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Cameroon

Malaria Operational Plan FY 2024

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TABLE OF CONTENTS

ABBREVIATIONS

ACT	Artemisinin-based combination therapy
AI	Active Ingredient
AL	Artemether-lumefantrine
AMF	Against Malaria Foundation
ANC	Antenatal care
An.	*Anopheles*
AS/AQ	Artesunate-amodiaquine
CDC	Centers for Disease Control and Prevention
CHW	Community Health Worker
CSO	Civil Society Organization
DHS	Demographic and Health Survey
EPI	Expanded Program for Immunization
EUV	End-Use Verification
FETP	Field Epidemiology Training Program
FSN	Foreign Service National
FY	Fiscal year
GRC	Government of the Republic of Cameroon
HCD	Human Centered Design
iCCM	integrated Community Case Management
IPTp	Intermittent Preventive Treatment for pregnant women
IRS	Indoor residual spraying
ITN	Insecticide-treated net
KDR	knockdown resistance
LSM	Larval source management
MBS	Malaria Behavioral Study
MIP	Malaria in Pregnancy
MIS	Malaria Indicator Survey
MOH	Ministry of Health
MOP	Malaria Operational Plan
mRDT	Malaria Rapid Diagnostic Test
NMCP	National Malaria Control Program
NSP	National Strategic Plan
PBO	Piperonyl-butoxide
PMI	U.S. President's Malaria Initiative
QAT	Quantification Analytics Tool
RA	Resident Advisor
RAS	Rectal Artesunate Suppository
SBC	Social and behavior change
SM&E	Surveillance, monitoring, and evaluation
SMC	Seasonal Malaria Chemoprevention

SP	Sulfadoxine-pyrimethamine
SPAQ	Sulfadoxine-pyrimethamine and amodiaquine
TES	Therapeutic Efficacy Studies
TWG	Technical Working Group
UHC	Universal Health Coverage
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 Cameroon, please refer to the country malaria profile, 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. Cameroon began implementation as a PMI partner country in FY 2017.

Rationale for PMI's Approach in Cameroon

Malaria is the most widespread endemic disease in Cameroon, responsible for greater than two million reported cases annually and absenteeism from school and work. Cameroon is among the 11 countries bearing 70 percent of the global burden of malaria as reported by the World Health Organization. The transmission of malaria is highest from July to October with high morbidity and mortality in the northern regions. The parasite, *Plasmodium falciparum*, and the *Anopheles gambiae* mosquito are responsible for transmission. After a brief period of stagnation, there is an increasing trend in the number of cases. In response to this burden, the Government of the Republic of Cameroon has made the fight against malaria a priority, as a highlight in the country's Health Sector Strategy (2016–2027). PMI's approach in Cameroon is based on PMI's five core areas of strategic focus: 1) reach the unreached; 2) strengthen community health systems; 3) keep malaria services resilient; 4) invest locally; and 5) innovate and lead. PMI programming is carefully coordinated with the Global Fund to Fight AIDS, Tuberculosis and Malaria and other partners to ensure geographic coverage of priority malaria interventions.

Overview of Planned Interventions

The proposed FY 2024 PMI funding for Cameroon is $22 million. PMI will support the following intervention areas with these funds:

1. Vector Monitoring and Control

PMI supports entomological, insecticide resistance and insecticide-treated mosquito nets durability monitoring; strengthening of field and laboratory capacity; sustainability at regional, district, and community levels; facilitation of the national vector control committee and national insecticide resistance management strategy; and operational costs for the 2025 insecticide-treated mosquito nets mass distribution campaign. Specifically, this includes: entomological monitoring in 15 sentinel sites (five for vector bionomics and an additional ten for insecticide resistance), larval surveillance for *Anopheles stephensi,* and streamlined durability monitoring of campaign insecticide-treated mosquito nets.

2. Malaria in Pregnancy

PMI's protects pregnant women from malaria by providing insecticide-treated mosquito nets and encouraging their use; receiving preventive treatment at prenatal visits; and promptly diagnosing and treating malaria and anemia. Planned interventions include:

- Procurement of sulfadoxine-pyrimethamine for routine distribution to pregnant women.
- Staff capacity strengthening to effectively provide malaria in pregnancy interventions.
- Support community distribution of sulfadoxine-pyrimethamine to increase coverage of intermittent preventive treatment of pregnant women.

3. Drug-Based Prevention

PMI supports annual seasonal malaria chemoprevention campaigns by procuring sulfadoxine-pyrimethamine and amodiaquine, training and supervising health workers, and encouraging caregivers to administer medications accurately to children. Seasonal malaria chemoprevention campaigns will continue in FY 2024, reaching children 3 months to 59 months of age in 47 districts in the north and far north regions.

4. Case Management

PMI promotes a comprehensive case management strategy including parasitological testing of all cases of suspected malaria and treatment at the health facility and community levels. Planned interventions will support this strategy through:

- Supporting the national level in the development of policies, procurement and distribution of antimalarial commodities (rapid diagnostic tests, artemisinin-based combination therapy, and severe malaria drugs) for health facilities and community health workers.
- Improving facility and community level health worker performance through training and supportive supervision in the north and far north regions.
- Supporting approximately 2,104 community health workers in community-level case management in the north and far north regions.

- Supporting therapeutic efficacy studies to monitor antimalarial resistance.
- Support for community-led monitoring in the north and far north regions. This approach is led by civil society organizations and community networks to gather actionable information on the implementation and quality of service delivery activities at facility and community levels.
- Funding to implement activities identified as priority for private sector engagement using results from a private sector assessment funded with previous year's Malaria Operational Plan.

5. Health Supply Chain and Pharmaceutical Management

PMI supports technical assistance to increase country ownership and accountability in supply chain management by supporting:

- Logistic management information system to increase use of real-time, complete and accurate data for decision making at all levels of the system.
- Forecasting and supply planning to ensure proper estimates of malaria commodity needs.
- Human resources strengthening to increase in-country capabilities to adequately manage the supply chain at all levels of the system.
- Warehousing and distributing health commodities to ensure product availability to the last mile.

6. Malaria Vaccine

PMI will support social and behavior change (SBC) activities to promote the uptake of the vaccine and updating tools for data management.

7. Social and Behavior Change

PMI strives to address social and internal factors that influence uptake of key malaria prevention and treatment behaviors. PMI supports SBC interventions at community and facility levels, data collection (formative, monitoring, evaluation) to optimize interventions, and capacity strengthening of SBC actors at national, regional and community levels. For FY 2024, interventions will promote proper use of insecticide-treated mosquito nets, prompt care-seeking for fever, early and regular ANC attendance, acceptance of seasonal malaria chemoprevention, and adherence to national guidelines by health workers. Engagement with local leaders and civil society organizations will be key to the success of these interventions. FY 2024 activities will also include monitoring and evaluation to measure the impact of SBC investments and capacity strengthening.

8. Surveillance, Monitoring, and Evaluation

PMI supports the collection of high-quality data through national and subnational surveys, disease surveillance systems, and national health management information systems. Technical support to the NMCP at the central, regional, district, and community levels to strengthen capacity and routine surveillance systems will be supported through:

- Data review and analysis at all levels to inform decision-making.
- Monitoring data quality and supporting development of malaria bulletins at the regional and central levels.

9. Operational Research and Program Evaluation

No specific operational research or program evaluation activities are proposed with FY 2024 funding.

10. Capacity Strengthening

Support the Government of the Republic of Cameroon in the implementation of a phased strategy designed to move the country toward universal health coverage over the next five years. Support will continue to focus on capacity-strengthening activities not just in relation to health service providers but for the NMCP for the implementation of the malaria National Strategic Plan. PMI will also continue to support strengthening of the public health workforce through the Field Epidemiology Training Program intermediate and frontline cohorts.

11. Staffing and Administration

A minimum of three health professionals oversee PMI in Cameroon. 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. The PMI interagency team works together to oversee all technical and administrative aspects of PMI, including finalizing details of the project design, implementing malaria prevention and treatment activities, monitoring and evaluation of outcomes and impact, reporting of results, and providing guidance and direction to PMI implementing partners.

I. CONTEXT & STRATEGY

1. Introduction

Cameroon began implementation as a PMI partner country in FY2017. This FY 2024 Malaria Operational Plan (MOP) presents a detailed implementation plan for Cameroon, 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 Cameroon, 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 County Malaria Profile, which provides an overview of Cameroon'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, accurate diagnosis and prompt treatment with artemisinin-based combination therapies, intermittent preventive treatment of pregnant women (IPTp), and drug-based prevention – as well as cross-cutting interventions such as surveillance, monitoring and evaluation; social and behavior change (SBC); and capacity strengthening. PMI's 2021–2026 strategy, *End Malaria Faster*, envisions a world free of malaria within our generation with the goal of preventing malaria cases, reducing malaria deaths and illness, and eliminating malaria in PMI partner countries. PMI currently supports 27 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 ten 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 Cameroon

3.1. Malaria Overview for Cameroon

The Government of the Republic of Cameroon (GRC) has made the fight against malaria a priority in the country's Health Sector Strategy (2016–2030). The GRC has also elaborated policies to improve access to the most vulnerable populations such as free treatment of malaria for children below 5 years and rolling out the first phase of Universal Health Coverage (UHC). The NMCP is implementing the National Strategic Plan (NSP) 2019–2023 according to the High Burden High Impact approach. The main strategic axes include SBC, vector control, chemoprevention, case management in health facilities and community, and surveillance. Challenges to malaria elimination in Cameroon include service disruptions due to the COVID-19 pandemic, insecurity, insufficient resources, frequent stockout of antimalarial commodities, poor coordination, poor resource mobilization, data quality/use, vector diversity and suboptimal implementation of proven interventions. Suboptimal implementation stems from poor adherence of national directives, low staff capacity, and demotivation of health workers. However, efforts towards elimination of malaria continue to be made by the GRC and development partners such as the Global Fund, PMI, Bill & Melinda Gates Foundation, United Nations Children's Fund (UNICEF), and World Health Organization (WHO), which provide most funding. Progress made so far has been the rollout of the first phase of the UHC, adoption of the malaria vaccine, expansion of the community health worker (CHW) program, and research on malaria vectors with the support of PMI.

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

3.2. Key Challenges and Contextual Factors

Despite the GRC's will to fight malaria, resources allocated remain largely insufficient. The NSP only mobilized 48 percent of the current NSP budget 2019-2023, with the state contributing 9.38 percent and donors contributing 90.62 percent. The low contribution of the state can be explained at least partly by poor coordination and limited multisectoral collaboration, especially with the private sector. Furthermore, supply chain needs are unsatisfied with frequent stockout and unavailability of antimalarial commodities. Resource constraints also contribute to a gap in ITNs available through routine distribution channels. Another challenge is insecticide resistance to pyrethroids and partial restoration of the sensitivity with piperonyl butoxide (PBO). Vector diversity with threats from *Anopheles (An.) stephensi* and changes in vector behavior also constitute an impending challenge. Only 17 of 35 potential sites for vector surveillance and insecticide resistance monitoring are covered.

