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Burkina Faso

Malaria Operational Plan FY 2023

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

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

CONTENTS

ABBREVIATIONS

ACT	Artemisinin-based Combination Therapy
AI	Active Ingredient
ANC	Antenatal Care
ANRP	*Agence Nationale de Régulation Pharmaceutiques*/National Regulation Authority
As-Pyr	Artesunate-Pyronaridine
CAMEG	*Centrale d'Achat des Médicaments Essentiels Génériques*/Central Medical Stores
CDC	Centers for Disease Control and Prevention
CHAI	Clinton Health Access Initiative
CHW	Community Health Worker
CY	Calendar Year
DGAP	*Direction Générale de l'Accès aux Produits de Santé*/Directorate General for Access to Health Products
DHS	Demographic and Health Survey
DHIS2	District Health Information Software 2
DOT	Directly Observed Therapy
DPES	*Direction de la Promotion et de l'Éducation pour la Santé*/Health Promotion and Education Directorate
DQA	Data Quality Assessment
DSIS	*Direction des Systèmes d'Information en Santé*/Health Information Systems Directorate
EDCTP	European and Developing Countries Clinical Trials Partnership
EIR	Entomological Inoculation Rate
EPI	Expanded Program on Immunization
EUV	End-Use Verification Survey
eLMIS	Electronic Logistics Management Information System (also known as NetSIGL in Burkina Faso)
FETP	Field Epidemiology Training Program
FY	Fiscal Year
GHSC-PSM	Global Health Supply Chain Program-Procurement and Supply Management
Global Fund	Global Fund to Fight AIDS, Tuberculosis and Malaria
GOBF	Government of Burkina Faso
GRAS	Groupe de Recherche Action en Santé
iCCM	Integrated Community Case Management
IDP	Internally Displaced Person
IDSR	Integrated Disease Surveillance and Response

IPTp	Intermittent Preventive Treatment for Pregnant Women
IRS	Indoor Residual Spraying
ISO	International Organization for Standardization
IRSS	Institut de Recherche en Sciences de la Santé
ITN	Insecticide-Treated Mosquito Net
LMIS	Logistics Management Information System
LNSP	*Laboratoire National de Santé Publique*/National Public Health Laboratory
MIP	Malaria in Pregnancy
MOH	Ministry of Health
MOP	Malaria Operational Plan
NHIS	National Health Information System
NMCP	National Malaria Control Program
NSP	National Strategic Plan
PBO	Piperonyl Butoxide
PMI	U.S. President's Malaria Initiative
PMS	Post-marketing Surveillance
QC	Quality Control
RAS	Rectal Artesunate
RDT	Rapid Diagnostic Test
RMNCH	Reproductive, Maternal, Newborn, and Child Health
SBC	Social and Behavior Change
SDP	Service Delivery Point
SMC	Seasonal Malaria Chemoprevention
SM&E	Surveillance, Monitoring, and Evaluation
SP	Sulfadoxine-Pyrimethamine
SPAQ	Sulfadoxine-Pyrimethamine Amodiaquine
TES	Therapeutic Efficacy Study
TWG	Technical Working Group
UNICEF	United Nations Children's Fund
USAID	U.S. Agency for International Development
WHO	World Health Organization

EXECUTIVE SUMMARY

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

U.S. President's Malaria Initiative

Launched in 2005, PMI supports implementation of malaria prevention and treatment measures as well as cross-cutting interventions. PMI's 2021–2026 strategy, *End Malaria Faster*, envisions a world free of malaria within our generation with the goal of preventing malaria cases, reducing malaria deaths and illness, and eliminating malaria in PMI partner countries. PMI currently supports 24 countries in sub-Saharan Africa and three programs across the Greater Mekong Subregion in Southeast Asia to control and eliminate malaria. Burkina Faso began implementation as a PMI partner country in fiscal year (FY) 2017.

Rationale for PMI's Approach in Burkina Faso

Malaria is endemic throughout Burkina Faso, and the country is one of 11 nations designated by the World Health Organization (WHO) as "high-burden high-impact countries" which bear 70 percent of the world's malaria burden. Seasonal peaks occur between May and October and vary in timing and intensity across the country's three major geographic zones due to regional differences in the rainy season. Routine data collected by the Ministry of Health (MOH) show that there were 12,231,086 malaria cases and 4,355 malaria-attributable deaths reported in 2021, which is an increase from 11,311,560 cases and 3,983 deaths reported in 2020. As described throughout this document, PMI supports a wide range of malaria prevention and control interventions, and all support is aligned with the 2021–2025 National Strategic Plan (NSP) for malaria control of the Burkina Faso NMCP.

