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Democratic Republic of the Congo

Malaria Operational Plan FY 2023

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This FY 2023 Malaria Operational Plan has been approved by the U.S. Global Malaria Coordinator and reflects collaborative discussions with national malaria control programs and other partners. Funding available to support outlined plans relies on the final FY 2023 appropriation from the U.S. Congress. Any updates will be reflected in revised postings.

This document was prepared in the early months of 2022 as the COVID-19 pandemic continued to evolve worldwide, including in PMI-partner countries. The effects of the pandemic on malaria control and elimination work in 2023 are difficult to predict. However, because U.S. Congressional appropriations for PMI are specific to work against malaria and any appropriations for work against COVID-19 are specific for that purpose and planned through separate future U.S. Government planning processes, this FY 2023 MOP will not specifically address the malaria–COVID-19 interface and will reassess any complementary work through timely reprogramming in countries.

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ABBREVIATIONS

ACT	Artemisinin-based Combination Therapy
AL	Artemether-Lumefantrine
ANC	Antenatal Care
ASAQ	Artesunate-Amodiaquine
AS-PYR	Artesunate-Pyronaridine
CCS	Community Care Site
CDC	Centers for Disease Control and Prevention
CDR	*Centrales de Distribution Regionales*
CHW	Community Health Worker
C-IPTp	Community Distribution of IPTp
CSO	Civil Society Organization
CQI	Continuous Quality Improvement
CY	Calendar Year
DHIS2	District Health Information Software 2
DHS	Demographic and Health Survey
DRC	Democratic Republic of the Congo
eLMIS	Electronic Logistics Management Information System
EPI	Expanded Program on Immunization
EUV	End-Use Verification
FBO	Faith-based Organization
FETP	Field Epidemiology Training Program
FY	Fiscal Year
Global Fund	Global Fund to Fight AIDS, Tuberculosis and Malaria
HBHI	High Burden High Impact
HMIS	Health Management Information System
HNQIS	Health Network Quality Improvement System
INRB	*Institut National de Recherche Biomédicale*/National Institute of Biomedical Research
IPTp	Intermittent Preventive Treatment for Pregnant Women
IRS	Indoor Residual Spraying
ITN	Insecticide-treated Mosquito Net
LMIS	Logistics Management Information System
M&E	Monitoring and Evaluation
MBS	Malaria Behavior Survey
MICS	Multiple Indicator Cluster Survey
MIP	Malaria in Pregnancy
MOH	Ministry of Health
MOP	Malaria Operational Plan

NMCP	National Malaria Control Program
OTSS	Outreach Training and Supportive Supervision
OR	Operational Research
PBO	Piperonyl Butoxide
PE	Program Evaluation
PEDIR	PMI-supported Enhanced Detection of Insecticide Resistance
PMI	U.S. President's Malaria Initiative
RDT	Rapid Diagnostic Test
RA	Resident Advisor
SBC	Social and Behavior Change
SM&E	Surveillance, Monitoring, and Evaluation
SNIS	*Système National d'Information Sanitaire*
SP	Sulfadoxine-Pyrimethamine
TES	Therapeutic Efficacy Study
TIPTOP	Transforming Intermittent Preventive Treatment for Optimal Pregnancy
TWG	Technical Working Group
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

EXECUTIVE SUMMARY

To review specific country context for the Democratic Republic of the Congo (DRC), please refer to the Country Malaria Profile located on the U.S. President's Malaria Initiative's (PMI's) country team landing page, which provides an overview of the country malaria situation, key indicators, the National Malaria Control Program (NMCP) strategic plan, and the partner landscape.

U.S. President's Malaria Initiative

Launched in 2005, PMI supports implementation of malaria prevention and treatment measures as well as cross-cutting interventions. PMI's 2021–2026 strategy, *End Malaria Faster*, envisions a world free of malaria within our generation with the goal of preventing malaria cases, reducing malaria deaths and illness, and eliminating malaria in PMI partner countries. PMI currently supports 24 countries in sub-Saharan Africa and three programs across the Greater Mekong Subregion in Southeast Asia to control and eliminate malaria. DRC began implementation as a PMI partner country in fiscal year (FY) 2011.

Rationale for PMI's Approach in DRC

Malaria is the leading cause of morbidity and mortality in DRC with more than 25 million malaria cases and almost 22,368 malaria deaths reported in 2021.[1] Globally, DRC accounts for an estimated 12 percent of all malaria cases and 13 percent of all malaria deaths.[2] The highest levels of transmission occur in zones situated in the north and center of the country, and the greatest burden of malaria morbidity and mortality falls on pregnant women and children under five years of age. The most recent household survey data point (2017–2018 Multiple Indicator Cluster Survey [MICS]) estimated malaria parasite prevalence in children 6 to 59 months of age to be 39 percent. DRC continues to struggle to achieve targets in intervention coverage and burden reduction. As one of World Health Organization's (WHO's) designated High Burden High Impact (HBHI) countries, DRC is working with partners to get malaria progress back on track through tailored and targeted interventions.

[1] District Health Information System (DHIS) 2.
[2] WHO, *World Malaria Report 2021: Regional Data and Trends*.

Overview of Planned Interventions

The proposed FY 2023 PMI funding for DRC is $48 million. PMI will support the following intervention areas with these funds:

1. Vector Monitoring and Control

PMI supports DRC's vector monitoring and control strategy through support for entomological surveillance and insecticide resistance monitoring in sentinel sites throughout the country, as well as studies to assess insecticide-treated mosquito net (ITN) durability and effectiveness of new generation ITNs (piperonyl butoxide [PBO] and G2). For prevention, PMI supports procurement and distribution of ITNs through routine distribution and mass campaigns.

With FY 2023 funding, PMI will continue entomological monitoring for insecticide resistance and vector behavior activities to guide ITN procurement decisions from the NMCP and other donors. PMI will add two additional sites (Fugurume in Lualaba province and Vanga in Kwilu province) to the longitudinal bionomics monitoring sites to improve geographic coverage. In addition, PMI is proposing to strengthen local capacity and implement community-based entomological monitoring for hard-to-reach areas to maximize impact of entomological interventions. ITN activities will follow the same strategies as in previous years but will transition entirely from procurement and distribution of standard nets to next generation nets.

2. Malaria in Pregnancy

PMI supports the DRC's malaria in pregnancy (MIP) strategy through procurement of drugs (sulfadoxine-pyrimethamine [SP]) for intermittent preventive treatment for pregnant women (IPTp) and kits to implement directly observed therapy for IPTp, as well as routine distribution of ITNs for pregnant women at antenatal care (ANC). PMI also supports training and supportive supervision of health service providers in IPTp and appropriate case management of MIP as well as social and behavior change (SBC) targeting women of reproductive age and their partners to promote ANC attendance and IPTp uptake.

With FY 2023 funding, in addition to aforementioned MIP activities, PMI/DRC plans to support the expansion of the pilot community IPTp approach, from the original three health zones (Kenge, Bulungu, and Kunda) to additional health zones in the HBHI and PMI target zones. Expansion will be based on initial country Transforming Intermittent Preventive Treatment for Optimal Pregnancy (TIPTOP) findings, and pending WHO specific guidance for community IPTp.

3. Drug-Based Prevention

PMI does not currently support seasonal malaria chemoprevention or other drug-based prevention in DRC.

4. Case Management

PMI supports the DRC's malaria case management strategy through training and supportive supervision for various cadres of health facility– and community-based health workers who provide malaria services, including lab technicians. PMI also supports procurement of essential diagnostic and treatment commodities; a microscopy quality assurance program; therapeutic efficacy studies (TESs)to monitor antimalarial resistance; and central-level support to the case management technical working group (TWG) to oversee and coordinate on malaria case management, including specific questions or new updates.

With FY 2023 funding, PMI/DRC proposes to provide community health workers (CHWs) at the estimated 3,665 CCSs in PMI focus areas with a travel stipend to serve as an incentive for travel to restock commodities and report data. After seven years expanding CCSs, PMI/DRC will pause the expansion in an effort to focus resources on strengthening the community referral system and ensuring the quality of integrated community case management services by adequately supporting CHWs through supervision and a transport stipend.

5. Health Supply Chain and Pharmaceutical Management

PMI-procured antimalarials and related commodities are delivered to each of the supported provinces through contracts with *centrales de distribution regionales* (CDRs) for storage and distribution including to the last mile. In addition, PMI has been supporting the establishment of a Logistics Management Information System (LMIS) in DRC. The quality of logistics data reported through District Health Information Software 2 (DHIS2) and analyzed through InfoMed is improving, and the use of these data for decision-making is increasing at all levels of the health system.

With FY 2023 funds PMI will continue to support the LMIS, the procurement, storage and distribution of antimalarial and related commodities to the end users through the last-mile delivery approach. Please refer to the **artemisinin-based combination therapy** (**ACT), rapid diagnostic test (RDT), injectable artesunate, and artesunate suppository Gap Analysis Tables** in the annex for more detail on planned quantities and distribution channels.

6. Social and Behavior Change

PMI supports DRC's malaria social and behavior change (SBC) strategy through implementation of tailored SBC interventions to promote uptake of key behaviors including ANC attendance and IPTp uptake, prompt care-seeking for fever, ITN use, and health worker adherence to national malaria guidelines for testing, treatment, and prevention of MIP. Activity implementation is based on extensive formative research to understand determinants of behavior uptake and tested innovative SBC interventions.

With FY 2023 funding, PMI proposes to support implementation of SBC interventions that will include a mix of interpersonal, community-based interventions, mass media, and service delivery platforms in the community and health facilities. PMI will support SBC coordination and capacity strengthening at national and provincial levels and will expand an interpersonal training curriculum at pre-service medical training institutions, first launched at the University of Kinshasa.

7. Surveillance, Monitoring, and Evaluation

Key recent surveillance, monitoring, and evaluation (SM&E) results include strengthening the NMCP's monitoring and evaluation (M&E) capacity through TWGs focused on malaria data review, analysis, and validation. In addition, PMI finalized a protocol for a study to determine the degree of discordance in test positivity rate of RDT data generated by automated readers and those reported in the national Health Management Information System (HMIS).

With FY 2023 funds, PMI will continue to support DRC's efforts in strengthening the Health Information System and malaria SM&E to generate high-quality data. To build capacity and support NMCP ownership, PMI will continue to develop standard dashboards and visualization tools to inform decision-making at the national, provincial, and health zone levels.

8. Operational Research and Program Evaluation

No new operational research/program evaluation is being proposed for FY 2023 funds.

9. Capacity Strengthening

PMI supports the NMCP objective to strengthen its technical and managerial capacity at central and provincial levels to effectively implement the national malaria strategic plan and reach its objectives. PMI also supports capacity strengthening for the package, coverage, and quality of essential malaria-related services and data management in health facilities and at the community level.

With FY 2023 funding, PMI/DRC will continue to support previous capacity-strengthening interventions including support of two participants in the Field

Epidemiology Training Program (FETP) advanced training program, NMCP attendance at key malaria scientific meetings and conferences, including engaging with the private sector via workshop, continued logistic assistance for TWGs, and NMCP capacity strengthening in critical technical needs identified by PMI and the NMCP.

