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Democratic Republic of the Congo

Malaria Operational Plan FY 2024

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ABBREVIATIONS

ACT	Artemisinin-based Combination Therapy
AL	Artemether-Lumefantrine
ANC	Antenatal Care
ASAQ	Artesunate-Amodiaquine
AS-PYR	Artesunate-Pyronaridine
ASTMH	American Society of Tropical Medicine and Hygiene
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
Gavi	Gavi, the Vaccine Alliance
Global Fund	Global Fund to Fight AIDS, Tuberculosis and Malaria
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
MOH	Ministry of Health
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
PNAM	Programme National d'Approvisionnement en Médicaments Essentiels
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 Democratic Republic of the Congo (DRC), please refer to the country malaria profile located on PMI's country team landing page, which provides an overview of the country's 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, the U.S. President's Malaria Initiative (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 27 countries in Sub-Saharan Africa and three programs across the Greater Mekong Subregion in Southeast Asia to control and eliminate malaria. The Democratic Republic of the Congo began implementation as a PMI partner country in Fiscal Year (FY) 2011.

Rationale for PMI's Approach in DRC

Malaria remains the leading cause of morbidity and mortality in DRC with 27.3 million malaria cases and 24,880 malaria deaths reported in 2022, an increase of 9.2 percent and 11.2 percent respectively since 2021.[1] Globally, DRC accounts for an estimated 12 percent of all malaria cases and 13 percent of all malaria deaths.[2] The highest transmission levels are 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 where the estimated malaria parasite prevalence in children 6 to 59 months of age is 39 percent.[3] As one of World Health Organization's designated High Burden High Impact countries, DRC continues to struggle to achieve targets in malaria control and is working with partners to get malaria progress back on track through tailored and targeted interventions.

Overview of Planned Interventions

The proposed FY 2024 PMI funding for DRC is $48 million. PMI will support the following intervention areas with these funds:

1. Vector Monitoring and Control

[1] District Health Information System 2.
[2] World Health Organization, World Malaria Report 2021: Regional Data and Trends. (Geneva, Switzerland, 2021): https://www.who.int/teams/global-malaria-programme/reports/world-malaria-report-2021.
[3] Institut National de la Statistique, Enquête par grappes à indicateurs multiples, 2017-2018, rapport de résultats de l'enquête. (Kinshasa, République Démocratique du Congo, December 2019): https://www.unicef.org/drcongo/media/3646/file/COD-MICS-Palu-2018.pdf.

With FY 2024 funds, PMI will procure 2,370,415 insecticide treated bed nets (ITNs) for routine distribution via antenatal care (ANC) and the expanded program on immunization channels, and support social and behavioral change (SBC) interventions to promote the appropriate use of ITNs. In previous years, PMI has relied on the Against Malaria Foundation to procure ITN for mass campaigns where the ITN distribution operational costs were paid by PMI. With FY 2024 funds, PMI will coordinate with the NMCP and the other in-country donors, including the Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund) to determine whether PMI can support mass distributions, in calendar year 2023 and beyond, in one province. PMI's specific contributions will be updated closer to the planned campaign. PMI will continue to support the National Institute for Biomedical Research (National Institute of Biomedical Research (*Institut National de Recherche Biomédicale*), the Kinshasa School of Public Health and the NMCP to expand entomological surveillance activities from the current 14 entomological monitoring sentinel sites to 20 with FY 2024 funds to provide better insecticide resistance data for ITN selection.

2. Malaria in Pregnancy

PMI will continue supporting DRC's malaria in pregnancy (MIP) strategy through the procurement of sulfadoxine-pyrimethamine (SP) for intermittent preventive treatment of pregnant women (IPTp) along with kits to implement directly observed therapy, as well as routine distribution of ITNs for pregnant women at ANC visits. PMI will also support training and supportive supervision of health service providers in IPTp, and appropriate case management of malaria during pregnancy as well as SBC targeting women of reproductive age and their partners to promote seeking prompt treatment of malaria, ANC attendance, bed net use, and IPTp uptake. DRC also plans to scale up the pilot community IPTp approach, from the original three health zones (Kenge, Bulungu, and Kunda) to additional health zones in the High Burden to High Impact and PMI target zones, pending the MIP guidelines update, to include World Health Organization guidance.

3. Drug-Based Prevention

PMI does not currently support seasonal malaria chemoprevention or other drug-based prevention in DRC. In its new strategic plan, DRC’s NMCP plans to implement it in 27 health zones in Haut-Katanga and 16 health zones in Lualaba.

4. Case Management

PMI will support the DRC’s malaria case management strategy through training and supportive supervision for health facilities and community-based health workers who provide malaria services, including lab technicians. PMI will also support procurement of essential diagnostic and treatment commodities; a microscopy quality assurance program; therapeutic efficacy studies to monitor antimalarial resistance; and central-level support to the case management technical working group. PMI will also provide travel stipends to incentivize community health

workers in approximately 4,004 community care sites in PMI focus areas to restock commodities and report data. With the FY 2024 funding, PMI will support these sites' expansion and plans to increase stipends for community health workers to harmonize with the paid stipend in DRC's Global Fund-supported provinces. Please refer to the artemisinin-based combination therapy, rapid diagnostic test, injectable artesunate, and artesunate suppository Gap Analysis Tables in the Annex for details on planned quantities and distribution channels.

5. Health Supply Chain and Pharmaceutical Management

PMI will continue to procure antimalarials and related commodities and to support their delivery to each of the supported provinces through contracts with *centrales de distribution regionales* (CDR) for storage and distribution, including last mile delivery to *aires sanitaires* being piloted in some health zones. PMI will also support the logistics management information system for the procurement, storage and distribution of antimalarial and related commodities to the end users through the last-mile delivery approach to increase its use for decision making at all health levels. In addition, PMI supports routine forecasting and supply planning as well as post-market surveillance of malaria products as integral components of the supply chain and pharmaceutical management system.

6. Malaria Vaccine

The DRC application to Gavi for the malaria vaccine was approved in April 2023 and the vaccine introduction is planned for early 2024. In its application, the DRC has requested 3,521,095 doses of malaria vaccine to reach 943,259 children between 2024 and 2026 in 13 provinces, further prioritization will be done once final allotment is shared with the country. With FY 2024 funds, PMI will provide complementary support in the planning, delivery, and monitoring of vaccine deployment. The vaccine introduction phase will be led by the national expanded program on immunization and supported by the NMCP.

7. Social and Behavior Change

PMI supports DRC's malaria SBC strategy through implementation of tailored SBC interventions to promote uptake of key behaviors including ANC attendance, IPTp uptake, prompt care-seeking for fever, ITN use, and health worker adherence to national malaria guidelines for data reporting, testing, treatment, and prevention of MIP. With FY 2024 funding, PMI proposes to support implementation of SBC interventions including a mix of interpersonal, community-based interventions, mass media, and service delivery platforms in the community and health facilities. PMI will also support the rollout of the service delivery assessment tool to improve the quality of malaria service delivery, and develop key SBC interventions, including communications and messaging, that will support the introduction and integration of the malaria vaccine into routine vaccination in selected health zones. SBC will continue 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.

8. Surveillance, Monitoring, and Evaluation

With FY 2024 funds and building from key results from the evaluation of the national malaria surveillance system, PMI will support DRC's efforts in strengthening the health information system and malaria surveillance, monitoring, and evaluation to generate high-quality data. To build capacity and support NMCP ownership, PMI will continue to support the improvement of malaria data review and analysis by updating guidelines and to develop standard dashboards and visualization tools (including the Malaria Data Integration and Visualization for Eradication platform) to inform decision-making at the national, provincial, and health zone levels. Based on the malaria rapid diagnostic test positivity rate study, PMI is planning to improve malaria surveillance data by using the Health Pulse application, a digital rapid diagnostic test reader, in a sample of supported provinces to assess the accuracy of the malaria test positivity rate compared to the data reported on the DRC health management information system via DHIS2.

9. Operational Research and Program Evaluation

No new operational research or program evaluation is being proposed for FY 2024 funds. PMI, however, provides technical inputs into operational research and program evaluation activities through the monitoring and evaluation technical working group.

10. Capacity Strengthening

PMI will continue supporting the NMCP's objective to strengthen its technical and managerial capacity at central and provincial levels to effectively implement the national malaria strategic plan including for the package, coverage, and quality of essential malaria-related services and data management in health facilities and at the community level.

With FY 2024 funding, PMI will support capacity-strengthening interventions including support of two participants in the Field Epidemiology Training Program advanced training program, workforce development through the PMI-supported Antimalarial Resistance Monitoring in Africa network and the PMI-supported Enhanced Detection of Insecticide Resistance. PMI will support the NMCP attendance at key malaria scientific meetings and conferences, including engaging with the private sector via workshop, continued logistic assistance for technical working groups, and NMCP capacity strengthening in critical technical needs identified by PMI and the NMCP. In addition, to improve service delivery, data quality and access to mobile money services, PMI will continue electrification activities to additional health facilities.

11. Staffing and Administration

There are no planned changes in staffing and administration in MOP 2024.

I. CONTEXT & STRATEGY

1. Introduction

The Democratic Republic of the Congo (DRC) began implementation as a PMI partner country in FY 2011. This FY 2024 Malaria Operational Plan (MOP) presents a detailed implementation plan for the 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 the DRC, describes progress to date, identifies challenges and relevant contextual factors, and provides a description of activities that are planned with FY 2024 funding. For more detailed information on the country context, please refer to the Country Malaria Profile, which provides an overview of the country's malaria situation, key indicators, the NMCP strategic plan, and the partner landscape.

