

The following document is an abbreviated malaria operational plan. The principles guiding development of this document—country-led, inclusive, consultative with a broad audience, and transparent—are consistent with best practices that the U.S. President’s Malaria Initiative (PMI) has instituted since its inception. While an in-depth background of malaria in this country can be found in the detailed [FY 2018 malaria operational plan](#) on [pmi.gov](#), this abbreviated document provides a high-level overview of PMI’s program in this country, including key strategic updates, country data and progress updates, and a detailed list of activities to be supported with FY 2019 U.S. Government PMI funding.

This abbreviated 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 final funding available to support the plan outlined here is pending final FY 2019 appropriation. If any further changes are made to this plan it will be reflected in a revised posting.



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PRESIDENT'S MALARIA INITIATIVE

MADAGASCAR

Abbreviated Malaria Operational Plan FY 2019

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ABBREVIATIONS and ACRONYMS

ACT	Artemisinin-based combination therapy
AL	Artemether-lumefantrine
aMOP	Abbreviated Malaria Operational Plan
ANC	Antenatal care
AS/AQ	Artesunate-amodiaquine
CDC	Centers for Disease Control and Prevention
CHL	Central Highlands
CHV	Community health volunteer
CHW	Community health worker
CM	Case management
CSB	Centre de santé de base/ Basic health center
DHS	Demographic and Health Survey
DHS-2	District Health Information System 2
EUV	End use verification
FY	Fiscal year
FSSN	Fever Sentinel Surveillance Network
Global Fund	Global Fund to Fight AIDS, Tuberculosis and Malaria
HMIS	Health management information systems
HSS	Health systems strengthening
iCCM	Integrated community case management
IPTp	Intermittent preventive treatment for pregnant women
IRS	Indoor residual spraying
ITN	Insecticide-treated mosquito net
LIMS	Laboratory Information Management Systems
MDA	Mass drug administration
MIP	Malaria in pregnancy
MIS	Malaria indicator survey
MOH	Ministry of Health
MOP	Malaria Operational Plan
NMCP	National Malaria Control Program
NSP	National Strategic Plan for Malaria
PBO	piperonyl butoxide
PCV	Peace Corps volunteer
PhaGDis	Pharmacie de gros de district/ District pharmaceutical depot
PMI	President's Malaria Initiative
RDT	Rapid diagnostic test
SALAMA	Madagascar Central Medical Store
SBCC	Social and behavior change communication
SM&E	Surveillance, monitoring, and evaluation
SP	Sulfadoxine-pyrimethamine
TDY	Temporary duty/technical assistance visit
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USG	United States Government
WHO	World Health Organization

I. INTRODUCTION

This FY 2019 abbreviated Malaria Operational Plan (aMOP) presents an implementation plan for Madagascar based on the strategies of PMI and the National Malaria Control Program (NMCP), building on investments made by PMI and other partners to improve and expand malaria-related services. It was developed in consultation with the NMCP and with participation of national and international partners involved in malaria prevention and control in the country. The fiscal year (FY) 2018 MOP¹ contains a more detailed description of the malaria situation in Madagascar, health system delivery structure, Ministry of Health (MOH) organization, and PMI's progress through April/May of 2017. This aMOP describes critical changes/updates to overall NMCP and PMI strategic approaches, as well as new activities proposed under each technical area to be supported with FY 2019 funds.

II. OVERVIEW OF PMI IN MADAGASCAR

Madagascar began implementation as a PMI focus country in 2006. The proposed FY 2019 PMI budget for Madagascar is \$24 million.

This aMOP reflects PMI activities in support of the NMCP's National Strategic Plan 2018-2022 (NSP) and MOH priorities. These priorities include advancing universal healthcare coverage focusing on quality of services, implementing a new community health policy, and strengthening the health management information system (HMIS) by integrating diverse systems using the District Health Information System (DHIS2). To achieve these priorities, and strengthen links between the community and basic health facilities (CSB) to provide an integrated package of health services, PMI will leverage all USAID health funds (e.g., maternal child health, water and sanitation, and family planning) and strengthen public-private partnerships. In addition, PMI will coordinate closely with the Global Fund, UN agencies, the World Bank, and the academic community. In FY 2019, PMI will shift its geographic focus from supporting selected districts within 15 regions (Analamanga, Alaotra Mangoro, Vakinankaratra, Amoron'i Mania, Haute Matsiatra, Atsinanana, Atsimo-Andrefana, Vatovavy-Fitovinany, Analanjorofo, Boeny, Diana, Melaky, Menabe, Sava, and Sofia) to providing comprehensive coverage of integrated malaria services within all districts in 10 regions (Atsinanana, Atsimo-Andrefana, Vatovavy-Fitovinany, Analanjorofo, Boeny, Diana, Melaky, Menabe, Sava, and Sofia), reaching approximately 10 million people (see Figure 1; regions consistent with the FY 2018 MOP). This shift will allow PMI to better target and scale up the delivery of malaria services in high-burden areas, leverage prior USAID/PMI investments, and ensure coordination with other funding partners for the efficient use of resources.