Overview of Planned Interventions

The proposed FY 2023 PMI funding for Burkina Faso is $24 million. PMI will support the following intervention areas with these funds:

1. Vector Monitoring and Control

Building on the ongoing routine net distribution efforts, PMI plans to procure 500,000 insecticide-treated mosquito nets (ITNs) with FY 2023 funds for routine distribution. PMI will continue durability monitoring of insecticide efficacy and physical integrity of ITNs. In addition, PMI will continue to support entomological monitoring to track insecticide

resistance at 12 sentinel sites, provide laboratory supplies and technical support, and fund advanced molecular analysis of mosquito samples.

2. Malaria in Pregnancy

Key interventions highlighted by the NMCP's NSP include a provision of an ITN to all pregnant women at the time of their first antenatal care (ANC) visit, provision of four or more doses of sulfadoxine-pyrimethamine (SP) as intermittent preventive treatment for pregnant women (IPTp), and effective case management of diagnosed malaria per WHO guidelines. The aspiration of complete national coverage of pregnant women has yet to be realized in Burkina Faso, with 89 percent of pregnant women receiving an ITN and 65 percent receiving three or more doses of IPTp in 2021 according to the NMCP. Several factors are associated with incomplete uptake of these interventions among the population, many of which are non-modifiable. However, despite these challenges, a recent pilot demonstrated the effectiveness of a community program to distribute IPTp. PMI plans to continue to support this intervention in the areas it was piloted as well as its potential upscaling in the future. Additionally, PMI will continue to provide medication for IPTp and support supply chain strengthening and on-the-job training for and supervision of health care workers, as needed.

3. Drug-based Prevention

The NMCP's NSP promotes seasonal malaria chemoprevention (SMC) as a malaria prevention intervention for all children aged 3 to 59 months nationwide. PMI supports the use of SMC as defined in WHO guidance, through the procurement of sulfadoxine-pyrimethamine amodiaquine (SPAQ) to meet the needs of the eligible population and support for all aspects of implementation (planning, training, paying distributors, social and behavior change [SBC] activities, etc.). With FY 2023 funds, PMI will continue to support SMC in 19 districts, with support for the other 51 districts being provided by other partners.

4. Case Management

To maintain access to life-saving treatments, the NMCP plans to purchase eight million rapid diagnostic tests (RDTs), six million existing first-line artemisinin-based combination treatments (ACTs) (including four million for infants and children), and 1.5 million artesunate-injectable treatments for severe malaria with FY 2023 funds. In line with WHO recommendations and NMCP guidance, PMI is no longer planning to scale up pre-referral treatment for children at the community level but will continue to support this intervention in regions where it has already been implemented. PMI will additionally fund 25 percent of the incentive payment, tools, training, and supervision for community health workers (CHWs) in three regions. PMI will also provide technical assistance to national and regional diagnostic laboratories.

5. Health Supply Chain and Pharmaceutical Management

PMI FY 2023 funds will support NMCP to ensure continual availability of quality products needed for malaria control at health facilities and the community level. In order to prevent stockouts of commodities to the extent targeted by the national strategy, PMI will support the MOH to implement annual commodities inventory, End-use Verification Survey (EUV), formative supervision, and Logistics Management Information System (LMIS) pre-service training. PMI will also support the MOH in the expansion of the electronic Logistics Management Information System (eLMIS) to PMI's supported regions. PMI will continue to support last-mile distribution efforts for antimalarial commodities in collaboration with the *centrale d'achat des médicaments essentiels génériques*/central medical stores (CAMEGs). Additionally, PMI will ensure that fire security plans are implemented at commodity storage facilities in collaboration with other donors, and it will aim to improve commodity quality control (QC) through regular post-marketing surveillance (PMS) activities and through steps toward achieving accreditation of the National Public Laboratory (*Laboratoire National de Santé Publique* or LNSP) under International Organization for Standardization (ISO) 17025 standards.

6. Social and Behavior Change

Social and behavior change (SBC) activities boost the effectiveness of PMI investments and promote positive health behaviors. With FY 2023 funds, PMI will continue to support a multifaceted approach to SBC interventions, including interpersonal communication and human-centered design to encourage early care-seeking and greater uptake of malaria prevention activities, especially at the community level. PMI funds will also be used to support national World Malaria Day awareness activities and to contribute to implementation of the national SBC strategy in coordination with Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund).

7. Surveillance, Monitoring, and Evaluation

Routine malaria case data from health facilities and CHWs are reported to the NMCP through District Health Information Software 2 (DHIS2) and the weekly Integrated Disease Surveillance and Response (IDSR) system. Routine data are supplemented by periodic surveys in the forms of population-based surveys, health facility surveys, and efficacy studies. Although the efforts to strengthen the surveillance, monitoring, and evaluation (SM&E) capacity across all levels of the health system have been adversely affected by recent setbacks related to insecurity, COVID-19, and funding delays, PMI support contributed to ongoing SM&E training of NMCP staff and Field Epidemiology Training Program (FETP) trainees, completion of data collection for an updated Demographic and Health Survey (DHS), and the development of plans to streamline SM&E efforts nationally. With FY 2023 funds, PMI will continue to provide central-level support for planning, coordination, and implementation of SM&E activities, as well as

the training of regional- and district-level doctors and SM&E officers through curriculum development and implementation of two integrated SM&E courses.

