaign. However, from 2016 to 2017 they increased by 62.34% and from 2017 to 2018 by 22.61%. Because a mass distribution campaign took place in 2018, it was assumed that cases would decrease by 42.18% from 2018 to 2019, and then increase 62.34% in 2020 and 22.61% in 2021). In 2018 1,576,072 malaria cases were reported.

³These numbers reflect the estimate of need; they do not account for maintaining minimum (12months) and maximum (19 months) stock levels.

⁴The Global Fund contribution has not yet been determined

Conclusion

PMI will procure limited quantities of ACTs in FY 2020 to fill estimated gaps.

Key Question 8

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

Supporting Data

Figure A26. Projected Need for SMTs and other Treatments 2019 - 2021

Calendar Year	2019	2020	2021
Injectable Artesunate Needs			
Total country population	26,453,320	27,249,565	28,069,777
Total projected number of malaria cases ¹	911,285	1,479,380	1,813,868
Projected Number of Severe Cases ²	13,031	21,155	25,938
Total Injectable Artesunate vials Needs³	115,810	365,400	98,700
Partner Contributions			
Injectable artesunate vials carried over from previous year	164,430	101,956	
Injectable artesunate vials from Government			
Injectable artesunate vials from Global Fund ⁶	53,336	81,657	
Injectable artesunate vials from other donors			
Injectable artesunate vials planned with PMI funding		25,000	100,000
Total Injectable Artesunate vials Available	217,766	208,613	100,000
Total Injectable Artesunate vials Surplus (Gap)	101,956	-156,787	1,300

Footnotes: Add any additional explanations/footnotes in this section to clearly explain the entries in your table. Remember to explain how numbers are derived and specify data sources. Please draw from a validated national malaria quantification if it exists for your country.

¹The assumptions used in malaria case quantification and approved by the MoH are based on trends from 2015 to 2018 (HMIS). From 2015 to 2016, malaria cases decreased by 42.18% after a mass ITN distribution campaign. However, from 2016 to 2017 they increased by 62.34% and from 2017 to 2018 by 22.61%. Because a mass distribution campaign took place in 2018, it was assumed that cases would decrease by 42.18% from 2018 to 2019, and then increase 62.34% in 2020, and 22.61% in 2021). In 2018 1,576,072 malaria cases were reported.

²1.43% of all malaria infections reported from 2015-2018 were severe disease; this proportion was used to estimate the number of severe cases of malaria for 2019, 2020, and 2021.

³These numbers reflect the estimate of need plus pipeline for maintaining minimum (12months) and maximum (19 months) stock levels.

⁴The Global Fund contribution has not yet been determined

Conclusion

Low-dose primaquine for transmission reduction in selected elimination districts, and rectal artesunate suppositories for pre-referral treatment of severe malaria among CU5 will not be procured by PMI using FY 2020 funds; it is anticipated that the Global Fund will procure these medications. PMI will reprogram funds if necessary, to ensure the availability of these drugs.

Key Question 9

Are the first-line ACTs effective and monitored regularly?

Supporting Data

Figure A27. Efficacy of First-Line ACTs

Most recently completed and ongoing antimalarial therapeutic efficacy studies for Pf				
Year	Sites	Treatment Arms	PCR-corrected ACPR>90%?	Where molecular resistance work was completed or the plan, if any, for molecular resistance work
2018	Matanga, Ankazomborona, Vohitromby, Kianjavato, Antsenavolo	AL ASAQ	Yes ¹	CDC Atlanta PARMA

Conclusion

As of 2018, AL and ASAQ remain efficacious for Pf in Madagascar. A TES is planned for 2020 using FY 2019 funding.

Key Question 10

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

Supporting Data

Laboratory capacity to do malaria microscopy at hospitals is still weak. Trained staff and/or equipment and reagents are often lacking. PMI has recently re-invested in supporting training microscopy technicians at the district level and is also supporting the NMCP to update its quality assurance/quality control manual. In addition to core case management support and interventions, PMI is investing in supporting the NMCP in their efforts to move Madagascar towards malaria elimination; part of that work will entail strengthening case management at all levels.

Conclusion

With FY 2020 funding, PMI will continue to support the important work of training microscopists and procuring critical equipment and supplies for microscopy. In addition, PMI will continue to support the elimination pilots that are currently in the planning stage.

Key Question 11

What are the in-country considerations (e.g. in-country staffing capacity, political climate, security concerns) that impact your funding allocation in this category?

Supporting Data

There are no concerns at this time.

Conclusion

None.

2.B. DRUG-BASED PREVENTION

NMCP objective
Madagascar has adopted the WHO multi-pronged approach to MIP that includes provision of an ITN at first ANC visit, at least three doses of Sulfadoxine-Pyrimethamine (SP) spaced one month apart starting early in the second trimester (from 13 weeks of pregnancy) until delivery, and prompt and effective diagnosis and treatment of malaria during pregnancy.
NMCP approach
The NMCP implements IPTp in 106 target districts as part of its current NSP (2018-2022). Per the NSP targets, the NMCP aims to achieve coverage of 80% of pregnant women with IPTp3 by 2022.
PMI objective, in support of NMCP
PMI supports the NMCP's comprehensive MIP approach for pregnant women including ensuring provision and use of ITNs at first ANC visit, provision of IPTp starting early in the second trimester (from 13 weeks of pregnancy) until delivery, and prompt and effective diagnosis and case management of malaria during pregnancy.
PMI-supported recent progress (past ~12-18 months)
<ul style="list-style-type: none">● PMI supported the NMCP in strengthening the quality and delivery of IPTp and MIP services at facility level, focusing particularly on the health facility staff at the CSBs and ensuring supportive supervision is carried out by district health staff and providing on-the-job training and guidance to improve provider practices and knowledge of the updated IPTp and ANC guidelines, ensuring the latest IPTp policy guidance is disseminated and available, and verifying IPTp is correctly tracked and recorded in the ANC registers and routine reporting forms:<ul style="list-style-type: none">○ Trained 179 providers in MIP (refresher and new staff)○ Provided supportive supervision to 632 providers from 538 facilities in USAID/PMI regions.● PMI continued supporting efforts at national level for strengthening MIP programming, ensuring coordination between malaria and maternal health programs with a national MIP technical working group.

- PMI strengthened SBC around drug-based prevention through training of CHVs on how to appropriately counsel pregnant women on the importance of attending ANC and taking IPTp and the timing for these activities.
- PMI procured 1.5 million SP treatments in FY19 contributing to the national annual need, ensuring adequate stocks of SP are available at the central warehouse. PMI continued to support strengthening of the supply chain management system including ensuring sufficient SP stocks are available at district and CSB level.

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

- PMI will continue to strengthen the quality of MIP implementation at ANC including supportive supervision and on-the-job training. PMI will provide guidance to improve provider practices and knowledge, and ensure the availability of ANC guidelines and job-aids for health facilities and CHVs.
- PMI will support strengthening of SBC approaches and messages related to MIP as part of PMI’s broader support for strengthening malaria SBC and including engagement of relevant community stakeholders and health care providers in promoting uptake of IPTp, use of ITNs and prompt, effective case management for pregnant women.
- PMI will strengthen health systems for MIP including support to supply chain strengthening to ensure sufficient SP stocks are available at central and peripheral levels. PMI will also support strengthening of routine reporting of MIP indicators as part of the broader M&E support to the MOH. This will ensure that core MIP indicators are included in the HMIS and reported routinely.

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 (monthly) preventive treatment for pregnant women (IPTp) to all pregnant women in malaria endemic area starting at 13 weeks gestational age, for a minimum of three treatments, and effective case management of malaria, in accordance with the WHO recommendations.

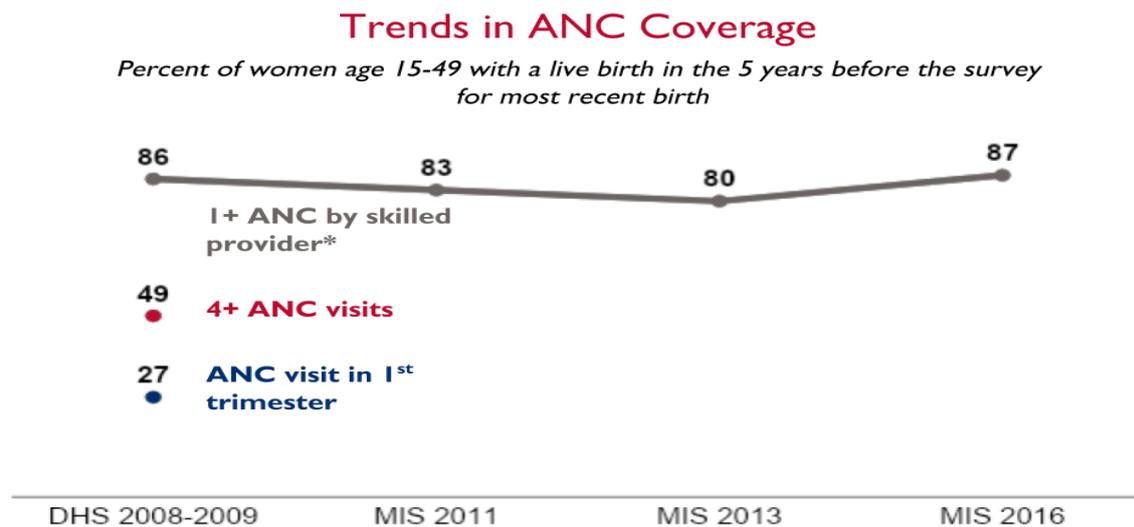
Do you propose to increase, decrease, or maintain funding allocation levels for this activity? Why, and what data did you use to arrive at that conclusion?
<ul style="list-style-type: none"> ● PMI proposes to maintain funding allocation levels for this activity based on the data provided below. ● Please see Table 2 for a detailed list of proposed activities with FY 2020 funding.