Data quality, especially those pertaining to logistics, is poor and limits their use for decision making and quantification. Only 33 percent of healthcare providers are trained and even fewer are supervised leading to non-adherence of treatment guidelines. This may contribute to overdiagnosis of severe malaria with 38 percent of uncomplicated malaria cases being diagnosed as such.

Children under five years of age and pregnant women remain at highest risk for malaria morbidity and mortality. Coverage of key interventions such as IPTp are low (58 percent), thus, CHWs offer an opportunity to improve access to quality health services. Furthermore, overdiagnosis of severe malaria and irrational use of injectable artesunate pose ongoing problems in Cameroon. This issue is complex, with the health system's cost recovery structure an important driving factor.

Cameroon continues to face an unprecedented humanitarian situation in the far north, Adamawa, east, northwest and southwest regions caused by armed conflicts, intertribal wars, and terrorism from Boko Haram. Over 30 health areas in the far north are insecure. The security situation has deteriorated more due to the increased number of improvised explosive device attacks in the far north during June 2023. Health problems of refugees and migrants are like those of host communities, including injuries, measles, diarrhoeal diseases (cholera, dysentery, etc.), severe respiratory infections, and malaria. Epidemics are also very common in these emergency situations. Most health workers responding to emergencies have not been trained to respond effectively and efficiently to the health needs in emergencies. The rainy season frequently inhibits access and provision of services. The latter holds particularly true for CHWs who are not able to conduct door-to-door seasonal malaria chemoprevention (SMC) activities when it floods because of heavy rains in sites such as the Minawao Refugee Camp.

3.3. PMI's Approach for Cameroon

The new NSP 2024–2028 aims to reduce malaria morbidity and mortality by 75 percent by 2028 from 2015 levels. PMI contributes to the NSP in the following six strategic areas:

Prevention: PMI procures and supports routine and campaign distribution of commodities (ITNs, sulfadoxine-pyrimethamine, sulfadoxine-pyrimethamine and amodiaquine) to pregnant women and children. PMI further supports training and supervision of staff; and the gradual roll out of community IPTp to reach more pregnant women and progressively transition SMC from a campaign-style intervention to a routinely delivered intervention that is part of the health system platform for cost effectiveness. PMI also supports vector bionomics and insecticide resistance monitoring and has included *An. stephensi* surveillance and ITN durability monitoring in its package of support.

As plans for the malaria vaccine rollout take shape in Cameroon, PMI anticipates support needs in the areas of SBC and adapting tools for data management.

Case management: PMI supports quality assured parasitological diagnostic confirmation and treatment of malaria at health facility and community levels. PMI supports training and supportive supervision for health care providers and laboratory technicians to improve the quality of case management. In FY2024, PMI will train more health care workers and intensify their supportive supervision in order to address overdiagnosis of severe malaria and promote adherence of national treatment guidelines. PMI will also strengthen community health systems for more impact and resilience through expansion of CHWs, their remuneration, supervision, their improved access to commodities, and stronger community support and ownership of community-level service delivery through engagement and accountability for interventions.

Social and Behavior Change: PMI supports advocacy and social mobilization using evidence-based SBC approaches to address issues with case management and adherence to treatment guidelines by health care providers. PMI also supports SBC activities during ITN distribution and SMC campaigns to improve coverage and adherence to guidelines. PMI will extend its engagement with local media and faith-based organizations to diffuse messages on the fight against malaria and empower local authorities through community dialogues.

Training and Research: PMI promotes capacity building of the NMCP on designing and implementing mentoring programs for health facility staff on case management. Also, PMI supports the training of new entomologists conducting vector bionomics and insecticide-resistance testing. PMI will continue support for therapeutic efficacy studies (TES) with an added focus on SP resistance monitoring.

Surveillance, Monitoring, and Evaluation: PMI supports data capacity strengthening of health care providers through regular data review meetings and data quality audits. PMI provides technical assistance to strengthen the malaria Field Epidemiology Training Program (FETP) program to enhance malaria surveillance at the community level. PMI supports

surveys such as the Malaria Indicators Survey (MIS) and Demographic and Health Survey (DHS).

Program management: PMI supports the NMCP in coordinating the malaria response through thematic technical working groups (TWGs); developing strategic policies and strengthening the NMCP's capacity monitoring malaria control activities. PMI also supports engagement with the private sector and civil society.

3.4. Key Changes in this Malaria Operational Plan

The FY 2024 MOP supports the expansion of the CHW network to include UNICEF-trained CHWs in PMI-supported regions to progressively fill gaps in community health. This MOP focuses on strengthening community-based interventions, including improved CHW access to malaria commodities (rapid diagnostic tests, artemisinin-based combination therapy), data quality strengthening, and increasing incentives. Collaboration with civil society to mobilize resources and engagement of the private sector and community structures to enhance community health systems remains a priority. Community-led monitoring has also been prioritized to monitor the effectiveness of user fee elimination schemes for malaria in children under five years of age and pregnant women. Emphasis is being put on the threat posed by *An. stephensi.* Enhanced larval surveillance is being done in seaports to determine whether the species is present in Cameroon and will be scaled to additional locations. PMI will limit the procurement of injectable artesunate to children under five years of age and pregnant women to support UHC and address overdiagnosis of severe malaria. There will be no purchase of ITNs for routine distribution due to funding limitations and the planned 2025 mass campaign.

II. OPERATIONAL PLAN FOR FY 2024

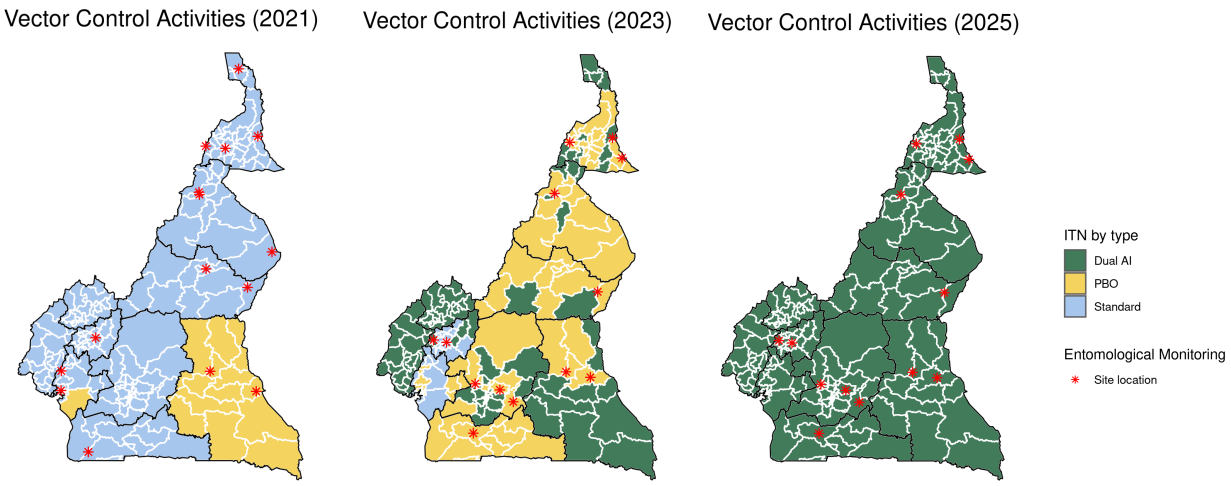
1. Vector Monitoring and Control

1.1. PMI Goal and Strategic Approach

The NMCP strategic plan promotes an integrated vector management strategy, which includes vector surveillance, enhanced insecticide resistance management, continuous and mass distribution of ITNs, geographically targeted indoor residual spraying (IRS), and larval source management (LSM). While the national strategy includes IRS and LSM approaches, PMI does not currently support these activities. Furthermore, IRS is not currently conducted, although it is being considered by the national vector control committee. PMI supports NMCP's High Burden High Impact goals for vector control, including entomological surveillance, distribution of new types of effective ITNs via mass campaigns and continuous channels, and combatting insecticide resistance. PMI has supported entomological monitoring at sentinel sites around the country and, given the unique insecticide resistance landscape, has also expanded insecticide resistance monitoring to support the selection of appropriate ITN tools. PMI supports vector control activities in the north and far north regions specifically, with some central-level support for planning and supervision. PMI supports the NMCP in achieving ITN

coverage of one ITN per 1.8 persons and in distributing new types of nets in high-malaria risk areas to reach maximum impact in accordance with the High Burden High Impact stratification approach. PMI supports the procurement and/or distribution of dual AI ITNs as needed to fill gaps. ITN mass distributions and PMI-supported entomological monitoring sites for 2023 are shown in Figure 1.

Figure 1. Map of Vector Control Activities in Cameroon



1.2. Recent Progress (between June 2022–June 2023)

PMI supported the following vector control activities:

- Vector monitoring in five longitudinal sentinel sites (Simatou, Gounagou, Mangoum, Bonaberi, Nyabessang) and insecticide resistance monitoring in ten additional sites (Bertoua, Djohong, Garoua, Gazawa, Kousseri, Mogode, Ndelele, Ngaoundere, Njombe, and Touboro) in partnership with the NMCP and local research institutions (i.e., Biotechnology Center), Center for Research in Infectious Diseases, and the Central African Organization for Endemic Diseases Control.
- Continuous data on human-vector behavior in all five vector bionomics sentinel sites to better understand biting behavior trends and to drive selection for ITN accelerometer operational research study.
- Supporting larval surveillance for *An. stephensi* in the port of Douala.
- Supporting an assessment of local institutions to identify existing local capacity to transition activities in alignment with localization efforts.
- Procuring and distributing 262,957 PBO ITNs and 347,042 dual AI ITNs for ANC and EPI distribution channels in the north and far north regions.
- Developing and validating the national communication plan for the 2022–2023 mass ITN campaign.

- Developing and distributing tools for SBC and training for the 2022–2023 mass ITN campaign for use in the north, far north, and Adamawa by SMC mobilizer/distributors (*mobidis*) and town criers.
- Supporting NMCP in increasing entomological capacity by facilitating training for community-based health personnel in Adamawa and east regions on basic entomology, including identification of larvae and adult mosquitoes.
- Supporting NMCP to coordinate the national vector control committee quarterly meetings to interpret entomological data across stakeholder groups to inform decision-making.
- Implementing 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 below.
- For more information about entomological monitoring, please refer to the last entomological report conducted in 2022.

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 surveillance including longitudinal monitoring at five sentinel sites and insecticide resistance monitoring at ten additional sites. FY2024 funding will be used to support year 3 streamlined durability monitoring, which will continue following the 2022–2023 mass campaign to determine the useful life of new types of nets since ITNs are Cameroon's primary malaria vector control intervention. In addition, activities for enhanced surveillance of *A. stephensi* will continue in accordance with the PMI *A. stephensi* action plan. PMI is also continuing to provide technical assistance to build the capacity of local research institutions and facilitate coordination between research institutions, NMCP, and the national vector control committee to support localization of entomological activities and operationalization of national insecticide resistance management plan.