8. Operational Research and Program Evaluation

PMI does not currently support operational research or program evaluation in Burkina Faso and does not plan to do so using FY 2023 funds. In support of the NMCP objective for the use of research data to inform programmatic decision-making, PMI plans to use FY 2023 funds to support an annual scientific meeting among researchers and malaria stakeholders including the NMCP and other decision-makers.

9. Capacity Strengthening

PMI's approach to capacity strengthening includes strengthening the leadership and management skills of the NMCP team as well as strengthening the malaria case management and data collection capabilities of CHWs. Using FY 2023 funds, PMI will continue to support a community health technical advisor secondee to the MOH's Direction de la Promotion et de l'Éducation pour la Santé/Health Promotion and Education Directorate (DPES), will develop and implement SM&E courses for regional- and district-level doctors and SM&E officers, and will support the MOH to develop a malaria vaccine roadmap and timeline.

I. CONTEXT AND STRATEGY

1. Introduction

Burkina Faso began implementation as a U.S. President's Malaria Initiative (PMI) partner country in fiscal year (FY) 2017. This FY 2023 Malaria Operational Plan (MOP) presents a detailed implementation plan for Burkina Faso, 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 Burkina Faso, describes progress to date, identifies challenges and relevant contextual factors, and provides a description of activities that are planned with FY 2023 funding. For more detailed information on the country context, please refer to the Country Malaria Profile, which provides an overview of the country malaria situation, key indicators, the NMCP strategic plan, and the partner landscape.

2. U.S. President's Malaria Initiative (PMI)

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

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

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

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

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

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

3. Rationale for PMI's Approach in Burkina Faso

3.1. Malaria Overview for Burkina Faso

Malaria is endemic throughout Burkina Faso and poses a major health problem. Seasonal peaks occur between May and October and vary in length and intensity across the three major geographic zones due to differences in the rainy season; elevated transmission lasts up to three months in the North, six months in the Center, and nine months in the South. Routine data collected by the Ministry of Health (MOH) show that there were 12,231,086 reported malaria cases (presumed and confirmed, with 94.5 percent confirmed by rapid diagnostic test [RDT] or microscopy) in 2021 compared to 11,311,560 cases in 2020 (with 91.5 percent confirmed). Malaria-attributable deaths increased from 3,983 in 2020 to 4,355 in 2021. Burkina Faso is one of 11 countries designated by the World Health Organization (WHO) as "high-burden high-impact," and its population experienced 3 percent of all malaria cases globally and 4 percent of all malaria deaths in 2019, per the 2020 World Malaria Report.

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

3.2. Key Challenges and Contextual Factors

Burkina Faso is facing a rapidly deteriorating security situation. Several regions of the country have become increasingly non-permissive, with sometimes severe limitations on access to and delivery of basic health services. As of February 28, 2022, there were 1.8 million internally displaced persons (IDPs) due to the ongoing violence (compared to less than 50,000 at the end of 2018). The MOH, including the NMCP, recognize the need to assess current service delivery activities and to identify potential changes and adaptations that could improve access to care for IDPs and to ensure continued access to quality care for host communities.

The health sector has been both directly and indirectly affected by the deteriorating security situation. As of February 28, 2022, the MOH reported that 499 health facilities were affected by insecurity, 160 of which are completely closed, leaving approximately 1.9 million individuals with limited access to health care. Health facilities were targets of violence, and 94 percent of health facility closures were reportedly due to direct attacks on the facilities themselves by unidentified armed groups. Access to health care is also indirectly affected by increased pressure on existing services from large influxes of IDPs and lack of access to certain populations due to armed groups isolating and encircling certain areas.

Burkina Faso is also currently experiencing political instability. After the January 24, 2022, coup, a portion of USAID's foreign aid funds for family planning were suspended, resulting in gaps in health strengthening efforts that would benefit the malaria program.

3.3. PMI's Approach for Burkina Faso

The current National Strategic Plan (NSP) for malaria control, that covers 2021–2025, draws from the overall National Plan for Economic and Social Development 2020–2022, which emphasizes malaria control, and is in line with the Government of Burkina Faso's (GOBF) long-term vision of eliminating malaria in Burkina Faso by 2030. The NSP 2021–2025 objectives align with the WHO's Global Technical Strategy and PMI's strategy, and are listed below:

- Reduce the malaria death rate by 2025 in Burkina Faso by 75 percent from 2015 levels.
- Reduce the malaria incidence rate by 2025 in Burkina Faso by 75 percent from 2015 levels.
- Reinforce NMCP management capacities by 2025 in Burkina Faso.

Of the 10 focus areas highlighted in the NSP 2021–2025, nine are aligned with PMI-supported key intervention areas and receive varying levels of PMI funds. Epidemic control and emergency management is a focus area of the NSP that has not to date received PMI support.