I. CONTEXT AND STRATEGY

1. Introduction

The Democratic Republic of the Congo (DRC) began implementation as a U.S. President's Malaria Initiative (PMI) partner country in fiscal year (FY) 2011. This FY 2023 Malaria Operational Plan (MOP) presents a detailed implementation plan for DRC, based on the strategies of PMI and the National Malaria Control Program (NMCP). It was developed in consultation with the NMCP and with the participation of national and international partners. The activities that PMI is proposing build on investments made by partners to improve and expand malaria-related services, including the Global Fund to Fight AIDS, Tuberculosis, and Malaria (Global Fund). This document provides an overview of the strategies and interventions in DRC, describes progress to date, identifies challenges and relevant contextual factors, and provides a description of activities planned with FY 2023 funding. For more detailed information on the country context, please refer to the Country Malaria Profile, which provides an overview of the country malaria situation, key indicators, the NMCP strategic plan, and the partner landscape.

2. PMI

PMI is led by the U.S. Agency for International Development (USAID) and implemented together with the U.S. Centers for Disease Control and Prevention (CDC). Launched in 2005, PMI supports implementation of malaria prevention and treatment measures—insecticide-treated mosquito nets (ITNs), indoor residual spraying (IRS), accurate diagnosis, and prompt treatment with artemisinin-based combination therapies (ACTs), intermittent preventive treatment of pregnant women (IPTp), and drug-based prevention—as well as cross-cutting interventions such as surveillance, monitoring and evaluation (SM&E); social and behavior change (SBC); and capacity-strengthening. PMI's 2021–2026 strategy, *End Malaria Faster*, envisions a world free of malaria within our generation with the goal of preventing malaria cases, reducing malaria deaths and illness, and eliminating malaria in PMI partner countries. PMI currently supports 24 countries in sub-Saharan Africa and three programs in the Greater Mekong Subregion in Southeast Asia to control and eliminate malaria. Over the next five years, PMI aims to save lives, reduce health inequities, and improve disease surveillance and global health security.

Under the strategy, and building upon the progress to date in PMI-supported countries, PMI will work with NMCPs and partners to accomplish the following objectives by 2026:

1. Reduce malaria mortality by 33 percent from 2015 levels in high-burden PMI partner countries, achieving a greater than 80 percent reduction from 2000.

2. Reduce malaria morbidity by 40 percent from 2015 levels in PMI partner countries with high and moderate malaria burden.
3. Bring at least 10 PMI partner countries toward national or subnational elimination and assist at least one country in the Greater Mekong Subregion to eliminate malaria.

These objectives will be accomplished by emphasizing five core areas of strategic focus:

1. **Reach the unreached:** Achieve, sustain, and tailor deployment and uptake of high-quality, proven interventions with a focus on hard-to-reach populations.
2. **Strengthen community health systems:** Transform and extend community and frontline health systems to end malaria.
3. **Keep malaria services resilient:** Adapt malaria services to increase resilience against shocks, including COVID-19 and emerging biological threats, conflict, and climate change.
4. **Invest locally:** Partner with countries and communities to lead, implement, and fund malaria programs.
5. **Innovate and lead:** Leverage new tools, optimize existing tools, and shape global priorities to end malaria faster.

3. Rationale for PMI's Approach in DRC

3.1. Malaria Overview for DRC

Malaria continues to be the leading cause of morbidity and mortality in DRC,[3] with more than 25 million malaria cases and 22,368 malaria deaths reported in 2021.[4] Globally, DRC accounts for an estimated 12 percent of all malaria cases and 13 percent of all malaria deaths.[5] Approximately 97 percent of the population lives in zones with stable malaria transmission lasting 8 to 12 months per year. The highest levels of transmission occur in zones situated in the north and center of the country, and the greatest burden of malaria morbidity and mortality falls on pregnant women and children under five years of age. The 2017–2018 Multiple Indicator Cluster Survey (MICS) showed malaria parasite prevalence in children 6 to 59 months of age to be 39 percent for rapid diagnostic tests (RDTs) and 31 percent for microscopy, which is higher than 2013–2014 Demographic and Health Survey (DHS) estimates. Although the latest MICS data show concerning declines in ITN ownership since the last DHS, the under-five mortality rate has improved, as well as IPTp coverage and the proportion of children receiving an ACT

[3] National Strategic Plan for Malaria Control 2020–2023.
[4] District Health Information Software 2.
[5] World Health Organization, *World Malaria Report 2021: Regional Data and Trends.*

among those treated with an antimalarial. Malaria cases have increased over the past several years in DRC, and although there were declines in malaria deaths between 2016 and 2019, malaria deaths showed an increase in 2021 from 2020 levels.

For more detailed information on malaria indicators, please refer to the Country Malaria Profile.

3.2. Key Challenges and Contextual Factors

Access to care in DRC, particularly malaria services, remains a challenge. Nationwide, it's estimated that only 30 percent of the population lives within five kilometers of the nearest health facility. As a result, the response has been to focus on establishing community care sites (CCSs) with the goal to close the gap in malaria service provision. Currently, an estimated 57,020 additional CCSs are needed to achieve full coverage. About 13 percent of these sites (8,566) have been established. In addition to expanding CCSs, there is a need to review and update the national community health policy to provide incentives to community health workers (CHWs).

Another challenge is the insufficient number of health care providers at the community and health facility levels; this is especially true in rural areas. Moreover, challenges related to the availability of antimalarials and the functionality of the DRC supply chain system remain barriers to treatment. The supply chain system is unstable due to a number of factors, including the cost, distance of transporting commodities, lack of appropriate infrastructure such as roads and warehouses, and challenges with lead times due to lengthy and complex customs clearing procedures. According to the last service provision assessment, completed in 2017–2018, only 22 percent of health facilities had injectable artesunate and less than 5 percent had rectal artesunate. The quality of data collected from health facilities and reported into the District Health Information Software 2 (DHIS2) and the Logistics Management Information System (LMIS) is improving but remains a challenge. Regular and accurate logistics data to inform supply planning, forecasting, and distribution continues to be a challenge.

Aside from the above programmatic challenges, DRC is experiencing armed conflict, political instability, and disease epidemics; these issues slow health service delivery and impact the affected populations' ability to receive proper care. Lastly, domestic funding for health is improving but has not yet reached the Abuja Declaration target of 15 percent of the national budget.

3.3. PMI's Approach for DRC

Building and strengthening the capacity of DRC's people and institutions—from the central to community levels—to effectively lead and implement evidence-based malaria control and elimination activities is paramount to PMI. The majority of PMI's planned

support with FY 2023 funding, across the areas of vector control, human health, and critical support systems such as supply chain, contains elements of capacity-building and system-strengthening. PMI understands it will take time for DRC to fully finance its development priorities, and thus will work with other partners (e.g., the Global Fund) to jointly track DRC's funding commitments across the malaria portfolio.

PMI organizes its investments around the activities below, in line with the DRC National Malaria Strategy 2020–2023.

- **Vector control,** including distribution of long-lasting ITNs through phased mass campaigns and continuous distribution through routine antenatal care (ANC) and Expanded Program on Immunization (EPI) systems and school- and community-based distribution to maintain high coverage levels. In addition, the strategy includes targeted IRS in pilot health zones (not funded by PMI).
- **Malaria in pregnancy (MIP),** including IPTp with sulfadoxine-pyrimethamine (SP) provided to pregnant women after the first trimester of pregnancy. Pregnant women are also given an ITN at their first ANC visit.
- **Case management** of malaria using confirmatory diagnostic testing with RDTs or microscopy and treatment with ACTs: artesunate-amodiaquine (ASAQ) or artemether-lumefantrine (AL) and the introduction of artesunate-pyronaridine (AS-PYR) (not yet supported by PMI) for uncomplicated cases and injectable artesunate as the treatment of choice for severe malaria cases. The strategy also includes rectal artesunate for pre-referral treatment at CCSs and at first-level health centers. Malaria tests and drugs are free for all age groups in DRC according to national guidelines.
- **Monitoring and evaluation (M&E)** through routine Health Management Information System (HMIS) with the DHIS2 software, weekly integrated disease surveillance and response, and sentinel surveillance, including both epidemiological and entomological surveillance. In addition, household surveys, ad hoc studies, and operational research (OR) are to be conducted to respond to specific program gaps and needs.
- **Community dynamics and approaches for SBC**, including strengthening the capacity of CHWs as key agents of behavior change, supporting the functionality of community groups, developing a strategy for SBC, and promoting the use of health services.
- **Management strengthening of the malaria program** through institutional capacity-building, leadership, resource mobilization, and multisectoral collaboration.

Additionally, DRC launched the High Burden High Impact (HBHI) initiative on November 14, 2019, to align interventions with malaria burden for the 10 most affected provinces (Kinshasa, Sud Kivu, Nord Kivu, Ituri, Kasaï, Tanganyika, Kasaï Oriental, Kongo Central, Haut Katanga, and Kasaï Central). The National Malaria Strategic Plan to Control Malaria 2020–2023 tries to align with the HBHI intervention micro-stratification as much as possible, although some interventions such as seasonal malaria chemoprevention and intermittent preventive treatment for infants may only reach pilot phases over the next few years.

In addition to furthering the objectives laid out in DRC's national malaria strategy, PMI support seeks to address the challenges summarized above, which include access to quality malaria care, weaknesses in the health system (e.g., supply chain, routine data quality), and continuity of services in the context of political instability. Strategies to mitigate these challenges also align with PMI strategic priorities. PMI investments will continue to focus on improving access and quality of malaria care at service delivery points in the community and in health facilities. PMI will also continue to support strengthening of systems that lie at the core of functional public health systems—supply chain, surveillance, and workforce, including PMI's continued support of Field Epidemiology Training Program (FETP). These investments in the health system will ensure that malaria services remain resilient and functional in the face of political or environmental instability. PMI is also exploring opportunities to optimize investments in local institutions and systems that can be more effective, efficient, and accessible—including when political or public health emergencies threaten continuity of services.

3.4. Key Changes in This MOP

PMI plans to reinforce the quality of malaria service delivery by emphasizing bi-directional feedback between providers and supervisors and engaging PMI-supported FETP residents in monitoring quality of care at peripheral levels. In addition, PMI will increase the number of sentinel sites for entomological surveillance as well as pilot community-based entomological surveillance and will reinforce country entomological capacity by enrolling DRC staff in PEDIR (PMI-supported Enhanced Detection of Insecticide Resistance). PMI/DRC plans to implement community IPTp based on the results and recommendations from the Transforming Intermittent Preventive Treatment for Optimal Pregnancy (TIPTOP) study and pending World Health Organization (WHO) guidance.