Summary of Distribution and Bionomics of Malaria Vectors in Cameroon

Malaria vectors in Cameroon are diverse, and as of 2022, *Anopheles* mosquitoes from 21 species have been collected across five longitudinal entomological monitoring sites (Gounougou, Simatou, Mangoum, Nyabessang, and Bonabéri) and ten additional insecticide-resistance monitoring sites (Bertoua, Djohong, Garoua, Gazawa, Mada, Mogode, Ndelele, Ngaoundere, Njombe, and Touboro). Although larval surveillance for *An. stephensi* was conducted in urban port areas of Douala, no *An. stephensi* have been confirmed yet; but, *An. coluzzii* were detected in this setting. Of the *Anopheles* collected in 2022, a total of 11 *Anopheles* species (and species groups) were reported across all collection methods and sites (*An. gambiae* s.l.*, An. funestus* s.l.*, An. pharoensis, An. paludis, An. moucheti, An. ziemanni,*

An. nili, An. rufipes, An. christyi, An. demeilloni, and An. tenebrosus) of which five are known to be involved in malaria transmission and were found to be positive for *P. falciparum* sporozoites (*An. gambiae* s.l.*, An. funestus* s.l., *An. moucheti, An. pharoensis,* and *An. paludis*). Further identification of the *An. gambiae* complex and *An. funestus* group revealed the presence of three members of the *An. gambiae* species complex: *An. gambiae*. (33.6 percent), *An. coluzzii* (59.1 percent), and *An. arabiensis* (7 percent). Three sub-species of the *An. funestus* group: *An. funestus* s.s. (75.8 percent) and *An. leesoni* (22.7 percent), *An. rivulorum-like* (.2 percent) and hybrid of *An. funestus s.s./An. leesoni* (1.1 percent).

The mean human biting rate of *An. gambiae* s.l. ranged from .58 bites/person/night (b/p/n) in Nyabessang, where seasonal rainfall and farming create temporary breeding sites, to 21.02 b/p/n in Simatou, where widespread rice cultivation enables permanent suitable vector breeding habitats. Early morning biting was observed for *An. gambiae* s.l., particularly in the northern sites of Gounougou and Simatou where biting occurred until 10 a.m., while early evening peak biting (9 p.m.-10 p.m.) was recorded in Mangoum. Monthly indoor resting density of *An. gambiae* s.l., estimated by PSCs, varied across sites from .3 females/room (f/r) in Bonabéri to 16.0 f/r in Simatou. The high indoor resting density suggests potential for IRS in Simatou. *An. gambiae* s.l. bites almost equally outdoors and indoors in both Gounougou and Simatou, and bites more outdoors in Mangoum and Bonabéri. In Nyabessang, *An. paludis* and *An. moucheti* were found at higher densities than *An. gambiae* s.l and were found to bite more outdoors than indoors. The mean monthly entomological inoculation rates was 3.9 infected bites/person/month (ib/p/m) in Gounougou, 2.23 ib/p/m in Simatou, 5.14 ib/p/m in Mangoum, 4.8 ib/p/m in Nyabessang, and 0.3 ib/p/m in Bonabéri.

Status of Insecticide Resistance in Cameroon

Cameroon has reported high pyrethroid resistance and resistance of vectors to newer insecticide compounds, chlorfenapyr and clothianidin. These resistance trends drove the NMCP decision to procure new active ingredient ITNs for the phased 2022-2023 mass campaign. In 2022, PMI supported insecticide resistance monitoring at ten sites using pyrethroid (alpha-cypermethrin, deltamethrin, and permethrin), organophosphate (pirimiphos-methyl), carbamate (bendiocarb), neonicotinoid (clothianidin), and pyrrole (chlorfenapyr) insecticides. In addition to pyrethroid resistance testing, intensity of pyrethroid resistance and synergist assays with PBO were conducted. *An. gambiae* s.l. were resistant to the diagnostic dose of all pyrethroids in all ten sites tested. Resistance to bendiocarb was observed in seven sites (Bertoua, Djohong, Gazawa, Kousseri, Ngaoundere, Ndelele, and Njombe). High pyrethroid resistance was observed across the three pyrethroids tested in all sites except Bertoua, where moderate permethrin resistance was found. Pre-exposure of mosquitoes to PBO substantially increased the mortality of *An. gambiae* s.l. against pyrethroid insecticides, but did not restore full susceptibility in nine sites surveyed, except in Djohong with deltamethrin and alpha-cypermethrin. Six sites of the ten sites showed susceptibility of *An. gambiae* s.l. to clothianidin (4 µg/bottle) using CDC bottle assays. Seven sites showed

susceptibility of *An. gambiae* s.l. to chlorfenapyr (100 µg/bottle) after 72 hours. *An. paludis* was susceptible to deltamethrin in Nyabessang while *An. pharoensis* showed resistance to deltamethrin in Simatou.

Furthermore, target site knockdown resistance (kdr) west and east (kdr-e and kdr-w), Ace-1, and N1575Y molecular markers of resistance were found to be involved in the insecticide resistance of the vectors of the different sites. These data are being used to guide NMCP options for vector control tool selection and the implementation of the insecticide resistance management plan.

1.3.2. Insecticide-Treated Nets

PMI will support SBC to improve use and care of ITNs and to mitigate against misuse. PMI will also support streamlined durability monitoring of PBO and dual AI nets distribution in the 2022–2023 mass campaign.

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

ITN Distribution in Cameroon

In Cameroon, ITNs are distributed via mass campaigns every three years. Continuous distribution channels are to pregnant women at ANC and to children via EPI, which began roll-out in 2022. The country transitioned from standard to PBO nets in certain priority districts during its 2019 mass campaign. During the 2022-2023 mass campaign, PBOs and dual AI nets were distributed in select districts, based on resistance data, as part of a phased approach with distribution in the far north, north, Adamawa, east, Littoral, west, and south regions in 2022 and planned for the center, northwest, and southwest regions in October 2023. Procurement and distribution was primarily funded by Global Fund and GRC with 178,250 dual AI nets in one district in the north region.

Given the planned 2025 mass campaign in PMI-supported regions, PMI is not planning to use FY 2024 funds to procure ITNs for routine distribution.

Please refer to the ITN Gap Analysis 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
2022-2023	2-4 in north/far north*	Interceptor G2 and PBO (DuraNet Plus©)	Initiated	Planned	Planned	Planned

***** Phased campaign means the dates will differ in these other regions.
PBO: piperonyl butoxide.

1.3.3. Indoor Residual Spraying
PMI does not currently support IRS in Cameroon

1.3.4 Other Vector Control
PMI is not currently supporting additional vector control activities, but a cluster randomized control trial supported by Wellcome Trust examining *Bti* larviciding in Yaounde from 2018-2020 indicated high impact of microbial larvicides on malaria vectors.

2. Malaria in Pregnancy

2.1. PMI Goal and Strategic Approach
The NMCP objective for malaria in pregnancy (MIP) according to its 2024-2028 NSP is to have comprehensive coverage of interventions to prevent and manage MIP targeting:

- At least 80 percent of pregnant women receive at least three doses of SP (IPTp3).
- At least 80 percent of pregnant women attending ANC in health facilities receive an ITN.
- Prompt diagnosis of at least 80 percent of malaria infections in pregnant women, and 100 percent treatment of confirmed cases according to national treatment guidelines.

PMI supports the government to achieve these objectives through capacity building of service providers in prevention and case management of MIP. PMI also procures and supports the distribution of SP and ITNs in the north and far north and supports CHWs to increase community awareness on the importance of early and regular ANC attendance and IPTp and ITN use during home visits. SBC prototypes are being piloted to promote ANC attendance, IPTp uptake, and ITN use during community dialogues in the premises of traditional authorities coordinated by CHWs.

Although ITN distribution (i.e., the proportion of pregnant women who received an ITN at ANC) has met the national average of 76 percent in the far north (88 percent) and north at (92 percent), IPTp coverage remains low, particularly in the far north region at 52 percent (vs. 71 percent in the North). Despite progress in meeting targets in both regions against the national average, ANC attendance rates continue to remain a barrier for IPTp uptake. According to the MIS 2022 survey, factors affecting ANC attendance include difficulty getting money for treatment (67 percent), the long distance to travel to get to the health facility (40 percent), obtaining permission to go for treatment (35 percent), and not wanting to go to the facility alone (28 percent). Insecurity also disrupts care provision services and constitutes an important barrier. The presence of CHWs presents a great opportunity to improve provision of IPTp from the second dose onward. The NMCP started SP distribution at the community level in areas of insecurity where access to health care was limited in 2021.

2.2. Recent Progress (June 2022–June 2023)
PMI supported the NMCP in:

- Changing the national IPTp guidelines on initiating SP administration in pregnant women from 16 weeks of gestational age to 13 weeks, as recommended by WHO.
- Adopting the quality assurance tool for malaria case management based on a model of outreach, training, and supportive supervision.
- Conducted two rounds of on-site training and supportive supervision visits in 441 health facilities (integrated with case management supervision).
- Procuring 100 percent of the required SP for delivery to pregnant women in the north and far north regions.

2.3. Plans and Justification for FY 2024 Funding

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

PMI will continue strengthening the capacity of health providers, ANC staff, and midwives in prevention and case management of MIP, supportive supervision, early and regular ANC attendance, use of ITNs, and IPTp uptake. PMI will also continue its support of the case management/MIP-integrated TWG to hold meetings and develop normative documents. Finally, PMI will continue to procure SP in quantities sufficient to meet the needs of the population in the north and far north regions of the country.

Supportive supervision data generated during supervision visits to health facilities indicate that lack of adequate MIP training and supervision for providers may be an important factor influencing provider behaviors. During the last outreach visit conducted by the PMI team, only 11.5 percent of providers demonstrated skills in MIP (i.e., achieved a performance of 90 percent or above). A specific observed deficiency was that providers did not educate pregnant women about the consequences of MIP or the benefits of preventing malaria with SP. PMI and the NMCP are prioritizing training and supportive supervision aimed at building capacity of health facilities for malaria case management during pregnancy and provision of IPTp and ITNs. PMI support to CHW-integrated training and supervision will also improve household sensitization of pregnant women on early and regular ANC attendance and use of ITNs. At the national level, PMI will support the NMCP to implement community-level IPTp through the development of a national strategy, the revision of training manuals and training of CHWs as well as SP provision. Please refer to the SBC section below for information on how SBC interventions will be directed to address challenges and improve these behaviors.

Please refer to the SP Gap Table in annex for more detail on planned quantities and distribution channels. Please see the SBC section for details on challenges and opportunities to improve intervention uptake or maintenance.