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

3.4. Key Changes in This MOP

There are no significant changes in strategies, activities, or budget levels compared to the FY 2022 MOP.

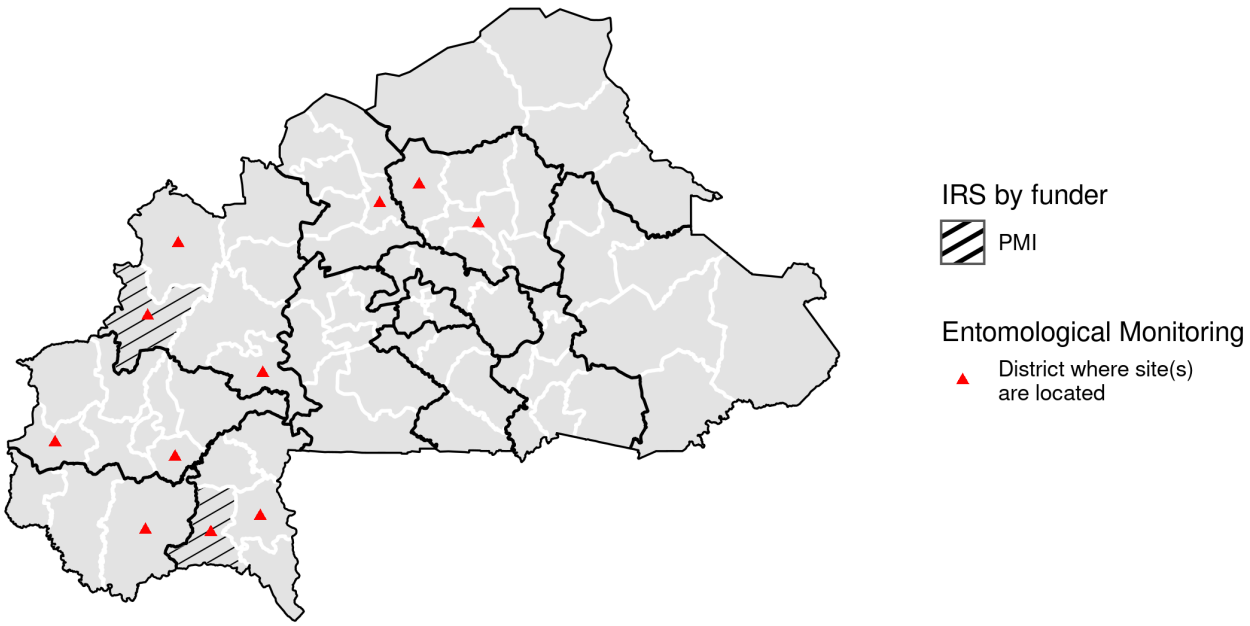
II. OPERATIONAL PLAN FOR FY 2023

1. Vector Monitoring and Control

1.1. PMI Goal and Strategic Approach

The Burkina Faso 2021–2025 NSP recommends several insecticide-based vector control interventions, including ITNs, IRS, larval source management, and insecticide resistance and entomology surveillance management. In 2021, PMI supported all of these interventions with the exception of larval control. The strategy endorses IRS with non-pyrethroid insecticides in locations where pyrethroid resistance occurs. PMI and the Global Fund jointly support mass campaigns of ITNs every three years in addition to continuous distribution of ITNs via antenatal care (ANC) and Expanded Program on Immunization (EPI) channels nationwide.

Figure 1. Map of Vector Control Activities in Burkina Faso—CY 2021



1.2. Recent Progress (Between April 2021 and February 2022)

- Supported the planning, implementation, and evaluation of the 2021 IRS in the Solenzo and Kampti districts (using clothianidin and a mixture of clothianidin and deltamethrin in Solenzo and primiphos-methyl in Kampti). A total of 175,523 structures were sprayed, yielding a final spray coverage rate of 92.7 percent and protecting 586,249 people from malaria, including 120,019 (20.5 percent) children under five years of age and 31,218 (5.3

percent) pregnant women. For more information about IRS, please refer to the 2021 End of Spray Report.

- Trained and engaged community members and others involved in IRS in the Solenzo and Kampti districts to support IRS mobilization and spray activities.
- Supported the monitoring of insecticide durability after application on wall surfaces in IRS sites of the Solenzo and Kampti districts. Cone bioassays with a susceptible insectary strain showed that Fludora Fusion WP-SB, SumiShield WG and Actellic 300CS both lasted for at least seven months in the IRS sites.
- Supported vector bionomics in 12 sentinel sites and insecticide resistance monitoring in 19 sites (including the 12 vector bionomics sites) in collaboration with NMCP and the Institut de Recherche en Sciences de la Santé (IRSS) Burkina Faso. Monitoring activities included insecticide resistance monitoring, vector bionomics monitoring, and insecticide residual efficacy monitoring. For more information about entomological monitoring, please refer to the 2020 Entomological Monitoring Report.
- Supported ITN durability monitoring by conducting 24-month data collection of a 2019 cohort of ITNs. ITNs examined included: Interceptor G2, a dual active ingredient (AI) ITN in Banfora health district; Interceptor, a standard pyrethroid ITN in Gaoua health district; and PermaNet 3.0, a pyrethroid ITN with the insecticide synergist piperonyl butoxide (PBO), in Orodara health district.
- Supported the procurement and distribution of PBO ITNs for routine distribution through continuous distribution channels: antenatal consultation and EPI.
- Provided technical assistance to a local research institution (IRSS) for the maintenance of insecticide-resistant strains of *Anopheles gambiae* s.l. in the laboratory.