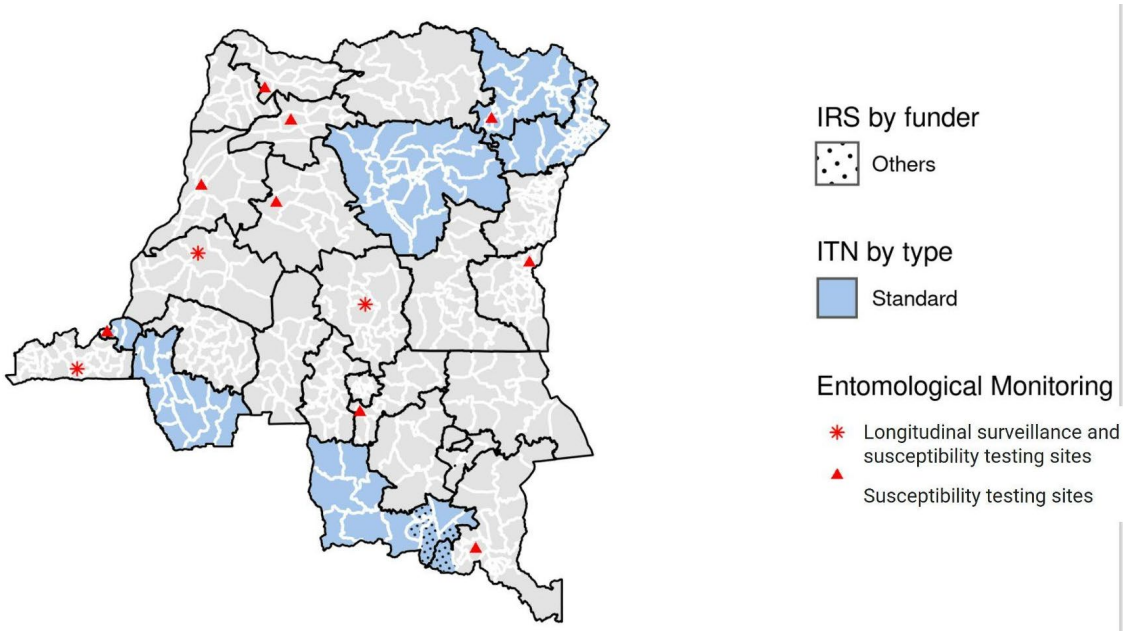
II. OPERATIONAL PLAN FOR FY 2023

1. Vector Monitoring and Control

1.1. PMI Goal and Strategic Approach

The DRC National Malaria Strategic Plan recommends different vector control interventions including continuous and mass distribution of ITNs, IRS, larval source management, as well as management of insecticide resistance and strengthening entomological surveillance capacities. Under the NMCP Strategic Plan for 2020–2023, the DRC seeks to achieve high ownership and use of ITNs among the general population, with the goal that at least 80 percent of the population will sleep under an ITN by 2023. The National Strategy also proposes piloting IRS in specific zones. Currently PMI supports the use of these interventions, with the exception of IRS and larval source management. Both PMI and the Global Fund support mass distribution of ITNs every three years, while PMI also supports continuous distribution of ITNs through routine distribution to pregnant women at ANC and to children under one year of age at EPI clinics. PMI also supports continuous distribution in provinces with hyperendemic transmission via schools and the community. PMI supports routine vector surveillance (bionomics) at three sentinel sites and insecticide resistance monitoring in 12 sentinel sites representing key malaria endemicity zones in DRC.

Figure 1. Map of Vector Control Activities in DRC in 2021



1.2. Recent Progress (April 2021 to March 2022)

During this period, PMI:

- Procured 3,046,800 ITNs for distribution via continuous distribution through ANC and vaccination clinics.
- Distributed 3,200,000 ITNs through mass campaigns in Kwango and Lualaba and 255,000 ITNs through school distribution in Lomami.
- Distributed 2,030,018 ITNs via continuous distribution through ANC and vaccination clinics.
- Procured 1,141,683 Interceptor G2 ITNs for mass distribution in Nord Ubangi province.
- Conducted vector bionomics monitoring monthly in three sites (Lodja, Kimpese, and Inongo) and insecticide resistance monitoring in 12 sites in collaboration with the National Institute of Biomedical Research (*Institut National de Recherche Biomédicale* [INRB]), the School of Public Health and the University of Kinshasa. For more information, please refer to 2021 DRC Entomological Monitoring Report.
- Provided technical assistance to INRB for entomological monitoring through training of insectary technicians.
- Supported INRB with provision of pinned specimens of *An. stephensi* for training field technicians and guide identification should this species be found in DRC.
- Supported efficacy monitoring of piperonyl butoxide (PBO) and pyrethroid-based nets in Sud Ubangi province.
- Supported monitoring of ITN use and sleeping behaviors of local populations in Tanganyika province.
- Supported baseline and 12-month streamlined durability monitoring of PBO-based ITNs in Tanganyika province.

1.3. Plans and Justification for FY 2023 Funding

The FY 2023 funding tables contain a full list of vector monitoring and control activities that PMI proposes to support in DRC with FY 2023 funding. Please visit www.pmi.gov/resources/malaria-operational-plans-mops for these FY 2023 funding tables.

1.3.1. Entomological Monitoring

PMI will continue to support entomological monitoring activities in DRC as described in the **Recent Progress section** above. These activities will include vector bionomics and insecticide resistance monitoring at different sites, including areas receiving PBO ITNs. With FY 2023 funds, PMI will expand support for entomological monitoring from three vector bionomics survey sites to four sites to include Kasaï Oriental province (an area where the HBHI project is being implemented). Insecticide resistance monitoring will be carried out in 14 sites (12 current sites, in addition to 2 sites in the HBHI area). With

increased security challenges, community-based entomological surveillance will be initiated in the added sites in Kasaï Oriental as part of the PMI vision of supporting local communities, reaching hard-to-reach areas, and scaling up entomological interventions. PMI is also continuing to provide technical assistance to build the capacity of local research institutions. As such, PMI will support training for two staff from the INRB/University of Kinshasa to participate in the PMI training PEDIR at CDC, Atlanta, in 2024. The data generated through these activities will assist the NMCP in making evidence-based decisions on malaria vector control.

Summary of Distribution and Bionomics of Malaria Vectors in DRC

As of 2021, the main malaria vectors in DRC are *An. gambiae* s.l. and *An. funestu*s. *An. gambiae* s.l. is predominant throughout the year in Lodja and Inongo, while *An. funestus* is predominant in Kimpese. *An. paludis* was the other anopheline species found mainly in Inongo The vector species bite both indoors and outdoors with peak biting period between 11:00 p.m. and 3:00 a.m. for *An. gambiae* s.l, and *An. funestus* between 6:00 p.m. to 7:00 p.m. indoors and 7:00 p.m. to 8:00 p.m. outdoors for *An. paludis.* Biting rates of *An. gambiae* s.l. were particularly high in Lodja throughout the year and much lower in Inongo. The mean indoor resting density was three *An. gambiae* s.l. in Lodja with peak in December, five *An. paludis* in Inongo with peak in April, and three *An. funestus* s.l. in Kimpese with peak in May. The mean *An. gambiae* s.l. biting rate in Lodja was 18 bites per person per night indoors and 39 outdoors, with 2.9 percent sporozoite infection rate and 242 infective bites per person per year (entomological inoculation rate). In Kimpese, the mean sporozoite rate was 3.8 percent in *An. gambiae* s.l. and 2.5 percent in *An. funestus* s.l. with a combined annual entomological inoculation rate of 446. The mean biting rate was low in Inongo (0.33 bites per person per night indoors and 0.35 bites per person per night outdoors) with no sporozoite-infected mosquitoes. Peak transmission period is from March to May in Lodja and December through May in Kimpese. The results show heterogeneity in vector population in DRC and highlights high year-round malaria transmission risk in Lodja and Kimpese with relatively low transmission risk in Inongo in southern DRC.

Status of Insecticide Resistance in DRC

In 2021, insecticide susceptibility tests showed that pyrethroid resistance is widespread in DRC. In all sites, except Lodja, *An. gambiae* s.l. was resistant to pyrethroids (permethrin, deltamethrin, and alpha-cypermethrin). Resistance intensity varied by site and by insecticide, but was usually moderate or high. Moderate deltamethrin resistance intensity was recorded in eight sites (Inongo, Kapolowe, Kingasani, Karawa, Pawa, Mbandaka, Mwene Ditu, and Lisala) and high in one site (Kimpese). Permethrin resistance intensity was low in five sites (Kapolowe, Katana, Kingasani, Mbandaka, and Mwene Ditu) and high at Kimpese. Alpha-cypermethrin resistance intensity was

moderate in six sites (Lodja, Inongo, Karawa, Pawa, Mwene Ditu, and Lisala) and high in four sites (Kimpese, Kapolowe, Kingasani, and Mbandaka). In all sites, PBO partially restores susceptibility to pyrethroids. In particular, pre-exposure to PBO significantly increased mortality in deltamethrin at all 12 sites (with 91 to 100 percent mortality). As of 2021, mosquitoes tested were susceptible to chlorfenapyr (100ug/bottle) at seven sites (100 percent in Kimpese, Inongo, Mwene Ditu, Lisala, and Boende; and >90 percent in Kisangani and Mbandaka) while emerging chlorfenapyr resistance was recorded at two sites (Karawa and Pawa).

1.3.2. ITNs

PMI will continue to support procurement and distribution of ITNs through continuous distribution channels of ANC and EPI but will not support school-based distribution or mass campaigns with FY 2023 funds. PMI will support operational campaign costs for distribution of ITNs procured by the Against Malaria Foundation in 2024 using previous year's MOP funding. PMI will also support SBC to improve consistent use and proper care of ITNs.

Please see the **SBC section** below for details on challenges and opportunities to improve intervention uptake or maintenance.

ITN Distribution in DRC

In DRC, ITNs are made available via mass distribution campaigns every three years and through ANC and EPI continuous distribution channels. Currently, both PMI and the Global Fund support mass distribution of ITNs every three years. However, the NMCP's goal is for net replacement every 30 months based on durability studies showing the average ITN durability in local settings is under two years. In addition, PMI supports continuous distribution of PBO ITNs through routine distribution to pregnant women during ANC clinics, to children under one year of age at EPI clinics, and continuous distribution in provinces with hyperendemic transmission via school campaigns (though as noted above, PMI will not support school campaigns with FY 2023 MOP funds).

Please refer to the **ITN Gap Analysis Tables** in the annex for more detail on planned quantities and distribution channels.

Table 1. Streamlined Durability Monitoring in DRC

Campaign Date	Site	Brand	Baseline	12-month	24-month	36-month
December 2020	Tanganyika	Veeralin (Alpha-Cypermethrin + PBO)	April/May 2021	February/ March 2022	Planned	Planned
December 2020	Tanganyika	SafeNet Alphacypermethrin	April/May 2021	February/ March 2022	Planned	Planned
September 2022	Nord Ubangi	Interceptor G2 (Chlorfenapyr + Alphacypermethrin)	Planned	Planned	Planned	Planned

1.3.3. IRS

PMI does not support IRS in DRC.

2. MIP

2.1. PMI Goal and Strategic Approach

The DRC National Malaria Strategic Plan aims to protect all pregnant women from MIP through the provision of at least four doses of SP over the course of a woman's pregnancy.

NMCP Approach

The National Malaria Chemoprevention Therapy guidelines recommend that SP-based IPTp be given to all pregnant women during ANC visits from the start of the second trimester of pregnancy (i.e., not during the first trimester). Each woman should receive at least four doses of SP during pregnancy. Doses should be administered one month apart until delivery as directly observed treatment at health facilities. Supportive supervision for MIP is integrated into the broader malaria case management using the outreach training and supportive supervision (OTSS) tool.