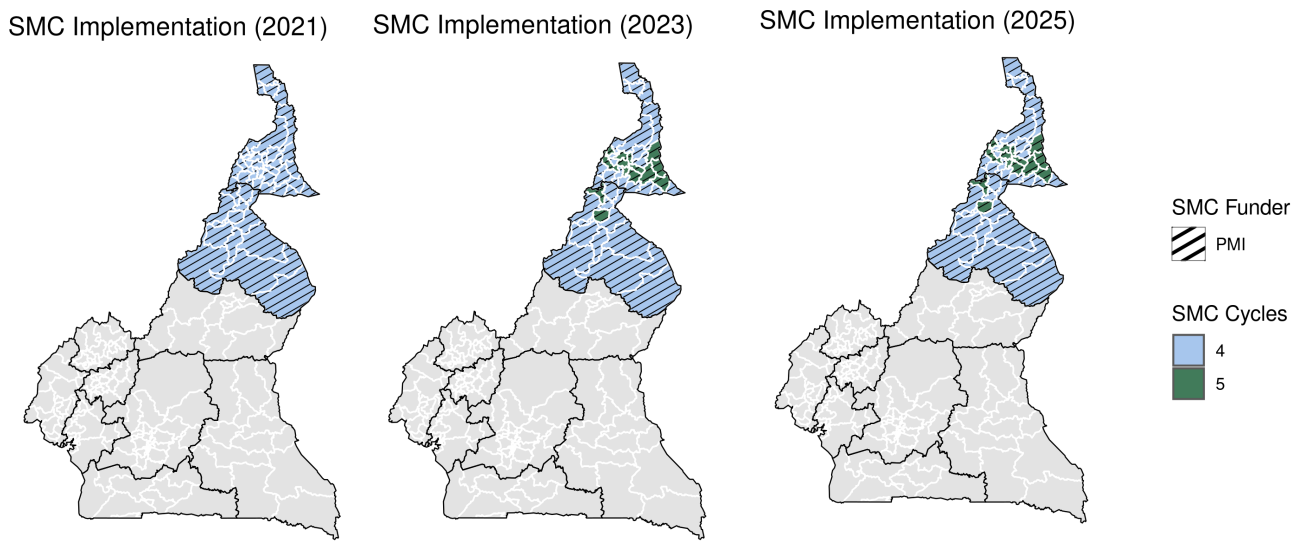
3. Drug-Based Prevention

3.1. Seasonal Malaria Chemoprevention

3.1.1. PMI Goal and Strategic Approach

The NMCP NSP promotes SMC as a malaria prevention intervention in areas with highly seasonal malaria transmission. SMC has been implemented every year since 2016 via door-to-door campaigns in eligible districts during the peak malaria transmission season (June–October). Currently SMC protects 2.1 million children 3 to 59 months of age in the 47 eligible districts in the north and far north regions. PMI supports SMC as defined in WHO guidance, including all elements of planning and implementation. The approach requires community distributors to directly observe administration of the first dose of sulfadoxine-pyrimethamine and amodiaquine (SPAQ) and leave treatment doses for administration by the caregiver on days two and three for all cycles. PMI fully supports SMC in all 47 districts including SPAQ procurement and implementation activities (planning, training, paying distributors, SBC activities, independent monitoring surveys to assess coverage and adherence). PMI also supports the NMCP SMC activities at the central level, including planning and training.

Figure 2. Map of Seasonal Malaria Chemoprevention Implementation in Cameroon



3.1.2. Recent Progress (June 2022–June 2023)

An estimated campaign coverage of 98 percent of targeted children was achieved in these PMI-supported districts during the 2022 campaign. Based on results of recent stratification modeling exercises, the NMCP requested support to expand the number of SMC cycles from four to five in 24 of the 47 districts implementing SMC. This expansion started in 9 of the 24 SMC-eligible districts in 2022, and five more districts were added (for a total of 14 out of 24) in 2023 due to limited resources.

Additionally in 2022, PMI and the NMCP piloted a new SMC delivery modality in nine districts in which CHWs integrated door-to-door SMC distribution into their routine duties (rather than hiring seasonal staff for a campaign-style program). The CHWs were compensated for the additional duties. The implementing partner reported this approach reduced costs and promoted community ownership. In addition, integrating SMC into routine CHW duties allowed for testing and treating of febrile children during SMC distribution rather than having to refer them for care. This routine SMC distribution by CHWs approach will continue to be evaluated with full scale up in 2025.

The following activities were conducted to implement SMC:

- PMI procured SPAQ blister-packs to meet the need in the 47 eligible districts.
- Training of 11,538 SMC mobilizers/distributors (including 1550 CHWs for the nine districts incorporating SMC into routine CHW duties) and 1,649 supervisors.
- Training 499 communication focal points at the district and health area levels.
- Updating the SMC Surveillance, Monitoring, and Evaluation (SM&E) tools and providing training and logistical support for digital data reporting into DHIS2 from the district level by 46 data managers, and paper based data collection by 452 data managers at the health area level.
- Supporting the NMCP to convene internal SMC evaluation workshops, including a workshop at the end of each SMC cycle at the regional level and every other cycle at the district level to assess SMC implementation.
- Implementing campaign processes and outputs and identifying bottlenecks.
- Implementing five cycles of SMC external monitoring through lot quality assurance sampling surveys to assess the SMC quality and verify coverage and adherence measures.
- Supporting the NMCP to hold planning and post-implementation validation meetings.
- Supporting the production of an SMC bulletin.
- Ensuring the inclusion of SP resistance marker testing of samples from 2022 TES in the north region.
- Supporting SBC activities focused on demand generation at the community level through collaborations with civil society organizations (CSOs). For more information, please refer to the SBC section.

3.1.3. Plans and Justification for FY 2024 Funding

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

With FY 2024 funding, PMI will continue to procure SPAQ and support SMC activities, as described in the Recent Progress section above, with door-to-door mobilization and continued roll-out of routine SMC distribution by CHWs. New SBC investments through CSOs and opinion leaders will focus on maintaining high levels of acceptance and adherence to intake doses for days 2 and 3 through:

- SMC 2025 campaign planning and implementation, including review and modification of the strategy, procurement and distribution of SPAQ, materials and tools and training of all actors.
- Continued support of CSOs and neighborhood advocates or champions to increase uptake of second and third doses of SPAQ.
- Focus on increased collaboration among partners engaged in SM&E and SBC, and increased focus on epidemiological surveillance and data quality assurance.

Please refer to the SPAQ Gap Table in annex for more detail on the planned quantities and distribution channels. Please see the SBC section for details on challenges and opportunities to improve intervention uptake or maintenance.

3.2. Other Drug-Based Prevention

In alignment with WHO guidance, the new NSP 2024-2028 recommends perennial malaria chemoprevention (PMC) for infants under two years of age in areas of Cameroon with moderate to high malaria transmission that is not highly seasonal (areas not eligible for SMC). The NSP recommends that infants below 2 years of age living in PMC-eligible districts receive five doses of SP during EPI visits at specific intervals corresponding to their vaccination schedule (10 weeks, 14 weeks, 6 months, 9 months, and 15 months). In addition to implementation of this standard, 5-dose PMC, Cameroon is currently piloting an eight dose PMC regimen (administered at 10 weeks, 14 weeks, 6 months, 9 months, 12 months, 15 months, 18 months, and 23 months) in six health districts (Bafia, Nkolbisson, Ngoumou, Soa, Obala, and Ntui) in the Center region with support from the Plus Project funded by Unitaid and implemented with the support of Population Services International and the Association Camerounaise pour le Marketing Social.

3.2.1. PMI Goal and Strategic Approach

PMI is not supporting PMC or other drug-based prevention interventions other than SMC in 47 districts of the north and far north regions.

4. Case Management

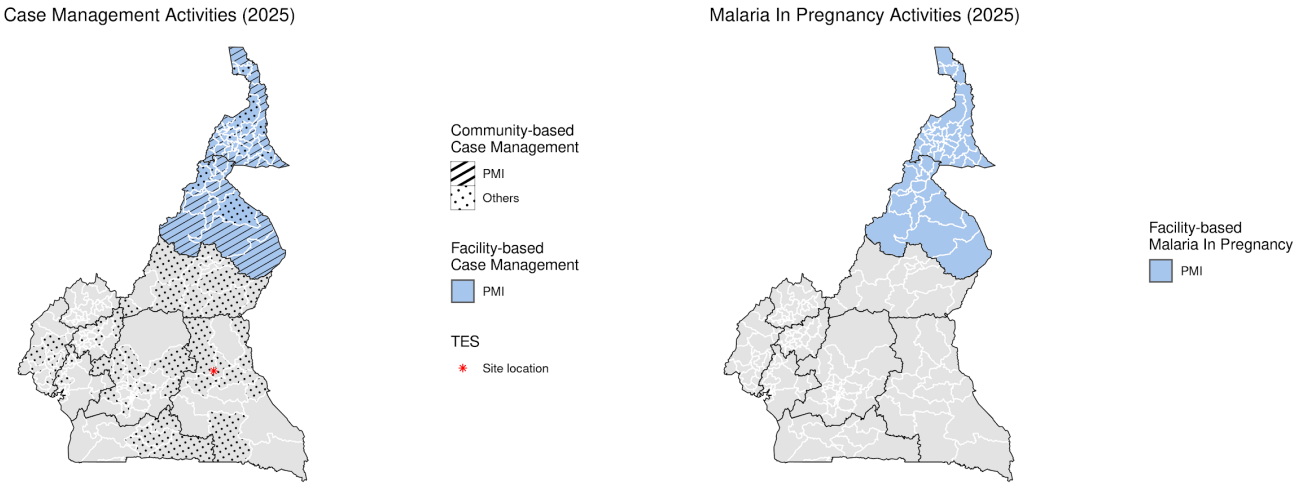
4.1. PMI Goal and Strategic Approach

The NMCP's Strategic Plan 2024-2028 promotes a comprehensive case management strategy including universal, quality-assured parasitological testing of all cases of suspected malaria. Prompt and effective treatment with ACT for uncomplicated malaria and emergent pre-referral and/or definitive management of severe febrile illness and severe malaria at health facility and community levels are in line with national directives. PMI supports all aspects of this approach through supporting national policy and programs, procuring commodities, and bolstering facility and community level health worker performance. PMI supports procurement of mRDTs, ACTs, and injectable and rectal artesunate in the north and far north regions. PMI also supports

supportive supervision activities in 31 out of 47 health districts in both regions. The Global Fund supports the remaining eight regions.

PMI also supports 2,104 CHWs in north and far north regions out of 9,606 (22 percent) CHWs nationally to conduct malaria community case management (mCCM) to all ages, pre-referral rectal artesunate suppository (RAS) treatment, and preventive and promotional activities in 20 out of the 47 districts in the north and far north. Although PMI only provides transportation allowance to CHWs, it is supporting the MOH to set up a regulatory framework for direct payments to CHWs to do this effectively in the future. The biggest challenge faced by the community health system is insufficient resources for optimal CHW expansion and frequent stock-out/unavailability of essential commodities.To address this, PMI is investing in an evidence-based approach to optimize CHW expansion through the PMI Insights Project and mobilizing resources to retrain and supervise already trained CHWs. Other partners, including municipal councils, will also support existing CHWs. Despite its wide reach into the community, there has not been an evaluation of community driven interventions in Cameroon since its inception in 2015 to generate evidence for a data-driven advocacy for resource mobilization.

Figure 3. Map of Case Management, Community Health and Malaria in Pregnancy Service Delivery Activities in Cameroon, 2025.



4.2. Recent Progress (June 2022–June 2023)

National Level Case Management Support

- Supported the NMCP in the mid-term review of the current NSP and in the development of the new malaria NSP (2024-2028).
- Supported the production and dissemination of 300 manuals for quality malaria diagnosis and the development of national malaria case management and quality assurance manual.
- Supported the NMCP in implementing a national external quality control system for routine malaria slides.