Key Question 1

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

Supporting Data

Figure A28. Trends in ANC Coverage



Conclusion

- First ANC visit remains generally high with over 80% of pregnant women attending ANC at least once; however, only 49% of pregnant women completed all four ANC visits that were recommended at the time. Furthermore, most pregnant women initiated ANC after their first trimester.
- CHV are being specifically trained in SBC during monthly meetings at the health facility by health providers. In addition, bilateral partners support ANC and IPTp training of CHWs.
- Peace Corps Volunteers assist with SBC activities to support ANC and IPTp where possible
- WHO recommendations for ANC have been incorporated into national Reproductive Health norms and procedures and a malaria communication plan has been developed to address the frequency and timing of ANC visits. The plan calls for CHVs and health care providers to encourage pregnant women to attend ANC at health facilities beginning in their first trimester.
- The MOH updated its national ANC norms and guidelines to reflect the 2016 WHO ANC recommendations which include promoting eight ANC contacts during pregnancy and

recommend an additional visit at 13-16 weeks for initiating early IPTp. The updated ANC guidelines were finalized and disseminated to health staff in May 2018.

Key Question 2

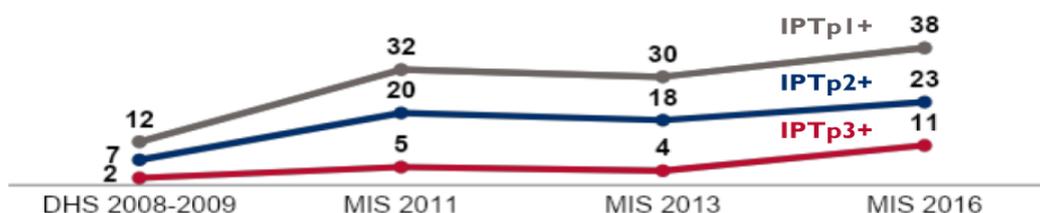
What proportion of pregnant women are receiving the recommended doses of IPTp?

Supporting Data

Figure A29. Trends in IPTp

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



**These indicators have changed slightly over time. Depicted here is the coverage value not restricted to doses received at ANC.*

Conclusion

IPTp coverage has increased steadily since PMI started in 2008; however IPTp3 coverage according to the most recent MIS was only 11%. This is well below the NSP target of 80% by 2022. The NMCP with PMI and in-country RBM partners are working to address this challenge.

Continued support for strengthening and improving the delivery of MIP services at the health facility level, and encouraging pregnant women to attend ANC early, is needed since two-thirds of pregnant women remain without three doses of IPTp3 in targeted districts. To this end, new strategies such as supporting health workers to conduct ANC outreach clinics which include SP provision are being explored by PMI partners, including Peace Corps Volunteers who are assigned to partners. In addition, Madagascar is participating in a UNITAID-supported study to test community-distributed IPTp by trained CHVs. Results from this study will be presented in May 2020 along with study results from three other TIP TOP countries at a global stakeholder forum in Mozambique. If study outcomes are successful, and WHO endorses this approach, the NMCP is interested in scaling up community-distributed IPTp to other districts in Madagascar and PMI will coordinate closely with NMCP to support this effort.

Key Question 3

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

Supporting Data

Currently there are insufficient data to describe the gap between ANC attendance and IPTp uptake. During the DHS 2020 that will include an MIS module, both indicators will be collected. This will allow the team to describe the gap for missed opportunities.

Figure A30. Key Barriers and Facilitators to ANC Attendance

Facilitator	Type of Factor	Data Source	Evidence
Positive Social Norms Around ANC and IPTp	Social	Malaria-Related Ideational Factors and Other Correlates Associated with IPTp Among Pregnant Women in Madagascar – 2018 Institut Pasteur de Madagascar’s Study on the Determinants of the Care of Pregnant Women and Children – 2018	Available qualitative data suggests that family members and peers play an important role in influencing women’s decision about whether to attend ANC. This is supported by findings from a recent analysis of cross-sectional household data, which found that positive social norms increased the odds of a woman receiving IPTp2.
Role of Women in Decision making	Internal / Social	Malaria-Related Ideational Factors and Other Correlates Associated with IPTp Among Pregnant Women in Madagascar - 2018	A recent analysis of data from a household survey found that a woman’s individual ideational characteristics, including her participation in the decision to seek care, are associated with whether or not she receives IPTp2.
Barrier	Type of Factor	Data Source	Evidence
Limited Knowledge on Pregnant Women’s Increased Vulnerability to Malaria	Internal	MIS - 2016	Only 25% of respondents to the 2016 MIS indicated that pregnant women are more vulnerable to malaria.
Cost of Some ANC Services	Environmental	JHPIEGO/MCSP Care-Seeking Behavior Study – 2018 TIP TOP Project- Results of Qualitative Research on IPTp	Women are charged for iron folate tablets and mebendazole as part of the national cost-recovery scheme. These costs, as well as any costs associated with consultation, are frequently cited as a barrier in qualitative research on ANC attendance in Madagascar.

Distance to Health Facility	Environmental	Institut Pasteur de Madagascar's Study on the Determinants of the Care of Pregnant Women and Children – 2018	A recent analysis found that distance is an important determinant to whether women attend ANC. Women who live more than 5 kilometers from a health facility are less likely to attend ANC.
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Figure A31. Key Barriers and Facilitators to IPTp Administration at ANC Visits

Facilitator	Type of Factor	Data Source	Evidence
No Data Available	-	-	-
Barrier	Type of Factor	Data Source	Evidence
Stockouts of SP	Environmental	NSP 2018-2022	As noted in the National Strategic Plan, Madagascar has experienced stockouts of SP. It is believed this has contributed to the gap between ANC attendance and IPTp uptake, given that providers cannot provide SP if it is not available.
Limited Provider Familiarity with IPTp Guidelines	Internal / Environmental	Use of MIP Assessment Tools to Identify Key Challenge in Implementing IPTp in Moramanga District - 2018	A recent study conducted in one district found that up-to-date national IPTp guidelines were only available in 30% of facilities and that 50% of facilities had outdated IPTp guidelines. This data, while limited to a single data, suggests that limited understanding of current guidelines may contribute to the gap between ANC attendance and IPTp uptake.

Conclusion

There is limited quantitative data available on ANC attendance and IPTp; however, recent qualitative data from the TIPTOP project has highlighted some of the barriers pregnant women and their providers face. The only data available is from one time point (2008-2009 DHS) and shows that a large gap exists between ANC4 and IPTp3.

Barriers to improving ANC and IPTp coverage include distance from health facilities, the costs of ANC services (e.g., iron folate tablets, mebendazole which are part of the national cost-recovery scheme and may pose a financial burden for pregnant women), and limited knowledge among pregnant women regarding the importance of IPTp. In the new SBC strategy, SBC activities will be improved to address knowledge gaps of pregnant women. Effort will be made to reduce SP stock-out at Health facility level.

Key Question 4

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

Supporting Data

Current HMIS monthly reporting forms do not capture this information and information on specific barriers and facilitators for diagnosis and treatment of pregnant women is unknown. Revised health facility reporting forms have been updated to collect malaria case management data among pregnant women.

Conclusion

The HMIS does not capture malaria cases by pregnancy status. The HMIS record is being updated and revised this year, and in discussions with partners and NMCP, there is an opportunity to add pregnancy status to case management indicators to the HMIS.

Key Question 5

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

Supporting Data

Figure A32. Estimated Need for IPTp Commodities, 2019 - 2021

Calendar Year	2019	2020	2021
Total Population at Risk ¹	22,629,407	23,310,552	24,012,200
SP Needs			
Total number of expected pregnant women ¹	1,018,323	1,048,975	1,080,549
Total number of pregnant women expected to attend ANC ²	835,025	891,629	940,078
ANC visit 1 (IPT-1) ³	668,021	802,466	846,070
ANC visit 2 (IPT-2) ³	584,518	668,722	705,058
ANC visit 3 (IPT-3) ³	501,015	579,559	611,050
ANC visit 4 (IPT-4) ³	417,513	490,396	517,043
Total SP Need (in treatments)⁴	2,171,066	2,541,143	2,679,221
Partner Contributions			
SP carried over from previous years	849,200	2,189,734	3,446,441
SP from Government			
SP from Global Fund ⁵	2,004,700	2,297,850	
SP from Other Donors			
SP planned with PMI funding (doses)	1,506,900	1,500,000	
Total SP Available	4,360,800	5,987,584	3,446,441
Total SP Surplus (Gap)	2,189,734	3,446,441	767,220

Footnotes: Add any additional explanations/footnotes in this section to clearly explain the entries in your table. Remember to explain how numbers are derived and specify data sources. Please draw from a validated national malaria quantification if it exists for your country.

¹106 districts targeted for SP. Population 2018 RPGH (National census), with growth rate of 3.01% per year, 4.5% of the population living in the 106 districts is estimated to be pregnant women.

²Based on NSP target, 82% of pregnant women are expected to attend ANC in 2019, 85% in 2020 and 87% in 2021 (cf. table of Performance framework NSP 2018-2022, Page 123). For purposes of SP quantification, ANC1 is assumed to be at ≥13 weeks of pregnancy, thus SP would be recommended.

³Per NSP: among women attending ANC1, 80% are expected to take SP for IPTp at visit 1; 70% at visit 2; 60% at visit 3 and 50% at visit 4

⁴These numbers reflect the estimate of women requiring SP; they do not account for maintaining minimum (12 months) and maximum (19 months) stock levels.

⁵GF fund is not yet determined

Conclusion

Based on the SP gap analysis, there are sufficient SP treatments available for the 2019-2021 time period due to commodity contributions from Global Fund and PMI in the last two years. PMI will work with supply chain partners to monitor SP stocks and will reprogram FY20 funds if SP stock outs are reported at central level.

Key Question 6

What are the in-country considerations (e.g. in-country staffing capacity, political climate, security concerns) that impact your funding allocation in this category?