2. U.S. President's Malaria Initiative

The U.S. President's Malaria Initiative (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 supply chain management, surveillance, monitoring and evaluation; social and behavior change; 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 30 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 the DRC

3.1. Malaria Overview for DRC

Malaria continues to be the leading cause of morbidity and mortality in the DRC, with more than 27 million malaria cases and 24,368 malaria deaths reported in 2022. Globally, the DRC accounts for an estimated 12 percent of all malaria cases and 13 percent of all malaria deaths. 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 (RDT) and 31 percent for microscopy, which is higher than 2013–2014 Demographic and Health Survey (DHS) estimates. Although the latest MICS (2017-2018) data show concerning declines in ITN ownership since 2013-2014 DHS,[4] the under-five mortality rate has decreased, the IPTp coverage and the proportion of children receiving an ACT among those treated with an antimalarial have increased 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 of 8.percent with 22,368 deaths in 2021 and 24,378 deaths in 2022.

For more detailed information on malaria indicators, please refer to the DRC malaria profile.

3.2. Key Challenges and Contextual Factors

Access to care in the DRC, particularly malaria services, remains a challenge. Nationwide, it is estimated that only 30 percent of the population lives within five kilometers of the nearest

[4] Ministère du Plan et Suivi de la Mise en œuvre de la Révolution de la Modernité - MPSMRM/Congo, Ministère de la Santé Publique - MSP/Congo and ICF International. Enquête Démographique et de Santé en République Démocratique du Congo 2013-2014. (Rockville, Maryland, USA, 2014): https://dhsprogram.com/publications/publication-FR300-DHS-Final-Reports.cfm.

health facility. As a result, the response has been to bring malaria services close to communities by establishing community care sites (CCS) with the goal to close the gap in malaria service provision. Currently, an estimated 57,020 additional CCSs are needed to achieve full coverage (defined as services offered within five km). Approximately 13 percent of these sites (8,566) have been established to date nationwide. In addition to expanding the number of CCS, there is also a need to review and update the national community health policy to provide and harmonize financial and other incentives to community health workers (CHW).

Another challenge is the insufficient number of health care providers at both the community and health facility levels; this is especially true in rural areas. Moreover, challenges related to the availability of antimalarial drugs and the functionality of the DRC supply chain system remain barriers to malaria interventions. The supply chain system is unreliable due to several factors, including the distances and costs for 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. Data reported into the District Health Information Software 2 (DHIS2) and the logistics management information system (LMIS) are improving but the quality of data collected from health facilities remains an issue. As such, accurate data to inform supply planning, forecasting, and distribution continues to be a challenge.

Aside from the above programmatic challenges, DRC continues to experience armed conflicts, political instability, and sporadic disease epidemics. In addition, flooding in some parts of the country has been worrisome. These issues slow health service delivery and impact affected populations' ability to receive proper care. Lastly, while it is improving, domestic funding for health is still very low and has not yet reached the Abuja Declaration target of 15 percent of the national budget.[5]

3.3. PMI's Approach for the 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 activities is paramount to PMI. The majority of PMI's planned support with FY 2024 funding, across the areas of vector control, malaria in pregnancy (MIP), case management, and critical cross cutting support such as social and behavioral change (SBC), M&E, and supply chain management, contain 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 progress and funding commitments across the malaria portfolio.

[5] Nyamugira, Alexis Biringanine et al. "Towards the achievement of universal health coverage in the Democratic Republic of Congo: does the Country walk its talk?." July 4, 2022

PMI organizes its investments around the activities below, in line with the DRC National Malaria Strategic Plan 2024-2028.

- **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 to maintain high coverage levels. In addition, the strategy includes targeted IRS in pilot health zones (not funded by PMI).
- **Malaria in pregnancy,** including IPTp with sulfadoxine-pyrimethamine (SP) provided to pregnant women after starting the second trimester of pregnancy. Pregnant women are also given an ITN at their first ANC visit and benefit from case management when they have malaria.
- **Case management** of malaria using confirmatory diagnostic testing with RDT or microscopy and treatment with ACT: artesunate-amodiaquine or artemether-lumefantrine and the introduction of artesunate-pyronaridine (not yet supported by PMI) for uncomplicated malaria 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 for children under five years of age. RDTs and medicines are free of charge for all age groups in DRC according to national guidelines.
- **Monitoring and evaluation** 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 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 malaria service delivery and behavior change, supporting the functionality of community groups, and promoting proper use of health services with accurate diagnosis, and prompt treatment.
- **Strengthening the national malaria program** through institutional capacity-building on leadership, coordination, program management, resource mobilization, and multisectoral collaboration.

DRC launched the High Burden High Impact initiative on November 14, 2019, to focus malaria interventions in 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 tried to align with the High Burden High Impact micro-stratification as much as possible, although some interventions such as seasonal malaria chemoprevention and perennial malaria chemoprevention may only reach pilot phases over the next few years.

In addition to furthering the objectives laid out in the new National Malaria Strategy 2024-2028, PMI seeks to address the challenges summarized above, which include access to quality malaria prevention and care, weaknesses in the health system (e.g., supply chain, routine data quality), and continuity of services in the context of political instability and/or epidemics.

Strategies to mitigate these challenges align with PMI 2021-2026 strategic focus areas. PMI investments will continue to focus on improving access and quality of malaria services at delivery points in the community and in health facilities. PMI will also continue to support strengthening the health system, including supply chain management, surveillance, monitoring and evaluation as well as workforce development including PMI's continued support of the Field Epidemiology Training Program (FETP). These investments will ensure that malaria services remain resilient and functional in the face of political or environmental instability. Moreover, PMI has identified the University of Kinshasa (UNIKIN) and the National Institute of Biomedical Research (*Institut National de Recherche Biomédicale* [INRB] as potential institutions for localization to optimize investments that can be effective, efficient, accessible, and sustainable specifically when political or public health emergencies threaten the continuity of health services.

3.4. Key Changes in this Malaria Operational Plan

PMI plans to support the malaria RTS,S vaccine introduction following the country's successful Gavi application through further support to SBC messaging, improved M&E and support to introduction at the health facility level. PMI will also increase the number of community care sites that were paused in FY 2023 to bring malaria services to the most remote communities. In addition, PMI will also increase the number of sentinel sites for entomological surveillance to collect more data on insecticide resistance of the primary malaria vectors in DRC for decision making and to support the surveillance of invasive *Anopheles (An.) stephensi* in the city of Kinshasa. For MOP 2024, PMI will reduce the number of ITN for continuous distribution and will pause the funding to cover the operational cost for mass distribution due to budgetary limits. PMI will rely on other donors to fill the gap. PMI plans to implement community IPTp based on the results and recommendations from the Transforming Intermittent Preventive Treatment for Optimal Pregnancy (TIPTOP) study, pending World Health Organization (WHO) guidance, and updated national guidelines.

II. OPERATIONAL PLAN FOR FY 2024

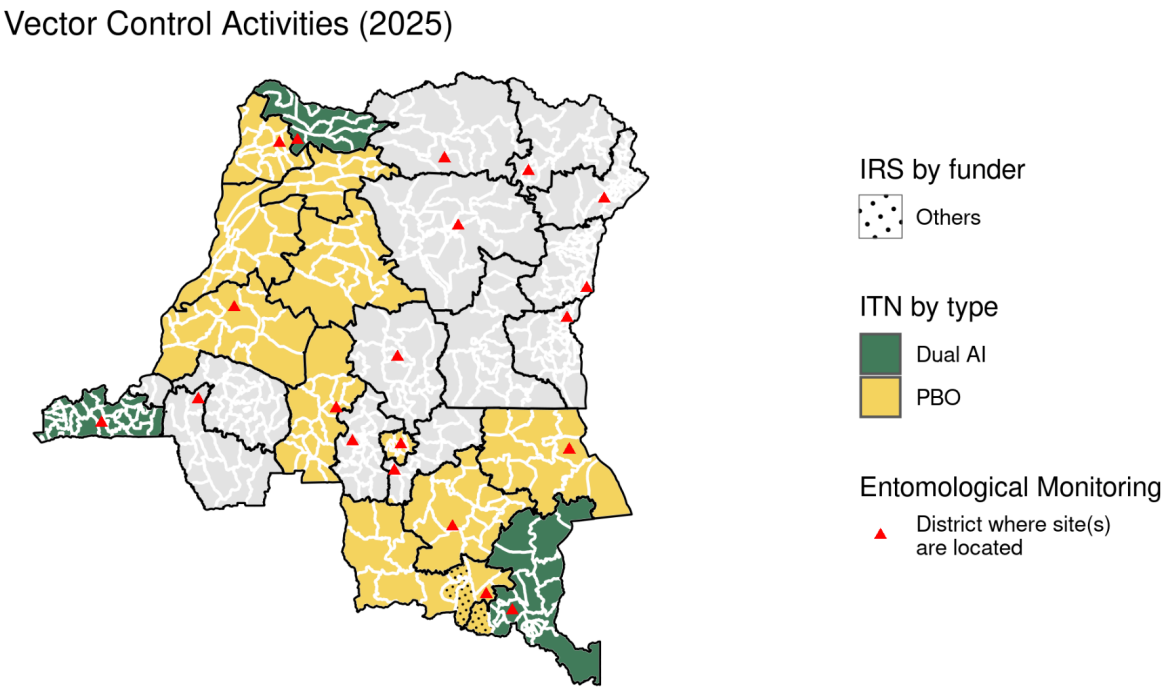
1. Vector Monitoring and Control

1.1. PMI Goal and Strategic Approach

The DRC National Malaria Strategic Plan 2024-2028 promotes an integrated vector control approach that recommends different vector control interventions including continuous and mass distribution of ITNs, use of indoor residual spray (IRS), larval source management, as well as management of insecticide resistance and strengthening entomological surveillance capacities. Under the National Strategic Plan 2024-2028, the NMCP 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 2028. The National Strategic Plan also proposes piloting IRS in specific zones. Currently, PMI supports the use of all these interventions except for IRS and larval source management. In previous years, and in partnership with the Global Fund, PMI supported mass distribution of ITNs every three years.