¹ <https://www.pmi.gov/docs/default-source/default-document-library/malaria-operational-plans/fy-2018/fy-2018-madagascar-malaria-operational-plan.pdf?sfvrsn=5>

Figure 1: Geographic Distribution of FY 2019 PMI-Supported Activities



III. STRATEGY UPDATES

Madagascar recently developed the NSP 2018-2022, which the MOH adopted 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 very low-burden zones of the country. Zone classification was based on epidemiologic stratification estimated from the 2016 Malaria Indicator Survey (MIS), malaria surveillance data, and a vulnerability index calculated from healthcare utilization and poverty data (see Table 1). Of the 114 districts in the country, 106 are classified as control, 3 as pre-elimination, and 5 as elimination.

The Madagascar malaria elimination strategy is not yet complete; however, an elimination working group has been established by the RBM Partnership and PMI is funding an assessment of elimination readiness in a sample of targeted districts and supporting the NMCP to develop elimination-specific surveillance guidelines. The World Health Organization (WHO) will support the development of a national elimination strategy.

National presidential elections will be held in November and December 2018; protests during the pre-election period suggest the elections could be contentious. This uncertain political climate has resulted in the postponement of the 2019 Demographic and Health Survey (DHS) until after the elections are held, which is now tentatively scheduled for March 2020. The timing of the 2018 mass insecticide-treated net (ITN) distribution campaign was also disrupted slightly. The campaign was launched in 57 PMI-supported districts during August 6-28, 2018, and will begin in 49 Global Fund-supported districts during September 10-28, 2018. The entire campaign is scheduled to be complete before the kick-off election campaigning.

Epidemiology update

Madagascar experienced an increase in reported malaria cases and deaths in 2017. Rapid diagnostic test (RDT) confirmed malaria cases increased from 471,599 in 2016 to 795,527 in 2017 and malaria related-deaths from 449 in 2016 to 629 in 2017 (HMIS 2017). This increase may be related in part to reduced efficacy of ITNs, which were last mass-distributed in 2015 (with durability monitoring indicating that insecticidal activity drops to <25 percent 24 months after distribution) and to cyclones that resulted in conditions more favorable to transmission. Cyclones also caused infrastructure damage that made conducting prevention activities very challenging. Other possible explanations for this increase include increased detection (e.g., increased health center use or RDTs done), reporting (e.g., enhanced community-based efforts and tablet-based systems), or changes in vector behavior (e.g., increased outdoor biting). It is also possible that cases in 2016 were particularly low due to recent mass ITN distribution.

Table 1: Epidemiologic Stratification of Malaria Infection Risk, 2017 (translated from French version, 2016 HMIS data)*