PMI Objective in Support of NMCP

PMI supports DRC's MIP strategy through procurement of SP and directly observed treatment kits for IPTp, training and supportive supervision of health service providers in IPTp, and appropriate case management for MIP. PMI also supports SBC to promote ANC attendance and IPTp uptake. PMI plans to support community-based IPTp scale-up, based on recommendations from the TIPTOP study results.

2.2. Recent Progress (April 2021 to March 2022)

During this period, PMI provided support to:

- Procure 8 million SP treatments for PMI-supported health zones.
- Train 3,925 health service providers in IPTp.
- Provide SP to 1,755,455 pregnant women and the SP directly observed treatment kits to 198 health facilities.
- Increase engagement with community structures, such as village outreach committees, health area development committees, and CHWs to inform elements of the VIVA! campaign, which focuses on maternal health behaviors, including ANC attendance. Initial engagements have focused on capacity-building of community stakeholders to strengthen the linkage between communities and health structures.

2.3. Plans and Justification for FY2023 Funding

The FY 2023 funding tables contain a full list of MIP activities that PMI proposes to support in DRC with FY 2023 funding. Please visit PMI.gov for these FY 2023 funding tables.

PMI/DRC will continue to support MIP activities with a similar package of interventions, except for a change in focus from training MIP providers to providing supportive supervision to MIP providers who have already been trained. Over the last three years, PMI has supported training of over 6,000 ANC providers; with the FY 2023 MOP budget, PMI will redirect funds previously used for MIP training to provide support for MIP supportive supervision, targeting the low-performing facilities.

The DRC piloted the community distribution of IPTp (C-IPTp) through the TIPTOP project in three health zones (Kenge, Bulungu, and Kunda) ending in April 2022. Based on positive findings from this pilot, recommendations are to coordinate and advocate for resource mobilization to integrate the C-IPTp approach in the health system, pending updates to the WHO guidelines and the DRC's guidelines to inform C-IPTp scale-up in other provinces. Using data from DHIS2, low performing health zones and health facilities from HBHI provinces will be selected for the C-IPTp implementation. PMI support will include CHW training in MIP and IPTp administration, supportive supervision for ongoing capacity-building, and monthly monitoring meetings. PMI will also continue the procurement of SP for IPTp, as well as consumables to facilitate provision of IPTp as directly observed treatment (water containers, cups), and the procurement of additional buffer stock of SP to maintain adequate SP supplies, which may pose a barrier to IPTp uptake. PMI will continue to support SBC interventions focused on promoting early and regular ANC, as well as ANC provider behaviors to address missed opportunities to provide IPTp for eligible pregnant women at ANC. Current data collection activities, including the Malaria Behavior Survey (MBS) and a recent study on gaps between ANC visits and IPTp uptake, provided important insights

to shape these interventions, including interpersonal communication between ANC providers and pregnant women and the recording of data into registers.

Please refer to the **SP Gap Analysis Table** in the annex for more detail on planned quantities and distribution channels.

Please see the **SBC section** below for details on challenges and opportunities to improve intervention uptake or maintenance.

3. Drug-based Prevention

PMI does not currently support seasonal malaria chemoprevention or other drug-based prevention in DRC.

4. Case Management

4.1. PMI Goal and Strategic Approach

The main NMCP case management objective, according to the 2020–2023 National Malaria Strategic Plan, is to treat 100 percent of confirmed malaria cases according to national guidelines at all levels of the health pyramid, including in the community. The national malaria case management guidelines recommend that any suspected case, tested positive by RDT or microscopy, be treated with ACT, specifically ASAQ and AL combinations. AS-PYR has recently been adopted as a third first-line formulation for treatment of uncomplicated malaria. Injectable artesunate is the preferred treatment for severe malaria cases. If the first line treatments are unavailable, the country recommends the combination quinine-clindamycin for non-severe cases and injectable artemether or injectable quinine for severe cases. Rectal artesunate is used as pre-referral treatment for severe malaria cases at the CCS level or health centers.

All suspected malaria cases are supposed to be tested by RDT. Microscopy is recommended for cases suspected of treatment failure to monitor parasite clearance for severe malaria cases and for identification of parasite species. Microscopy can only be conducted at facilities with proper equipment and trained laboratory staff; this is generally limited to the referral health facility level.

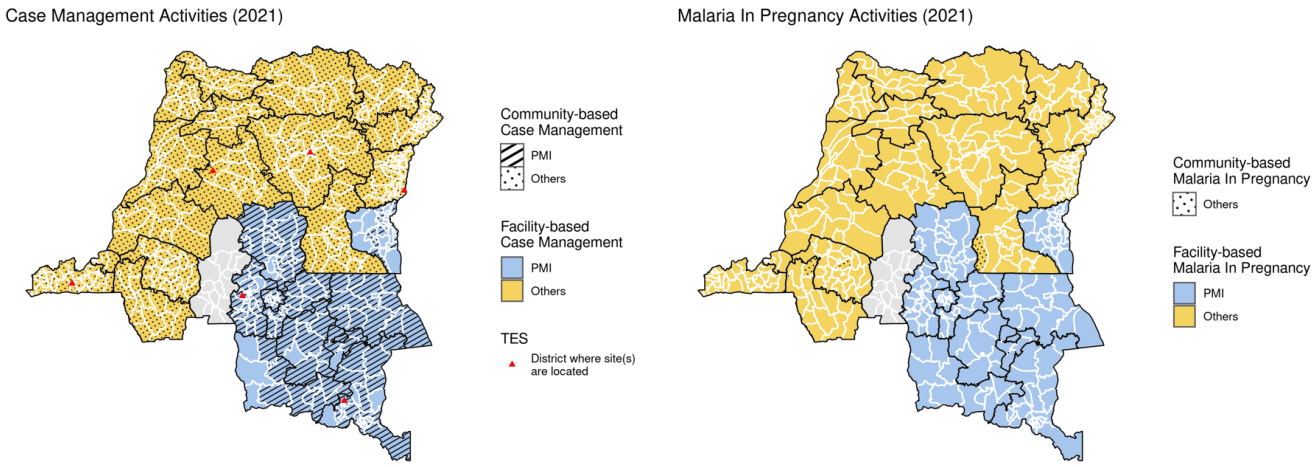
PMI currently supports malaria services to 37 percent of the population, in 179 health zones and 3,122 health areas with 168 general reference hospitals, 6,775 health centers, and 3,015 community health sites out of the 21,590 estimated, in 9 out of the 26 provinces.[6]

[6] DHIS2, 2020.

PMI supports the country's malaria case management strategy through procurement of essential diagnostics and treatments, and by providing training and supportive supervision for lab technicians, facility-based health workers, ANC providers, and CHWs. PMI also supports a microscopy quality assurance program and therapeutic efficacy studies (TESs) to monitor antimalarial resistance and, at the central level, supports the case management technical working group (TWG) to convene regular meetings. PMI is also providing support for a pilot implementation program in Haut Katanga focused on continuous quality improvement (CQI), which aims to improve the quality of malaria case management services through improved bi-directional feedback between providers and supervisors. In addition, PMI supports efforts to improve pre-service training in the DRC by assessing and updating curricula across various training institutions.

Beginning in 2022 with FY 2021 MOP programming, PMI/DRC will implement changes in support of community-level service delivery: 1) expand the age limit of children served at CCSs to include those 6 to 13 years of age in addition to the currently served under five years of age; 2) provide travel stipends to CHWs in support of their efforts to get re-supplied and report data; and 3) pause geographic expansion of CCSs to ensure the quality of service delivery through appropriate support to existing CHWs (e.g., supportive supervision, focus on referral, continuity of care). These changes will be maintained with FY 2023 MOP programming.

Figure 2. Map of Case Management, Community Health and Malaria in Pregnancy Service Delivery Activities in DRC, 2021



4.2. Recent Progress (April 2021 to March 2022)

National-level Case Management Activities

- Supported the digital data collection and analysis training of fifteen new laboratory OTSS+ supervisors and eight clinical supervisors in the use of Health Network Quality Improvement System (HNQIS). The HNQIS replaced the paper-based OTSS tool and the NMCP plans to extend its use as a national tool for malaria providers' supportive supervision.
- Provided support to NMCP to convene and lead four malaria TWG meetings.
- Supported national External Competency Assessment of Malaria Microscopists accreditation for 12 laboratory expert microscopists courses.
- Conducted a national assessment of malaria pre-service training curriculum, identified gaps and developed the repository as a reference tool for trainers to develop their malaria course content tailored to the students' needs.

Commodities

- Supported the procurement and distribution of 11 million malaria RDTs, accounting for approximately 100 percent of needs in PMI-supported provinces.
- Supported the procurement and distribution of malaria microscopy lab reagents for the lab referral health facilities in the nine PMI-supported provinces.
- Supported the procurement and distribution of 14 million ACT treatments, accounting for approximately 100 percent of needs in PMI-supported provinces,
- Supported the procurement and distribution of 3 million vials of parenteral artesunate, accounting for approximately 100 percent of needs for children under five years of age in PMI-supported provinces.
- Supported the procurement and distribution of 288,940 rectal artesunate suppositories for pre-referral treatment of severe malaria cases in children, accounting for approximately 100 percent of needs in PMI-supported provinces.

Facility-level Case Management Activities

- Piloted a CQI project in Haut Katanga which showed improvement in management of uncomplicated malaria cases. Malaria service providers were able to demonstrate steady improvement in requesting a biological test (RDT/microscopy) for all suspected cases, correctly documenting RDT results, and prescribing the recommended ACTs to treat uncomplicated malaria cases. However, ACT prescription for negative test results remains a

challenge: providers prescribing ACTs for negative results remained stable, going from 71 percent to 74 percent to 70 percent for the third rounds of OTSS+, respectively. Based on the overall findings, PMI recommends scaling up in low-performing PMI-supported provinces.

- Supported the training of 3,736 health service providers in malaria case management, including diagnostics and treatment.
- Supported the Ministry of Health (MOH) training of 171 lab technicians in malaria microscopy and 23 malaria clinician supervisors for the CQI pilot implementation monitoring,
- Implemented one round of internal and external microscopy quality assurance at referral-level facilities in the nine PMI-supported provinces.
- Planned and conducted three joint clinical and laboratory OTSS+ in Haut Katanga and two OTSS+ in eight other provinces.
- Conducted the training of 58 laboratory technicians in basic malaria diagnostic refresher training and 15 laboratory technicians in advanced malaria diagnostic refresher training.
- Trained facility and community health levels providers on uncomplicated and severe malaria case management training, including on RDTs and microscopy.
- Treated 3,073,377 children under five years of age with confirmed malaria.

Community-level Case Management Activities

- Trained 1,750 CHWs and conducted 1,988 supportive supervision or mentorship visits reaching 695 CCSs.
- Trained 3,736 health workers in supportive supervision for CHWs.

Please note that recent progress with monitoring antimalarial efficacy and the TES approach is presented in the **Plans and Justification for FY 2023 Funding** section immediately below.

4.3. Plans and Justification for FY 2023 Funding

The FY 2023 funding tables contain a full list of case management activities that PMI proposes to support in DRC with FY 2023 funding. Please visit www.pmi.gov/resources/malaria-operational-plans-mops for these FY 2023 funding tables.