This distribution cycle has been revised to 30 months based on PMI-supported durability studies. Following the reduction in mass distribution intervals, the school-based distribution has been discontinued by the NMCP. With FY 2024 funds, PMI will strongly explore the possibility of supporting mass campaigns. PMI is currently discussing the budget and resources for mass campaigns with the NMCP and Global Fund. If resources across development partners are sufficient, PMI may support the operational cost for distribution in calendar year 2024. PMI's specific contributions will be updated closer to the planned campaign. PMI will continue supporting distribution of ITNs through routine distribution to pregnant women via ANC and EPI channels nationwide. PMI supports routine vector surveillance (bionomics) at three sentinel sites and insecticide resistance monitoring in 14 sentinel sites representing key malaria endemicity zones in DRC.

Figure 1. Map of Vector Control Activities in DRC, Location of Sentinel Sites for Entomological Monitoring in 2025



1.2. Recent Progress (April 2022–April 2023)

- Supported the procurement 2,532,100 piperonyl butoxide (PBO) ITNs for continuous distribution and distribution of 2,242,538 PBO ITNs to pregnant women and children under one year old in the nine PMI supported provinces through antenatal and vaccination clinics.
- Supported mass campaign distribution of 3,057,434 standard PMI procured ITNs in one province and distribution of 4,530,584 PBO Against Malaria Foundation procured ITNs in two provinces.
- Supported school-based distribution of 1,360,275 standard Global Fund-procured ITNs in two provinces.

- Supported mass campaign digitalization through the collection of ITN distribution data on mobile devices.
- Supported vector bionomics monitoring monthly in three sites (Kenge, Lodja, and Karawa) and insecticide resistance monitoring in 14 sites in collaboration with the PNLP, the INRB and the School of Public Health of the University of Kinshasa. For more information, please refer to the 2022 DRC Entomological Monitoring Report.
- Provided technical assistance to local research institutions (INRB and University of Kinshasa) for laboratory training involving molecular analysis of mosquito samples and training on entomological monitoring including surveillance and identification of the invasive malaria vector (*An. stephensi*).
- Supported INRB in conducting all the entomological surveys including routine entomological surveillance, support to the insectary, and training of regional staff.
- Supported prevention of MIP by providing ITNs to women at their first ANC visit.
- Provided technical assistance to INRB for entomological monitoring through training of insectary technicians.
- Supported 24- and 28-month streamlined durability monitoring of 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 24-month streamlined durability monitoring of PBO-based ITNs in Tanganyika province.
- Piloted community-based entomological monitoring in the province of Kasai Oriental.
- Supported national, facility and community levels SBC activities to improve demand for ITNs, increase appropriate use, promote care, and mitigate against misuse. For more information, please refer to the SBC section.

1.3 Plans and Justification for FY 2024 Funding

The FY 2024 funding tables contain a full list of vector monitoring and control activities that PMI proposes to support.

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 and Interceptor G2 (IG2) ITNs. With FY 2024 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 High Burden High Impact project is being implemented). With increasing demand for insecticide resistance data for planning selection of ITNs for the different provinces, PMI is expanding support for insecticide resistance monitoring from 14 sites to 20 sites to cover 20 of the 26 provinces in DRC. Data collected will feed into the country's database and will help to monitor impact of new nets on entomological indices, and to better understand vector-human interactions and to inform decisions. To reach populations in high insecurity areas or in geographically hard to reach provinces, PMI has supported the training of the Water Hygiene

and Sanitation supervisors which are local health workers of the Ministry of Health to conduct entomological monitoring with remote supervision until they become independent. In addition, PMI will support the surveillance of the invasive malaria vector (*An. stephensi*) in urban Kinshasa. PMI will also provide technical support to review and update the DRC Plan for Insecticide Resistance Management and continue to provide technical assistance to strengthen the capacity of the NMCP, INRB, and the School of Public Health of the University of Kinshasa.

Summary of Distribution and Bionomics of Malaria Vectors in DRC

As of 2022, *An. gambiae s.l.* and *An. funestus* were the main malaria vectors in DRC. *An. gambiae s.l.* is predominant throughout the year in Kenge, Lodja, and Karawa while *An. funestus* was found mainly in Karawa. *An. moucheti* is an emerging vector mainly involved in malaria transmission in Karawa, not found in the other two sites.

The main vector species bite both indoors and outdoors with peak biting periods between 1:00 a.m. and 4:00 a.m. Humans are the preferred host indoors and outdoors at all the sites with peaks biting periods between July and October. The combined annual entomological inoculation rate (EIR) was 439.5 infectious bites per person per year in Karawa, 106.5 in Kenge and 73.1 in Lodja. Peak transmission season is from July to October that coincides with the rainy season in different sites.

Status of Insecticide Resistance in DRC

Pyrethroid resistance is widespread in DRC. In all sites in 2022, *An. gambiae s.l.* was resistant to permethrin, deltamethrin, and alpha-cypermethrin. Resistance intensity varies by site and by insecticide, but is usually moderate or high. In all sites, bioassays with pyrethroids following pre-exposure to PBO showed an increase in mortality compared with tested pyrethroid alone, though mortality was still <90% for permethrin in seven sites (Lodja, Pawa, Kingasani, Kabondo, Karawa, Kamina, and Rutshuru); for deltamethrin, in two sites (Lodja and Karawa); and alpha-cypermethrin in six sites (Kenge, Lodja, Pawa, Kingasani, Mikalayi, and Rutshuru). Overall, PBO significantly increased mortality in deltamethrin (with full restoration at 11 out of 14 sites) compared to permethrin or alphacypermethrin. There was no resistance for chlorfenapyr at any of the sites when compared to 2021 where chlorfenapyr resistance was detected in two out of the 12 sites tested including in Karawa, Nord-Ubangi and Pawa, Uele.

1.3.2. Insecticide-Treated Nets

PMI will continue to support procurement and distribution of ITNs through continuous distribution channels of ANC and EPI and will explore support for mass campaigns with FY 2024 funds, together with partners and other donors, with decisions being made closer to the planned campaigns. 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.

Insecticide-treated Mosquito Net Distribution in DRC

In DRC, ITNs are made available via mass distribution campaigns every three years and through ANC and EPI continuous distribution channels. PMI, Against Malaria Foundation, and the Global Fund supported mass distribution of ITNs every three years with campaigns occurring in alternate years. However, the NMCP's goal for net replacement is 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, and to children under one year of age at EPI clinics. The NMCP will no longer use school-based distribution as a continuous distribution approach. The country transitioned from standard to PBO nets for both routine and campaign distribution and plan to distribute dual AI nets in selected provinces, based on resistance data, during the GC7 campaigns.

PMI plans in this MOP to procure 2,370,415 PBO nets for continuous distribution, but the type may change based on insecticide resistance data and results. Please refer to the ITN Gap Table in the annex for more detail on planned quantities and distribution channels.

Table 1. Streamlined Durability Monitoring

Campaign Date	Site	Brand	Baseline	12-month	24-month	36-month
December 2020	Tanganyika	Veeralin (Alpha-Cypermethrin + PBO)	April/May 2021	February/ March 2022	February 2022	Planned
December 2020	Tanganyika	SafeNet Alphacypermethrin	April/May 2021	February/ March 2022	February 2022	Planned
May 2020	Sud Ubangi	PBO Permanet 2.0	August 2021	May 2022	October 2022	Planned
May 2020	Sud Ubangi	PBO Permanet 3.0	August 2021	May 2022	October 2022	Planned
June 2023*	Nord Ubangi	Interceptor G2 (Chlorfenapyr + Alphacypermethrin)	June 2022	Planned	Planned	Planned

*Delay in ITN distribution has prevented further monitoring.
PBO: piperonyl butoxide.

1.3.3. Indoor Residual Spraying (IRS)

PMI does not support indoor residual spraying in DRC.

1.3.4 Other Vector Control
PMI does not support other entomological intervention in DRC.

2. Malaria in Pregnancy

2.1. PMI Goal and Strategic Approach
The DRC National Malaria Strategic Plan aims to protect all pregnant women from malaria through the MIP approach which consists of providing all women, over the course of their pregnancy at least four doses of SP, case management services, and ITNs during ANC visits.

National Malaria Control Program Approach

In addition to providing case management services and an ITN to all pregnant women, the national guidelines recommend that intermittent preventive treatment during pregnancy (IPTp) with SP be given to them during ANC visits from the start of the second trimester of pregnancy. Each woman should receive at least four directly observed doses of SP, one month apart until delivery as part of their clinical regimen at health facilities. Supportive supervision for MIP is integrated directly into the broader outreach training and supportive supervision (OTSS) tool for malaria case management.

PMI Objective in Support of NMCP

PMI supports DRC's MIP approach through the procurement of ITNs, ACT, and SP along with directly observed therapy kits for IPTp (clean water, and cups) at health facilities, as well as training and supportive supervision of health care providers. PMI also supports SBC activities to promote ANC attendance and plans to support community-based IPTp scale-up, based on global guidance and the recommendations of the TIPTOP study results.

2.2. Recent Progress (April 2022–March 2023)
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 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 links between communities and health structures.

2.3. Plans and Justification for FY2024 Funding
The FY 2024 funding tables contain a full list of malaria in pregnancy activities that PMI proposes to support.

PMI will continue to support MIP activities with a similar package of interventions, including the change initiated in FY 2023 which is focusing training on MIP supportive supervision to providers who have already been trained on MIP. With FY 2024 funding, PMI will continue to redirect funds previously used for MIP training to support MIP supportive supervision, targeting low-performing facilities.

The community distribution of community IPTp (C-IPTp) pilot study conducted by the TIPTOP project in 2022 in three health zones (Kenge, Bulungu, and Kunda), recommended coordinating and advocating for resource mobilization to integrate the C-IPTp approach in the health system, pending updates of the WHO guidelines and DRC's national guidelines to inform C-IPTp scale-up in other provinces. Using data from DHIS2, low performing health zones and health facilities from High Burden High Impact provinces will be prioritized for the scale up of C-IPTp. PMI support will include CHW training in MIP including IPTp administration, strengthening health providers' capacity for supportive supervision, and conducting monthly data monitoring meetings.