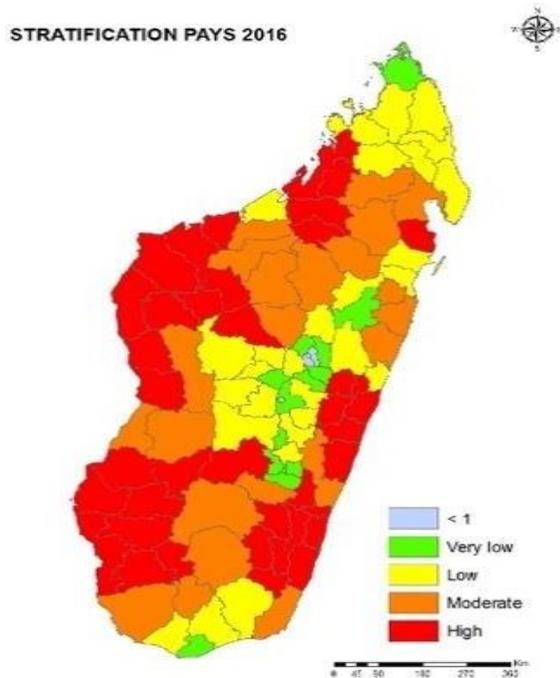
Stratification	Cases/1000 inhabitants	Zone	Objective	Interventions	No. Districts Targeted	Population	Rapid Response (by MOH)
High	> 100	Control (incidence $\geq 200/1,000$ or incidence ≥ 100 with vulnerability index ≥ 4) ¹	Reduce transmission below 100	ITNs, IPTp, case management (CM), crosscutting interventions (SBCC, SM&E)	25	3,466,336 (14%)	IRS if malaria increase/outbreak or mass drug administration if outbreak
		Control (incidence <200 or incidence ≥ 100 with vulnerability index < 4)	Reduce transmission below 100	ITNs, IPTp, CM, crosscutting interventions (SBCC, SM&E)	14	1,751,470 (7%)	
Moderate	50-100	Control	Reduce transmission below 50	ITNs, IPTp, CM, crosscutting interventions (SBCC, SM&E)	25	5,366,047 (22%)	
Low	10-50	Control	Reduce transmission below 10	ITNs, IPTp, CM, crosscutting interventions (SBCC, SM&E)	29	6,923,542 (29%)	
Very low	1-10 & TP $\geq 5\%$	Control	Move towards pre-elimination	ITNs, IPTp, CM, crosscutting interventions (SBCC, M&E)	13	3,132,994 (13%)	
	1-10 & TP < 5%	Pre-elimination	Move towards elimination	IRS for elimination, CM, malaria foci surveillance, targeted treatment, and crosscutting interventions	3	1,024,444 (4%)	
Free	< 1	Elimination	Elimination	Active surveillance, case investigation around index cases; low dose primaquine,** crosscutting 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; however, the NMCP has not yet fully developed the elimination plan.

¹Scale: High vulnerability: >4 , vulnerable: 3, moderate vulnerability: 2, and low vulnerability: ≤ 1

Figure 2: Epidemiologic Stratification of Malaria Infection Risk, HMIS 2016



ITNs: The NMCP adopted the goal of universal ITN coverage in 106 of 114 health districts (i.e., one ITN for every two people in malaria-control districts). To achieve this goal, which expands universal coverage from 92 to 106 districts, the NMCP plans mass distribution campaigns every three years to provide free ITNs in these districts. In addition, PMI will support continuous distribution of ITNs at the community level in up to 20 high-transmission districts, and the Global Fund will support routine ITN distribution (i.e., during immunization and antenatal care (ANC) visits at health centers).

IRS: IRS remains a key intervention for malaria control in select districts; PMI is the main donor supporting this activity. PMI will continue blanket IRS in high-transmission districts of the east and south east in 2018, in addition to adding two districts in the south west. An insecticide rotation plan with new long-lasting insecticides will begin in 2018 to mitigate resistance. In 2019, after five rounds of IRS on the east coast, PMI will shift to focus IRS activities entirely in the south west and south east districts as malaria burden is higher in the south. The Global Fund will no longer fund IRS in the new malaria grant (NFM2 2018- 2021); however, they will continue to support limited IRS activities for outbreak response.

IPTp: The NMCP adopted the 2016 WHO IPTp recommendations and trained health facility staff on these. Under the new NSP and re-stratification, IPTp will be administered in 106 districts targeted for malaria control, an increase from 93 districts previously targeted.

Case Management: The NMCP plans to extend community-based case management of malaria, currently targeting children under 5 years of age, to children aged 6-15 years as a pilot activity in high-burden, hard-to-reach districts. Recent epidemiologic data indicates that these children are among the most affected by malaria. The NMCP also plans to scale up pre-referral treatment with rectal artesunate of severe malaria cases in children under six years of age across the country. In pre-elimination districts, low-dose primaquine will be used to reduce transmission, and outbreak response according to MOH policy may include mass drug administration and active case detection.