National-level Case Management Activities

PMI/DRC will continue to support the digital data collection and analysis training for new laboratory OTSS+ supervisors and clinical supervisors in the use of HNQIS. The HNQIS has been handed over to the NMCP and Division Système National d'Information

Sanitaire and has become a national tool that both the Global Fund and PMI plan to support as needed. The HNQIS replaced the paper-based OTSS tool, and the NMCP plans to extend its use as a national tool for malaria providers' supportive supervision.

PMI/DRC will continue to support the NMCP to conduct supervision of malaria control activities at the provincial level (two national supervisors conduct semi-annual supervision visits to nine provinces), and to hold the quarterly malaria TWG meetings.

PMI will also continue to support the malaria pre-service training curriculum through periodic meetings between the NMCP and higher education and university institution trainers, website maintenance (MOH and Ministry of Higher Education and University), and annual review to assess and update guidelines and training curriculum related to case management of malaria.

PMI will also conduct advocacy and improve the coordination to develop a national strategy for professionalization of CHWs.

Commodities

With FY 2023 funds, PMI plans to procure RDTs for use at hospitals, health centers, and CCSs in PMI-supported provinces. This procurement includes three months of buffer stock. PMI will also procure ACTs, which will be used at hospitals, health centers, and CCSs. Cost estimate also includes delivery to regional warehouses. This procurement will also include buffer stock.

For severe malaria, PMI will procure injectable artesunate, covering estimated needs of children 0 to five years of age for reference health centers and hospitals. Cost estimate includes delivery to regional warehouses. This is sufficient for forecasted need only; no additional months of stock are planned due to budget limitations. PMI will procure rectal artesunate for pre-referral treatment. Cost estimate includes delivery to regional warehouses and includes buffer stock.

Please refer to the **ACT, RDT, injectable artesunate, and artesunate suppository Gap Analysis Tables** in the annex for more detail on planned quantities and distribution channels.

Facility-level Case Management Activities

With FY 2023 funding, the DRC will continue to support the OTSS (on-the-job training and mentoring) of facility-based health workers and lab technicians responsible for the management of both uncomplicated and severe malaria in public and not-for-profit health centers and hospitals.

PMI/DRC will expand the CQI piloted in Haut Katanga to low-performing PMI-supported provinces since results showed improvement in key aspects of uncomplicated malaria case management. PMI will not support the procurement of lab reagents since patients are charged for malaria microscopy and health management teams have been advised to use the profits from these fees to replenish lab reagents.

Pending DRC's policies and timeline for malaria vaccine roll-out, PMI also plans to support the introduction of the malaria vaccine into health facilities through the reinforcement of health care workers' capacity, supportive supervisions, malaria data (including vaccine administration) monitoring, and engagement of the health care workers and the community in positive vaccine introduction messaging.

Community-level Case Management Activities

PMI/DRC will continue to provide a stipend to CHWs in recognition of their effort related to malaria commodity replenishment. While not a direct form of payment, this approach serves as motivation for their valuable contribution. With the FY 2023 funding, PMI/DRC plans to focus on improving the quality of community health care services by providing a flat rate for commodity replenishment to CHWs and supportive supervision. Starting in calendar year (CY) 2023, the eligible age group for community care services will expand from children under five years of age to 13 years of age.

As of December 2021, out of the total estimated coverage needed of 21,590 CCSs in PMI-supported provinces, PMI is supporting 3,115. In 2022, PMI/DRC will expand to an additional 540 sites, bringing the total to 3,655 by December 2022. While additional expansion is desired, funding constraints limit the addition of more sites beyond this number. Instead, resources will focus on ensuring malaria services quality and strengthening the community case management referral system for adequate continuity of care for those most vulnerable to the most severe malaria outcomes. PMI/DRC is putting a stronger emphasis on the quality of community case management for severe cases, including dosing and referral. This will be operationalized through existing training and supervision activities (i.e., no additional funds needed) with specific discussions on partner work planning.

Monitoring Antimalarial Efficacy

The 2017 TES results showed decreasing efficacy of ACTs in certain sites in DRC (Moriarty et al., 2021). Samples collected in 2020 and 2021 from the six sites (Boende, Kabondo, Kapalowe, Kimpense, Mikalayi, and Rutshuru) are being analyzed and results will help inform the choice of first-line ACTs in DRC. Given that DRC shows evidence of waning drug efficacy and is a context with high multiplicity and diversity of infection, regular TES will continue to be a priority of PMI/DRC.

From 2022, the number of sentinel sites for TES has increased to eight from the initial six sites. Four sites will be studied each year (Table 2).

Table 2. Ongoing and Planned Therapeutic Efficacy Studies

Ongoing TESs			
Year	**Site name**	**Treatment arm(s)**	**Plan for laboratory testing of samples**
2021	Kabondo (Kisangani/Tshopo), Kapolowe (Haut Katanga), Mikalayi (Kasaï Central), Boende (Tshuapa)	AL, ASAQ	Ongoing
Planned TESs (funded with previous or current MOP)			
Year	**Site name**	**Treatment arm(s)**	**Plan for laboratory testing of samples**
2022	Kalima/Kindu (Maniema), Vanga (Kwilu), Kimpese (Kongo Centrale), Rutshuru (Nord Kivu).	AL, ASAQ	TBD
2023	Kabondo (Kisangani/Tshopo), Kapolowe (Haut Katanga), Mikalayi (Kasaï Central) Boende (Tshuapa)	AL, ASAQ	TBD

AL=artemether-lumefantrine; ASAQ=artesunate-amodiaquine; TBD=to be determined

With 2023 funds, PMI will continue to support TES in DRC to inform malaria treatment strategies.

Please see the **SBC section** below for details on challenges and opportunities to improve intervention uptake or maintenance.

5. Health Supply Chain and Pharmaceutical Management

5.1. PMI Goal and Strategic Approach

The DRC 2020–23 National Malaria Strategic Plan prioritizes strengthening the malaria supply chain and ensuring availability of malarial products in health facilities. The plan highlights the importance of coordination among key procurement and supply chain stakeholders and the importance of regular logistics data to inform decision-making and the establishment of an electronic Logistics Management Information System (eLMIS). Malarial product availability over the short term at all levels of the health care system and, in particular, at the last mile, remains a priority and a challenge for PMI in this MOP along with investments in longer-term supply chain system strengthening.

5.2. Recent Progress (April 2021 to March 2022)

PMI has continued to support various activities to strengthen the health supply chain and pharmaceutical management, including annual quantifications, storage and distribution, strengthening of the eLMIS, and improving data quality. There has also

been support for pharmaceutical management, specifically to strengthen capacity for quality assurance for medicines and post–marketing surveillance for malaria medicines.

Product availability continues to be a major challenge for malaria control in the DRC. Availability at *centrales de distribution regionales* (CDRs) remained high for all products for 2020 and 2021 with no stockouts. At the health facility level, routine data on availability reported through the *Système National d'Information Sanitaire* or SNIS (a customized DHIS2 system) comprises the quality of data as well as suboptimal reporting rates. The annual End-Use Verification (EUV) Survey is an important complement to these data, although care must be taken in ascribing any trend to the data since they are a single point-in-time measure. That said, there was discernible improvement in product availability between the EUVs for September 2020 and August 2021 (see Table 3)

Table 3: Stockout Rates and Stock Levels for Various Malaria Products, End-Use Verification, 2019–2020

Product	Stockouts		% Facilities Stocked according to Plan (between Minimum and Maximum)	
	Sept 2020	Aug 2021	Sept 2020	Aug 2021
Any WHO prequalified ACT	84%	88%	NA	NA
No AL presentation	73%	64%	NA	NA
Rectal Artesunate 100 mg	77%	69%	18%	15%
Injectable Artesunate	75%	59%	30%	17%
RDT	20%	12%	21%	35%
SP	19%	13%	28%	34%
ITNs	35%	36%	25%	31%

For example, the percent of facilities with any WHO prequalified ACT improved slightly from 84 percent to 88 percent from 2020 to 2021, while the percent of facilities with no AL presentation declined from 73.1 percent to 63.7 percent (note most facilities in DRC stock either or both of AL and ASAQ). Stockout rates for most individual presentations, while remaining high, did, in most, cases improve (see Table 3). Meanwhile, the percent of facilities stocked according to plan (between minimum and maximum) improved for some products but disimproved for others with no discernible trend (see Table 3).

It is too soon to say if the PMI policy of ordering additional stock to maintain minimum stock levels up to six months for all products is contributing to the improved availability seen (even as stockouts remain unacceptably high). However, funding limitations mean that in some cases for this MOP, PMI is unable to plan for this level of buffer stock.

Direct delivery of products to the last mile (rather than health facilities having to collect) can readily improve product availability. However, it requires significant investment in planning and funding for transportation. An additional complication in DRC is poor infrastructure (in particular, roads), making many facilities difficult to access, especially during the rainy season. As noted above, in most cases in PMI-supported provinces, products are delivered to CDRs, and from CDRs to zones, and then onward to health facility levels for certain zones. Integrated distribution of PMI products with other USAID products (for HIV/AIDS, family planning, and maternal and child health) from CDRs directly to health facilities can speed up distribution and improve availability. USAID piloted integrated direct distribution of products in 10 zones in two provinces (Haut Katanga and Lualaba). Initial results showed improved availability compared to facilities in control zones and they also suggested that delivery through private sector third-party logistics was cheaper than using CDRs to deliver to zones. These cost findings have yet to be confirmed. PMI plans to maintain this model in piloted zones and PMI will seek opportunities to increase integrated direct delivery for this MOP period.

Steady progress is being made to strengthen the capacity of the government to manage and lead its supply chain. In the past year, with support from PMI, technical logistics management units were formally created at the central and provincial levels. In addition, work continued to draft the legal frameworks, *Système national d'approvisionnement en médicaments essentiels*, for the national supply chain. This legal endorsement is a vital first step in implementing this needed reform. PMI is also supporting a supply chain assessment using the USAID National Supply Chain Assessment tool, which is expected to be completed in 2022 and will provide the basis for the next national supply chain strategy. Support is also given to coordination among CDRs, including organizing information-sharing meetings.

Medicine quality, particularly of commercial products, is an important concern for the NMCP. There are large numbers of commercial malarial products circulating in the DRC, not all of which are WHO prequalified, and they play an important role in ensuring access to medicines. Poor quality products, however, can compromise treatment and increase resistance. PMI is supporting the *Laboratoire Nationale de Contrôle de Qualité* to build their overall capacity and to perform post–marketing surveillance of malaria medicines. In 2021, a post–marketing surveillance plan was developed and products sampled from the marketplace with testing underway as this MOP was being prepared.

5.3. Plans and Justification with FY 2023 Funding

The FY 2023 funding tables contain a full list of health supply chain and pharmaceutical management systems strengthening that PMI proposes to support in DRC with FY 2023 funding. Please visit www.pmi.gov/resources/malaria-operational-plans-mops for these FY 2023 funding tables.