PMI will also continue to procure SP and consumables to facilitate provision of IPTp as directly observed preventive treatment. PMI will continue to support SBC interventions focused on promoting early and regular ANC visits, 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 recording of data into registers.

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

Please see the SBC section below for details on challenges and opportunities to improve MIP uptake.

3. Drug-Based Prevention

In the DRC, Global Fund had offered to support seasonal malaria chemoprevention in 11 health zones in Haut-Katanga with the Global Fund's GC7. In addition, NMCP has requested that PMI support two health zones in Lualaba (Dilala and Manyika health zones) with MOP FY 2024 funding, but PMI could not due to resource constraints.

4. Case Management

4.1. PMI Goal and Strategic Approach

The main objective of NMCP case management is to reduce malaria related morbidity by 70 percent and mortality by 50 percent from the 2021 level (National Malaria Strategic Plan 2024-2028). The national malaria case management guidelines recommend that any suspected malaria case must be tested using a RDT, at the health facility and community care site (CCS) levels, or at an approved pharmacy in accordance with national guidelines. 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.

All confirmed malaria cases should receive prompt, quality-assured treatment, according to guidelines. In practice, any case tested positive by RDT should receive an ACT recommended by the national policy, namely the combination artesunate-amodiaquine or artemether-lumefantrine regardless of environment (rural or urban). The artesunate-pyronaridine combination has been adopted as the third first-line formulation by the national pharmaceutical regulatory authority and will be subject of an introduction plan. However, PMI has no plan yet to fund procurement of artesunate-pyronaridine. Injectable artesunate is the treatment of choice for severe cases. In case of unavailability, the country recommends the quinine-clindamycin combination for simple 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.

The CCSs are responsible for providing integrated care of childhood illnesses and gradually for certain adult pathologies and even certain family planning services under the supervision of the health area head nurse.

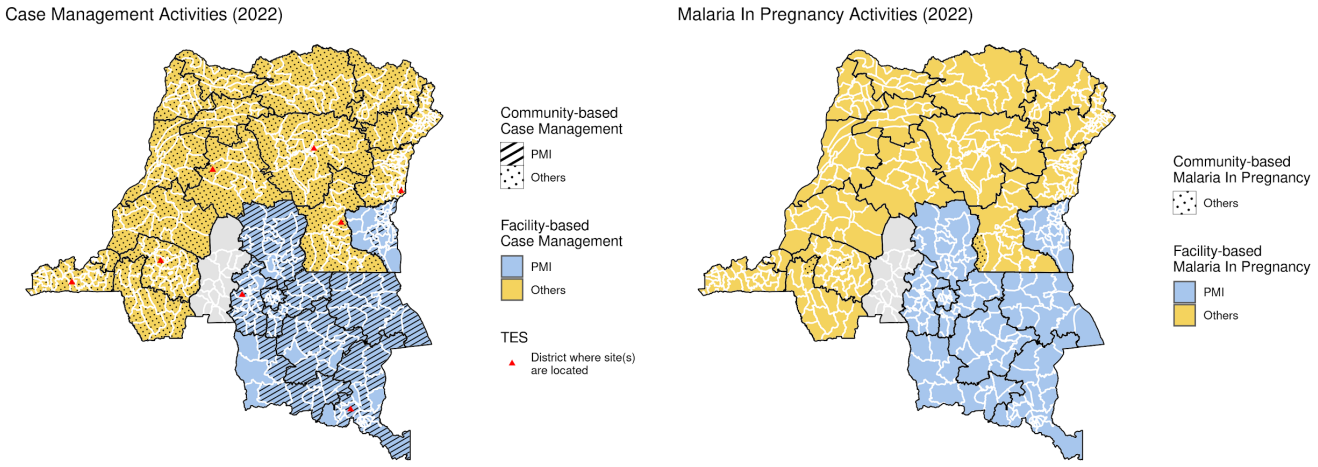
PMI currently supports malaria services in 9 out of the 26 provinces, representing 38 percent of the total population. In 2023, PMI's support in the nine provinces include 179 health zones and 3,122 health areas that include 168 general reference hospitals, 6,775 health centers, and 3,504 CCSs (out of the 21,590 estimated need).

PMI supports the country's malaria case management strategy by procuring essential diagnostics and treatments commodities and providing training and supportive supervision for lab technicians, facility-based health workers, ANC providers, and CHWs. PMI also supports a microscopy quality control and assurance program, and therapeutic efficacy studies (TES) to monitor antimalarial resistance and, at the central level, supports the case management technical working group (TWG) to convene regular meetings and to oversee and coordinate on malaria case management, including specific questions or new updates. PMI is also providing support for scaling up the continuous quality improvement in three provinces (Haut-Katanga, Kasai Oriental and Kasai Central), 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 monitoring the implementation of the updated malaria training curriculum across various training institutions.

PMI plans to expand the number of CCS with FY 2024 funding, and continue the implementation of updated community-level service delivery. These services include expanding the age limit of children served at CCSs to 6–13 years of age (adding to the children currently served who are under five years of age), PMI will also provide travel stipends to CHW in support of their efforts to get supplies and report data. PMI supports almost 7,000 community health workers (two per CCS) to deliver community-based case management services combining iCCM and mCCM, depending on non-malaria commodities availability, for those aged 2 months to 13 years, using RAS as pre-referral treatment. According to the National Community Care Site Expansion Plan (2022-2027), the DRC's MOH plans to expand CCSs from 10,112 to 15,000 (out of 65,586 needed countrywide). PMI will support the expansion of CCS by adding 500 CCSs with FY 2024 funds, for a total of 4,004 CCS supported by PMI.

Figure 2. Map of Case Management, Community Health and Malaria in Pregnancy Service Delivery Activities in the Democratic Republic of the Congo



4.2. Recent Progress (April 2022–April 2023)

National Level Case Management Activities

- Supported national staff to conduct five supervision visits in five provinces.
- Maintained the national slide bank by providing support for replacement of lost or broken slides for the sustainability of the external quality control and quality assurance.
- Provided support to NMCP to convene and lead four malaria case management TWG meetings.
- Developed an online knowledge questionnaires tool to track the implementation of the developed malaria training modules in universities and higher health training institutions, and supported online repository of higher education training curricula for malaria**,**

determining the specifications for targeted technical support to the institutional website intended to serve as a repository for content, including malaria pre-service training modules.
- Carried out one round (#6) of microscopy external quality control in November 2022.
- Maintained the National Slides Bank for microscopy external quality assurance and quality control.
- Coordinated with Global Fund to conduct a joint community health site visit that discovered similarities and differences in PMI and Global Fund supported activities in their respectives supported provinces, and took steps to harmonize community health interventions.

Commodities

During the past period, PMI has supported:

- Procurement of 10,584,025 malaria RDTs and 9,464,310 treatments.
- 1,438,124 vials of parenteral artesunate.
- 232,852 rectal artesunate suppositories.
- Distribution of the following commodities:

Table 2: Quantities of Commodities Distributed

Commodity	Quantity distributed
Artemether/Lumefantrine 20/120 mg Dispersible Tablet 1 x 6x1 Blister Pack Tablets	179,064
Artemether/Lumefantrine 20/120 mg Dispersible Tablet 1 x 6x2 Blister Pack Tablets	678,420
Artemether/Lumefantrine 20/120 mg Tablet 1 x 6x3 Blister Pack Tablets	562,344
Artemether/Lumefantrine 20/120 mg Tablet 1 x 6x4 Blister Pack Tablets	750,595
Artesunate (w/ 1 Amp NaHCO3 5% + 1 Amp NaCl 0.9%) 60 mg Vial 1 Set	2,487,052
Artesunate 100 mg Suppository 2 Suppositories/Blister	247,538
Artesunate/Amodiaquine 100/270 mg Tablet 25 x 3 Blister Pack Tablets	2,148,800
Artesunate/Amodiaquine 100/270 mg Tablet 25 x 6 Blister Pack Tablets	2,890,925
Artesunate/Amodiaquine 25/67.5 mg Tablet 25 x 3 Blister Pack Tablets	1,085,325
Artesunate/Amodiaquine 50/135 mg Tablet 25 x 3 Blister Pack Tablets	2,913,075
Malaria Rapid Diagnostic Test (*Pf*) Cassette 1 Test	10,787,463

Facility Level progress:

- Conducted 434 on-site training and supportive supervision visits in 3,906 health facilities.

- Collected key case management quality of service indicators during supportive supervision Round 6 for malaria microscopy. During OTSS+, laboratory technicians improved skills on the blood smear preparation, staining slides, and reading to be able to detect, identify species, and count parasites easily. Testing prior to treatment has improved, but adherence to diagnostic test results remains a big challenge as providers still continue to treat suspected malaria cases with negative test results.
- Convened 836 facility level data review meetings to promote data use and improve best practices.
- Conducted two data quality assessments visits (two per province) in 61 health facilities located in 18 health zones. A database is available, but not a report.

Community Level Progress

- Conducted 1,384 on-site training and supportive supervision or mentorship visits reaching 2,768 community health workers. Conducted a joint site visit between PMI and Global Fund to assess similarities and differences in their respective provinces.
- Key case management quality of service indicators are collected at health facilities level during the supportive supervision, by lab or clinicians supervisors, using HNQIS, and at the community level by health center head nurses during routine supportive supervision visits.
- Starting with FY 2022 MOP funding, PMI introduced the $10 stipend payment for 3,504 CCSs in recognition of the CHW effort related to malaria commodity replenishment, to cover costs incurred by CHW to travel for commodity re-supply. Using FY2022 funds, the eligible age group for community care services was also expanded from children under five years of age to thirteen years of age. PMI still continues to advocate for the professionalization of community health workers.