Supporting Data

n/a

Conclusion

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

3. CROSS-CUTTING AND OTHER HEALTH SYSTEMS

3.A. SUPPLY CHAIN

NMCP objective
<ul style="list-style-type: none"> To ensure continuous availability of life-saving and quality malaria commodities across all sectors and segments of the Malagasy population (National Malaria Strategic Plan 2018-2022).
NMCP approach
<ul style="list-style-type: none"> Maintain a strong integrated supply chain through <i>SALAMA</i> (central medical supply depot) which stores and distributes all antimalarial commodities from the central to the district level. Enhance coordination among donors (e.g., Global Fund and PMI) and other relevant RBM partners for resource mobilization to fill supply gaps. Ensure harmonization of supply chain technical assistance and commodity procurement among RBM partners.

- Support the development of standardized commodity forecasting and supply chain planning to be used by all partners.
- Promote a multi-sector approach and private-private partnerships to reach all segments of the population with quality commodities.
- Accelerate the establishment of district-led supply management committees to reduce stockouts at service delivery points.
- Pilot new methods to deliver commodities to hard-to-reach communities including drones.
- Refine the logistics management information system (LMIS) to improve data quality and reduce stock outs.

PMI objective, in support of NMCP

- PMI and the Global Fund continue to support the NMCP to improve the supply chain at national, regional and district levels. PMI supports 10 regions (*Atsinanana, Atsimo-Andrefana, Vatovavy-Fitovinany, Analanjirifo, Boeny, Diana, Melaky, Menabe, Sava, and Sofia*), reaching approximately 12.4 million individuals. The 10 regions were selected based on malaria burden and opportunities to leverage other USG health sector investments (i.e., maternal, newborn and child health (MNCH), family planning (FP), and water, sanitation and hygiene (WASH) programs).
- PMI procures antimalarial commodities in coordination with the Global Fund based on annual quantification exercises.

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

- PMI funded annual forecasting and supply planning of malaria commodities
 - Quantification exercises in November 2018 and May 2019 (forecasting for 2019-2020-2021)
 - Training of 63 members of the MoPH's *Unité Technique de Gestion Logistique (UTGL)* on quantification methods and use of Quantimed and Pipeline softwares (25 trained in 2018 and 38 in 2019).
- PMI funded structured fees of the warehousing of antimalarial commodities at *SALAMA*.
- PMI funded costs of transportation of routine and emergency malaria supplies from central storage at *SALAMA* warehouses to district distribution storage facilities (*PhaGDis*).
- PMI supported the NMCP to improve stock management at all levels of the health care system
 - Established 22 malaria supply chain management committees at the district levels
 - Developed terms of reference
 - Trained 112 committee members on their roles
 - Trained 965 and 262 staff members from district and health facility levels in antimalarial commodity management and use of LMIS software (*CHANNEL*) in 2018 and 2019, respectively

- Conducted supervision on supply chain management and use of LMIS in 57 PMI-supported districts with the MoPH's *Direction de la Pharmacie, des Laboratoires, et de la Médecine Traditionnelle (DPLMT)* which manages the supply chain
- In June 2019, PMI and USAID launched the Total Market Approach (TMA) initiative to support public and private health sectors to ensure equitable access to quality malaria commodities nationwide. A malaria commodity market assessment was completed and findings are expected to be disseminated by November 2019.
- In June 2019, PMI initiated a comprehensive assessment of the current LMIS to inform the design of modifications that will be interoperable with DHIS2.

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

- FY 2020 funds will be used to procure malaria commodities and support warehouse and distribution costs. This will include pre-positioning up to six months of security stocks in select regional warehouses managed by *SALAMA*. These security stocks will be placed in hard-to-reach areas that have experienced malaria increases during the previous three years.
- PMI will support the CY 2020 quantification review (December 2019) and the annual quantification exercise for 2021 (May 2020). Adjustments to procurement and distribution plans and funding will be considered during the next Global Fund and PMI reprogramming exercises.
- PMI will continue to leverage Global Fund resources to reinforce central-level (malaria national supply chain management committee and *UTGL*) supply chain capacity including training, validation of quarterly distribution plans and emergency distributions across the 115 health districts storage facilities.
- FY 2020 funds will be used to support supply chain strengthening, decentralization, and capacity building for stock management at district and community levels (i.e., *PhaGDis*, district hospitals, *PhaGeCom*) in the 60 health districts supported by PMI.
- FY 2020 funds will be used for last-mile distribution of commodities to service delivery points (health facilities and communities)
- Upon completion of an assessment of the current LMIS, PMI will support the update of a DHIS2-compatible LMIS system and its nationwide roll-out
- FY 2020 funds will support a bi-annual end-use-verification survey in 10 PMI regions

PMI Goal

Ensure continual availability of quality commodities needed for malaria prevention, control and elimination (ACTs, RDTs, SP, injectable artesunate, and ITNs) at health facilities and in communities.

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

We are proposing to increase funding for supply chain activities for the following reasons:

- PMI will procure all ACTs to fill the estimated gap for 2021.
- Procurement of ITNs for the 2021 mass distribution campaign and related distribution costs
- Procurement, storage and distribution of additional RDTs and ACTs for the following:
 - Anticipated increase in reported malaria cases three years after mass ITN distribution campaign based on historical data
 - Roll-out of proactive community case management in up to 4 districts
 - Active case detection around index cases in two pilot elimination districts
 - Outbreak response in control districts
 - Expected improvement services delivery quality and in care seeking at community and facility levels
 - Improved case reporting due to full deployment of DHIS2
- Support for technical assistance to decentralize and improve the supply chain and LMIS at all levels of the health care system.

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

Key Question 1

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

Supporting Data

Figure A33. Central Stock Levels for ACTs

Central Stock Levels for ACTs

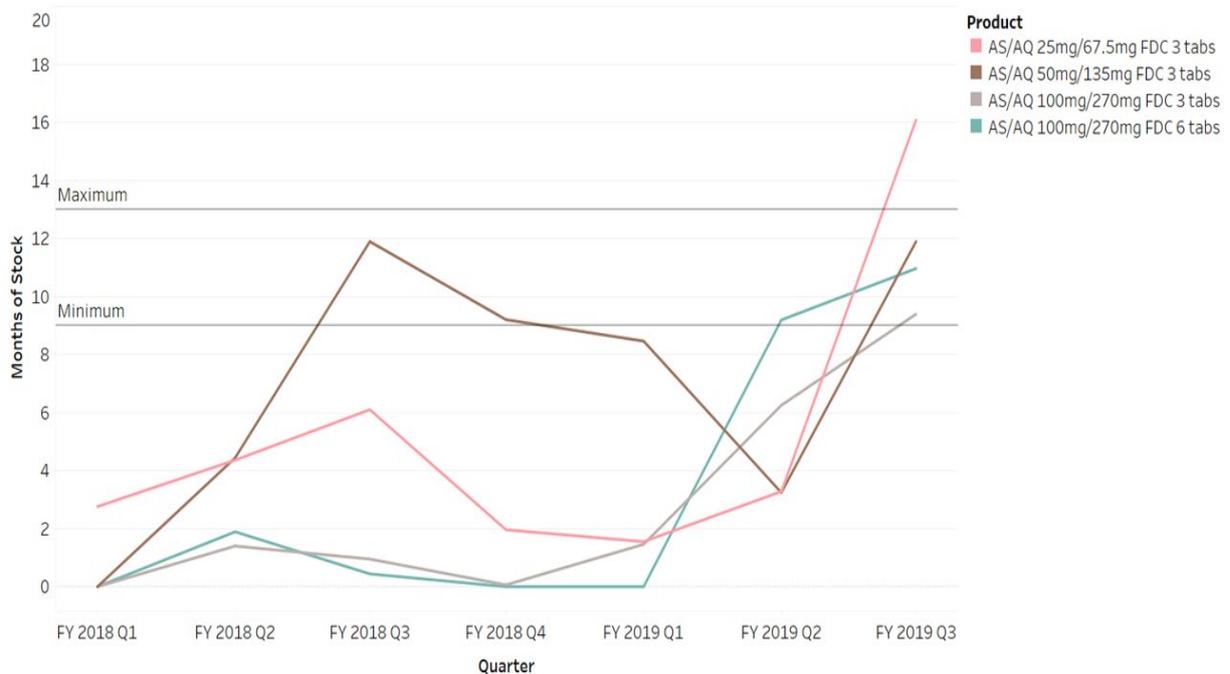
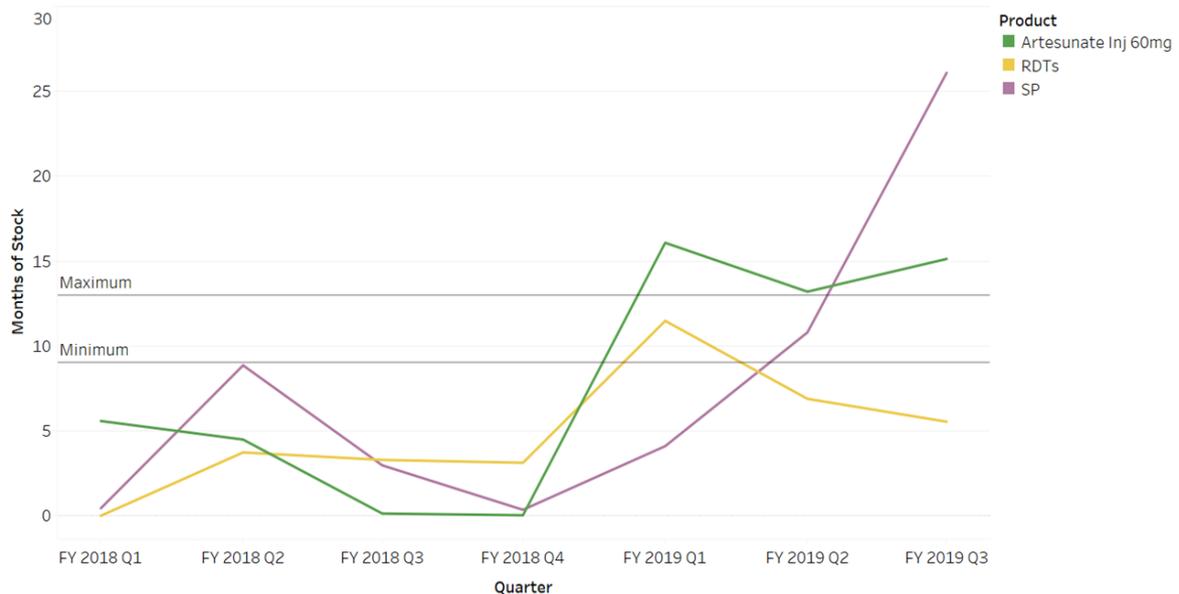


Figure A34. Central Stock Levels for RDTs, SP, and Inj Artesunate, 60mg

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



Conclusion

In general, national stocks were sufficient to ensure continuous availability of malaria commodities during the previous 12 months. However, quality control delays of medications procured by both PMI and the Global Fund resulted in stock outs of injectable artesunate and ACTs for age ≥ 14 years in Q3 and Q4 of FY2018. An emergency air shipment of a limited supply of medication was approved by the Global Fund while the sea shipment was en route.