- Certified 11 laboratory technicians at level A and B of the WHO classification with capacity to check positive slides for malaria parasite identification and quantification.
- Convened one regional lessons-learned workshop and supported training, supervision, and quality assurance in case management and MIP in 441 health facilities out of 452 targeted (due to flooding in most instances).
- Supported the implementation and supervision of TES sites in the districts of Guider and Figuil in the north region.

Commodities

- Supported the procurement and distribution of 1,157,050 malaria mRDTs for north and far north regions, covering 100 percent of needs.
- Supported the procurement and distribution of 1,376,250 of AL for north and far north regions, accounting for approximately 94 percent of needs.
- Supported the procurement and distribution of 1,091,505 vials of parenteral artesunate for north and far north regions, accounting for approximately 62 percent of needs.
- Supported the procurement and distribution of 40,000 rectal artesunate suppositories for north and far north region, covering 100 percent of needs.

Facility Level

- Supported the NMCP to conduct quarterly supportive supervision of 51 laboratories in health facilities.
- Conducted two rounds of on-site training and supportive supervision visits in 441 health facilities.
- Provided technical assistance in the training of 65 monitors at the central and regional levels to provide on-site training and supportive supervision.
- Supported two lessons learned workshops to review the results of supportive supervision.

Community Level

- Supported the strengthening and expansion of iCCM to 20 health districts (from 16 districts) through organizing a ten-day workshop for training and equipping 208 CHWs in the health districts of Koza and Mogode in the far north region.
- Collected key case management quality of service data at the community level during supportive supervision, including diagnostic testing prior to treatment and adherence to diagnostic test results.
- Supported the NMCP and the Directorate of Health Care Organization and Technology in implementing the pilot phase of strengthened iCCM in three health districts (Guider, Mokolo, and Kaele) to integrate and build capacity of CSOs, community health committees at the district and health area levels, and community leaders' in communication activities.
- Supported the legalization of the community health committees (dialogue structures) in three health districts selected for strengthening of iCCM .

- Supported the implementation of the PMI Insights Project for modeling CHW expansion in Cameroon.
- Supported the MOH to develop a legal framework for the institutionalization and remuneration of CHWs that has been submitted to the Prime Minister, awaiting his signature.

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.

Phase 1 of the UHC was launched by the GRC in April 2023 in five regions among which are PMI focus regions. It provides free consultations and treatment for children under 5 years of age. Pregnant women pay 6,000 CFAs ($10) to enroll and have access to a set of services that includes malaria treatment. PMI will support UHC through continued supply of antimalarial commodities, capacity strengthening, and supervision of health care providers to ensure quality of services. Also, PMI will continue to support community-led monitoring on the effectiveness of UHC through CSOs.

In 2020, 66.5 percent of malaria cases in Cameroon were categorized as severe with consequent irrational use of injectable artesunate. The NMCP elaborated a plan to ameliorate this situation of overdiagnosis of severe malaria targeting 1,000 priority health facilities that reported 61 percent of the country's severe malaria cases. Strategic actions in this plan included capacity strengthening, intensified M&E, SBC, control missions (supervision visits targeting this issue) and purchase of performance (incentivizing correct case management practices). Only the first two actions have been implemented and may have contributed to the 19 percent reduction of severe malaria cases that was observed in these priority facilities. In the PMI focus regions, a 23 percent and 22 percent reduction were observed in the north and far north regions, respectively, between 2020 and 2022. PMI will continue to support these efforts through training and supportive supervision of health workers, promotion of UHC, implementation of SBC approaches identified through formative research (see SBC section), and technical support to the NMCP mentors program that empowers districts.

Furthermore, only 57 percent of uncomplicated malaria cases and 48 percent of severe malaria cases were treated in compliance with national treatment guidelines. This situation is marked in persons above five years of age and pregnant women with no difference between public and private facilities. In the PMI focus regions, less than 40 percent of persons above five years of age and pregnant women with severe malaria were treated with injectable artesunate. However, most of the cases were misclassified as severe malaria. Therefore, PMI will address this issue by limiting procurement of injectable artesunate to children under five years of age and pregnant women, intensifying SBC, and strengthening the capacity of health care providers to comply with national treatment guidelines.

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 workshops for the development, update or revision and dissemination of national policies and normative documents such as the national guidelines for the treatment of malaria, and quality assurance guidelines for the diagnosis and treatment as well as their operationalisation. PMI will also continue to support case management TWG meetings to elicit consensus on key issues and recommendations for their resolution. These funds will support NMCP supportive supervision activities (from central and regional levels) including field visit logistics and communication support, annual refresher training for central level supervisors and updating of supervision tools. PMI funding will also continue capacity building for program management and support for activities identified as priority for private sector engagement.

Commodities

Cameroon will continue to procure antimalarial commodities (ACT, mRDT, injectable artesunate, RAS, SPAQ, SP). However, due to evidence of irrational use of injectable artesunate, PMI intends to reduce the quantity of injectable artesunate and cover the needs for the most vulnerable groups that include children under five years of age and pregnant women, while supporting the capacity building for health care providers for appropriate classification of malaria cases.

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

Facility Level

PMI will continue training and supervision for providers at public and non-profit health facilities in focus regions to effectively deliver malaria case management services with emphasis on district level supervision. Supervision will be integrated to include activities related to commodity verification and data quality with more involvement of staff of the district health service and CBOs. PMI will support severe malaria and malaria deaths audits to verify if proper diagnosis and treatment were provided.These audits will help improve data quality and promote a better monitoring of malaria cases management by health facilities managers.

PMI will continue to support the implementation of a comprehensive quality assurance/quality control plan for malaria diagnostics, including mRDTs and microscopy, in public and non-profit health facilities in the north and far north regions. This support will focus on parasite detection, species identification, parasite counting, and use of mRDTs. Laboratory supervision teams will also use malaria slide proficiency testing panels.

Community Level

PMI will continue to support CHW expansion in its focus regions. With FY2023 funds, PMI will absorb the supervision and coordination of CHWs trained by UNICEF rather than training new CHWs. FY 2024 funds will support selection, training, equipment, and supervision of 1,088 CHWs in the 20 health districts currently supported in the north and far north regions to effectively deliver routine community case management of simple malaria, and pre-referral RAS for severe malaria to hard-to-reach populations. This support also includes payment of travel stipends for CHWs to attend monthly meetings to report data and resupply commodities. With the elaboration of the legal framework for community participation, donors will be expected to align with a monthly compensation at minimum wage. PMI will increase the monthly transport allowances for CHWs to attend monthly meetings at the health facility. Additionally, PMI funds will support community-led monitoring to gather actionable information on the effectiveness and quality of services at community level, including client satisfaction. This approach will greatly contribute to UHC.

Plans to digitize community health workers activities have been underway in Cameroon with a UNICEF supported proof of concept. In the new NSP, the NMCP proposes CHW digitalization which PMI will support as resources allow.

Monitoring Antimalarial Efficacy

The NMCP promotes the monitoring of the effectiveness of ACTs through TES every 2 years. The challenge the NMCP faces is conducting studies to closely monitor the effectiveness of antimalarials, including SPAQ given the high pressure exerted on these drugs. The next study is planned for 2024. Cameroon plans to conduct a TES every two years in two sites, each in a different region. For longitudinal data, the north will be maintained as a TES site; a new site will be selected in a different region for each TES to expand geographic coverage of resistance data. Capacity building is required for central level supervisors and staff in these sites. SP resistance marker testing is planned for monitoring chemoprevention interventions.

Table 2. Ongoing and Planned Therapeutic Efficacy Studies

Ongoing Therapeutic Efficacy Studies			
Year	**Site name**	**Treatment arm(s)**	**Plan for laboratory testing of samples**
2021	Center region: District Hospital Akonolinga, District Hospital Mfou, District Hospital Soa, District Hospital Mbalmayo, District Hospital Mbanjock, CMA Matomb	AL ASAQ	PARMA Hub in Senegal
2022	North region: Guider District hospital, Figuil District Hospital	AL DP	PARMA Hub in Senegal
Planned TESs (funded with previous or current MOP)			
Year	**Site name**	**Treatment arm(s)**	**Plan for laboratory testing of samples**
2024	Littoral region, (Bonassama Health District) North region: Health District TBD	AL ASAQ DP AL DP or ASPY (TBD)	In-country (BTC, CRID)
2026	East region (Bertoua Health District) North region: X Health District	AL ASAQ DP AL DP or ASPY (TBD)	In-country (BTC, CRID)

AL: Artemether-lumefantrine; ASAQ: Artesunate-amodiaquine; ASPY: Artesunate-pyronaridine; BTC: The Biotechnology Center; CRID: Centre for Research in Infectious Diseases; DP: Dihydroartemisinin- piperaquine; MOP: Malaria Operational Plan; PARMA: President's Malaria Initiative (PMI)-supported Antimalarial Resistance Monitoring in Africa.

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

Objective 3 of the NMCP's strategic plan states that by 2028, malaria commodities will be continuously available in 70 percent of health facilities and in communities. PMI supports NMCP's approach to achieving this objective through strengthening supply chain activities at central, regional and district levels in close collaboration with other donors. Indeed, PMI supports the central level in strategy planning, quantification and pharmaceutical regulation. These interventions include, but are not limited to, supply chain coordination, warehousing and inventory management, distribution planning and last mile delivery. At the district level, in the

two PMI-focus regions of north and far north, PMI supports data monitoring and analysis, capacity building of pharmacist attendants and district focal points for SMC through training and supportive supervision.

5.2. Recent Progress (June 2022–June 2023)

PMI's principal supply chain investments aimed at improving malaria commodity availability includes technical assistance for strategy and planning, quantification, pharmaceutical regulation, warehousing and inventory management, last mile distribution, M&E, and human resource capacity development. Although stockouts continue to be an area of concern, visibility on stock levels at facilities has significantly increased over the last few years in the DHIS2. This is largely attributable to PMI's support in emphasizing the importance of routine reporting at all levels of the supply chain as well as collaboration with partners to ensure DHIS2 has the capabilities to appropriately report stock information. Specific recent progress includes:

- Transitioned supply planning activities from pipeline to Quantification Analytics Tool (QAT) that is the next generation of supply planning tools.
- Trained MoH on the use of QAT to increase ownership resulting in NMCP's personnel to properly enter supply plan data and run analysis.
- Supported the revision of medicine registration guidelines.
- Procured commodities under the coordination of NMCP and adjusted orders after supply plan review meetings.
- Developed allocation plans quarterly based on timely logistic data reported by health facilities, in collaboration with the regional level.
- Ensured last mile delivery of malaria commodities through regional funds for health promotion.
- Ensured good storage practices through the implementation of the *5S* approach (Sort, Shine, Set, Standardize and Sustain).
- Increased stock accuracy at regional warehouses through monthly inventory and stock reconciliation.
- Improved stock management skills of health facilities personnel through coaching, supportive supervision and training.
- Implemented two end-use verification (EUV) surveys in the north and far north regions, providing more in-depth insights into stock levels and reasons for stockouts.
- Managed the distribution of ITNs and SPAQ and the reverse logistics for SPAQ at the end of the SMC cycles.