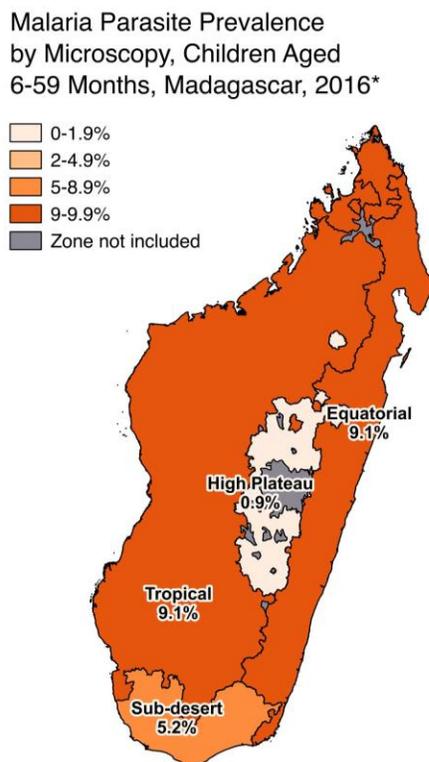
HMIS: The plan for the transition of the Fever Sentinel Surveillance Network sites to the MOH from Institut Pasteur de Madagascar as part of the integrated regional health information system was completed and adopted in April 2018 and is being piloted in 14 districts of 2 regions (Analalava, Antsohihy, Bealanana, Befandriana Nord, Mampikony, Mandritsara, Port Berger [Boriziny-Vaovao] in Sofia Region, and Ambatolampy, Antsirabe I, Antsirabe II, Betafo, Faratsiho, Mandoto in Vakinankaratra Region). In addition, DHIS2 will be rolled out throughout the country by the first quarter of 2019.

Social and Behavior Change Communication (SBCC): PMI will support the evaluation of the NSP 2018- 2022 SBCC strategy

IV. DATA UPDATES AND EVIDENCE OF PROGRESS

During 2017, HMIS, Integrated Disease Surveillance and Response, and Fever Sentinel Surveillance Network data revealed increases in malaria in much of Madagascar relative to 2016. This could be related to lower ITN use or reduced ITN bioefficacy since the last mass ITN distribution campaign occurred in 2015. A mass ITN distribution campaign is currently scheduled for August-September 2018. Focalized outbreaks in 2017 may have been related to difficulties getting adequate supplies to remote areas, which is always challenging in Madagascar but may have been further complicated in 2017 by cyclones that caused substantial infrastructure damage. Finally, integrated surveillance activities and malaria reporting completeness and timeliness have continued to improve since 2014 when PMI was able to re-engage with the NMCP and MOH to support surveillance activities (during 2009-2014, PMI was not able to work directly with the Government of Madagascar due to a *coup d'etat*). Thus, improved detection and reporting may account for some of the increase during 2017 relative to 2016.

Figure 3: Parasite Prevalence by Zone, Madagascar, 2016



*Malaria Indicator Survey, 2016

Table 2: Evolution of Key Survey-Based Malaria Indicators in Madagascar from 2011 to 2016*

Indicator	DHS 2008-9 (baseline)	2011 MIS	2013 MIS	2016 MIS
% Households with at least one ITN	58	80	68	80
% Population with access to an ITN	n/a	n/a	n/a	n/a
% Children under five who slept under an ITN the previous night	47	77	62	73
% Pregnant women who slept under an ITN the previous night	47	72	61	69
% Population that slept under an ITN the previous night	n/a	68	85	68
% Children under five years of age with fever in the last two weeks for whom advice or treatment was sought	41	n/a	38	46
% Children under five years of age with fever in the last two weeks who had a finger or heel stick	n/a	n/a	13	16
% Children receiving an ACT among children under five years of age 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	7	20	18	22
% Women who received three or more doses of IPTp during their last pregnancy in the last two years	n/a	n/a	n/a	10
% Children under five years with parasitemia (by microscopy , if done)	n/a	6	9	7
% Children under five years of age with parasitemia (by RDT , if done)	n/a	9	10	5
Under-5 mortality rate per 1,000 live births	72	n/a	n/a	n/a

*DHS 2008-2009 as baseline

Table 3: Evolution of Key Malaria Indicators Reported through Routine Surveillance Systems in Madagascar from 2012 to 2017

	2012	2013	2014	2015	2016	2017
# Fever cases or illness consistent with malaria ¹	717,074	946,588	951,188	1,744,737	1,667,277	2,181,219
# Confirmed cases ²	362,732	380,651	374,110	738,428	471,599	795,527
# Presumed cases ³	-	-	-	-	-	-
Total # <5 cases ⁴	152,231	138,383	139,500	289,037	165,723	266,222
Total # malaria deaths ⁵	632	667	561	866	449	629
Data completeness ⁶	81%	85%	82%	83%	91%	95%
Test positivity rate ⁷	40%	37%	40%	50%	32%	40%

¹Fever cases are reportable to HMIS (routine monthly reporting)

²Total diagnostically confirmed cases. All ages, outpatient, inpatient.