- Support for a national quantification for malaria products. This includes individual provincial-level forecasts for each of the nine PMI-supported provinces, which are then rolled up to the national level. Each province produces its own supply plan which is regularly updated based on supply, demand/consumption, and funding.
- Monitoring of the supply chain stock levels, including the supply plan and stock levels at CDRs, zones, and health facilities. CDR data are reported through InfoMed from CDRs warehouse management system (currently APISOFT), and zonal and health facility data from the SNIS (DHIS2-based system). Data are monitored and assessed for completeness and quality and used to inform supply plans and distribution plans (from CDRs to zones and/or health facilities). This includes support for the use and management of the InfoMed system and dashboard by *Programme National d'Approvisionnement en Médicaments* and ensuring its ongoing interoperability with the SNIS and CDRs warehouse management systems.
- Implementation of one EUV study funded jointly with the Global Fund. The scope will be national.
- Financial support for warehousing of malaria products at CDRs (8 percent of product value) and onward distribution to either zones or health facilities using either CDRs or private sector third-party logistics (budgeted at 5 percent). To the extent possible given financing, integrated delivery of USAID-procured products will be implemented to health facilities, bypassing zones.
- Ongoing support for the technical logistics management units at the central and provincial levels to strengthen their capacity to provide direct support for the supply chain.
- Ongoing support for longer-term human resource for supply chain management (HR4SCM) interventions in collaboration with the Global Fund and other donors. This includes support for supply chain bachelor's and master's degree programs at the University of Kinshasa School of Public Health and to the national professional association of logisticians and supply chain professionals.
- Continue support to *the Laboratoire Nationale de Contrôle de Qualité* to achieve and maintain ISO certification and continue post–marketing surveillance of malaria medicine quality.

6. SBC

6.1. PMI Goal and Strategic Approach

PMI/DRC's SBC support is in full alignment with the NMCP's National Strategic Communication Plan, 2021–2023. The NMCP objective is to strengthen community

dynamics and approaches to SBC favorable to malaria control in the DRC's 26 provinces. The SBC plan was updated in December 2021; one strategic update was the inclusion of health providers as a major audience, primarily for IPTp uptake and data reporting.

PMI supported the elaboration, validation, and dissemination of the new National Strategic Communication Plan, which incorporates data from recently implemented PMI-supported data collection activities. The MBS was jointly funded by PMI and Global Fund and provides data on relevant determinants of key malaria behaviors among the population. PMI also supported a study on factors associated with apparent gaps between ANC visits and IPTp coverage, which led to the inclusion of health worker behaviors in the current National Strategic Communication Plan. The plan focuses on improved uptake of key malaria behaviors, including correct and systematic use of ITNs, prompt care-seeking at the onset of fever, and administration of IPTp. The NMCP's approach to SBC activities consists primarily of interpersonal communications (e.g., household visits) and mass media. Selection of approaches and channels are intended to maximize interaction with the community, achieve reach to the majority of the population, improve accountability, maintain an effective feedback loop between communities and healthcare providers, and engage decision-makers. The SBC approaches also take into account their efficiency and adaptability to the rural, urban, and peri-urban contexts.

PMI's SBC activities support the NMCP's approach by addressing knowledge gaps about drivers of key behaviors, engaging with stakeholders to develop innovative interventions based on human-centered design principles, piloting those interventions, and finally bringing them to scale through phased implementation approaches. PMI's approach in DRC recognizes that malaria fits into an integrated health package, and health resources can be leveraged to promote behaviors such as care-seeking and ANC attendance that have positive health impacts beyond just malaria. While PMI focuses SBC implementation in its targeted provinces, the data and insights generated through formative research (e.g., MBS, ANC/IPTp gap study) are shared with other relevant donors, namely Global Fund, to inform high-quality SBC implementation throughout the country.

6.2. Recent Progress (April 2021 to March 2022)

PMI supported the following SBC activities in the past 12 months:

- Planning, implementation, and dissemination of the MBS which was conducted in 15 of DRC's 26 provinces, representing four different geographic regions. In addition to the updated National Strategic Communication Plan, PMI has also supported the development of province-

level microplans that apply learning from the MBS to improve malaria control strategies at decentralized levels. These efforts will continue to inform targeting and design of SBC implementation in communities.

- Implementation of a formative study to assess health facility–level factors influencing the gap between ANC attendance and provision of IPTp to better understand how to address missed opportunities at service delivery points for optimal IPTp uptake. Study results have been disseminated among malaria stakeholders and will inform health facility–level interventions targeted to health facilities, providers, as well as health zone- and provincial-level health authorities to address provider training, supervision, data recording, counseling, and commodity availability issues.
- Implementation of a multi-media campaign through community radio, billboard, and interpersonal communication during the ITN campaign mass distribution and school-based distribution in five provinces. The communication objectives were to inform the audience on ITN distribution logistics and promote the benefit of sleeping every night under an ITN.
- Implementation of the integrated health VIVA! campaign through community-based interventions co-designed with communities. VIVA! promotes essential family health practices including ITN use, ANC attendance, and care-seeking. PMI has supported the development, design, and piloting of several interventions through a human-centered design process and is now poised to further scale these activities in target health zones.
- Implementation of a multi-media campaign targeting urban and peri-urban populations in four target provinces to promote consistent ITN use, ANC attendance and IPTp uptake, and care-seeking for fever. Channels include TV, radio, social media, billboards, and information phone lines. These activities are estimated to have reached over six million people.
- Routine monitoring of SBC implementation through quarterly rapid surveys in four of PMI's target provinces. These surveys focus on knowledge, awareness, and practices for various health behaviors including malaria.
- Technical assistance for the development, validation, and dissemination of the new National Strategic Communication Plan, 2021–2023, and elaboration of provincial communication plans for all nine supported provinces.
- Support for quarterly convening of the communications TWG at national and provincial levels (in select PMI provinces).

Key challenges remain for uptake of key behaviors in some technical areas:

- **ITNs:** Per the 2017–2018 MICS, the ITN use:access ratio is over 1.0 in the vast majority of provinces (including PMI provinces) except for Kasaï Central (0.59). This trend was also observed during the 2022 MBS. Overall, the

use:access ratio was 0.88, indicating that most people with access to a bed net report using it, but that there is some room for improvement. But again in the Kasaï Central survey zone, the ratio was substantially lower. The DRC MBS showed that positive attitudes toward ITNs and the belief that consistent use of ITNs was a community norm were less common in Kasaï zone compared to the other zones.

- **MIP:** As mentioned above, a mixed-methods study conducted in 2021 in Tanganyika and Lualaba provinces explored the factors associated with missed opportunities for delivery of IPTp at ANC. Data showed that there were missed opportunities for IPTp provision at 44 percent of all ANC visits recorded in the registries. Provider interviews revealed a lack of communication with pregnant women during the administration of IPTp as well as major gaps in how IPTp data are recorded in ANC registers. Recommendations from the study included strengthening provider capacity in data recording, improving supervision, improving SP supply management, and having more effective communication between the provider and client during IPTp administration. The MBS also showed that over one third of respondents believed that providers commonly made pregnant women pay for IPTp in Kasaï region. Payment for what is intended to be a free drug is a major disincentive for pregnant women to attend ANC.
- **Case Management:** The MBS demonstrated that prompt care-seeking in a health facility or from a CHW was low, with only about 4 out of 10 children with fever being brought for care on the same or next day. The associated SBC recommendations are to implement interventions to raise awareness of prompt care-seeking and to strengthen health providers' capacity to improve compliance with country guidelines and appropriate data recording at all levels. PMI anticipates additional insights on case management from the ongoing RDT reader study, particularly the qualitative component which will take place in August 2022.

6.3. Plans and Justification with FY 2023 Funding

The FY 2023 funding tables contain a full list of SBC activities that PMI proposes to support in DRC with FY 2023 funding. Please visit www.pmi.gov/resources/malaria-operational-plans-mops for these FY 2023 funding tables.

Priorities

While PMI supports SBC activities that promote the uptake and maintenance of all key malaria interventions, the following three behaviors will be prioritized with FY 2023 funds:

Table 4. Priority Behaviors to Address

Behavior	Target Population	Geographic Focus	Programming to Address Behavior
Consistent IPTp uptake (including early and regular ANC attendance)	Pregnant women Spouses/other head of household decision-makers ANC providers	9 PMI focus provinces	• Multi-media campaign (e.g., radio, TV, billboards) targeted to urban and peri-urban areas. • Service communication and counseling from facility-based providers to pregnant women, care-takers, partners/spouses. • Community mobilization through civil society organizations (CSOs) and faith-based organizations (FBOs). • Interpersonal communications from CHWs engaged in health promotion activities. • VIVA! activities in the community, including couples' communication for ANC decisions, interpersonal communications targeted to market-goers, and strategies to encourage household health savings to address cost barriers to ANC attendance. • VIVA! activities will also engage local leaders to serve as community mobilizers to promote ANC attendance.
Prompt care-seeking for fever	Household decision-makers	9 PMI focus provinces	• Multi-media campaign (e.g., radio, TV, billboards) targeted to urban and peri-urban areas. • Service communication and counseling from facility-based providers to pregnant women, care-takers, partners/spouses. • Interpersonal communications from CHWs engaged in health promotion activities. • Community mobilization through CSOs and FBOs. • VIVA! activities in the community, including couples' communication for care-seeking decisions, interpersonal communication targeted to market-goers, and strategies to encourage household health savings to address cost barriers to care-seeking. • VIVA! activities will also engage local leaders to serve as community mobilizers to promote care-seeking.
Health worker adherence to malaria case management guidelines for testing and treatment	Health providers in the public/non-profit sector Caretakers/ patients seeking services	9 PMI focus provinces	• Continued support for further roll-out of the communication module syllabus, currently being introduced at the University of Kinshasa, and envisioned to be incorporated in other medical training institutions. • Community mobilization through CSOs and FBOs. • Service delivery activities, including pre-service training for providers, in-service training, and supportive supervision. • Focused support to health workers on data recording behaviors.

Additional Support Activities

The past few years of PMI SBC support in DRC have focused on formative research including the MBS, the ANC/IPTp study, and qualitative human-centered design work to address barriers to ANC attendance and care-seeking. Activities based on the insights generated from this work are now being piloted and implemented.

A robust M&E strategy will continue to be supported by PMI to ensure these activities are having the desired impact on behaviors, to inform whether and how these activities should be scaled/targeted, and to inform changes and adjustments to activities that might be needed. USAID will support an initial evaluation of VIVA! campaign implementation that should inform any changes and adjustments to future activities, and PMI will continue to support quarterly data collection and analysis to inform reach and recall of malaria messages.

There is a need for continued SBC capacity-building at both the national and provincial levels with increased support at provincial levels. To bolster the NMCP and provincial programs, PMI will continue to support:

- National-level coordination of the SBC TWG.
- Provincial-level coordination of the SBC TWGs in the nine PMI-supported provinces.
- SBC activities related to the vaccine introduction and roll-out (pending country decisions/policies/timeline).
- Communication activities during the ITNs mass campaign in targeted provinces.
- Expansion of the communications training curriculum at medical training institutions building on work done at the University of Kinshasa.
- The NMCP to celebrate World Malaria Day and World Mosquito Day.
- Implementation of RECO recognition activities to support community mobilization to raise the profile and stature of CHWs in their communities.