1.3. Plans and Justification for FY 2023 Funding

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

1.3.1. Entomological Monitoring

PMI will continue to support entomological monitoring activities as described in the **Recent Progress section** above. Activities will include insecticide resistance monitoring, vector bionomics, and ITN durability monitoring. Vector bionomics monitoring will be carried out in 12 sites (including sites where PBO ITNs were

distributed and where IRS has been withdrawn). Insecticide resistance monitoring will be carried out at the 19 sites. As part of the IRS exit strategy, PMI will increase surveillance and strengthen community-based entomological surveillance. These entomological data will assist the NMCP in evidence-based decision-making. PMI will also provide technical support (through training) to strengthen the entomological capacity of the NMCP and local research institutes to better understand vector-human interactions.

Summary of Distribution and Bionomics of Malaria Vectors in Burkina Faso

The primary malaria vectors in Burkina Faso are *Anopheles gambiae* s.l. and *An. coluzzii*. *An. gambiae* s.l. is the predominant vector in the southwestern districts (Gaoua, Kampti, Soumousso, Karangasso-Vigué), while *An. coluzzii* is more frequent in the north-central (Seguenega and Kongoussi) and west-central districts (Nouna and Solenzo). Indoor resting densities and biting rates both peaked in August/September in all sentinel sites. The entomological inoculation rate (EIR) was highest in the sites monitored in the southwest, with the EIR in Gaoua (unsprayed) estimated 324 infective bites per person (indoors) for seven months (June to December 2021). The EIR was significantly reduced in the neighboring sprayed district of Kampti with 140 infective bites per person over the same time period. In the two sites where PBO ITNs were distributed, the EIR was estimated to be relatively reduced following distribution, with 47 infectious bites per person in Karangasso-Vigué and Soumousso (for seven months) compared to 87 infective bites recorded in the previous year.

Status of Insecticide Resistance in Burkina Faso

Pyrethroid resistance in *An. gambiae* s.l. is widespread in Burkina Faso. In 2021, *An. gambiae* s.l. was resistant to all pyrethroids tested (alpha-cypermethrin, deltamethrin and permethrin), but pre-exposure to PBO significantly increased mosquito susceptibility to alpha-cypermethrin, deltamethrin, and permethrin in all sites tested, including Karangasso-Vigue and Soumousso, where Permanet 3.0 nets were distributed in 2019. Pyrethroid resistance intensity was high (10x the diagnostic concentration) in all sites for deltamethrin and alpha-cypermethrin and moderate (5x the diagnostic concentration) for permethrin. *Anopheles gambiae* s.l. was fully susceptible to pirimiphos-methyl at all the sites except in the sprayed site of Solenzo and in the unsprayed sites of Orodara and Gaoua where resistance was recorded. *An. gambiae* s.l. was also susceptible to clothianidin and chlorfenapyr at all the sites except in Vallée du Kou, where *An. gambiae* s.l. was resistant to chlorfenapyr.