³Only diagnostically confirmed cases of malaria are reportable in Madagascar

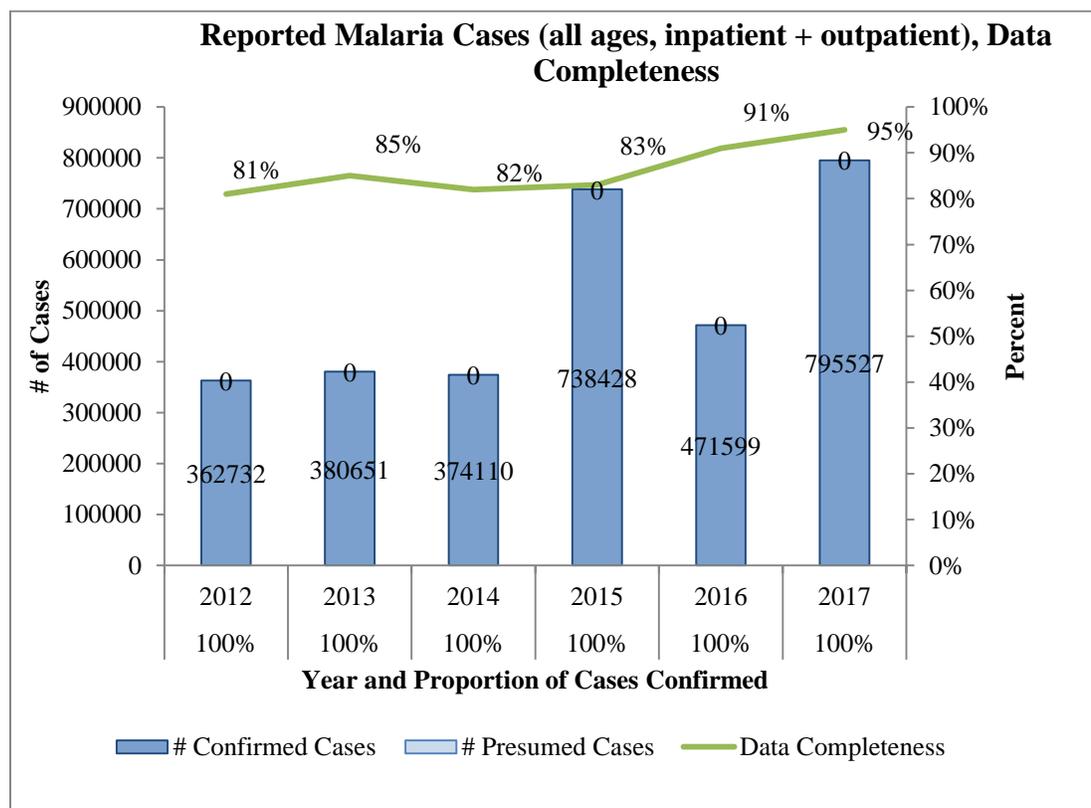
⁴Total number of <5 cases. Outpatient, inpatient, confirmed, and unconfirmed.