Key Question 2

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

Supporting Data

Figure A35. Stock Out Rate SP and RDT FY 2018 and FY 2019

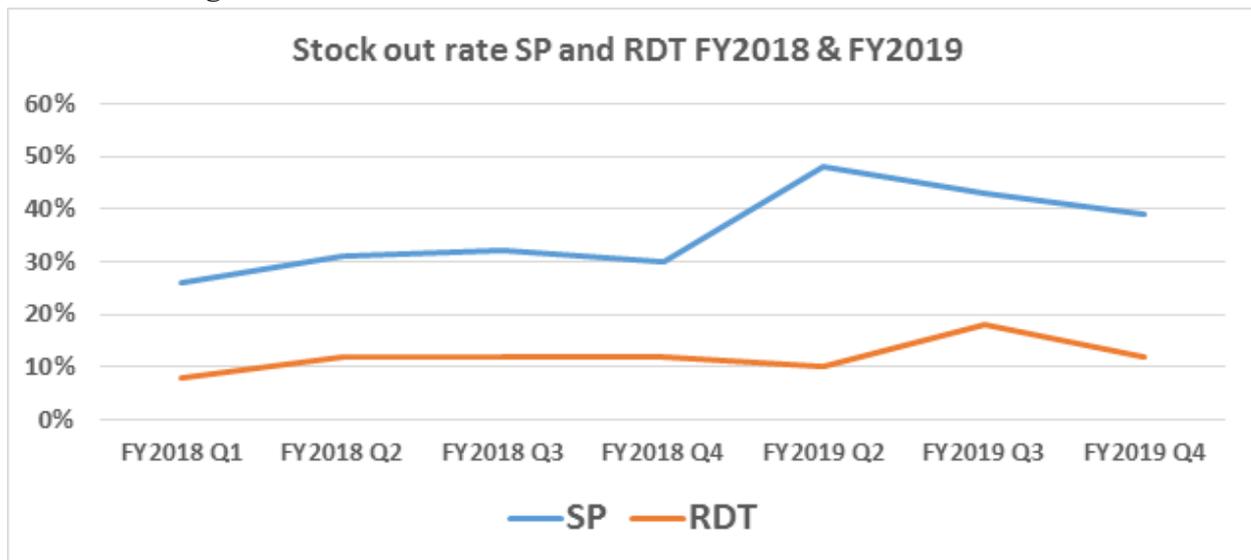
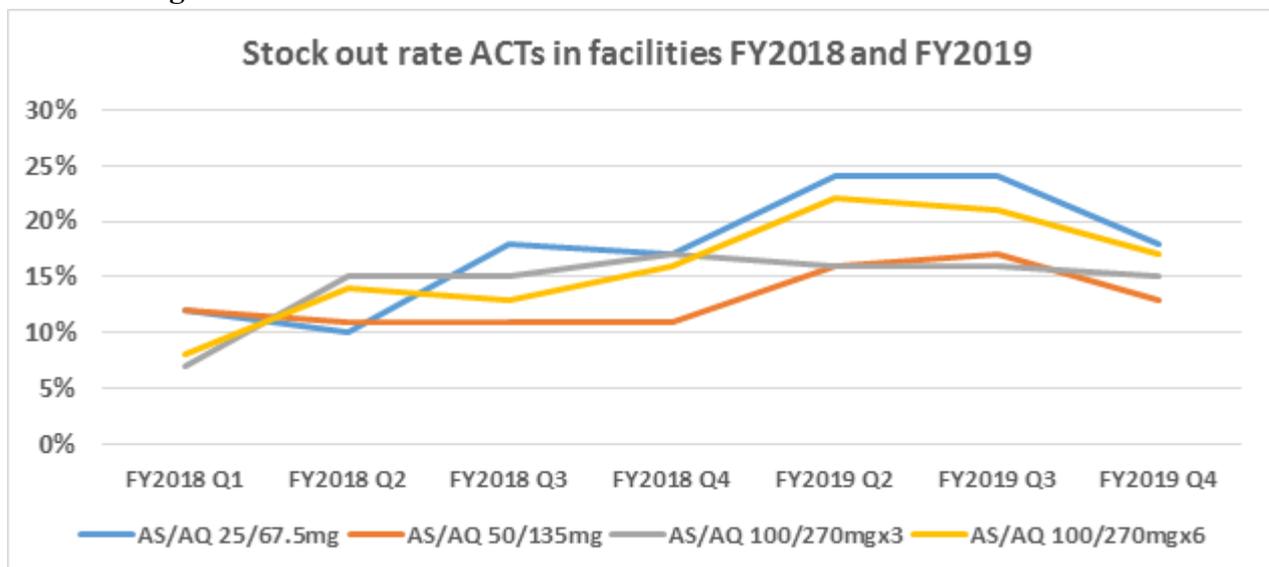


Figure A36. Stock Out Rate ACTs in Facilities FY 2018 and FY 2019



Conclusion

While the stockout of ACT (all ages formulation) and RDT was kept low between five to seventeen percent over the past year, the SP stockout was twice (around 30 percent) as high as the other antimalarial commodities. Demand and uptake of SP will improve as the new USAID/ACCESS activity supporting a comprehensive continuum of care and improved

malaria clinical service delivery at community and facility levels and the new USAID/IMPACT activity that provides TA on public supply chain (district, CSB and community) are now fully operational in 60 districts and 10 regions of Madagascar.

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 A37. ASAQ 1-12M vs Number of Malaria Cases