7. SM&E

7.1. PMI Goal and Strategic Approach

PMI supports many components of the DRC NMCP's SM&E strategy across the nine PMI-supported provinces and at the national level:

- PMI focuses on improving the routine surveillance system, strengthening the M&E capacity within the NMCP, and improving data quality across the nine supported provinces.
- PMI supports national, provincial, health zone and health area data quality meetings and reviews.

- PMI supports the printing and dissemination of HMIS registers and monthly reporting forms for the nearly 7,500 facilities within the PMI-supported provinces.
- PMI supports standard surveys as well as other studies and operations research.

7.2. Recent Progress (April 2021 to March 2022)

In CY 2021, PMI supported the following SM&E activities:

- PMI recruited a data specialist to assist the team with related analyses, data reviews, and SM&E partner engagement and support.
- PMI provided technical assistance to strengthen the central level NMCP M&E team's capacity through regular M&E TWG meetings. These focused on analyzing malaria trends and mechanisms for improving health information. At the national level, PMI supported six monthly data review and analysis meetings and three quarterly data validation meetings.
- PMI also supported the M&E capacity at the provincial level in data quality review and use. This was accomplished through using nine provincial malaria SM&E advisors to assist with supportive supervision and coordination of malaria activities around data completeness, timeliness, compilation, and analysis at the provincial level. PMI/DRC continued to support the implementation of DHIS2 in nine provinces, including 36 quarterly M&E TWGs and nine annual integrated primary health care data reviews at the provincial level.
- PMI supported the NMCP and Division *Système National d'Information Sanitaire* to organize four joint supportive supervision visits from the national level to the nine PMI provinces to review data quality issues. Twenty-one health facilities were visited in 15 health zones.
- PMI supported joint supportive supervision visits from provincial to health zone level in 234 health facilities, covering 79 health zones across the nine PMI-supported provinces
- PMI supported routine data quality assessments in 238 health facilities, covering 79 health zones across the nine PMI-supported provinces.
- PMI supported 12 monthly data review meetings at the roughly 1,002 health areas and 72 health zones to conduct monthly data monitoring meetings.
- SM&E provincial advisors also supported semi-annual data reviews in August 2021 across all nine PMI-supported provinces.
- PMI supported the reproduction and dissemination of patient registers and monthly reporting forms for the roughly 7,500 health facilities within the PMI-supported provinces.

The constant expansion of DHIS2 to additional health facilities is positive for surveillance of malaria in DRC but also introduces some challenges. The Government of DRC began to pilot and roll out DHIS2 subnationally in 2014, scaling up nationally over three years. Despite being seen as fully scaled by the end of 2017, additional facilities are continuously added onto the DHIS2 platform. As a result, the number of health facilities that reported suspected malaria cases in January 2017 and January 2022 increased nationally by 35 percent, from 13,325 to 17,973; and in PMI-supported provinces by 34 percent, from 5,534 to 7,429. The continued incorporation of health facilities onto DHIS2 makes assessing trends, estimating commodity needs, and ensuring an ample supply of patient registers and monthly reporting tools challenging.

7.3. Plans and Justification with FY 2023 Funding

The FY 2023 funding tables contain a full list of SM&E activities that PMI proposes to support in DRC with FY 2023 funding. Please visit www.pmi.gov/resources/malaria-operational-plans-mops for these FY 2023 funding tables.

Using FY 2023 funds, PMI will maintain support for SM&E activities in DRC. This will include:

- Data analysis and use for program management, supervision to provincial levels, coordination of M&E working groups, and facilitation of national-level reviews.
- Training and coaching on data analysis and use as well as general M&E support to the NMCP provincial health departments.
- Support for implementing partner meetings to discuss SM&E activities and coordination as well as continued improvement of standard dashboards and visualizations for review of malaria data at the health zone and provincial levels.
- Continued improvement of standard dashboards and visualizations for review of malaria data at the health zone provincial and national levels, and enhanced data quality assessments with register comparison and review.
- PMI will also support the production and dissemination of registers and monthly reporting forms for all health facilities within the nine supported PMI provinces as well as 12 monthly data validation meetings at each of the 179 PMI-supported health zones and nearly 3,000 health areas, as well as transmission of data to the health-zone level.
- PMI is also planning to support the management, monitoring, and integration of malaria vaccine introduction data into the national HMIS.

Table 5. Available Malaria Surveillance Sources

Source	Data Collection Activity	2020	2021	2022	2023	2024	2025
Household Surveys	Demographic and Health Survey			P	P		
Household Surveys	Malaria Indicator Survey						
Household Surveys	Multiple Indicator Cluster Survey						
Household Surveys	Expanded Program on Immunization Survey						
Health Facility Surveys	Service Provision Assessment						
Health Facility Surveys	Service Availability Readiness Assessment Survey						
Health Facility Surveys	Other Health Facility Survey						
Malaria Surveillance and Routine System Support	Therapeutic Efficacy Studies		X		P		
Malaria Surveillance and Routine System Support	Support to Parallel Malaria Surveillance System						
Malaria Surveillance and Routine System Support	Support to Health Management Information System	X	X	P	P	P	P
Malaria Surveillance and Routine System Support	Support to Integrated Disease Surveillance and Response						
Malaria Surveillance and Routine System Support	Electronic Logistics Management Information System	X	X	P	P	P	P
Malaria Surveillance and Routine System Support	Malaria Rapid Reporting System						
Other	End-Use Verification	X	X	P	P	P	P
Other	School-based Malaria Survey						
Other	Knowledge, Attitudes and Practices Survey, Malaria Behavior Survey						
Other	Malaria Behavior Survey		X				
Other	Malaria Impact Evaluation			*P			
Other	Entomologic Monitoring Surveys						

*Asterisk denotes non-PMI funded activities; X denotes completed activities; P denotes planned activities.

8. OR and Program Evaluation (PE)

8.1. PMI Goal and Strategic Approach

Two of the guiding principles of the NMCP's 2020–2023 Malaria National Strategic Plan include: 1) innovation in the development of new implementation tools to fight malaria; and 2) research to maximize progress toward malaria elimination in DRC.

8.2. Recent Progress (April 2021 – March 2022)

With FY 2019 funds, the PMI/DRC team finalized the protocol for the study "Assessing the Accuracy of Malaria Test Positivity Rates and Related Indicators Reported into the National Health Management Information System in the Democratic Republic of Congo." This study uses an automated RDT reader to analyze and interpret RDT results. The study will determine the degree of discordance in related malaria indicators between data obtained from RDT readers compared to what is reported through national HMIS. The study is one piece of a larger effort to understand the breadth and depth of data quality issues related to counts of patients tested by RDT, positive by RDT, and test positivity rate. These efforts hope to inform important data quality questions in DRC. This will be an important step in assessing the accuracy of the malaria surveillance data in DRC and thus improve interpretation and approaches to improving data quality efforts moving forward. No other OR/PE is funded through PMI.

The RDT reader study was scheduled to start in the summer of 2021 as soon as the RDT readers arrived in DRC. Due to delay in receiving the RDT readers in-country, largely related to supply chain issues impacted by COVID-19, the study did not start until December 2021. The RDT readers were deployed to 144 peripheral health facilities, 48 each in Haut Katanga, Kasaï Central, and Sud Kivu provinces. Preliminary data will be available in mid-2022 and the study is scheduled to last approximately one year. A parallel study is underway to identify determinants of providers' behavior affecting malaria treatment decision-making.

Recently Completed OR/PE Studies	Status of Dissemination	Start date	End date
Exploring the barriers to IPTp in the DRC (ANC/IPTp)	Lualaba & Tanganyika	Mar. 2021	Feb. 2022
Ongoing or Planned OR/PE Studies	**Status**	**Start date**	**End date**
Assessing the accuracy of malaria test positivity rates and related indicators reported into the national HMIS in the DRC	Ongoing field data collection	Dec. 2021	Dec. 2022

Table 7. Non-PMI-funded Operational Research/Program Evaluation Studies Planned/Ongoing in DRC

Source of Funding	Implementing Institution	Research Question/Topic	Current Status/Timeline
UNITAID	Jhpiego	Feasibility of community IPTp, four-country study (TIPTOP).	Ongoing: 2017–2022 2024 (TIPTOP)

8.3. Plans and Justification with FY 2023 Funding

No OR/PE activities are proposed with FY 2023 funding.

9. Capacity Strengthening

9.1. PMI Goal and Strategic Approach

PMI/DRC supports the NMCP objective to strengthen its technical and managerial capacity at the central and provincial levels to effectively implement the national malaria strategic plan and reach its objectives. PMI's support focuses on:

- Ensuring the NMCP has an adequate and conducive working environment.
- Management training for malaria focal points and health zone officers.
- Coordinating of malaria activities at provincial and lower levels of the health system.
- Implementing of the NMCP organizational development and leadership strengthening activity that follows the 2014 NMCP institutional audit recommendations.

9.2. Recent Progress (April 2021 – March 2022)

PMI supported the following capacity strengthening activities in the last 12 months:

- Targeted training and coaching of NMCP's leadership skills and workforce development.
- Implementation of FETP, which included FETP trainees working directly with the NMCP. Specifically, PMI has supported the training of two advanced cohort trainees in the FETP program to strengthen the residents' capacity to correctly complete malaria surveillance tools, analyze malaria data, conduct supervision of CHWs, and investigate reported malaria outbreaks. In addition, funding from PMI supported an NMCP-led training of 22 health workers to build capacity in malaria surveillance and monitoring. PMI also directly engaged with the residents to understand their needs and determine how they can efficiently support the NMCP.

- Development of annual operational plans for all supported health zones with a malaria component.
- Supervision, including supervision of provinces by the central level.
- NMCP support to plan and conduct malaria TWG at national and provincial levels and malaria task force meetings at the national level.

9.3. Plans and Justification with FY 2023 Funding

DRC will continue to support most capacity-strengthening activities as described in the **Recent Progress section** above. As such, the FY 2023 funding tables contain a detailed list of capacity-strengthening activities that PMI proposes to support in DRC, including strengthening the capacity of NMCP to:

- Provide support to the MOH/NMCP to engage with the private sector and establish a private sector TWG. Strengthen the private sector capacity to be involved in malaria activities support. Support the MOH/Government of DRC to maintain and reinforce the public-private partnership and identify future opportunities.
- Support the establishment of an enabling environment for identified digital initiatives, and support the identification and customization of a community-based digital tool, and support development of standard operating procedures on community-based surveillance.
- Implement health facility electrification to improve the quality of services provided and improve access to networks for ease of digital health data recording and reporting.

10. Staffing and Administration

In most PMI countries, a minimum of three health professionals oversees PMI. The single interagency team led by the USAID mission director or their designee consists of a resident advisor (RA) representing USAID, an RA representing CDC, and one or more locally hired experts known as foreign service nationals. In DRC, there are three locally hired experts, two RAs representing USAID and CDC, and overall management is provided by the malaria and tuberculosis team lead. The PMI interagency team works together to oversee all technical and administrative aspects of PMI, including finalizing details of the project design, implementing malaria prevention and treatment activities, M&E of outcomes and impact, reporting of results, and providing guidance and direction to PMI implementing partners.