⁵All ages, outpatient, inpatient, confirmed, and unconfirmed

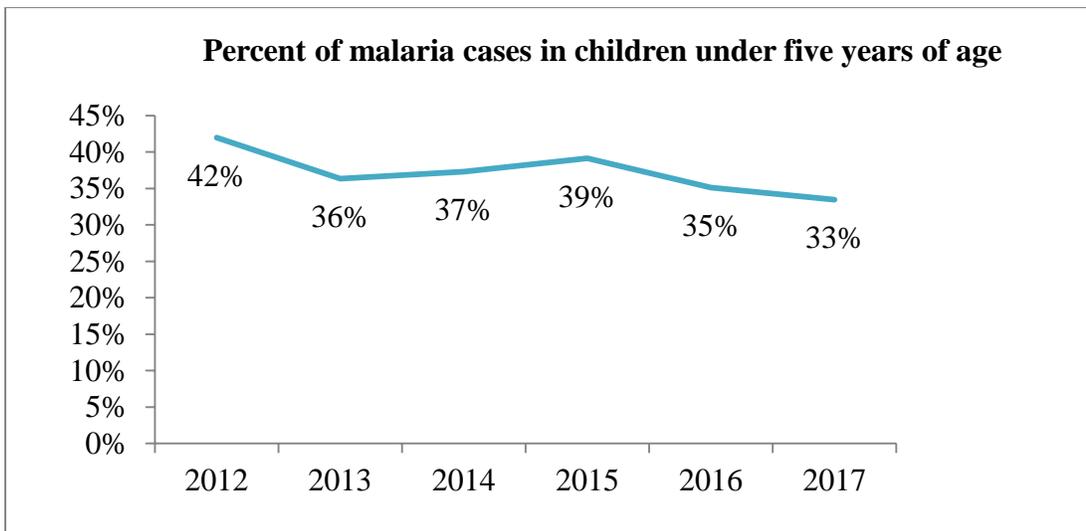
⁶Number of monthly reports received from health facilities/Number of health facility reports expected (i.e., number of facilities expected to report multiplied by the number of months considered)

⁷Number of confirmed cases (#2 above)/Number patients receiving a diagnostic test for malaria (RDT or microscopy)

Figures 4 and 5: Trends in Key Malaria Indicators Reported in Routine Surveillance Systems*



*Madagascar does not track presumed cases



V. NEW OR EXPANDED ACTIVITIES AND KEY CHANGES

1. Vector control

a) Entomologic monitoring and insecticide resistance management

With FY 2019 funding, PMI will continue to support up to 11 entomological sentinel sites collecting routine entomological indicators and conducting insecticide resistance monitoring. While the number of sites will remain the same, the location of one to two entomological sites will shift from high-burden areas to the elimination district(s) where PMI will be supporting the NMCP with elimination activities. The 2017 results of PMI-supported entomological monitoring in Madagascar can be found here: <https://www.pmi.gov/how-we-work/technical-areas/entomological-monitoring>

b) Insecticide-treated nets

PMI supports the 2018-2022 NSP goal of universal coverage with one ITN per two people in 106 of Madagascar's 114 health districts; a campaign to distribute 13 million ITNs in collaboration with the Global Fund during calendar year 2018 is underway. The ongoing ITN mass campaign is being done in two phases: August 6-25, 2018, in 57 PMI districts and September 10-28, 2018, in 49 Global Fund districts. As in previous years, PMI will support ITN durability monitoring for net survivorship, physical integrity, bioefficacy, and insecticidal content on ITNs distributed during the campaign. PMI also supports continuous ITN distribution in up to 20 high-transmission districts at the community level to replace damaged nets and cover new sleeping spaces, while Global Fund supports routine ITN distribution (i.e., health facility-based delivery during immunization and ANC visits). Funds to purchase nets for continuous distribution are planned each year to prevent stockouts due to procurement delays. With FY 2019 funds, PMI will again support continuous distribution activities in up to 20 districts, as well as several preparatory activities for the 2021 mass campaign, including an enumeration exercise, macroplanning, and the procurement of 1 million ITNs. Similar to the 2018 ITN mass campaign, PMI will use a collaborative approach with the Global Fund and other key partners to leverage resources and ensure a successful 2021 ITN mass distribution campaign.

c) Indoor residual spraying

With FY 2019 funding, PMI will continue to support IRS in up to five high-burden districts. While the estimated number of structures will remain consistent (approximately 350,000 structures), the selection of the targeted districts may change, prioritizing the highest burden areas. Similar to previous times IRS has been withdrawn from districts in Madagascar, there will be added emphasis on surveillance and malaria case management, including prevention of commodities stockouts, plus SBCC to populations on early care-seeking behavior and use of ITNs. In 2018, Madagascar will conduct IRS with both Actellic and Sumishield. Results of resistance testing, insecticidal activity duration testing, and the availability of new pre-qualified listed insecticides will be considered when selecting insecticides. The targets set in this aMOP are estimates; final numbers will depend on partners' pipeline, cost saving measures, and other factors (e.g., residual insecticide stock from previous IRS campaigns). Results of the 2017 IRS campaign supported by PMI can be found here: <https://www.pmi.gov/where-we-work/madagascar>