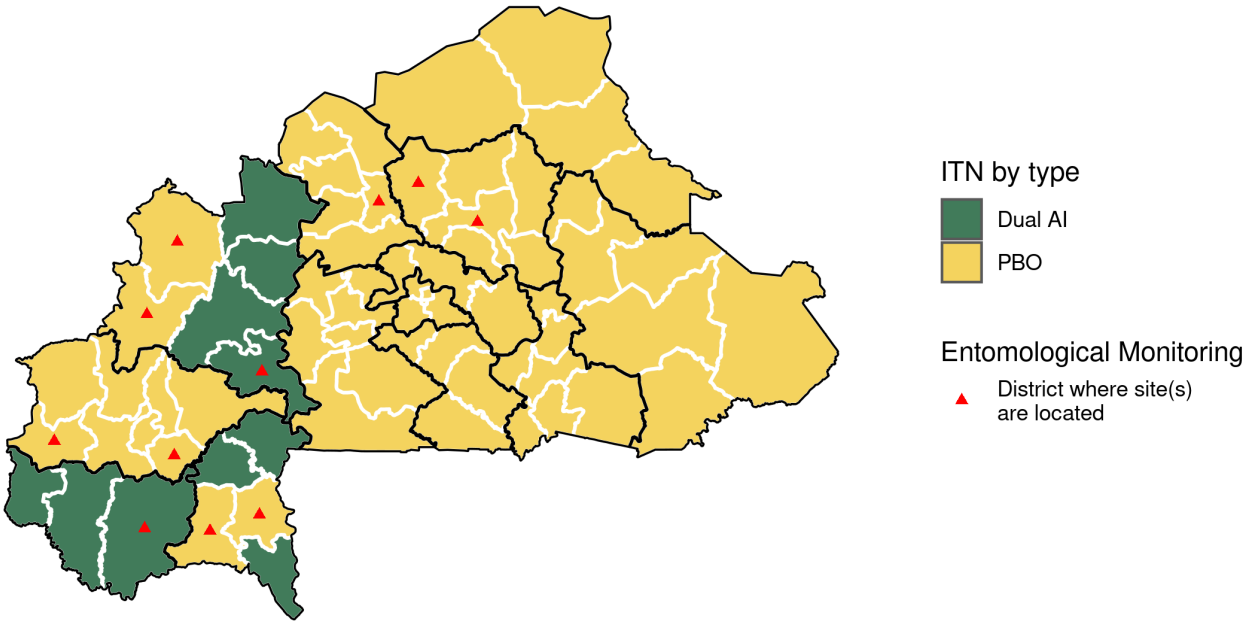
1.3.2. ITNs

PMI will continue to support procurement and distribution of ITNs through continuous distribution and increase advocacy to improve use and care of ITNs to be distributed in 2022.

ITN Distribution in Burkina Faso

In Burkina Faso, ITNs are distributed via mass campaigns every three years with Global Fund and PMI support. Between mass distribution campaigns, ITNs are distributed continuously through a number of channels, including to pregnant women at ANC visits, through the EPI, and via annual school-based distribution to children in grades one and four. The country transitioned to distribution of PBO nets and Interceptor® G2 dual AI nets from standard ITNs during its 2019 mass distribution campaign. For both mass campaigns and routine distribution, PBO nets are distributed in the majority of districts, with Global Fund–procured dual AI nets distributed in 10 districts as shown in Figure 2. Based on the available insecticides resistance data, the country plans to continue distributing dual AI nets in the same 10 districts during the 2022 campaign. Currently there are no major gaps projected for the 2022 ITN campaign, with minimal ITN gaps in subsequent years. The PMI team will work closely with other donors and the NMCP to close those gaps, utilizing the existing PMI pipeline to procure additional ITNs, if needed.

Figure 2. Map of Vector Control Activities in Burkina Faso—CY 2022



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

Table 1. Standard Durability Monitoring

Campaign Date	Site	Brand	Baseline	12-month	24-month	36-month
October 2019	Banfora	Interceptor G2	December 2019	October 2020	November 2021	planned
August 2019	Gaoua	Interceptor	December 2019	September 2020	October 2021	planned
June & July 2019	Orodara	PermaNet 3.0	December 2019	September 2020	July 2021	planned

1.3.3. IRS

PMI last supported IRS in Burkina Faso in 2021 where cone bioassays with a susceptible insectary strain showed that both clothianidin-based insecticides and pirimiphos-methyl lasted for at least seven months in the IRS sites. However, PMI no longer supports the IRS in the country due to budget constraints. An IRS exit strategy is being put in place to include distribution of new types of ITNs in the IRS sites, increased advocacy to improve use and care of ITNs and to mitigate against misuse, epidemiological surveillance, and strengthening community-based entomology surveillance.

2. Malaria in Pregnancy (MIP)

2.1. PMI Goal and Strategic Approach

PMI supports the national strategy for the prevention of MIP in Burkina Faso, which includes provision of ITNs at the first ANC visit, a minimum of four doses of IPTp starting at 16 weeks gestational age, and effective case management of malaria per WHO guidelines.

The national strategy promotes 100 percent of pregnant women receiving an ITN through routine distribution.

Burkina Faso offers IPTp to pregnant women free of charge nationwide. This is provided through ANC visits at health facilities and by community health workers (CHWs) in certain regions. The goal is to provide at least four supervised doses of IPTp with sulfadoxine pyrimethamine (SP) to every pregnant woman.

According to the 2017–2018 Malaria Indicator Survey, 80 percent of pregnant women in Burkina Faso attended at least one ANC visit by a skilled provider and 93.7 percent received IPTp at least once during pregnancy. Coverage of IPTp2 and IPTp3 were 82.3 percent and 57.7 percent, respectively. There are many factors that may explain the number of ANC visits a pregnant woman attends and IPTp doses she receives over the course of her pregnancy in Burkina Faso, such as:

- Early initiation of IPTp at 13 weeks of pregnancy is not included in the NMCP guidelines due to the difficulty of determining 13 to 16 weeks of pregnancy in most health facilities without appropriate equipment.
- Use of health services, including prenatal visits, decreased during the COVID-19 pandemic and insecure regions, which affected ANC4 coverage.
- Greater distances to the closest health facility were associated with decreased ANC attendance according to a case study conducted in northwestern Burkina Faso in 2009.
- Additional social and environmental non-modifiable determinants negatively impacting ANC attendance including ethnicity, religious beliefs, and household income.
- Reinforced SBC using CHWs is associated with improved IPTp uptake.