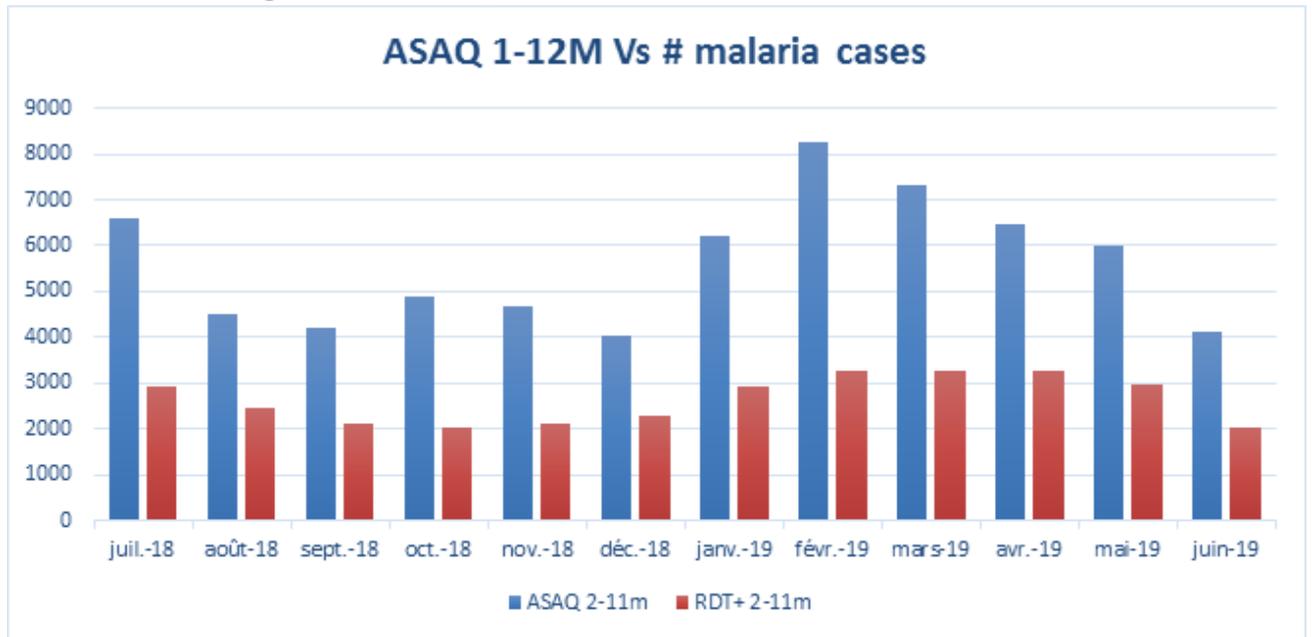


Figure A38. ASAQ 1-5 Year vs Number of Malaria Cases

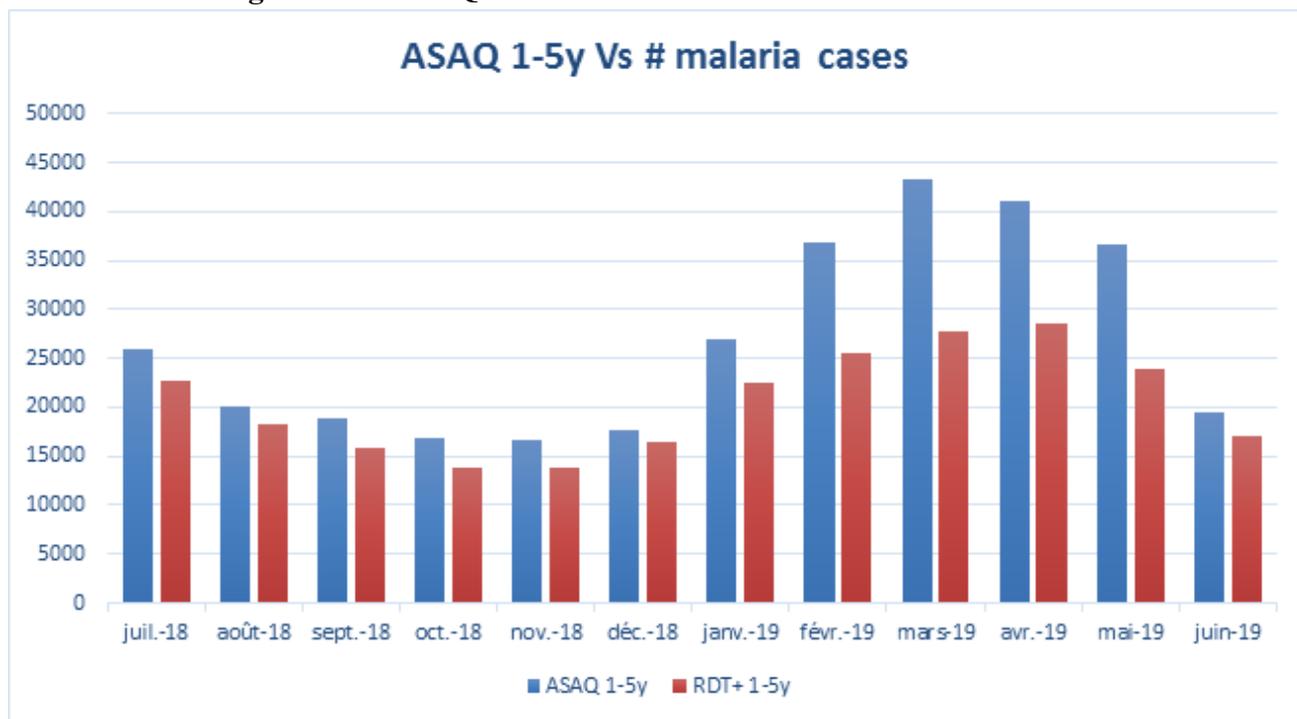


Figure A39. ASAQ 6-13 Year vs Number of Malaria Cases

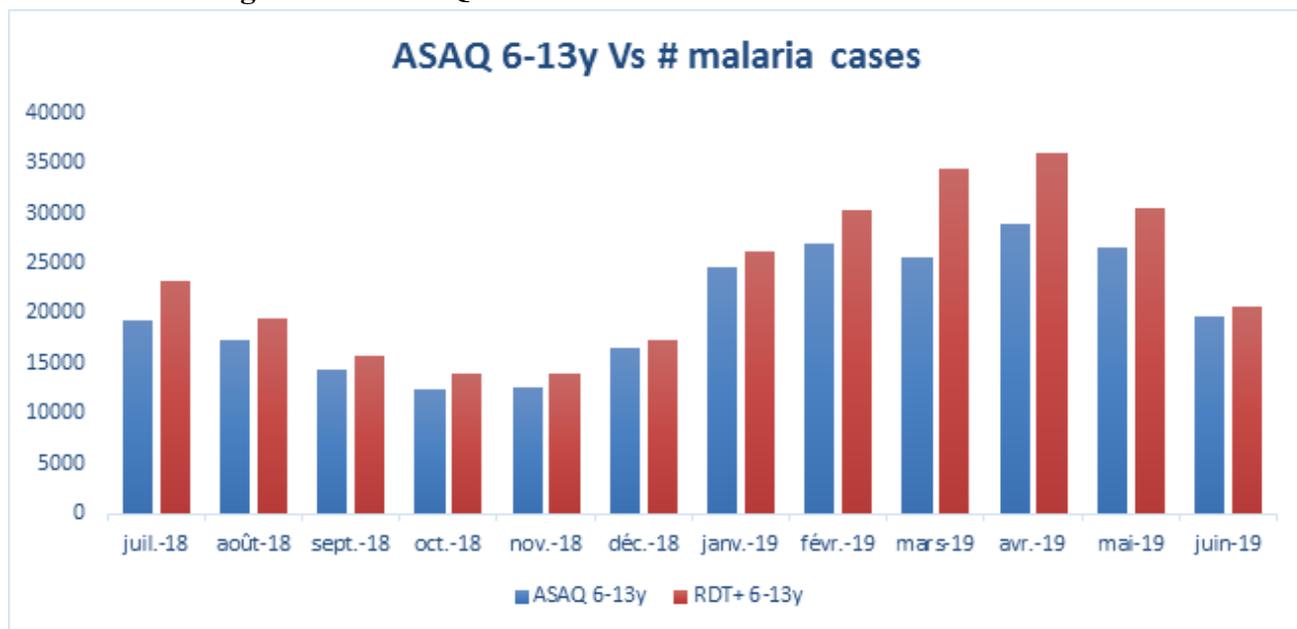
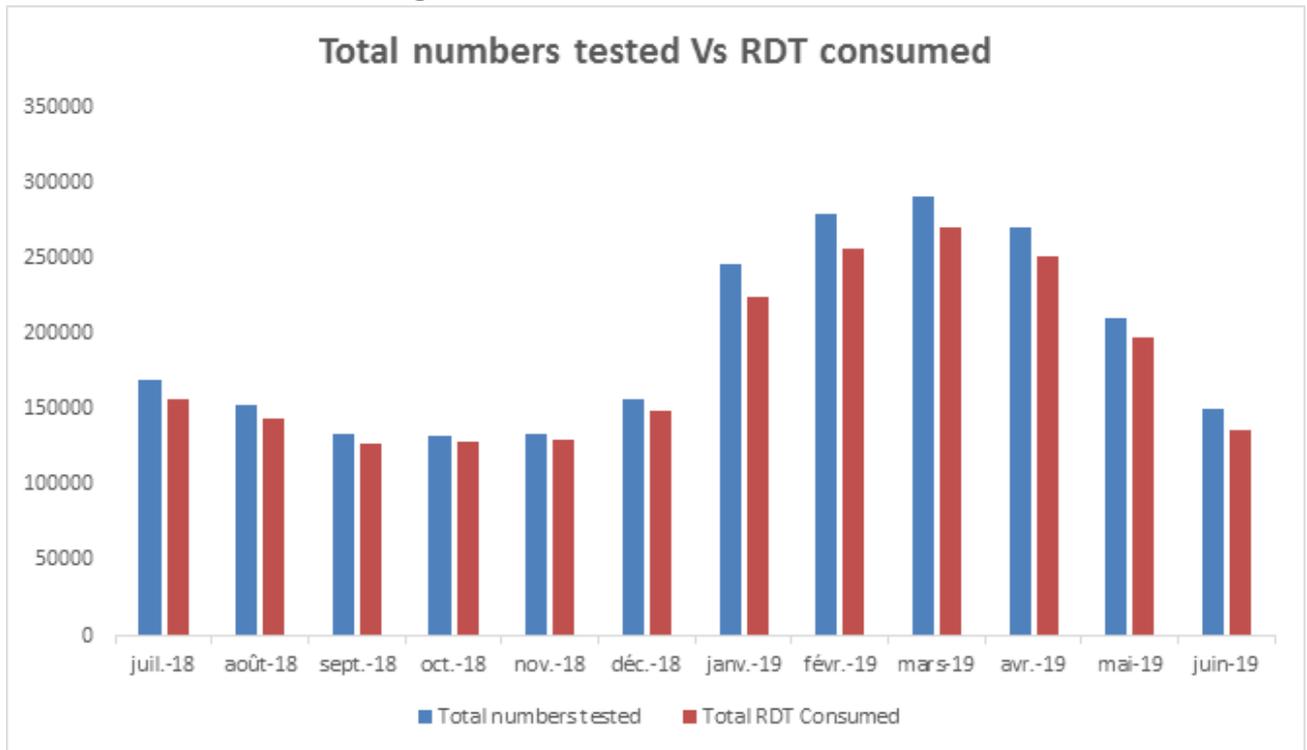