Please note that recent progress with monitoring antimalarial efficacy and the TES approach is presented in the Plans and Justification for FY 2024 Funding section below.

4.3. Plans and Justification for FY 2024 Funding

The FY 2024 funding tables contain a full list of case management activities that PMI proposes to support.

National Level Case Management Activities

PMI will continue to support digital data collection and analysis training for new laboratory OTSS+ supervisors and clinical supervisors in the use of the Health Network Quality Improvement System (HNQIS). The HNQIS has been handed over to the NMCP and Division of National Health Information System (Division SNIS) 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 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 continue to track the implementation of the malaria training modules in universities and higher health training institutions, using the online knowledge questionnaires tool. PMI will also support the online repository of higher education training curricula for malaria. PMI will also provide technical support for the community health policy update and advocacy to develop a national strategy for the professionalization of CHW.

Commodities

Please refer to the ACT, RDT, injectable artesunate, and artesunate suppository gap tables in the annex for more detail on planned quantities and distribution channels.

Facility Level

With FY 2024 funding, PMI will continue to support the OTSS (on-the-job training and mentoring) of facility-based health workers for the management of both uncomplicated and severe malaria in public and not-for-profit health centers and hospitals.

PMI will strengthen the continuous quality improvement and extend the approach to two low-performing PMI-supported provinces as results in the initial three provinces (Kasai Oriental, Kasai Central and Haut Katanga) showed improvement in key aspects of uncomplicated malaria case management. Formal classroom training will be replaced by the on-the-job training approach to allow more funding for the introduction of CQI in the additional provinces (Tanganyika and Sud Kivu). PMI will still not support the procurement of lab reagents as patients receive RDT tests free of charge, but patients are still currently charged for malaria microscopy. Health management teams have been advised to use the profits from these fees to replenish lab reagents.

Community Level

PMI will continue to support CCSs' supportive supervisions of malaria and integrated case management at community level. PMI will continue to provide a stipend to CHWs in recognition of their efforts related to malaria commodity replenishment. While not a direct form of payment, this approach serves as motivation for their valuable contribution. With FY 2024 funding, PMI will continue to focus on improving the quality of community health care services by providing a flat rate for commodity replenishment to CHWs and supportive supervision. In agreement with the NMCP, PMI will continue to support expanding the age range of services to children from 5 to 13 years of age in new CCS, aligning with the 16 Global Fund-supported provinces.
PMI is supporting 3,504 CCS out of the total estimated coverage needed of 21,590 CCSs in PMI-supported provinces. With FY 2024 funding, PMI will continue to support CHW

training/refresher training as needed and the procurement of small equipment in the established CCS. In addition, PMI will create and equip 500 additional CCS, and provide training to about 1,000 new CHWs (two CHWs/site) after a two-year pause. This will bring the total number of PMI-supported CCS to 4,004 and contribute to the DRC's National Community Health Care extension Plan, aiming to increase CCS coverage from 15 percent to 23 percent (i.e., from 10,112 to 15,000 CCSs) by 2027. Beginning with the FY 2021 reprogrammed funds, PMI started paying CHWs a monthly stipend of $10 per CCS and plans to increase this payment to $20 with FY 2024 MOP funds to harmonize CHW payments with the Global Fund rate, as a result of the PMI-Global Fund joint site visit recommendations.

Monitoring Antimalarial Efficacy

The 2017, TES results showed decreasing efficacy of ACT in certain sites in DRC.[6] 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 ACT 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. 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 3).

With FY 2024 funds, PMI will continue TES in DRC. The number of TES sites will however decrease to five sites per year due to budgetary restrictions and also to the increase in the cost of conducting TES.

Table 3. Ongoing and Planned Therapeutic Efficacy Studies

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

AL: artemether-lumefantrine; ASAQ: artesunate-amodiaquine; PARMA: Partnership for Antimalarial Resistance Monitoring in Africa.

[6] Schmedes, Sarah E et al. "*Plasmodium falciparum* kelch 13 Mutations, 9 Countries in Africa, 2014-2018." 2021.

Please see the SBC section 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 National Malaria Strategic Plan 2024-2028 prioritizes strengthening the malaria supply chain and ensuring availability of anti-malarial products in health facilities and at the community level. This new plan highlights the importance of coordination among key procurement and supply chain stakeholders and the importance of regular quality logistics data to inform decision-making and the strengthening of an electronic LMIS. Antimalarial product availability over the short term at all levels of the health care system and, in particular at the last mile, remains a priority for PMI along with investments in long-term supply chain system strengthening. Also, in collaboration with the MOH and other partners, U.S. Agency for International Development (USAID) DRC is in the process of creating a ten-year supply chain roadmap for 2023-2032 of which aims to increase the appropriate use of quality health products that are available and accessible to end-users through strengthened national healthcare supply chain and pharmaceutical management.

5.2. Recent Progress (April 2022–March 2023)

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. 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.

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. At the health facility level, routine data on availability is reported through a customized DHIS2 system, the *Système National d'Information Sanitaire* (SNIS) which includes the quality of data and 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. Through this system, there was observed discernible improvement in product availability between the EUVs for September 2020 and August 2021 (see Table 4).

Table 4: Stockout Rates and Stock Levels for Various Malaria Products, End-Use Verification, 2020–2022

Product	% HF Stockout on Day of Visit			% CDR Stocked according to Plan (between Minimum and Maximum)		
	Sep-20	Aug-21	Jul-22	Sep-20	Aug-21	Jul-22
Any WHO prequalified ACT	16%	12%	12%	NA	NA	NA
No AL presentation	73%	63%	44%	NA	NA	NA
Rectal Artesunate 100 mg	77%	69%	64%	10%	14%	0%
Injectable Artesunate	75%	59%	77%	3%	30%	10%
RDT	20%	12%	13%	12%	40%	25%
SP	19%	13%	18%	20%	8%	0%
ITNs	35%	36%	42%	22%	25%	0%

NB: % of HF with no AL presentation appear very high because even rural HFs were included in the denominator while they were not supplied with AL til 2021 as was the case for urban HFs. Also AL represents only 30% of ACT procured for the country. The other 70% are ASAQ.
ACT: artemisinin-based combination therapy; AL: artemether-lumefantrine; ASAQ: artesunate-amodiaquine; CDR: centrales de distribution regionales; HF: health facility; ITN: insecticide-treated mosquito net; RDT: rapid diagnostic test; SP: sulfadoxine-pyrimethamine.

The NMCP and PMI are concerned about the quality of medicines—especially that of commercial products. 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 can compromise treatment and increase resistance. PMI is supporting the *Autorite Congolaise de Regulation Pharmaceutique* and the *Laboratoire Pharmaceutique de Kinshasa* to build their capacity to perform post-marketing surveillance of antimalarial medicines. In 2021, a first round of post–marketing surveillance was conducted in three provinces, and in 2022 a second round was initiated in five provinces supported by PMI.

PMI provided technical assistance to the *Programme National d'Approvisionnement en Médicaments* (PNAM) to coordinate the national quantification committee and conduct long-term forecasts and quarterly supply plan reviews for priority health commodities. In March 2023, PMI supported the training of 33 staff from PNAM, MOH and USAID on a forecasting tool called Quantification Analytic Tool (QAT). QAT is used as the single tool to quantify all products for different health elements in USAID-supported provinces, including antimalarial products, and will soon be introduced in Global Fund-supported provinces. Following QAT training, a six-day workshop was organized to develop forecasting assumptions for malaria, HIV/AIDS, tuberculosis, family planning and reproductive health (FP/RH), and MNCH

commodities. Provinces also have their own supply plan with the QAT tool and can update their respective supply plan in real-time instead of this being centrally managed from Kinshasa.

5.3. Plans and Justification with FY 2024 Funding

The FY 2024 funding tables contain a full list of health supply chain and pharmaceutical management systems strengthening that PMI proposes to support.

With FY 2024 funds, PMI will support:

- Conducting a national quantification for malaria products using QAT. 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 will produce its own supply plan which is regularly updated based on supply, demand/consumption, and funding.
- Monitoring supply chain stock levels, including the supply plan and stock levels at CDRs, health zones, and health facilities. CDR stock 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 is 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* (PNAM) and ensuring its ongoing interoperability with the SNIS and CDRs warehouse management systems.
- Implementing a national EUV survey.
- Funding for warehousing of malaria products at CDRs (budgeted at 7.5 percent of product value) and onward distribution to other zones or health facilities using either CDRs or private sector third-party logistics (budgeted at 7.5 percent).To the extent possible given financing, integrated delivery of USAID-procured products will be implemented to health facilities, bypassing zones, but it may not be possible to expand last mile delivery beyond the zone currently covered in Haut Katanga and Lualaba. In addition, for instances where products are delivered to zonal level, funding is budgeted at 2 percent of product value for distribution from zones to aire santaires through the Integrated Health Program (IHP).
- Supporting the technical logistics management units at the central and provincial levels to strengthen their capacity to provide direct support for the supply chain.
- Supporting 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.
- Supporting *the Laboratoire Nationale de Contrôle de Qualité* to achieve and maintain ISO certification and continue post–marketing surveillance of malaria medicine quality.