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.

PMI will continue to support the activities as described in the Recent Progress section with emphasis on increasing country ownership and accountability through a bilateral award with a local organization. PMI will also support the country's effort to establish an electronic Logistics Management Information System, increasing accurate data visibility and use and, furthermore, PMI will support the country to establish and implement short, middle, and long term plans for HR capacity strengthening.

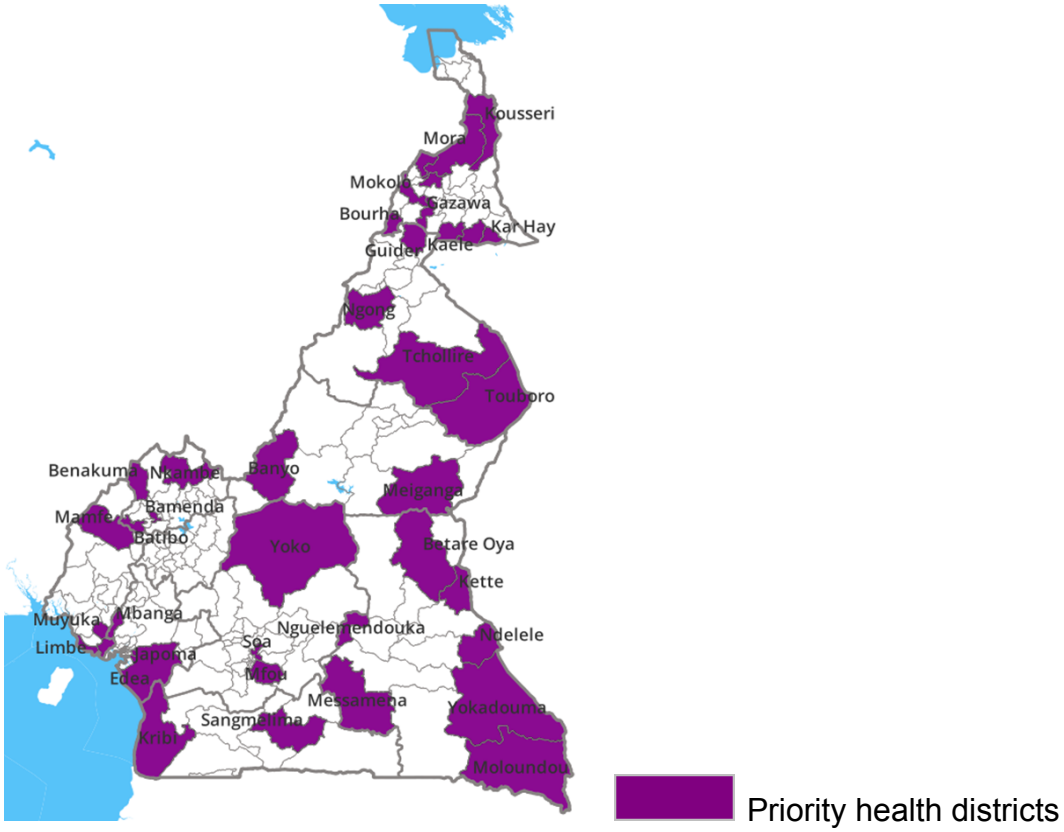
6. Malaria Vaccine

6.1. PMI Goal and Strategic Approach

PMI's goal for the malaria vaccine is to support the MOH to strategically deploy this intervention as a complementary tool to the existing core interventions. This includes technical assistance to the NMCP as it engages with the national EPI to strategically use data to decide on where to introduce the malaria vaccine. Vaccine introduction will be led by the national EPI program, thus, PMI will work with the NMCP and the national EPI program to provide complementary technical 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.

6.2. Recent Progress (June 2022–June 2023)

Figure 4. Map of Malaria Vaccine Plans for the First Phase in Cameroon



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.

In January 2023 Cameroon applied to Gavi to support the procurement and deployment of the malaria vaccine. The RTS/S/AS01 malaria vaccine in Cameroon will be deployed in health facilities to infants at 6, 7, 9, and 24 months of age as part of routine EPI service delivery and complemented by periodic intensification of routine immunization activities. Cameroon plans to cover about 250,000 children with 999,000 doses of the malaria vaccine in 42 out of 179 eligible health districts in the first allocation phase of the vaccine beginning in January 2024. Health districts with a high burden of malaria and lowest vaccination dropout rates were selected. This included 13 priority PMI-supported health districts (9 in far north region and 4 in north region). All malaria vaccine procurement will be supported by UNICEF with Gavi funding and counterpart funds from the government. PMI-funded supportive supervision for health care workers will include malaria vaccine services, and data management. New SBC investments will also focus on malaria vaccine delivery for health care workers and demand generation, including vaccine hesitancy.

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

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 strategy. The NSP emphasizes the role that political and religious leaders, civil servants, and CHWs can play in sensitizing communities on malaria prevention and control. The strategy highlights the importance of diverse distribution platforms for communication, including traditional media (radio, television), new media (social media), existing networks for interpersonal and group communication (educators, CHWs, traditional artists), and better leveraging of local leaders/opinion leaders and educational entertainment (movies, songs). PMI focuses for SBC support in the north and far north regions using multiple approaches: community radio; interpersonal communications through CHWs, facility-based providers, religious leaders, and other local actors with existing communication platforms; and community dialogues designed to strengthen linkages between communities, traditional leaders, and service providers. These efforts encourage uptake of key malaria behaviors while supporting community engagement.The prioritized behaviors relevant to the north and far north regions continue to focus on consistent and correct use of ITNs year-round; prompt care-seeking for fever; early and regular ANC attendance and IPTp uptake; awareness and acceptance of SMC; and provider adherence to case management and MIP guidelines for quality service delivery.

In addition to communication-based approaches, PMI supports other non-communication based SBC interventions in the north and far north regions. These have primarily been identified through a human-centered design (HCD) process to identify promising approaches to improve care-seeking and case management at provider and community levels. PMI has also increased focus on M&E for SBC, primarily for community radio activities and HCD prototypes. Robust M&E is helping to guide modifications and scaling of ongoing SBC. Finally, PMI supports capacity strengthening of SBC focal points at national and regional (north and far north) levels, including for SBC coordination meetings. While the NSP recognizes the importance of communication to reduce the malaria burden, a new national malaria communication plan will be developed to further elaborate communication objectives, behavioral determinants, and approaches reflecting the Malaria Behavior Survey (MBS) results, other formative data, and alignment with the NSP 2024-2028 goals and objectives. PMI is supporting the development of this document to ensure it is in line with the RBM Partnership to End Malaria SBC working group's guidelines and tools for national SBC plan development.

7.2. Recent Progress (June 2022–June 2023)

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

- Community radio spots focused on priority behaviors (see table below) through support to 38 radio stations (expanded from 24) which included an assessment to understand household listening habits and exposure to malaria messaging with programming adjusted accordingly; co-creation of spots with radio stations; monitoring of broadcasts by trained freelancers; translation into 11 local languages to expand reach.
- Implementation of community dialogues by CHWs under the leadership of local leaders in support of prompt care-seeking, early and consistent ANC visits, and ITN use.
- Refresher training of both CHWs and traditional leaders supporting their activities to reinforce their understanding of messaging discussed during community dialogues.
- Design and pre-test of ANC booklets to improve adoption of key malaria in pregnancy behaviors for use by midwives with pregnant women during ANC visits.
- Produced mini-videos on case management of both uncomplicated and severe malaria.
- Development of an M&E framework to assess the impact of the HCD prototypes currently implemented.
- Co-creation workshop and prototype development of interventions to address overdiagnosis of severe malaria. The workshop brought together health personnel, service providers, community leaders, and community members to identify root causes of severe malaria overdiagnosis and generate prototypes to address root causes at community and facility levels.
- Communication strategy and materials developed for SMC mobilizers and distribution teams, town criers, and other SMC campaign actors; briefing on the SBC strategy for communication focal points at regional, district and health area levels, as well as advocacy briefing in the two regions.

- Collaboration with M&E partners to integrate SBC indicators into SMC external monitoring surveys to measure SBC effectiveness.
- Design, production and dissemination of 15,000 leaflets distributed during ITN mass campaign follow up activities organized by the NMCP with Global Fund resources.

In addition to progress made, there are some notable challenges across interventions and technical areas for which SBC interventions have the potential to improve uptake and/or maintenance of behavior.

- **Insecticide-treated Mosquito Nets:** ITN use given access, based on 2018 DHS data, indicates a strong culture of net use in the north and far north regions with a use:access ratio of 0.8 to >1.0. However, MBS data from 2019 indicate that there may be lower net use during low transmission (i.e., dry) months. In addition, we are also cautious about assuming that self-reported net-use from household surveys is an accurate reflection of consistent net-use all night long and are looking to the incorporation of human behavior monitoring with entomological monitoring for additional insights.

- **Malaria in Pregnancy:** ANC attendance has remained relatively steady in Cameroon from 2011 to 2018. Fewer women attend any ANC in the north and far north than the national average, and fewer women in those regions also attend ANC in their first trimester according to the last household data point in 2014. Data from the 2019 MBS showed that only 47 percent of women in the north region and 51 percent in the far north region were aware that they should start ANC as soon as they get pregnant. Consistent uptake of IPTp remains low at 58 percent, requiring more SBC interventions to ameliorate coverage.

- **Seasonal Malaria Chemoprevention:** According to results from the 2022 campaign, neither refusal of nor adherence to full dosing is a significant problem. In 2022, independent monitoring surveys showed high coverage for all cycles with an average of 94 percent distribution coverage. Adherence was also high: of all eligible children, 94 percent received the days two and three doses at each cycle according to parental declaration.

- **Vaccine:** As Cameroon prepares for vaccine implementation, it will be critical to gain an understanding of community perceptions of the vaccine, any vaccine hesitancy that communities or groups may experience, and the extent to which trusted community leaders and health providers would encourage vaccine uptake in addition to adoption and maintenance of other malaria behaviors.

- **Case Management:** Insights generated from the HCD work (described above) and the MBS indicate a number of factors influencing care-seeking practices. Women, who are responsible for the majority of care-taking but often have limited financial resources, often delay taking a child for treatment. Men often do not become involved (i.e., providing funds for health care) until the child's condition has worsened. There are also

strong preferences for self-medication and relatively low perceived community norms related to prompt care-seeking. Perceptions of low commodity availability and an expectation of having to pay for treatment also influence care-seeking. Additional work looking specifically at overtreatment with severe malaria treatments identifies similar issues related to delayed care-seeking, lack of knowledge of signs and treatment differences between uncomplicated and severe malaria, patient preference for injections, and financial incentives by health workers to treat cases as severe. Data from both the MBS and HCD work suggest that communities favor CHWs over facility providers.