Figure A40. Total Numbers Test



Conclusion

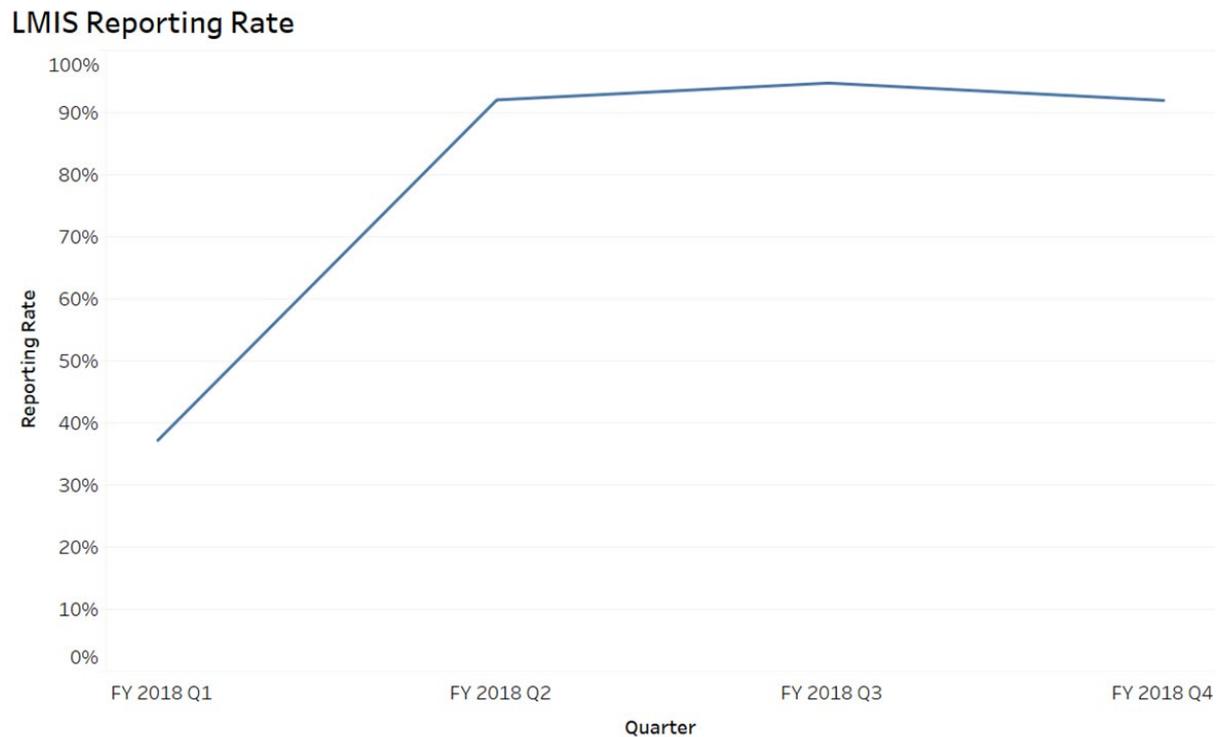
Data suggests important discrepancies between ACTs consumed and positive RDTs across all age groups and all service delivery points. This difference is particularly pronounced for infants and children less than five years of age and is most likely due to RDT stockouts across service delivery points. based on LMIS and EUV reports, where applicable. For older children and adults, not all RDT-positive individuals had documentation of ACT treatment. This could be due to ACT stockouts, poor reporting by overburdened providers, or lack of integration of HMIS and LIMS systems. New quantification strategies will consider age-specific malaria burden and plan commodity procurement accordingly. In addition, further investigations will be conducted by PMI team to better understand these discrepancies.

Key Question 4

What are the trends in LMIS reporting rates?

Supporting Data

Figure A41. LMIS Reporting Rate



Conclusion

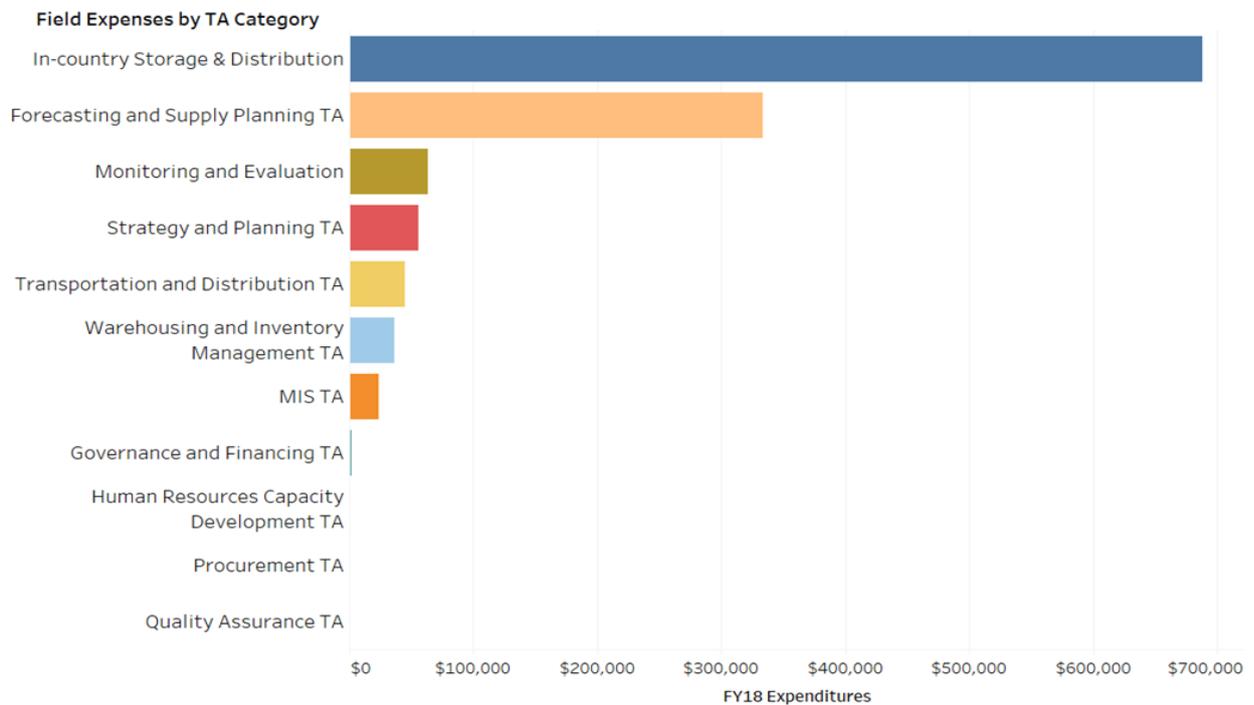
The LMIS reporting rate was consistently high and above 90% until the end of FY2018.

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 (e.g. increasing visibility of demand at health facilities)? In areas performing well, is it dependent on PMI/donor funding (e.g. PMI and Global Fund pay for warehousing and distribution) and so should be maintained?

Supporting Data

Figure A42. PMI Supply Chain Investments in FY 2018



Conclusion

PMI along with Global Fund and other USAID health programs (e.g., maternal child health and family planning) fund supply chain technical assistance at the central level. This support includes annual forecasting and supply planning, warehousing, and distribution including to the last-mile. In addition, PMI supports training, supervision and LMIS reporting at the district, health facility and community levels. PMI supported in-country storage, distribution and LMIS efforts that are critical to maintaining commodity availability at health facilities and in communities at this time.

Key Question 6

What are the in-country considerations (e.g. in-country staffing capacity, political climate, security concerns) that impact your funding allocation in this category? If there is a specific budget line item in Table 2 that is not covered by the above questions, please address here.

Supporting Data

There are no in-country considerations at this time.

Conclusion

Security issues in select areas of the high-burden regions of Melaky and Atsimo Andrefana remain an ongoing challenge for malaria control including establishing an efficient supply chain. The new Malagasy government has prioritized security improvement in these regions.

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

NMCP objective
Refine the SM&E system to ensure timely availability of consistently high-quality data to improve malaria prevention and control activities.
NMCP approach
<p>The NMCP places a high priority on building a robust SM&E system to measure progress and inform malaria control investments and strategies. The objectives of malaria SM&E are to:</p> <ul style="list-style-type: none"> • Use quality surveillance data to increase the effectiveness of malaria control interventions • Guide NMCP decision making on allocation and use of resources that are funded by national stakeholders, such as ministries of health and global funding partners • Attain national goals to control and eliminate malaria
PMI objective, in support of NMCP
<p>PMI contributes to the country's SM&E strategy by supporting the NMCP to improve their capacity to conduct high-quality surveillance as a core malaria prevention and control intervention. PMI supports both periodic surveys and routine health information system strengthening via implementing partners and the RBM community. Specifically, PMI is supporting the integration of data systems to establish one integrated, comprehensive routine health management information system (HMIS) that is based on DHIS2 technology, supporting DHS and MIS surveys, and investing in training of SM&E personnel at all levels of the health system to support HMIS. In addition, PMI provides support to the NMCP to analyze and interpret their surveillance data via implementing partners and to present these analyses to the RBM community for situational awareness. PMI will also support designing and implementing SM&E activities in two districts, Antsirabe II and Antsiranana I, where the NMCP's elimination plan will be piloted.</p>
PMI-supported recent progress (past ~12-18 months)
<p>PMI provided the following support in the previous 12-18 months:</p> <ul style="list-style-type: none"> • Launched DHIS2 nationwide at region and district levels; data are being submitted via DHIS2 for all 114 districts • Challenges affecting the roll-out and scale-up of DHIS2 include: <ul style="list-style-type: none"> ○ Limited connectivity and computers in some districts ○ Changes in MoH leadership that have resulted in delayed timelines ○ Weak data management and analysis skills in some areas ○ Unequal distribution of human resources across districts and communes • Improved analysis and dissemination of health statistics including weekly malaria epidemiology updated during RBM meetings, monthly bulletins with disease surveillance data and quarterly bulletins summarizing malaria data

- Finalized the NMCP SM&E plan 2018-2022
- Facilitated development of a malaria elimination surveillance strategy. Briefly, this entails identifying all cases of malaria through active and passive surveillance in public and private facilities, confirming all suspect cases, treating all cases with effective antimalarials, investigating and conducting active case finding around index cases, enhancing district health information systems, monitoring vectors and parasite species, and supporting health workers and health systems to achieve surveillance and case management goals.

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

- Provide supportive supervision for DHIS2 at regional and district levels
- Orient partners and MoH decision makers on the use of DHIS2 to elaborate dashboards, and reports for decision making and strategic planning
- PMI will support developing malaria surveillance tools and protocols for elimination activities based on the elimination strategy; these will be piloted in two districts, Antsirabe II and Antsiranana I, that have had persistently low-transmission. Health workers will be trained and processes monitored and adjusted. Lessons learned in these pilot districts will be used to refine elimination activities.
- Address interoperability between DHIS2/HMIS and other health systems (e.g., IDSR, LMIS)
- Scale-up of DHIS2 at the community and hospital level

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.