6. Malaria Vaccine

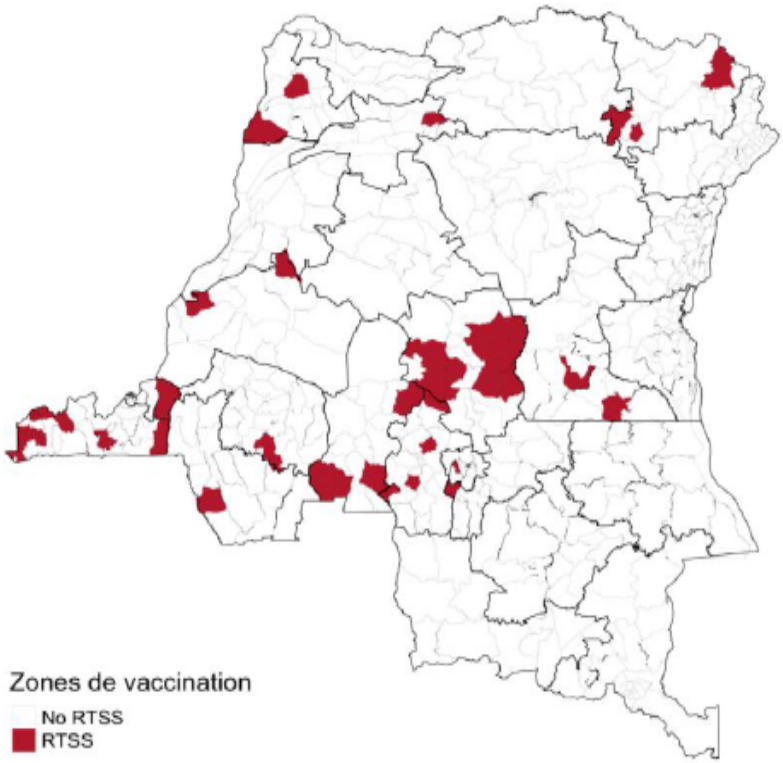
6.1. PMI Goal and Strategic Approach

PMI aims to support the Ministry of Health to strategically deploy the malaria vaccine as a complementary tool to the existing core interventions. This includes technical assistance to the NMCP along with the national EPI to strategically use data to monitor vaccine introduction. The vaccine introduction phase will be led by the national EPI, thus PMI DRC will continue to work with the NMCP and national immunization colleagues to provide complementary support in the planning, delivery and monitoring of vaccine deployment. This includes support to maximize uptake of the vaccine without adversely affecting coverage of other malaria interventions. Given that the country has successfully applied for the malaria vaccine and will be among the first countries to receive malaria doses, PMI/DRC will provide funding to existing mechanisms to support SBC and M&E activities during the introduction phase.

6.2. Recent Progress (April 2022–March 2023)

During the past period, the PMI supported the NMCP and EPI teams in developing an application for malaria vaccine introduction. The DRC application submitted to Gavi in January 2023 was accepted in April 2023 and information on the vaccine allocation to DRC was received in late May 2023.

Figure 3. Map of malaria vaccine plans in the DRC



6.3. Plans and Justification for FY 2024 Funding

The FY 2024 funding tables contain a full list of activities related to other drug-based prevention that PMI proposes to support..

The DRC plans to introduce the malaria vaccine in early 2024. The choice of the provinces where the vaccine will be introduced was based on malaria morbidity and mortality routine data as well as on vaccination rates and provinces with the best immunization performance. As such thirty eight (38) health zones are targeted in thirteen (13) provinces including Haut Uele, Kongo Central, Kasai Oriental, Kwango, Kwilu, Kinshasa, Kasai Central, Kasai, Lomami, MaiNdombe, Mongala, Maniema, and Sankuru. The vaccine will be provided to children aged 6 to 23 months in four doses at 6, 7 ,9, and 24 months. DRC will need 3,521,095 doses of malaria vaccine to reach 943,259 children between 2024 and 2026.

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.

All malaria vaccine procurement will be supported by UNICEF with Gavi funding. PMI will provide funding and technical assistance to support SBC and M&E activities through existing mechanisms in its supported provinces (Kasai Central, Lomami, and Sankuru).

7. Social and Behavior Change

7.1. PMI Goal and Strategic Approach

PMI's SBC support is in full alignment with the NMCP's National Strategic Communication Plan (2024-2028). The NMCP's 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 March 2023 to include aspects of malaria vaccine, seasonal malaria chemoprevention, and perennial chemoprevention and is targeted towards health providers, primarily to improve data reporting and interpersonal communication with pregnant women during IPTp administration to foster uptake. The SBC plan aims to improve uptake of key malaria behaviors in pregnant women including appropriate and systematic use of ITNs, prompt care-seeking at the onset of fever, and IPTp.

PMI conducting extensive formative research to understand determinants of behavior uptake and tested innovative SBC interventions to inform diagnostics activities. PMI supported a qualitative study conducted to understand providers' behavior through a quantitative study to determine the degree of discordance in test positivity rate of malaria RDT data generated by automated readers. PMI also introduced a service delivery assessment tool that uses a socio-ecological model to understand factors influencing provider behavior for patient assessment, treatment, preventive services, commodity management, and data recording.

The NMCP's SBC activities consist primarily of interpersonal communications (e.g., household visits), community mobilization (mini campaign, quiz at the market, FBO, CSO) and mass media. Selection of approaches and channels are intended to maximize interaction with the community, achieve reach to most of the population, improve accountability, maintain an effective feedback loop between communities and healthcare providers, and engage decision-makers. The SBC approaches also consider 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 finlly bringing them to scale through phased implementation approaches. PMI 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 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, Deki reader analytic study) are shared with other relevant donors such as Global Fund to inform high-quality SBC implementation throughout the country.

7.2. Recent Progress (April 2022–April 2023)

PMI supported the following activities from April 2022 and April 2023:

- PMI developed educational materials in French and local languages to support social and behavior change during mass campaigns. These materials include a leaflet that describes and explains through a comic strip how to ventilate ITNs in the shade before hanging them over sleeping spaces. PMI also developed radio microprogramming that provides information on campaign dates, when net distribution will be done, and encourages family members to sleep every night under ITNs. The programs also include storytelling and poems for school children on the appropriate use and care of ITNs, regular school attendance, and the negative impact of malaria on school performance. Programs provide malaria lessons for primary school teachers and school children's curricula, and run thematic interactive radio programs to answer questions from listeners.
- PMI also supported activities to improve health providers' identified behaviors, including building a prototype quality health center using human-centered design, which consists of collecting feedback from the community to improve the quality of services and the performance of health providers.
- PMI supported the implementation of a set of SBC interventions to address community and individuals behavior: a multi-media campaign targeting urban and peri-urban populations in four target provinces, the outreach activities under the umbrella campaign VIVA!, and the mini-campaigns to promote consistent ITN use, ANC attendance and IPTp uptake, and early care-seeking for fever. Channels include TV, radio, social media, billboards, household visits by *Relais Communautaires* (community

health extension worker), and information phone lines. These activities are estimated to have reached over seven million people in PMI-supported provinces.
- Additionally, PMI supported 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. PMI also provided technical assistance to the NMCP for the development, validation, and dissemination of the new National Strategic Communication Plan 2024-2028, and elaboration of an advocacy plan for fundraising.

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

- **ITNs:** Per the 2017-2018 MICS, the ITN use to access ratio is over 1.0 in the vast majority of provinces (including PMI provinces) except for Kasaï Central (.59). This trend was also observed during the 2022 MBS. Overall, the use to access ratio was .88, indicating that most people with access to bed nets report using them, but there is room for improvement. But in the Kasaï Central survey zone, the ratio was substantially lower. The DRC MBS showed that positive attitudes toward ITNs and the belief in consistent use of ITNs as community norm were less common in Kasaï zone compared to the other zones.

- **MIP:** PMI conducted the ANC/IPTp study to explore health facility factors and health provider characteristics associated with SP provision. The study revealed that data in the ANC registry are often inaccurate and incomplete and showed the existence of missed opportunities for SP delivery at ANC. The health provider needs an improvement of his behavior on communication with clients while administering IPTp to pregnant women, accuracy of data recorded on the registration tools and the management of SP stock to avoid commodity stockout.

- **Case Management:** PMI carried out a study using qualitative methods to explore the factors that influence providers' decisions in malaria case management, how they record data in the health registry regarding actions taken after RDT results and malaria treatment decision-making. The study also examined how data are recorded in the registry or synthesized for monthly reporting into the HMIS. The study findings raise questions about 1) the reasons for differences in TPR based on HMIS versus Deki Reader data, 2) the degree to which healthcare providers rely on RDT results when making malaria case management decisions for their patients, and 3) what other factors influence provider decisions about malaria case management. The conviction of community members interviewed is that malaria is prevalent in the community, and some women stated they would not leave the clinic without malaria medication. Health center patients are not totally confident in the results of RDT mostly if negative and rely on microscopy, and that the RDT would not pick up all species of malaria parasite.

7.3. Plans and Justification with FY 2024 Funding

The FY 2024 funding tables contain a full list of SBC activities that PMI proposes to support.

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 2024 funds:

Table 5. Priority Behaviors to Address

Behavior	Target Population	Geographic Focus	Programming to Address Behavior
Health worker adherence to malaria case management guidelines for testing and treatment and data reporting.	Health providers in the public/ non-profit sector Caretakers/ patients seeking services	All 9 PMI-focus provinces	• Continued support for further roll-out of the communication module syllabus currently being introduced at the University of Kinshasa, 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.
Consistent IPTp uptake (including early and regular ANC attendance)	Pregnant women Spouses/other head of household decision-makers ANC providers	All 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 mini-campaigns, society organizations, and faith-based organizations. • 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	All 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.

Additional Support Activities:

PMI will continue to implement activities based on the insights generated from the MBS, the ANC/IPTp study, human-centered design work to address barriers to ANC attendance and care-seeking, and a qualitative study on the determinants of RDT result use and malaria treatment decision-making.

PMI will continue to support the roll out VIVA! light version of the umbrella campaign (less expensive) as outreach activities and prepare the handover to the DRC MOH as community strategy by the government and other national and international partners for the promotion of essential family practices and the use of health services. This appropriation process by government and NGOs is a step towards long-term sustainability.

The 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. PMI will continue to support quarterly data collection and analysis to inform reach and recall of malaria messages. Additionally, PMI will support the implementation of the provider behavior tool to assess service delivery in health facilities in the behavior lens.