- **Service Delivery:** The SBC HCD work also highlighted competition and tension between facility-based providers and CHWs, particularly when there is income to be generated from the provision of services. Some respondents indicated that facility providers will withhold supplying CHWs commodities to maintain their income-generating stock of medicines at the facility. Cameroon's cost recovery model also seems to affect availability of commodities at health facilities as they tend to place orders for medicines that generate income or use stockouts as a justification to prescribe other medicines they can charge for. Assessment also indicated that many providers lack basic knowledge of national malaria case management guidelines.

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, Table 3 outlines three behaviors that will be prioritized with FY 2024 funds:

[Note that early/regular ANC attendance and IPTp uptake messaging will be integrated into activities such as community dialogues, community radio, and service communication. While not listed as one of the three priority behaviors, promoting early and regular ANC/IPTp uptake is a program priority supported by PMI. SBC for SMC campaigns will also be supported. As malaria vaccine implementation gets underway in Cameroon, PMI will also provide SBC support for demand generation as needed. SBC for core behaviors (e.g., ITN use, care-seeking) will specifically consider how to ensure vaccine implementation does not negatively impact uptake and maintenance of existing interventions.]

Table 3. Priority Behaviors to Address

Behavior	Target Population	Geographic Focus	Programming to Address Behavior
Consistent use of ITNs throughout the year and proper net care	All household members, particularly children 5 to 17 years of age	North and far north regions	● Community dialogues delivered by CHWs with proactive support and guidance from traditional leaders. CHWs and traditional leaders receive training to reinforce their understanding of messaging discussed during community dialogues. ● Community radio ● Service communication provided by facility-based providers (including ANC, EPI, OPD)
Prompt care-seeking for fever for children under 5 years of age and appropriate demand for services	Caregivers of children under five years of age	North and far north regions	● Community dialogues delivered by CHWs with proactive support and guidance from traditional leaders. CHWs and traditional leaders receive training to reinforce their understanding of messaging discussed during community dialogues. ● Community radio ● Service communication provided by facility-based providers (including ANC, EPI, OPD)
Adherence to case management guidelines	Health facility-based providers (across cadres)	North and far north regions	● Scaling HCD prototypes for development of quick reference tools for facility-based service providers that communicate national malaria directives, including mini-videos for case management and ANC booklets. ● Training for supervisors for improved provider adherence to national guidelines, service communication, and relationships and communication skills to strengthen patient/provider relations. ● A participatory and active role for community actors including community leaders, health area chiefs, and CHWs in quarterly community task force meetings to improve accountability and engagement. ● Service communication provided by facility-based providers with a focus on awareness of free services and emphasizing the “right treatment for the right diagnosis” to address preference for injectables. ● Additional activities focused on addressing overtreatment with injectables are currently under development. Prototypes to be tested include: community-led monitoring of provider adherence to directives, promoting community norms in support of appropriate treatment, and use of tools by providers that prompt appropriate treatment.

ANC: antenatal care; CHW: community health worker; EPI: HCD: human-centered design; ITN: insecticide-treated mosquito net; OPD: outpatient department..

Additional Support Activities:

The first several years of PMI SBC support in Cameroon have focused on formative research including MBS and qualitative HCD work to understand factors influencing poor malaria case management practices at health facility and community levels, and other key behaviors for ITN use, SMC and MIP. Activities based on the insights generated from this work are currently being piloted, refined, and implemented. A robust M&E strategy will be supported by PMI to ensure these activities are having the desired impact on behaviors, to inform how these activities should be scaled, and to guide changes and adjustments as needed.

There is also a need for continued SBC capacity strengthening at both the national and regional levels. Since PMI implementation support is focused at the north and far north regional levels, and SBC coordination in the regions has historically been a challenge, efforts will focus on regional capacity-building. To bolster the NMCP, regional programs, and community-based organizations that support local SBC implementation, PMI will support:

- National-level coordination of the SBC TWG.
- Regional-level coordination of the SBC TWGs in the north and far north regions.
- Capacity-building of central- and regional-level SBC focal points in evidence-based design and M&E for SBC.
- Capacity-building for community-based organizations in implementation and monitoring of SBC activities.

8. Surveillance, Monitoring, and Evaluation

8.1. PMI Goal and Strategic Approach

PMI supports the NMCP's SM&E objectives through periodic funding for nationally-representative household surveys (DHS/MIS) and continuous support of routine surveillance systems at the national level and with focused support at the district level in the north and far north. PMI also supports the Frontline FETP program (focused on the north and far north) to strengthen surveillance and epidemiological capacities of frontline public health professionals.

8.2. Recent Progress (June 2022–June 2023)

PMI supported the NMCP/MOH to implement the following activities at the central level:

- Planned and implemented the 2022 MIS.
- Developed a national semi-annual bulletin and regional quarterly bulletins.
- Convened national- and regional-level SM&E TWG meetings with key partners.
- Organized malaria data annual review meeting.

PMI supported the following activities in the north and far north regions:

- Provided technical and logistical support for the SMC through printing and dissemination of tools, training of data managers, review of data quality and implementation of external monitoring.
- Provided technical and logistical support to district teams to organize bimonthly data validation meetings.
- Reviewed regularly malaria data from the DHIS2 with NMCP at the regional level and sent feedback to districts to facilitate improved data quality and use.
- Supported the MoH to organize frontline FETP training in the north (24 participants) and far north regions (44 participants).
- Provided technical and logistical support to national- and regional-level mentors to support participants remotely and onsite with their fieldwork following the one-week onsite FETP training.
- Provided technical and logistical support to regional and district teams to conduct data quality assessments visits in 120 health facilities in the north and 250 in the far north.

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.

PMI will provide SM&E support (see Recent Progress) and will also support data quality assessments and integration of all community-level malaria data in a centralized repository.

PMI-supported planned activities include:

- Continue central-level support for DHIS2: PMI will continue to support routine health information system strengthening and scale-up of DHIS2 and to ensure quality of malaria data in partnership with NMCP and the MOH Health Information Unit.
- Support NMCP to collect, analyze, and use routine malaria data: PMI will continue to support the Cameroon NMCP to streamline data collection, reporting, analysis, and use at the central, regional, and district levels. This will include support for SM&E TWG activities; data quality assessments; district-, regional-, and central -level data reviews and validation meetings; and production of regional and national malaria bulletins.
- Continue the support of FETP malaria-specific Advanced and Frontline training programs, which will include support for at least two additional cohorts of trainees, one each in the north and far north. Training will be targeted to chiefs of health areas, health facility staff, and malaria surveillance focal points in the districts.
- Support NMCP in line with NSP 2024 -2028 digitization priorities by strengthening CHW mapping and community health reporting system. In PMI focus districts, PMI will support CHWs in the use of the currently piloted electronic reporting system and provide capacity strengthening to their supervisors for improved data review and consolidation at the regional, district, and health area levels. This will include electronic devices, training, internet connection, standardization of CHW data review and consolidation guidelines, and coordination of multiple CHW-supporting partners to centralize their data in DHIS2. At the central level, PMI will support the mapping to provide baseline,

updates and optimization on CHWs coverage that will allow the NMCP to better coordinate partners supporting the CHWs strategy.

Table 4. 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			X			P*, ^
Household Surveys	Multiple Indicator Cluster Survey					P*	
Household Surveys	Expanded Program on Immunization survey						
Health Facility Surveys	Service Provision Assessment						
Health Facility Surveys	Service Availability Readiness Assessment survey						
Health Facility Surveys	Other Health Facility Survey						
Malaria Surveillance and Routine System Support	Therapeutic Efficacy Studies		X	X		P	P
Malaria Surveillance and Routine System Support	Support to Parallel Malaria Surveillance System						
Malaria Surveillance and Routine System Support	Support to Health Management Information System	X	X	X	X	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						
Malaria Surveillance and Routine System Support	Malaria Rapid Reporting System						
Other	End-Use Verification Survey	X	X	X	X	P	P
Other	School-based Malaria Survey						
Other	Knowledge, Attitudes and Practices Survey, Malaria Behavior Survey					P	
Other	Malaria Impact Evaluation						
Other	Entomologic Monitoring Surveys	X	X	X	X	P	P

*Asterisk denotes non-PMI funded activities, X denotes completed activities and P denotes planned activities.
^Note: Although a 2025 MIS is currently planned for the GC7, PMI plans to work with the Global Fund and the MOH and other stakeholders to ensure a rational plan of investment in nationally-representative household surveys to avoid duplication or inefficient use of limited resources.

9. Operational Research and Program Evaluation

9.1. PMI Goal and Strategic Approach

Training and research is one of the six strategic areas of the NMCP's NSP. The NMCP has an interest in expanding capacity and funding for research, however PMI has had limited resources available to support this priority.

9.2. Recent Progress (June 2022–June 2023)

Table 5. PMI-funded Operational Research/Program Evaluation Studies in Cameroon

Ongoing or Planned OR/PE Studies	Status	Start date	End date
Evaluating human behavior and objective ITN use with associated vector bionomics in Cameroon to determine physical protection ITNs provide against biting malaria vectors.	Under Ethics clearance	09/23	12/24

ITN: insecticide-treated mosquito nets.

Table 6. Non-PMI funded Operational Research/Program Evaluation Studies Planned/Ongoing in Cameroon

Funding Source	Implementing institution	Research Question/Topic	Current status/ timeline
Wellcome Trust	Center for Research in Infectious Diseases, Cameroon	PIIVeC OR Project: investigating the efficacy of PBO nets and new types of nets in the context of pyrethroid resistance	Ongoing
Wellcome Trust	Center for Research in Infectious Diseases, Cameroon	Impact of metabolic resistance to pyrethroids on the vectorial competence of the major African malaria vector *An. funestus*	Ongoing
BMGF	Center for Research in Infectious Diseases, Cameroon	Molecular markers for metabolic resistance to insecticides	Ongoing
Global Fund	National Malaria Control Program	Community IPTp distribution by CHWs	Ongoing
UNITAID	PSI/Association Camerounaise pour le Marketing Social	Impact of eight doses of SP for PMC in six districts in the center region	Ongoing

BMGF: Bill & Melinda Gates Foundation; CHW: community health worker; IPTp: intermittent preventive treatment during pregnancy; PBO: piperonyl butoxide; PIIVeC: Partnership for Increasing the Impact of Vector Control; PMC: perennial malaria chemoprevention; PSI: Population Services International; SP: sulfadoxine-pyrimethamine.

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

The GRC is implementing a phased strategy designed to move toward UHC over the next five years. PMI aims to support capacity-building activities to strengthen not just health service providers, but also NMCP staff and regional and district technical teams in the implementation of the NSP. PMI investments, including SMC, IPTp, and clinical and community service delivery strengthening directly contribute to this effort. PMI is contributing efforts to strengthen central and regional staff capacity in SM&E, SBC, and diagnostics nationwide.

PMI provides support for coordinating the national response through technical assistance to technical working groups. PMI provides capacity strengthening for supportive supervision of the implementation of the activities in the NSP through support for the elaboration of normative documents and transfer of competencies and tools for supervision to the central level. PMI also provides logistics for NMCP actors to attend and present their research work in international conferences. PMI aims to train and create a critical mass of epidemiologists in frontline care and entomologists conducting vector bionomics and insecticide-resistance testing.