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

PMI Madagascar proposes maintaining similar funding levels for surveillance activities; however, a portion of routine surveillance funds will be targeted for surveillance activities in elimination districts. We will not be funding DHS/MIS in 2021, thus total funds for SM&E will be reduced in FY2020. Please see FY Budget 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 42. Intervention Coverage, Service Availability and Readiness, and Morbidity and Mortality

Data Source	Data Collection Activities	Year								
		2015	2016	2017	2018	2019	2020	2021	2022	2023
Household Surveys	Demographic Health Survey (DHS)						(X) ⁴			
	Malaria Indicator Survey (MIS)		X				(X)			
	Multiple Indicator Cluster Survey (MICS)				X					
	EPI survey									
Health Facility Surveys	Service Provision Assessment (SPA)									
	Service Availability Readiness Assessment (SARA) survey									
	Other Health Facility Survey				X					
Other Surveys	EUV				X	X	(X)	(X)	(X)	(X)
	School-based Malaria Survey									
	Other (Knowledge, Attitudes and Practices Survey, Malaria Behavior Survey)							(X)		
	Other (Malaria Impact Evaluation)									
Malaria Surveillance and Routine System Support	Support to Parallel Malaria Surveillance System	X	X	X	X					
	Support to HMIS	X	X	X	X	X	(X)	(X)	(X)	(X)
	Support to Integrated Disease Surveillance and Response (IDSR)	X	X	X	X	X	(X)	(X)	(X)	(X)

⁴ DHS with MIS module and biomarkers

Data Source	Data Collection Activities	Year									
		2015	2016	2017	2018	2019	2020	2021	2022	2023	
	Other (Electronic Logistics Management Information System (eLMIS))	X	X	X	X	X	(X)	(X)	(X)	(X)	
	Other (Malaria Rapid Reporting System)										

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

Conclusion

Available data support maintaining SM&E funding levels at the current amount; a DHS with a malaria module and biomarkers will be conducted beginning in 2020.

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 43. HMIS-Supported Activities

Intervention	PMI-Funded? (X)			Does Global Fund plan to fund this? (X)	Does another donor plan to fund this? (X)
	FY 18	FY 19	FY 20		
Central Level					
Register, tools (e.g. checklists, indicator glossary), job aids (design, indicators, definition of data elements, data dictionary, system support)	X	X	(X)	(X)	(X)
Data quality assessments (separate from supervision – funding for travel to lower levels)	X	X	(X)	(X)	(X)
Program monitoring and technical assistance (funding for travel to lower levels)	X	X	(X)	(X)	(X)
Training (funding for central level to conduct training at lower levels, capacity building, i.e. on the job training for central level staff)	X	X	(X)	(X)	(X)
Human Resources (secondment of person in NMCP for SM&E, office/team for SM&E)	X	X	(X)	(X)	(X)

Intervention	PMI-Funded? (X)			Does Global Fund plan to fund this? (X)	Does another donor plan to fund this? (X)
	FY 18	FY 19	FY 20		
Data Use (analysis, interpretation, visualization (dashboards, bulletins, dissemination/feedback to lower levels, decision-making)	X	X	(X)	(X)	(X)
Policy guidelines and coordination (updating policies, guidelines, supporting sub-committee meetings, supporting participation in sub-committee meetings)	X	X	(X)	(X)	(X)
External relations/Communications/Outreach (support travel to international meetings and publications)	X	X	(X)	(X)	
Support to annual operational plans for national malaria program	X	X	(X)	(X)	(X)
Desk review to catch “logic errors system” (provide TA to catch logic errors)					(X)
Region. PMI supports activities in 10 regions.					
Registers (warehousing, printing, distribution)	X	X	(X)	(X)	(X)
Data quality assessments (separate from supervision – funding for travel to lower levels)	X	X	(X)	(X)	(X)
Program monitoring and technical assistance (funding for travel to lower levels)	X	X	(X)	(X)	(X)
Training (funding for regional staff to conduct training at lower levels, capacity building (i.e. on the job training for regional level staff)	X	X	(X)	(X)	
Human Resources (secondment of person for malaria SM&E, office/team for SM&E)	X	X	(X)	(X)	(X)
Data Use (analysis, interpretation, visualization (dashboards, bulletins), dissemination/feedback to lower levels, decision-making)	X	X	(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)	(X)	(X)
Adaptation of checklists and job-aides	X	X	(X)	(X)	(X)
Participation in national meetings (support for travel costs)	X	X	(X)	(X)	(X)
Support to Annual Operational Plans for Regional Malaria Program	X	X	(X)	(X)	(X)

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

Conclusion

The above activities were jointly undertaken by PMI and the Global Fund. By leveraging PMI and Global Fund resources, the MoH was able to integrate surveillance activities among partners and stakeholders and transition more efficiently to DHIS2.

Key Question 3

What are the outcomes of HMIS strengthening efforts?

Supporting Data

Figure A43. Outcomes of HMIS Strengthening Efforts

		2017	2018
Timeliness ¹	% of reports received on time	80%	83%
Completeness ¹	Confirmed malaria cases for children under 5 years of age was reported in X% of facility-months	73%	76%
Accuracy ²	Populate with most recent DQA data	50%	59%

¹HMIS (GESIS data base)

²2017 was from the baseline of the HIMS evaluation; in 2018, a sample of districts were monitored to estimate DQA.

Conclusion

Although timeliness and completeness of surveillance reports submitted from 2017 to 2018 improved, the NMCP's goal of attaining 90% of reports being complete and on-time has not yet been achieved. Thus, there is a need for support to strengthen the HMIS system. In addition, data accuracy remains below 60% suggesting the need for ongoing support to improve data quality

Key Question 4

What are the in-country considerations (e.g. in-country staffing capacity, political climate, security concerns) that impact your funding allocation in this category? If there is a specific budget line item in Table 2 that is not covered by the above questions, please address here.

Supporting Data

There are no in-country considerations that impact funding for SM&E at this time.

Conclusion

PMI will continue to support SM&E activities to achieve the NMCP's goal of improved data integration, quality, completeness, timeliness and use for advancing malaria prevention, control and elimination.

3.C. SOCIAL AND BEHAVIORAL CHANGE (SBC)

NMCP Objective
The NMCP supports SBC as an essential component of its Malaria National Strategic Plan 2018-2022 (NSP) and developed a national communication plan to align with the NSP. The objective of the communication plan is for at least 80% of the target population to adopt favorable behaviors conducive to malaria prevention and prompt care-seeking.
NMCP Approach
<p>The NMCP SBC approach includes engaging multiple stakeholders and using diverse communication tools to reach the largest possible range of the population with effective malaria prevention and control messages. Elements of the NMCP SBC approach include:</p> <ul style="list-style-type: none">● Engagement of multiple stakeholders:<ul style="list-style-type: none">○ Community participation via CHVs, health facility workers, community leaders, traditional healers and religious groups;○ Inclusion of diverse ministries within the national government;○ Participation of RBM partners including PMI, Global Fund, WHO, UNICEF, and the World Bank;○ Engagement with private sector providers and private businesses.● Use of diverse communication tools, methods and channels:<ul style="list-style-type: none">○ Creation of SBC materials in collaboration with the Ministry of Education for use in primary and secondary schools;○ Development of standardized SBC messages and materials on gender-related issues in collaboration with the Ministry of Population;○ Creation of standardized SBC messages and materials on the specific needs of pregnant women and young children in collaboration with the Ministry of Family Health● Coordination of SBC activities via an SBC Coordinating Committee:<ul style="list-style-type: none">○ Committee members include:<ul style="list-style-type: none">■ NMCP's Communication Office;■ RBM representatives including the Peace Corps Malaria Coordinator;

- PMI Madagascar and partners;
 - The Global Fund
- The malaria SBC coordinating committee has the following role:
 - Develop and revise the National SBC Plan;
 - Review and harmonize materials and messages;
 - Validate communication tools;
 - Coordinate SBC activities, including World Malaria Day;
 - Lead advocacy efforts to engage leaders at the central and district level;
 - Conduct evaluations.
- Integration of the national Malaria SBC Plan within the Ministry of Public Health Communication Plan:
 - Alignment with national strategic plans;
 - Utilize approved SBC tools and materials;
 - Guide the implementation of SBC activities.

PMI Objective in Support of NMCP

PMI supports the NMCP to develop sound SBC plans and evaluations and aims to strengthen the NMCPs technical and organizational capacity to advance their SBC objectives.

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

During the past 12-18 months, PMI and PMI partners supported the following SBC activities:

- Development of a national communication strategy for malaria control to guide SBC interventions among the different population groups in Madagascar;
- Coordination of the implementation of the national communication strategy;
- Design of local approaches for supporting healthy behaviors in households via traditional and religious leaders, women’s groups, community leaders and service providers;
- Promotion of school-based SBC activities to identify households that need ITNs
- Training school teachers to promote appropriate malaria prevention and treatment behaviors;
- Launch of primary schools as friends-of-malaria-prevention:
 - Friends-of-malaria-prevention was started in schools in 23 districts and will expand each year to additional districts;
 - Peace Corps has supported this effort through the development of a storybook for primary school children regarding malaria prevention;
- Advocate with the Ministry of Education;

- Ongoing support for the NMCP's communications campaign to increase ITN use;
- Utilization of CHVs to improve ANC attendance and IPTp uptake through interpersonal communication and health center referrals;
- Community mobilization activities in preparation for the 2018 IRS campaign to educate communities and reduce IRS refusals;
- Community mobilization activities including a Peace Corps Volunteer initiated mobile theater troop to support correct and consistent ITN use;
- Home visits by Peace Corps Volunteers to encourage the use of ITNs;
- Training of CHVs by Peace Corps Volunteers in behavior change communication.

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

With FY 2019 funds, PMI will continue to support a range of communications activities to influence the adoption of desired malaria prevention and treatment behaviors (e.g., proper ITN use, care and maintenance; IPTp uptake; IRS acceptance; and prompt care-seeking for fever). PMI will also support newly-developed messages and strategies for elimination districts. Some of these activities include:

- Community-based behavior change interventions including home visits, community meetings, and the development of materials for school-based activities;
- Mid-term review of SBC activities under the NSP 2018-2022 as part of the Malaria Program Review;
- Support for Peace Corps via two bilateral partners to support community SBC activities;
- Support for a Peace Corps Volunteer malaria coordinator to facilitate training and initiatives among Peace Corps Volunteers;
- Support for new or targeted malaria prevention and control strategies, including:
 - Continuous-distribution of ITNs in targeted high-transmission districts;
 - Rectal artesunate use for severe disease among children < 5 years of age in targeted districts;
 - Enhanced surveillance in districts in which IRS was recently discontinued;
 - Elimination activities in selected districts.
- Collaboration with the National Malaria SBC Coordination Committee, as well as the NMCP, MoH, Ministry of Education, Ministry of the Family, private sector entities, and local partners to harmonize the implementation of SBC programming through:
 - Utilization of materials, tools, and media products already developed;
 - Development of new SBC tools, including job aids, posters, and standardized messages for CHVs and providers;
 - Implementation of both social mobilization and mass media activities to reach large

numbers of people, as well as interpersonal communications at the community and health facility levels to reinforce and tailor messages.