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 programs, PMI will continue to support:

- National-level coordination of the SBC TWG.
- SBC activities related to the vaccine introduction and roll-out which depends on the timeline, policies, and other key factors.
- Expansion of the communications training curriculum at medical training institutions building on work done at the University of Kinshasa.

8. Surveillance, Monitoring, and Evaluation

8.1. PMI Goal and Strategic Approach

Key recent surveillance, monitoring, and evaluation (SM&E) results include the evaluation of the national malaria surveillance system. It also included an assessment of HMIS data accuracy via the degree of discordance of test positivity rate of malaria RDT data interpreted by automatic DEKI reader and reported in the national HMIS. The results included strengthening the NMCP's monitoring and evaluation capacity through TWGs focused on malaria data review, analysis, and validation. PMI also supported joint supervision and malaria routine data quality assessment to improve data quality and data management systems in targeted health zones.

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

- Focusing on improving the routine surveillance system, strengthening the M&E capacity within the NMCP, and improving data quality across the nine supported provinces,
- Supporting national, provincial, health zone and health area data quality meetings and reviews,
- Supporting printing and disseminating HMIS registers and monthly reporting forms for the nearly 7,500 facilities within the PMI-supported provinces, and
- supporting standard surveys and other studies and operations research.

8.2. Recent Progress (April 2022–April 2023)

In CY 2022, PMI supported the following SM&E activities:

- 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.
- 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.
- Supported joint supportive supervision visits from provincial to health zone level in 73 health facilities, covering 18 health zones across the nine PMI-supported provinces.
- Supported routine data quality assessments in 238 health facilities, covering 79 health zones across the nine PMI-supported provinces.
- Supported 12 monthly data review meetings at the roughly 836 health areas and 129 health zones to conduct monthly data monitoring meetings.

- Supported the reproduction and dissemination of patient registers and monthly reporting forms for the roughly 7,500 health facilities within the PMI-supported provinces.
- Supported the NMCP to develop and submit two abstracts for the American Society of Tropical Medicine and Hygiene 2022 annual conference and to participate in person.
- Supported a comprehensive baseline assessment of the malaria system assessment in 250 health facilities covering 21 health zones across 4 PMI supported provinces (Haut Katanga, Kasai Oriental, Lomami and Sud Kivu). This assessment helped to document the state of malaria surveillance, identify gaps, define actions for improvement, and measure future improvements of the malaria surveillance system in the DRC.

8.3. Plans and Justification with FY 2024 Funding

The FY 2024 funding tables contain a full list of SM&E activities that PMI proposes to support.

Using FY 2024 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, task force malaria 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 (routine and surveillance) at the health zone and provincial levels.
- Continued improvement of standard dashboards and visualizations through Malaria Data integration and Visualization platform for review of malaria data (from routine health information system), entomological monitoring, surveys, and climate data at the health zone, provincial and national levels.
- Enhanced malaria data quality assessments with register comparison and review.
- Continued to support the malaria scientific days and to support the NMCP to develop, submit abstracts and to attend the American Society of Tropical Medicine and Hygiene annual conference.
- PMI will also support the production and dissemination of registers and monthly reporting forms for all health facilities and community care sites within the nine supported PMI provinces.
- Support 12 monthly data validation meetings at 179 PMI-supported health zones and nearly 3,000 health areas, as well as transmission of data to the health-zone level.
- Support managing, monitoring, and integrating malaria vaccine introduction data into the national HMIS.
- Based on the RDT quantitative study results, PMI is planning to strengthen malaria surveillance through the assessment of the accuracy of the malaria morbidity data using the Health Pulse application in a sample of supported provinces compared to the data reported on the DRC health management information system via DHIS2.

Table 6. Available Malaria Surveillance Sources

Source	Data Collection Activity	2020	2021	2022	2023	2024	2025
Household Surveys	Demographic Health Survey				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						
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	X	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	X	P	P	P
Malaria Surveillance and Routine System Support	Malaria Rapid Reporting System						
Other	End-Use Verification Survey	X	X	X	P	P	P
Other	School-based Malaria Survey						
Other	Knowledge, Attitudes and Practices Survey, Malaria Behavior Survey			X			
Other	Malaria Impact Evaluation						
Other	Entomologic Monitoring Surveys	X	X	X	P	P	P

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

9. Operational Research and Program Evaluation (PE)

9.1. PMI Goal and Strategic Approach

PMI continues to support the two guiding principles of the NMCP's Malaria National Strategic Plan 2020-2023: 1) innovation in developing new implementation tools to fight malaria; and 2) research to maximize progress toward malaria elimination in DRC.

PMI recently completed a quantitative and qualitative study assessing the degree of discordance in test positivity rate of malaria RDT data generated by automated readers compared to those reported in the national HMIS.

These results highlighted that health providers over-report malaria RDT diagnostic results and the presence of an RDT reader can change provider behavior. Through the M&E Technical Working Group and the Malaria Task Force meetings, future efforts will focus on mitigation solutions, including strengthening health provider's communication for behavioral change to improve the quality of the data reported in the national database.

9.2. Recent Progress (April 2021–March 2022)

With FY 2019–2021 funds, PMI completed the "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" study. This study used an automated RDT reader to analyze and interpret RDT results. 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.

The study measured the differences between the test positivity rates (TPRs) reported by the Deki readers and routine surveillance data reported in HMIS in 144 health facilities in three provinces (Haut Katanga, Kasai Central, and Sud Kivu).

The results showed potential over-notification of positive RDTs by 27 percent in South Kivu, 46 percent in Kasai Central, and 118 percent in Haut Katanga. According to the providers behavior study conducted to identify determinants of providers' behavior affecting malaria treatment decision making, the perceived pressure and opinions of peers (other health workers in the facility, supervisors, and patients) appeared to be a major factor.

PMI also conducted an assessment of the national malaria surveillance system in DRC, including a diagnostic of the surveillance system, the infrastructures in place such as human resources, information technology, and the national directives. Other aspects assessed included data reporting, analysis, quality assurance of data and behavioral aspects including governance and the staff competence and motivation.

The results showed that the quality of malaria surveillance data remains low and DRC faces several challenges with governance and health system infrastructure. Major recommendations included improving the infrastructure, data reporting, and governance to improve data quality.

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

Recently Completed OR/PE Studies	Dissemination status	Start date	End date
Exploring barriers to IPTp (ANC/IPTp)	Completed	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	Completed	Dec. 2021	Dec. 2022
Assessment of the national malaria surveillance system	Completed	Nov. 2021	Dec. 2022

ANC: antenatal care; HMIS: health management information system; IPTp: intermittent preventive treatment during pregnancy.

Table 8. Non-PMI-funded Operational Research/Program Evaluation Studies Planned/Ongoing in DRC

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

TIPTOP: Transforming Intermittent Preventive Treatment for Optimal Pregnancy

9.3. Plans and Justification with FY 2024 Funding

No OR/PE activities are proposed with FY 2024 funding.

10. Capacity Strengthening

10.1. PMI Goal and Strategic Approach

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

10.2. Recent Progress (April 2022–April 2023)

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

- Targeted training and coaching of NMCP's leadership skills and workforce development.
- Supported the implementation of the FETP program with four FETP trainees working directly with the NMCP. Specifically, PMI supported the training of two advanced cohort FETP trainees to strengthen residents' capacity to correctly complete malaria

surveillance tools, analyze malaria data, supervise CHWs, and investigate reported malaria outbreaks. In addition, funding from PMI supported an NMCP-led training of 22 health zone-level supervisors (*Infirmiers Titulaires*) to build capacity in malaria surveillance and monitoring. These trainees will provide training to health facility-level malaria data managers. PMI also directly engaged with the residents to understand their needs and determine how they can efficiently support the NMCP.
- Developed annual operational plans for all supported health zones.
- Supported supervision at all levels, including the nine PMI supported provinces by the central level, and supervision of health zones by the provincial management teams.
- Supported the NMCP to plan and conduct malaria TWG at national and provincial levels and malaria task force meetings at the national level.

10.3. Plans and Justification with FY 2024 Funding

The FY 2024 funding tables contain a full list of capacity strengthening activities that PMI proposes to support.

DRC will continue to support most capacity-strengthening activities as described in the Recent Progress section above. The FY 2023 funding tables contain a detailed list of 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.
- Support the electrification of at least 60 health facilities in two years to improve service quality and access to networks for ease of digital health data recording and reporting.

11. Staffing and Administration

In most PMI countries, a minimum of three health professionals oversee PMI. The single interagency team led by the USAID mission director or their designee consists of resident advisors representing USAID and CDC, and one or more locally hired experts known as foreign service nationals. In DRC, there are three locally hired experts, two resident advisors representing USAID and CDC, and the overall management is provided by a malaria and tuberculosis team lead. The PMI interagency team works together overseeing all technical and administrative aspects of PMI, including project design, implementing malaria interventions, including cross cutting interventions that are M&E, SBC, supply chain management. PMI also provides guidance and direction to PMI implementing partners.

ANNEX: GAP ANALYSIS TABLES

Table A-1. Routine ITN Gap Analysis Table

Calendar Year	2023	2024	2025
Total country population	123,968,672	127,687,732	131,518,364
Total population at risk for malaria	123,968,672	127,687,732	131,518,364
PMI-targeted at-risk population	47,063,168	48,475,063	49,929,315
Population targeted for ITNs	47,063,168	48,475,063	49,929,315
Continuous Distribution Needs			
Channel 1: ANC	1,770,288	1,390,615	1,425,464
Channel 1: ANC Type of ITN	PBO	Dual AI and PBO	Dual AI and PBO
Channel 2: EPI	1,550,524	1,597,040	1,644,951
Channel 2: EPI Type of ITN	PBO	Dual AI and PBO	Dual AI and 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	PBO	PBO	Dual AI and PBO
Estimated total need for continuous channels	3,320,812	2,987,655	3,070,415
Mass Campaign Distribution Needs			
Mass distribution campaigns			
Mass distribution ITN type			
Estimated total need for campaigns			
Total ITN Need: Continuous and Campaign	3,320,812	2,987,655	3,070,415
Partner Contributions			
ITNs carried over from previous year	1,475,704	704,992	1,064,143
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	2,550,100	3,346,806	2,370,415
Type of ITNs with PMI funding	PBO	PBO	Dual AI and PBO
Total ITNs Contribution Per Calendar Year	4,025,804	4,051,798	3,434,558
Total ITN Surplus (Gap)	**704,992**	**1,064,143**	**364,142**

ANC:antenatal care; EPI: expanded program on immunization; ITN: insecticide-treated mosquito net; PBO: piperonyl butoxide.