2.2. Recent Progress (Calendar Year [CY] 2021)

Recent process in advancement of MIP activities has been impacted by the significant delay in the award of PMI Burkina Faso's malaria bilateral mechanism and resulting lack of implementing partners for nine months through August 2021.

The NMCP reported that 88.9 percent of pregnant women received an ITN and 65 percent received IPTp3 in 2021, which are both below the targets set in the NSP.

Results from a pilot activity implementing community IPTp were published in June 2021, showing that community IPTp can increase IPTp coverage through well-trained, well-equipped, and well-supervised CHWs without negatively affecting the number of ANC visits attended by pregnant women. Per the NSP, community IPTp is continuing with planned expansion in all health districts of Ouargaye, Pô, and Batié with the intent to scale up the intervention nationally in 2022 pending approval of WHO recommendation. The first dose of IPTp will be given at health facilities in the context of ANC1, with subsequent doses able to be administered by CHWs under supervision.

The effectiveness of IPTp is dependent upon its availability. A recent study demonstrated that improved availability of SP at study sites contributed to significant improvement in its uptake. SBC targeting pregnant women and their partners, including using CHWs to create awareness and facilitate linkages, also has a positive effect on IPTp administration as demonstrated in the same study. Insufficient training for health personnel is an environmental barrier for IPTp administration and control sites where staff did not receive training, re-training, and supportive supervision had lower IPTp uptake than study sites. (Feasibility Study on Intermittent Preventive Treatment of Malaria in Pregnancy at the Community Level in Burkina Faso, 2018.)

2.3. Plans and Justification for FY 2023 Funding

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

Data show that there are strategies to increase IPTp uptake despite several non-modifiable factors negatively associated with IPTp coverage. One such approach is expanding SBC activities using CHWs, as was shown to be successful in the PMI-funded community IPTp pilot, on a national scale. Community IPTp will be scaled up in three PMI-supported regions (Centre Est, Centre Ouest, and Sud Ouest) in 2022–2023, which are different from where the pilot was conducted. FY 2023 funding will complement these efforts by supporting supervision of these CHWs.

In addition, PMI will continue to support supply chain strengthening efforts to ensure constant availability of SP at the health facility and community levels, as well as on-the-job training and supportive supervision of health care workers.