PMI Goal

Through the use of SBC interventions, and in alignment with the country's national malaria control communication strategy, PMI supports the uptake and correct and consistent use of malaria interventions to improve malaria control efforts to reduce malaria morbidity and mortality.

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

PMI/Madagascar is proposing to decrease SBC funding for FY 2020 compared with FY2019 in order to support the 2021 ITN mass distribution campaign, including SBC activities. Furthermore, one bilateral partner, which operates in seven regions, will end in June 2021; their budget will be reduced relative to FY 2019 funding. To ensure optimal implementation of malaria SBC activities, PMI/Madagascar, which integrates its activities with other community health initiatives, will leverage all health SBC resources to assure quality malaria SBC activities. Please see Table 2 for a detailed list of proposed activities with FY 2020 funding.

Key Question 1

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

Supporting Data

Based on the data presented previously in this MOP, PMI/Madagascar plans to prioritize the following behaviors, which are also consistent with the priorities of the NMCP:

1. *Early ANC Attendance and IPTp Acceptance*: According to the 2016 MIS, only 17% of women aged 15-49 received a message about IPTp to prevent malaria in pregnant women. Among women with children under five years of age or who are pregnant, only 2% reported that pregnant women need to take two doses of IPTp during pregnancy to avoid contracting malaria. This data suggests a need for more focused SBC on early ANC attendance and IPTp acceptance.
2. *Prompt Care-Seeking for Febrile Illness*: As noted under the Case Management Section, prompt care-seeking is generally perceived as a social norm in Madagascar, yet prompt care-seeking in the formal health sector remains low for children with febrile illness and self-medication is not uncommon. This reflects the fact that the use of health centers is rare and considered only in the case of severe illness, decision that is influenced by the perceived quality of the care received, the relationship with the provider, the type of information provided, the effectiveness of the treatments received during the previous consultations, the length of the waiting time, and the presence of service providers at facilities.

Conclusion

The NMCP has identified three malaria priority areas for FY2020, increasing ANC attendance, IPTp uptake, and prompt care seeking for febrile illness. PMI will support efforts to improve SBC efforts to improve uptake of these prevention and control efforts. This will be accomplished via bilateral partners, Peace Corps Volunteers, and in collaboration with CHVs in PMI districts. These activities will include community mobilization, home visits, and radio spots. In addition, bilateral partners will support supportive supervision of providers, which will include technical and SBC training on ANC attendance and IPTp uptake. The target population for these activities will be women of reproductive age and their providers, and parents, caretakers and providers of children in PMI-supported regions. However, these efforts will be undertaken in coordination with the NMCP and the RBM partners such that efforts and lessons learned will be shared to benefit the entire country.

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

Information on the behavioral determinants of early ANC attendance and IPTp can be found under Key Question Three in Section 2.B.II. Information on the behavioral determinants for prompt care-seeking can be found under Key Question Two in Section 2.A. One notable information gap is on missed opportunities for IPTp highlighted by a discrepancy between ANC attendance and IPTp uptake. At present, very little is known about the extent of the issue or the role of provider behavior.

Conclusion

Data on the factors influencing the prioritized behaviors is available from a number of sources in Madagascar. For areas where this information is scarce, including information on ANC attendance and IPTp uptake, an effort is underway to compile available data, clarify gaps, and design the next steps.

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

Efforts to evaluate the impact communications activities on malaria indicators such as prompt care-seeking behavior have been limited. Thus, the NMCP identified the following needs:

- Design an evaluation of the impacts of SBC activities;

- Assure that SBC activities have specific, measurable objectives;
- Support districts to adapt SBC activities to local situations.

Conclusion

The NMCP has identified a need to evaluate SBC activities to understand their impact on malaria indicators, assure that SBC activities have specific measurable objectives and can be adapted to local needs.

Refer to the Madagascar Country Program Inventory MOP 2020 for additional information.

Key Question 4

What are the in-country considerations (e.g. in-country staffing capacity, political climate, security concerns) that impact your funding allocation in this category? If there is a specific budget line item in Table 2 that is not covered by the above questions, please address here.

Supporting Data

N/A

Conclusion

There are no in-country considerations at this time.

3.D. PROGRAM EVALUATION AND OPERATIONAL RESEARCH

NMCP objective
The NMCP objective for Program Evaluation (PE) and Operational Research (OR) is to provide evidence-based information to guide decision making and update policies.
NMCP approach
The NMCP is revitalizing the malaria OR committee to update the country's research agenda in collaboration with malaria stakeholders and RBM partners.
PMI objective, in support of NMCP
In Madagascar, PMI support for program and policy-relevant OR and PE intends to: <ul style="list-style-type: none"> • Test promising new tools and approaches for remote locations • Evaluate scale-up malaria interventions in remote areas • Identify local solutions to vector control and case management challenges • Identify the most effective combination of proven interventions to reduce malaria transmission in remote Madagascar

PMI-supported recent progress (past ~12-18 months)
PMI is currently supporting and assisting the NMCP and IPM to design and implement an OR study on the feasibility and effectiveness of expanding community case management of malaria to all ages. This OR is funded with FY18 country funds, and FY18 PMI core funds.
PMI-supported planned activities (next ~12-18 months, supported by currently available funds)
<ul style="list-style-type: none"> Baseline data collection for a PMI-supported OR study on the feasibility and effectiveness of expanding community case management of malaria to all ages is scheduled to begin in October 2019; the intervention is set to begin in January 2020.

PMI Goal
PMI/Madagascar is proposing to conduct preliminary feasibility assessments for OR to reduce remaining malaria transmission and disease burden in transition zones (those that bridge elimination-targeted districts and high-transmission districts) via vector control implementation. Please see Table 2 for a detailed list of proposed activities with FY 2020 funding.

Are you proposing to increase, decrease, or maintain funding allocation levels for this activity? Why? What data did you use to arrive at that conclusion?
No OR activities were funded in MOP FY2019; thus OR funding for MOP 2020 represents an increase. 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

A care seeking behavior survey conducted in 2017 revealed that reasons for delays in seeking care for febrile illness include distance from health centers. Thus, the NMCP prioritized studying expanding the age of malaria case management provided at the community level; a cluster-randomized trial to determine feasibility and effectiveness of this strategy will begin in October 2019. In addition, Madagascar has experienced focal malaria outbreaks in coastal and fringe areas of the country during 2017-2019, including in areas bordering elimination districts. The NMCP is interested in exploring new strategies for vector control in areas experiencing these outbreaks.

PMI is currently supporting and assisting the NMCP and IPM to design and implement an OR study on the feasibility and effectiveness of expanding community case management of malaria to all ages. No other PE or OR is currently being conducted in the country.

Conclusion

To address focal malaria outbreaks in Madagascar, including those occurring in areas bordering elimination districts, the NMCP is interested in studying new strategies for vector control.

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

As Madagascar advances toward elimination, increased transmission during 2016-2019 in districts bridging elimination-targeted Central Highlands and moderate-transmission coastal districts is of concern. Malaria prevention activities have been ongoing in these districts; however, they have not been targeted for IRS as higher-burden districts have been prioritized. Larviciding or other larval source management in nearby rice fields in these bridging districts may be an effective method to control vectors and thus transmission in these areas. An OR study to assess entomological characteristics of vectors in these areas and to test the initial feasibility of larviciding (i.e. periodic spraying of a bio-larvicide - bti) in the context of the NMCP's goal of progressive malaria elimination is proposed in MOP2020.

Conclusion

Some districts that bridge low- and moderate-transmission zones have experienced concerning increases in malaria cases during 2016-2019. These districts may benefit from larviciding of rice paddies in close proximity to the populations, to prevent malaria; conducting OR would provide information regarding the effectiveness of such a strategy, in combination with other vector control methods, as the country moves toward elimination.

Key Question 3

What are the in-country considerations (e.g. in-country staffing capacity, political climate, security concerns) that impact your funding allocation in this category? If there is a specific budget line item in Table 2 that is not covered by the above questions, please address here.

Supporting Data

There are no specific in-country concerns impacting this funding allocation at this time.

Conclusion

There are no specific in-country concerns impacting this funding allocation at this time.

3.E. OTHER HEALTH SYSTEMS STRENGTHENING

NMCP objective
The NMCP, along with the MoH and their partners, has indicated a commitment to health systems strengthening to reduce stockouts of essential equipment and medicines, increase access to care for all persons and improve the care that is provided.
NMCP approach
The NMCP collaborates with the MoH and other government departments and funders to strengthen the public health infrastructure of the country.
PMI objective, in support of NMCP Infrastructure
PMI, through partnerships with implementing partners including MAHEFA MIARAKA and ACCESS, engages with the Peace Corps to support health systems strengthening.
PMI-supported recent progress (past ~12-18 months)
<ul style="list-style-type: none">● Peace Corps support SBC activities for the 2018 mass ITN distribution campaign.● Peace Corps will support SBC activities for IRS.
PMI-supported planned activities (next ~12-18 months, supported by currently available funds)
<ul style="list-style-type: none">● Peace Corps will conduct Malaria Boot Camp to train PCVs to support NMCP and PMI activities in their respective communities.● Peace Corps will continue to support SBC activities for ITN activities including continuous and routine distribution campaigns.● Peace Corps will continue to support SBC activities for the IRS campaign.● Peace Corps will participate in SBC for malaria in pregnancy and prompt care seeking activities.● These activities will be funded through existing pipeline of previous fiscal years resources.