10.2. Recent Progress (June 2022–June 2023)

- Supported FETP malaria-specific frontline programs, Intermediate FETP fellows and residents participating in the advanced training cohort. The frontline training supported one cohort of trainees in the north region and two in the far north. New funding for three new intermediate fellows currently in training will contribute to the pool of mentors to support the expanding group of frontline graduates.
- Provided advanced training support to one resident engaged in malaria projects and mentored by NMCP staff (see the SM&E section above).
- Supported the NMCP to develop a mentoring program to counter overdiagnosis of severe malaria cases and train mentors in different regions of the country.
- Organized a competency transfer workshop to build the capacity of the NMCP to use the Health Network Quality Improvement System tool for outreach and supportive supervision.
- Convened and led two TWG meetings on MIP and case management involving 24 MOH participants and other major stakeholders.
- Supported the workshop for the annual planning of malaria control activities.

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.

PMI will continue to support cohorts for frontline and intermediate FETP to support capacity building in SM&E at the periphery in the two regions supported by PMI. PMI will continue to

provide support for technical working groups to organize quarterly meetings in collaboration with other partners. Also, coordination activities at central level will be attended to ensure alignment and complementarity of PMI activities with those of other partners. PMI funds will be used to support initiatives on private sector engagement including developing and enacting a national strategy for private sector engagement and resource mobilization.

11. Staffing and Administration

A minimum of three health professionals oversee PMI in Cameroon. 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. The PMI interagency team works together to oversee all technical and administrative aspects of PMI, including finalizing details of the project design, implementing malaria prevention and treatment activities, monitoring and evaluation of outcomes and impact, reporting of results, and providing guidance and direction to PMI implementing partners.

ANNEX: GAP ANALYSIS TABLES

Table A-1. ITN Gap Analysis Table

Calendar Year	2023	2024	2025
Total country population	28,088,845	28,758,503	29,442,327
Total population at risk for malaria	28,088,845	28,758,503	29,442,327
PMI-targeted at-risk population	8,455,701	8,717,886	8,985,029
Population targeted for ITNs	8,455,701	8,717,886	8,985,029
Continuous Distribution Needs			
Channel 1: ANC	296,980	316,790	325,284
Channel 1: ANC Type of ITN	Dual AI	Dual AI	Dual AI
Channel 2: EPI	232,756	273,819	312,998
Channel 2: EPI Type of ITN	Dual AI	Dual AI	Dual AI
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	529,736	590,608	638,282
Mass Campaign Distribution Needs			
Mass distribution campaigns			5,490,851
Mass distribution ITN type	Dual AI	Dual AI	Dual AI
Estimated total need for campaigns			5,490,851
Total ITN Need: Continuous and Campaign	**529,736**	**590,608**	**6,129,133**
Partner Contributions			
ITNs carried over from previous year	60 359	0	0
ITNs from Government			
Type of ITNs from Government			
ITNs from Global Fund			
Type of ITNs from Global Fund			
ITNs from other donors			5,490,851
Type of ITNs from other donors			Unknown
ITNs planned with PMI funding	360,000	316,800	0
Type of ITNs with PMI funding	Dual AI	Dual AI	
Total ITNs Contribution Per Calendar Year	**360,000**	**316,800**	**5,490,851**
Total ITN Surplus (Gap)	**(169,736)**	**(273,808)**	**(638,282)**

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

Table A-2. RDT Gap Analysis Table

Calendar Year	2023	2024	2025
Total country population	28,088,845	28,758,503	29,442,327
Population at risk for malaria	28,088,845	28,758,503	29,442,327
PMI-targeted at-risk population	8,455,701	8,717,886	8,985,029
RDT Needs			
Total # of projected suspected malaria cases	5,106,017	5,264,339	5,425,655
% of suspected malaria cases tested with an RDT	33%	33%	33%
RDT Needs (tests)	**1,685,753**	**1,744,744**	**1,805,781**
Needs estimated based on HMIS data			
Partner Contributions (tests)			
RDTs from Government			
RDTs from Global Fund			
RDTs from other donors			
RDTs planned with PMI funding	1,795,115	1,809,650	1,836,299
Total RDT Contributions per Calendar Year	**1,795,115**	**1,809,650**	**1,836,299**
Stock Balance (tests)			
Beginning balance	698,100	807,462	872,368
- Product need	1,685,753	1,744,744	1,805,781
+ Total contributions (received/expected)	1,795,115	1,809,650	1,836,299
Ending Balance	**807,462**	**872,368**	**902,886**
Desired end of year stock (months of stock)	6	6	6
Desired end of year stock (quantities)	842,876	872,372	902,890
Total Surplus (Gap)	**(35,414)**	**(4)**	**(4)**

Table A-3. ACT Gap Analysis Table

Calendar Year	2023	2024	2025
Total country population	28,088,845	28,758,503	29,442,327
Population at risk for malaria	28,088,845	28,758,503	29,442,327
PMI-targeted at-risk population	8,455,701	8,717,886	8,985,029
ACT Needs			
Total projected # of malaria cases	1,108,980	1,147,063	1,186,377
Total ACT Needs (treatments)	**1,155,557**	**1,186,063**	**1,218,410**
Needs estimated based on HMIS data			
Partner Contributions (treatments)			
ACTs from Government			
ACTs from Global Fund			
ACTs from other donors			
ACTs planned with PMI funding	606,900	661,110	1,234,583
Total ACTs Contributions per Calendar Year	**606,900**	**661,110**	**1,234,583**
Stock Balance (treatments)			
Beginning balance	1,665,837	1,117,180	592,226
- Product need	1,155,557	1,186,063	1,218,410
+ Total contributions (received/expected)	606,900	661,110	1,234,583
Ending Balance	**1,117,180**	**592,226**	**608,400**
Desired end of year stock (months of stock)	6	6	6
Desired end of year stock (quantities)	577,779	593,032	609,205
Total Surplus (Gap)	**539,401**	**(805)**	**(805)**

Table A-4. Injectable Artesunate Gap Analysis Table

Calendar Year	2023	2024	2025
Injectable Artesunate Needs			
Projected # of severe cases	221,796	172,059	177,957
Projected # of severe cases among children (0-59 months of age)	91,158	70,716	73,140
Average # of vials required for severe cases among children	5	4	4
Projected # of severe cases among pregnant women	32,604	25,293	26,160
Average # of vials required for severe cases among adults	12	12	12
Total Injectable Artesunate Needs (vials)	**865,271**	**586,379**	**606,476**
Needs Estimated based on HMIS Data			
Partner Contributions (vials)			
Injectable artesunate from Government			
Injectable artesunate from Global Fund			
Injectable artesunate from other donors			
Injectable artesunate planned with PMI funding	455,000	732,973	606,079
Total Injectable Artesunate Contributions per Calendar Year	**455,000**	**732,973**	**606,079**
Stock Balance (vials)			
Beginning balance	758,737	0	146,594
- Product need	865,271	586,379	606,476
+ Total contributions (received/expected)	455,000	732,973	606,079
Ending Balance	**348,466**	**146,594**	**146,197**
Desired end of year stock(months of stock)	6	6	6
Desired end of year stock(quantities)	432,635	293,189	303,238
Total Surplus (Gap)	**(84,169)**	**(146,595)**	**(157,041)**

HMIS: health management information system.

Table A-5. 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 number of providers for the service)	25,920	28,512	31,364
Total Artesunate Suppository Needs (suppositories)	**37,325**	**41,058**	**45,164**
Needs estimated based on HMIS data			
Partner Contributions (suppositories)			
Artesunate suppositories from Government			
Artesunate suppositories from Global Fund			
Artesunate suppositories from other donors			
Artesunate suppositories planned with PMI funding	13,580	45,116	47,217
Total Artesunate Suppositories Available	**13,580**	**45,116**	**47,217**
Stock Balance (suppositories)			
Beginning balance	40,216	16,471	20,529
- Product need	37,325	41,058	45,164
+ Total contributions (received/expected)	13,580	45,116	47,217
Ending Balance	**16,471**	**20,529**	**22,582**
Desired end of year stock (months of stock)	6	6	6
Desired end of year stock (quantities)	18,663	20,529	22,582
Total Surplus (Gap)	**(2,192)**	**(0)**	**0**

HMIS: health management information system.

Table A-6. SP Gap Analysis Table

Calendar Year	2023	2024	2025
Total country population	28,088,845	28,758,503	29,442,327
Total population at risk for malaria	28,088,845	28,758,503	29,442,327
PMI targeted at risk population	8,455,701	8,717,886	8,985,029
SP Needs			
# of Pregnant women	398898	414375	414638
% of Pregnant women expected to receive IPTp1	65%	68%	71%
% of Pregnant women expected to receive IPTp2	55%	58%	62%
% of Pregnant women expected to receive IPTp3	47%	51%	56%
% of Pregnant women expected to receive IPTp4	98%	104%	110%
Total SP Needs (doses)	**1,056,505**	**1,164,297**	**1,235,069**
Needs Estimated based on HMIS Data			
Partner Contributions (doses)			
SP from Government			
SP from Global Fund			
SP from other donors			
SP planned with PMI funding	518,800	1,380,700	1,270,445
Total SP Contributions per Calendar Year	**518,800**	**1,380,700**	**1,270,445**
Stock Balance (doses)			
Beginning balance	903,450	365,745	582,148
- Product need	1,056,505	1,164,297	1,235,069
+ Total contributions (received/expected)	518,800	1,380,700	1,270,445
Ending Balance	**365,745**	**582,148**	**617,524**
Desired end of year stock (months of stock)	6	6	6
Desired end of year stock (quantities)	528,252	582,149	617,534
Total Surplus (Gap)	**(162,507)**	**(0)**	**(10)**

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

Table A-7. SMC Gap Analysis Table

Calendar Year	2023	2024	2025
Total population in the SMC targeted age range	4,265,114	4,347,751	4,429,057
SMC Drug (SP+AQ) Needs			
National population 3-11 months targeted for SMC	760,667	778,923	797,618
National population 12-59 months targeted for SMC	1,241,089	1,270,875	1,301,376
Total national population targeted for SMC	**2,001,756**	**2,049,798**	**2,098,993**
PMI population 3-11 months targeted for SMC	760,667	778,923	797,618
PMI population 12-59 months targeted for SMC	1,241,089	1,270,875	1,301,376
Total PMI population targeted for SMC	**2,001,756**	**2,049,798**	**2,098,993**
Total SP+AQ Needs (co-blisters)	**9,411,978**	**9,637,865**	**9,869,174**
Partner Contributions (co-blisters, national)			
SP+AQ carried over from previous year	1,186,850	370,472	7
SP+AQ from Government			
SP+AQ from Global Fund			
SP+AQ from other donors			
SP+AQ planned with PMI funding	8,595,600	9,267,400	9,869,174
Total SP+AQ Contributions per Calendar Year	9,782,450	9,637,872	9,869,181
Total SP+AQ Surplus (Gap)	**370,472**	**7**	**7**

SP+AQ: sulfadoxine-pyrimethamine-amodiaquine; SMC: seasonal malaria chemoprevention.