2. Malaria in pregnancy

While Madagascar's multi-pronged approach to MIP remains the same, the number of districts implementing IPTp has increased from 93 to 106 as a result of the revised malaria stratification in the current NSP (see strategy section). The NMCP aims to achieve coverage of 76 percent of pregnant women with three doses of IPTp in 106 districts by 2022. Additionally, the MOH has updated its national ANC norms and guidelines to reflect the 2016 WHO ANC recommendations, which include promoting eight ANC contacts during pregnancy. The guidelines also recommend an additional ANC visit between 13-16 weeks to ensure the first dose of IPTp is provided as early as possible in the second trimester. The updated ANC guidelines were finalized and disseminated to health staff in May 2018.

In FY 2018, PMI supported integrated trainings on several malaria and MIP activities for regional, district and CSB staff. In FY 2019, PMI plans to support the NMCP in strengthening the quality and delivery of IPTp and MIP services at the facility level, focusing on CSBs. PMI will ensure that district health staff provide on-the-job training, guidance, and supportive supervision to improve CSB clinician practices and adherence to current guidelines. In line with the new USAID/Madagascar health strategy, PMI will support implementation at the CSB level in 10 regions starting in late 2018 (shifting from 15 regions under the previous strategy) ensuring comprehensive support and coverage of MIP services in all districts of the targeted regions (see strategy section). PMI will also continue to support the national MIP technical working group in strengthening MIP programming and ensuring coordination with maternal health programs in all districts implementing IPTp. PMI will also support strengthening SBCC for MIP at the community level to ensure pregnant women are informed and knowledgeable about the timing and frequency of IPTp at ANC. PMI and the Global Fund procure sulfadoxine-pyrimethamine (SP) and adequate stocks of SP are available at the central warehouse; however, stockouts of SP persist at the peripheral levels due, in part, to poor supply chain and stock management practices. PMI will procure 1.5 million treatments of SP in FY 2019 contributing to the national annual need. PMI will continue to support strengthening of the supply chain management system including assessing whether SP stocks are correctly estimated, requested, and delivered to districts and ensuring sufficient quantities of SP are available at the CSB level.

3. Case management

PMI will continue to work with the NMCP to ensure that health facility workers and community health volunteers are well supported to accurately diagnose and manage cases of malaria in health facilities and at the community level. The malaria case management strategy remains largely unchanged from 2017 with a few exceptions. First, recent HMIS data indicates that children aged 5-15 years are among the

most affected by malaria; therefore, the NMCP's NSP 2018-2022 has added this age group to those targeted for community-level diagnosis and treatment of uncomplicated malaria in hard-to-reach areas. Secondly, the NMCP's malaria treatment guidelines, which were updated in 2017, now reflect WHO's updated guidance for the treatment of severe malaria in pregnant women (injectable artesunate is recommended for these women, regardless of stage of pregnancy). Third, rectal artesunate is now recommended for pre-referral treatment for severe malaria among children under six years of age, and the NMCP will work to implement this policy over the next few months. Although community health volunteers have received some initial training on the use of rectal artesunate, they will need refresher training when the product becomes available. Finally, PMI is supporting a therapeutic efficacy study started in 2018 in four sites to monitor the efficacy of artesunate-amodiaquine and artemether-lumefantrine. The NMCP also plans to establish a malaria elimination working group to develop plans for malaria elimination.

With FY 2019, PMI will support piloting elimination activities in one to two selected districts in support of the NMCP's elimination plans and to help inform the development of a comprehensive elimination strategy. Elimination planning efforts are in early stages and criteria for district selection and specific elimination activities are under consideration. An elimination working group has been established by the RBM team, and currently PMI is funding an assessment of elimination readiness in a sample of targeted districts, along with the development of elimination-specific surveillance.

With a shift in geographic coverage under USAID/Madagascar's health strategy in FY 2019, PMI will focus its implementation support on 10 regions instead of 15, ensuring comprehensive and full coverage of malaria control interventions in all districts in the targeted regions. In these districts, PMI will support malaria case management at all levels of the health system, including training and support for public and private sector facilities as well as at the community level.