Table A-2. Mass Distribution ITN Gap Analysis Table

Calendar Year	2023	2024	2025
Total country population	123,968,672	127,687,732	131,518,364
Total population at risk for malaria	123,968,672	127,687,732	131,518,364
PMI-targeted at-risk population	47,063,168	48,475,063	49,929,315
Population targeted for ITNs	47,063,168	48,475,063	49,929,315
Population targeted for mass distribution campaigns	3,171,235	8,914,744	14,433,289
Lualaba	3,171,235		
Kwango			
Kasai-Central		5,876,572	
Kasai-Oriental			6,232,019
Kasai			
Nord Ubangi			
Continuous Distribution Needs			
Channel 1: ANC			
Channel 1: ANC Type of ITN			
Channel 2: EPI			
Channel 2: EPI Type of ITN			
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	0	0	0
Mass Campaign Distribution Needs			
Mass distribution campaigns	1,761,797	4,952,635	8,018,494
Mass distribution ITN type			
Estimated total need for campaigns	1,761,797	4,952,635	8,018,494
Total ITN Need: Continuous and Campaign	**1,761,797**	**4,952,635**	**8,018,494**
Partner Contributions			
ITNs carried over from previous year	2,295,139	533,342	0
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		0	0
Type of ITNs with PMI funding	PBO	PBO	Dual AI, PBO
Total ITNs Contribution Per Calendar Year	**2,295,139**	**533,342**	**0**
Total ITN Surplus (Gap)	**533,342**	**(4,419,294)**	**(8,018,494)**

EPI: expanded program on immunization; ITN: insecticide-treated mosquito net; PBO: piperonyl butoxide.

Table A-3. RDT Gap Analysis Table

Calendar Year	2023	2024	2025
Total country population	123,968,672	127,687,732	131,518,364
Population at risk for malaria	123,968,672	127,687,732	131,518,364
PMI-targeted at-risk population	47,063,168	48,475,063	49,929,315
RDT Needs			
Total # of projected suspected malaria cases	12,385,998	13,682,423	14,199,676
% Percent of suspected malaria cases tested with an RDT	92.91%	92%	92%
RDT Needs (tests)	**11,508,144**	**12,610,785**	**13,105,484**
Needs estimated based on other	DHIS2	DHIS2	DHIS2
Partner Contributions (tests)			
RDTs from Government			
RDTs from Global Fund			
RDTs from other donors			
RDTs planned with PMI funding	10,584,067	9,024,760	13,352,834
Total RDT Contributions per Calendar Year	**10,584,067**	**9,024,760**	**13,352,834**
Stock Balance (tests)			
Beginning balance	7,962,140	7,038,063	3,452,038
- Product need	11,508,144	12,610,785	13,105,484
+ Total contributions (received/expected)	10,584,067	9,024,760	13,352,834
Ending Balance	**7,038,063**	**3,452,038**	**3,699,388**
Desired end of year stock (months of stock)	6	6	6
Desired end of year stock (quantities)	5,754,072	6,305,392	6,552,742
Total Surplus (Gap)	**1,283,991**	**(2,853,354)**	**(2,853,354)**

RDT: rapid diagnostic test.

Table A-4. ACT Gap Analysis Table

Calendar Year	2024	2025	2023
Total country population	127,687,732	131,518,364	123,968,672
Population at risk for malaria	127,687,732	131,518,364	123,968,672
PMI-targeted at-risk population	48,475,063	49,929,315	47,063,168
ACT Needs			
Total projected # of malaria cases	11,266,937	11,788,171	10,081,022
Total ACT Needs (treatments)	**11,266,937**	**11,788,171**	**10,081,022**
Needs estimated based on other	DHIS2	DHIS2	DHIS2
Partner Contributions (treatments)			
ACTs from Government			
ACTs from Global Fund			
ACTs from other donors			
ACTs planned with PMI funding	11,110,971	12,048,789	9,414,690
Total ACTs Contributions per Calendar Year	**11,110,971**	**12,048,789**	**9,414,690**
Stock Balance (treatments)			
Beginning balance	5,508,834	5,352,868	6,175,166
- Product need	11,266,937	11,788,171	10,081,022
+ Total Contributions (received/expected)	11,110,971	12,048,789	9,414,690
Ending Balance	**5,352,868**	**5,613,486**	**5,508,834**
Desired end of year stock (months of stock)	6	6	6
Desired end of year stock (quantities)	5,633,468	5,894,086	5,040,511
Total Surplus (Gap)	**(280,600)**	**(280,600)**	**468,323**

ACT: artemisinin-based combination therapy.

Table A-5. Injectable Artesunate Gap Analysis Table

Calendar Year	2023	2024	2025
Injectable Artesunate Needs			
Projected # of severe cases	965,647	1,225,828	1,280,651
Projected # of severe cases among children 0-5 years of age	446,129	679,784	715,165
Average # of vials required for severe cases among children 0-5 years of age	3	3	3
Projected # of severe cases among children 6-13 years of age	198,923	273,022	282,743
Average # of vials required for severe cases among children 6-13 years of age	6	6	6
Projected # of severe cases among adults	321,561	273,022	282,743
Average # of vials required for severe cases among adults	9	9	9
Total Injectable Artesunate Needs (vials)	**5,425,972**	**6,134,678**	**6,386,637**
Needs estimated based on other	DHIS2	DHIS2	DHIS2
Partner Contributions (vials)			
Injectable artesunate from Government			
Injectable artesunate from Global Fund			
Injectable artesunate from other donors			
Injectable artesunate planned with PMI funding	1,438,124	1,418,691	1,072,748
Total Injectable Artesunate Contributions per Calendar Year	**1,438,124**	**1,418,691**	**1,072,748**
Stock Balance (vials)			
Beginning balance	2,103,253	0	0
- Product need	5,425,972	6,134,678	6,386,637
+ Total contributions (received/expected)	1,438,124	1,418,691	1,072,748
Ending Balance	**(1,884,595)**	**(4,715,987)**	**(5,313,889)**
Desired end of year stock (months of stock)	6	6	6
Desired end of year stock (quantities)	2,712,986	3,067,339	3,193,319
Total Surplus (Gap)	**(4,597,581)**	**(7,783,326)**	**(8,507,208)**

Table A-6. RAS Gap Analysis Table

Calendar Year	2023	2024	2025
Artesunate Suppository Needs			
# of severe cases expected to require pre-referral dose (or expected to require pre-referral dose based on # of providers for the service)	176,523		
Total Artesunate Suppository Needs (suppositories)	**223,479**	**334,888**	**349,513**
Needs estimated based on other	DHIS2	DHIS2	DHIS2
Partner Contributions (suppositories)			
Artesunate suppositories from Government			
Artesunate suppositories from Global Fund			
Artesunate suppositories from other donors			
Artesunate suppositories planned with PMI funding	232,849	221,442	356,826
Total Artesunate Suppositories Available	**232,849**	**221,442**	**356,826**
Stock Balance (suppositories)			
Beginning balance	97,806	107,176	0
- Product need	223,479	334,888	349,513
+ Total contributions (received/expected)	232,849	221,442	356,826
Ending Balance	**107,176**	**(6,269)**	**7,313**
Desired end of year stock (months of stock)	6	6	6
Desired end of year stock (quantities)	111,739	167,444	174,757
Total Surplus (Gap)	**(4,563)**	**(173,713)**	**(167,444)**

RAS: rectal artesunate suppository.

Table A-7. SP Gap Analysis Table

Calendar Year	2023	2024	2025
Total country population	123,968,672	127,687,732	131,518,364
Total population at risk for malaria	123,968,672	127,687,732	131,518,364
PMI targeted at risk population	47,063,168	48,475,063	49,929,315
SP Needs			
# of Pregnant women			
% of Pregnant women expected to receive IPTp1	95%	100%	100%
% of Pregnant women expected to receive IPTp2	87%	85%	85%
% of Pregnant women expected to receive IPTp3	80%	75%	75%
% of Pregnant women expected to receive IPTp4	72%	68%	68%
Total SP Needs (doses)	**6,238,192**	**6,210,182**	**6,436,914**
Needs estimated based on other	DHIS2	DHIS2	DHIS2
Partner Contributions (doses)			
SP from Government			
SP from Global Fund			
SP from other donors			
SP planned with PMI funding	4,266,200	6,974,073	6,550,280
Total SP Contributions per Calendar Year	**4,266,200**	**6,974,073**	**6,550,280**
Stock Balance (doses)			
Beginning balance	2,742,054	770,062	1,533,953
- Product need	6,238,192	6,210,182	6,436,914
+ Total contributions (received/expected)	4,266,200	6,974,073	6,550,280
Ending Balance	**770,062**	**1,533,953**	**1,647,319**
Desired end of year stock (months of stock)	6	6	6
Desired end of year stock (quantities)	3,119,096	3,105,091	3,218,457
Total Surplus (Gap)	**(2,349,033)**	**(1,571,138)**	**(1,571,138)**

IPTp: intermittent preventive treatment during pregnancy; SP: sulfadoxine-pyrimethamine.