ANNEX: GAP ANALYSIS TABLES

Table A-1. Routine ITN Gap Analysis Table

Calendar Year	2022	2023	2024
Total country population	116,328,732	119,702,266	123,173,631
Total population at risk for malaria	116,328,732	119,702,266	123,173,631
PMI-targeted at-risk population	45,497,376	46,816,800	48,174,487
Population targeted for ITNs	45,497,376	46,816,800	48,174,487
Continuous Distribution Needs			
Channel 1: ANC	1,710,869	1,770,288	1,833,196
Channel 1: ANC Type of ITN	PBO and Single Pyrethroid	PBO	PBO
Channel 2: EPI	1,499,293	1,542,773	1,587,513
Channel 2: EPI Type of ITN	PBO and Single Pyrethroid	PBO	PBO
Channel 3: School			
Channel 3: School Type of ITN			
Channel 4: Community			
Channel 4: Community Type of ITN			
Channel 5:			
Channel 5: Type of ITN			
Estimated Total Need for Continuous Channels	3,210,162	3,313,061	3,420,709
Mass Campaign Distribution Needs			
Mass distribution campaigns			
Mass distribution ITN type			
Estimated Total Need for Campaigns	0	0	0
Total ITN Need: Continuous and Campaign	**3,210,162**	**3,313,061**	**3,420,709**
Partner Contributions			
ITNs carried over from previous year	1,000,226	836,864	73,903
ITNs from Government			
Type of ITNs from Government			
ITNs from Global Fund			
Type of ITNs from Global Fund			
ITNs from other donors			
Type of ITNs from other donors			
ITNs planned with PMI funding	3,046,800	2,550,100	3,346,806
Type of ITNs with PMI funding	PBO	PBO	PBO
Total ITNs Contribution Per Calendar Year	**4,047,026**	**3,386,964**	**3,420,709**
Total ITN Surplus (Gap)	**836,864**	**73,903**	**0**

Table A-2. School Distribution ITN Gap Analysis Table

Calendar Year	2022	2023	2024
Total country population	116,328,732	119,702,266	123,173,631
Total population at risk for malaria	116,328,732	119,702,266	123,173,631
PMI-targeted at-risk population	45,497,376	46,816,800	48,174,487
Population targeted for ITNs	6,686,969	50,578,724	0
Haut-Katanga		7,808,889	
Haut-Lomami		4,667,820	
Kasai Central		5,673,094	
Kongo Central	4,400,290		
Mai Ndombe	2,286,679		
Maniema		3,190,220	
Nord Kivu		10,198,100	
Sankuru		2,785,000	
Sud Kivu		8,668,790	
Tanganyika		3,566,278	
Tshopo		4,020,533	
Continuous Distribution Needs			
Channel 1: ANC			
Channel 1: ANC Type of ITN			
Channel 2: EPI			
Channel 2: EPI Type of ITN			
Channel 3: School	622,346	4,707,287	0
Channel 3: School Type of ITN	Unknown	Unknown	Unknown
Channel 4: Community			
Channel 4: Community Type of ITN			
Channel 5:			
Channel 5: Type of ITN			
Estimated Total Need for Continuous Channels	622,346	4,707,287	0
Mass Campaign Distribution Needs			
Mass distribution campaigns			
Mass distribution ITN type			
Estimated Total Need for Campaigns	0	0	0
Total ITN Need: Continuous and Campaign	**622,346**	**4,707,287**	**0**
Partner Contributions			
ITNs carried over from previous year	0	0	0
ITNs from Government			
Type of ITNs from Government			
ITNs from Global Fund		1,055,973	
Type of ITNs from Global Fund		Unknown	
ITNs from other donors			
Type of ITNs from other donors			
ITNs planned with PMI funding	0	0	0

Calendar Year	2022	2023	2024
Type of ITNs with PMI funding			
Total ITNs Contribution Per Calendar Year	**0**	**1,055,973**	**0**
Total ITN Surplus (Gap)	**(622,346)**	**(3,651,314)**	**0**

Note: This table is likely indicative as all donors seem to be facing budget limitation for ITN distribution via school channel.

Table A-3. RDT Gap Analysis Table

Calendar Year	2022	2023	2024
Total country population	116,328,732	119,702,266	123,173,631
Population at risk for malaria	116,328,732	119,702,266	123,173,631
PMI-targeted at-risk population	45,497,376	46,816,800	48,174,487
RDT Needs			
Total number of projected suspected malaria cases	11,684,904	12,385,998	13,129,158
Percent of suspected malaria cases tested with an RDT	92.91%	92.91%	92.91%
RDT Needs (tests)	**10,856,740**	**11,508,144**	**12,198,633**
Needs Estimated based on HMIS Data			
Partner Contributions (tests)			
RDTs from Government			
RDTs from Global Fund			
RDTs from other donors			
RDTs planned with PMI funding	12,215,500	10,584,025	9,024,760
Total RDT Contributions per Calendar Year	**12,215,500**	**10,584,025**	**9,024,760**
Stock Balance (tests)			
Beginning Balance	5,788,862	7,147,622	6,223,503
- Product Need	10,856,740	11,508,144	12,198,633
+ Total Contributions (received/expected)	12,215,500	10,584,025	9,024,760
Ending Balance	**7,147,622**	**6,223,503**	**3,049,630**
Desired End of Year Stock (months of stock)	6	6	6
Desired End of Year Stock (quantities)	5,428,370	5,754,072	6,099,316
Total Surplus (Gap)	**1,719,252**	**469,431**	**(3,049,686)**

Table A-4. ACT Gap Analysis Table

Calendar Year	2022	2023	2024
Total country population	116,328,732	119,702,266	123,173,631
Population at risk for malaria	116,328,732	119,702,266	123,173,631
PMI-targeted at-risk population	45,497,376	46,816,800	48,174,487
ACT Needs			
Total projected number of malaria cases	9,510,398	10,081,022	10,685,883
Total ACT Needs (treatments)	**9,510,398**	**10,081,022**	**10,685,883**
Needs Estimated based on HMIS Data			
Partner Contributions (treatments)			
ACTs from Government			
ACTs from Global Fund			
ACTs from other donors			
ACTs planned with PMI funding	12,242,495	9,450,600	11,111,104
Total ACTs Contributions per Calendar Year	**12,242,495**	**9,450,600**	**11,111,104**
Stock Balance (treatments)			
Beginning Balance	3,881,963	6,614,060	5,983,638
- Product Need	9,510,398	10,081,022	10,685,883
+ Total Contributions (received/expected)	12,242,495	9,450,600	11,111,104
Ending Balance	**6,614,060**	**5,983,638**	**6,408,859**
Desired End of Year Stock (months of stock)	6	6	6
Desired End of Year Stock (quantities)	4,755,199	5,040,511	5,342,942
Total Surplus (Gap)	**1,858,861**	**943,127**	**1,065,917**

Table A-5. Inj. Artesunate Gap Analysis Table

Calendar Year	2022	2023	2024
Injectable Artesunate Needs			
Projected number of severe cases	910,988	965,647	1,023,586
Projected number of severe cases among children 0-5y	420,876	446,129	472,897
Average number of vials required for severe cases among children 0-5y	3	3	3
Projected number of severe cases among children 6-13 y	187,664	198,923	210,859
Average number of vials required for severe cases among children 6-13 y	6	6	6
Projected number of severe cases among adults	303,359	321,561	340,854
Average number of vials required for severe cases among adults	9	9	9
Total Injectable Artesunate Needs (vials)	**5,118,842**	**5,425,972**	**5,751,531**
Needs Estimated based on HMIS Data			
Partner Contributions (vials)			
Injectable artesunate from Government			
Injectable artesunate from Global Fund			
Injectable artesunate from other donors			
Injectable artesunate planned with PMI funding	2,566,611	1,438,124	1,418,690
Total Injectable Artesunate Contributions per Calendar Year	**2,566,611**	**1,438,124**	**1,418,690**
Stock Balance (vials)			
Beginning Balance	697,890	0	0
- Product Need	5,118,842	5,425,972	5,751,531
+ Total Contributions (received/expected)	2,566,611	1,438,124	1,418,690
Ending Balance	**(1,854,341)**	**(3,987,848)**	**(4,332,840)**
Desired End of Year Stock (months of stock)	6	6	6
Desired End of Year Stock (quantities)	2,559,421	2,712,986	2,875,765
Total Surplus (Gap)	**(4,413,762)**	**(6,700,834)**	**(7,208,605)**

Table A-6. RAS Gap Analysis Table

Calendar Year	2022	2023	2024
Artesunate Suppository Needs			
Number of severe cases expected to require pre-referral dose (or expected to require pre-referral dose based on number of providers for the service)	166,532	176,523	187,115
Total Artesunate Suppository Needs (suppositories)	**210,829**	**223,479**	**236,887**
Needs Estimated based on HMIS Data			
Partner Contributions (suppositories)			
Artesunate suppositories from Government			
Artesunate suppositories from Global Fund			
Artesunate suppositories from other donors			
Artesunate suppositories planned with PMI funding	176,168	232,849	290,868
Total Artesunate Suppositories Available	**176,168**	**232,849**	**290,868**
Stock Balance (suppositories)			
Beginning Balance	89,754	55,093	64,463
- Product Need	210,829	223,479	236,887
+ Total Contributions (received/expected)	176,168	232,849	290,868
Ending Balance	**55,093**	**64,463**	**118,444**
Desired End of Year Stock (months of stock)	6	6	6
Desired End of Year Stock (quantities)	105,414	111,739	118,444
Total Surplus (Gap)	**(50,321)**	**(47,276)**	**0**

Table A-7. SP Gap Analysis Table

Calendar Year	2022	2023	2024
Total Country Population	116,328,732	119,702,266	123,173,631
Total Population at Risk for Malaria	116,328,732	119,702,266	123,173,631
PMI Targeted at Risk Population	45,497,376	46,816,800	48,174,487
SP Needs			
Total Number of Pregnant Women	1,819,895	1,872,672	1,926,979
Percent of pregnant women expected to receive IPTp1	94.0%	94.5%	95.1%
Percent of pregnant women expected to receive IPTp2	85.5%	86.7%	88.1%
Percent of pregnant women expected to receive IPTp3	76.7%	79.9%	83.8%
Percent of pregnant women expected to receive IPTp4	70.4%	72.0%	73.7%
Total SP Needs (doses)	**5,942,510**	**6,238,192**	**6,564,853**
Needs Estimated based on HMIS Data			
Partner Contributions (doses)			
SP from Government			
SP from Global Fund			
SP from other donors			
SP planned with PMI funding	2,735,800	4,266,200	6,974,073
Total SP Contributions per Calendar Year	**2,735,800**	**4,266,200**	**6,974,073**
Stock Balance (doses)			
Beginning balance	4,182,257	975,547	0
- Product Need	5,942,510	6,238,192	6,564,853
+ Total Contributions (Received/expected)	2,735,800	4,266,200	6,974,073
Ending Balance	**975,547**	**(996,445)**	**409,220**
Desired End of Year Stock (months of stock)	6	6	6
Desired End of Year Stock (quantities)	2,971,255	3,119,096	3,282,426
Total Surplus (Gap)	**(1,995,708)**	**(4,115,540)**	**(2,873,206)**