4. Crosscutting and other health systems strengthening

a) Pharmaceutical management

In FY 2019, PMI will continue to support an integrated national supply chain system that ensures a continuous supply of RDTs, ACTs, ITNs, and SP via the central medical store, SALAMA. This activity includes strengthening laboratory information management systems and the inter-operability between CHANEL, the existing laboratory information management systems software, and DHIS-2; continued support for national- and district-level supervision and coaching; conducting an integrated annual quantification and forecasting and biannual pipeline assessments; optimizing the sub-regional warehouse system; and conducting quarterly end-use verification surveys. These activities will be co-funded with other USAID Health Office programs.

b) Social and behavior change communication

With FY 2019 funding, PMI will support the evaluation of the SBCC strategy under the NSP. SBCC activities will also include strengthening the national and sub-national SBCC coordinating structure and updating and disseminating revised malaria toolkit messages. Revised malaria toolkits and messages for mass media communication and social media include integrated malaria messages related to promoting correct ITN use, acceptance of IRS where applicable, and preventing MIP, including promoting the use of IPTp and prompt care seeking and treatment of fever. Global Fund will support the NMCP to cover SBCC activities in regions that are not covered by the next bilateral project. SBCC toolkits and mass-media activities produced through PMI support will be available nationwide and this effort will continue under the bilateral project. PMI is supporting a care-seeking behavior assessment, which will cover all

epidemiologic zones to identify gaps, attitudes, and practices that may prevent timely care seeking in the formal health system for febrile illness that may lead to non-adherence to national guidelines for malaria treatment in Madagascar. This will provide a better understanding of gaps in service delivery and SBCC approaches. Therefore, specific barriers to be addressed will be identified based on the results from this study. All SBCC activities will be scaled-up from 93 to 106 districts in malaria control phases.

c) Surveillance, monitoring, and evaluation

With FY 2019 funding, PMI will provide support to the planning of the 2020 DHS survey, which will be conducted in March 2020; consultations to plan this survey have not yet begun. PMI will also continue to provide ongoing support to the NMCP to work with the MOH to establish one integrated HMIS based on DHIS2 technology. To that end, the NMCP has established a surveillance working group to design and implement integration of activities. The working group has updated and standardized surveillance, reporting and stock management tools; drafted a surveillance and monitoring manual; designed a plan to support capacity building for surveillance activities; updated the national policy on community health; improved methods to detect malaria clusters to respond more promptly; completed a transition plan to integrate their Fever Sentinel Surveillance Network into the HMIS; and will pilot DHIS2 in two regions beginning in August 2018. In addition, all district malaria coordinators attended week-long trainings on surveillance and monitoring during May and June 2018. These trainings included review of updated plans and strategies, reinforcement of the use of surveillance and monitoring tools, and guidance on the use of district-level data for decision-making. During 2019, PMI will work with the NMCP and partners to support these coordinators to implement skills acquired during recent trainings. The NMCP's web-based data is available to most RBM partners, and malaria surveillance data are available via the NMCP's password-protected website: <http://www.pnlp-madagascar.mg>

Table 4. SM&E Data Sources

Data Source	Survey Activities	Year								
		2012	2013	2014	2015	2016	2017	2018	2019	2020
Household surveys	DHS*									(X)
	MIS		X			X				
	Multiple Indicator Cluster**							X		
Health Facility surveys	Health Facility Survey			X				X		
Malaria Surveillance and Routine System Support	Support to parallel malaria surveillance system	X	X	X	X	X	X	X		
	Support to HMIS			X	X	X	X	X	(X)	(X)
	Support to Integrated Disease Surveillance and Response			X	X	X	X	X	(X)	(X)
Other Surveys	End-use verification							X	(X)	(X)
	School-based malaria			X						
	Millennium Development Goal Survey*		X	X						

*Malaria module will be included

** UNICEF is supporting this study

(X) Denotes planned

d) Operational research

PMI will not support any new operational research activities with FY 2019 funding. Activities approved with FY 2016 and FY 2017 funds have not been carried out, including a study on the evaluation of reactive case detection versus mass drug administration, which was canceled. An assessment of key populations was also cancelled and the funds will be reprogrammed. PMI continues to develop operational research capacity in the country and has recently facilitated the initiation of a working group to better define key malaria research priorities in Madagascar.

e) Other health systems strengthening

No new activities or significant changes are proposed. PMI will continue to collaborate with Peace Corps volunteers and support their malaria projects.

5. Staffing and administration

PMI Madagascar supports staffing and administration that follow PMI policy, as articulated in the FY 2018 MOP.