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

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

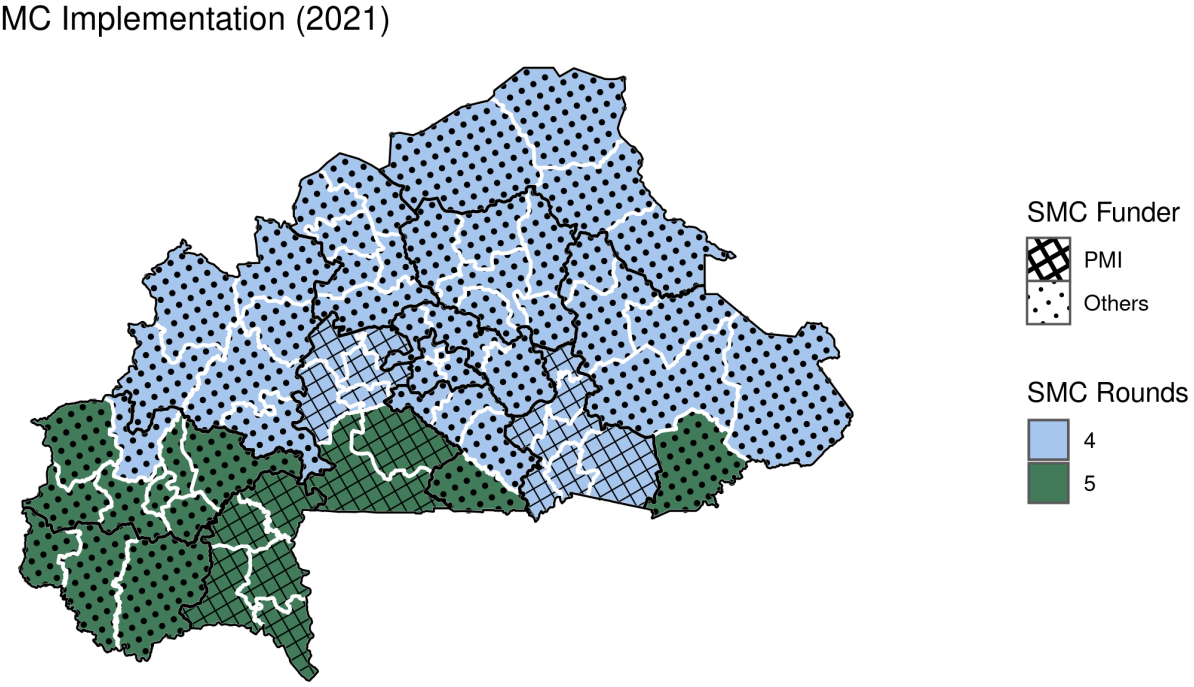
3. Drug-based Prevention

3.1. Seasonal Malaria Chemoprevention (SMC)

PMI Goal and Strategic Approach

The NMCP's NSP promotes SMC as a malaria prevention intervention for all children aged 3 to 59 months nationwide, and PMI supports its use as defined in WHO guidance. PMI financially supports SMC in 19 districts, including the procurement of co-blistered sulfadoxine-pyrimethamine amodiaquine (SPAQ) as well as all aspects of its distribution (e.g., planning, training, paying distributors, SBC activities). Other partners support SMC in the other 51 districts. Support for these districts during the 2021 campaign was provided by Malaria Consortium (27 districts), Global Fund (22 districts), and UNICEF (2 districts). PMI also supports the NMCP's SMC activities (planning, training, etc.) at the central level.

Figure 3. Map of SMC Implementation in Burkina Faso



3.2. Recent Progress (CY 2021)

PMI supported SMC that provided protection to more than 800,000 children aged 3 to 59 months in 19 districts. Five rounds of SMC were provided in seven districts and four rounds were provided in the remaining 12 districts. Campaign coverage was calculated to be greater than 100 percent in the PMI-supported districts in the 2021 campaign, likely due to underestimation of the target population. The coverage achieved in PMI-supported districts in 2021 is not comparable with previous coverage data, as the number and locations of districts supported by PMI were not consistent from 2020 to 2021 (PMI supported 12 districts in from 2018 to 2020 and 19 in 2021). Itemized accomplishments from CY 2021 include:

- Procured SPAQ blister packs to meet the need in the PMI-supported implementation areas.
- Procured and distributed materials and supplies (other than SPAQ) needed for the campaign; conducted cascade training for trainers, supervisors, and community distributors; and oversaw supervision by central-, regional-, and district-level teams from the MOH.
- Supported a pilot of directly observed therapy (DOT) for all three SMC doses (DOTx3) in the five districts of the Sud Ouest region, including support for an evaluation of the impact of DOTx3 on SMC treatment adherence.
- Conducted routine data collection, independent monitoring surveys, and rapid household surveys.

- Supported the NMCP to hold planning and post-implementation validation meetings.
- Supported SBC activities focused on demand generation at the community level such as community advocacy meetings, town criers, and local media. For more information, please refer to the **SBC section** below.

Concerns have been raised by the NMCP and others about possible reductions in the impact of SMC on prevention of malaria infection in the target population. PMI and others (including Malaria Consortium) are supporting the NMCP to better understand whether the effectiveness of SMC is actually decreasing. For example, using FY 2020 funds, PMI is supporting an evaluation of weekly trends in the incidence of malaria during SMC campaigns.

3.3. Plans and Justification for FY 2023 Funding

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

PMI will continue to support SMC activities in Burkina Faso as described in the **Recent Progress section**, with one exception. PMI does not currently plan to continue supporting DOTx3 for SMC in any of the PMI-supported implementation areas. As described in the **Recent Progress Section,** the NMCP (with support from multiple partners) is investigating potential decreases in SMC effectiveness. If necessary, PMI will support relevant changes to SMC implementation based on the results of these investigations.

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

4. Case Management

4.1. PMI Goal and Strategic Approach

In the NSP, the NMCP announced that it is striving to reduce malaria-associated deaths by 75 percent from 2015 levels by the end of 2025. To that end, national case management goals include the following:

Facilities

- 95 percent of suspected malaria cases receive a diagnostic test (RDT or microscopy).
- 90 percent of uncomplicated malaria cases diagnosed in a health facility receive correct treatment.

- 90 percent of severe malaria cases confirmed in health facilities receive correct treatment.

Communities

- 95 percent of suspected malaria cases receive a diagnostic test (RDT or microscopy).
- 80 percent of uncomplicated malaria cases diagnosed at the community level receive treatment.
- 90 percent of uncomplicated malaria cases diagnosed in an humanitarian emergency setting receive correct treatment.
- At least 80 percent of severe malaria cases confirmed at the community level receive correct pre-referral antimalarial treatment.

The NMCP approach for case management is that all suspected malaria cases should be tested using either RDT or microscopy. Suspected malaria cases are defined as patients presenting to the health facility or to CHWs with fever or history of fever. Guidelines are not dependent upon patient age; as such, diagnostic testing for malaria is considered mandatory for febrile patients from all age groups presenting for care at both the health facility and community levels. Only patients who test positive should receive treatment.

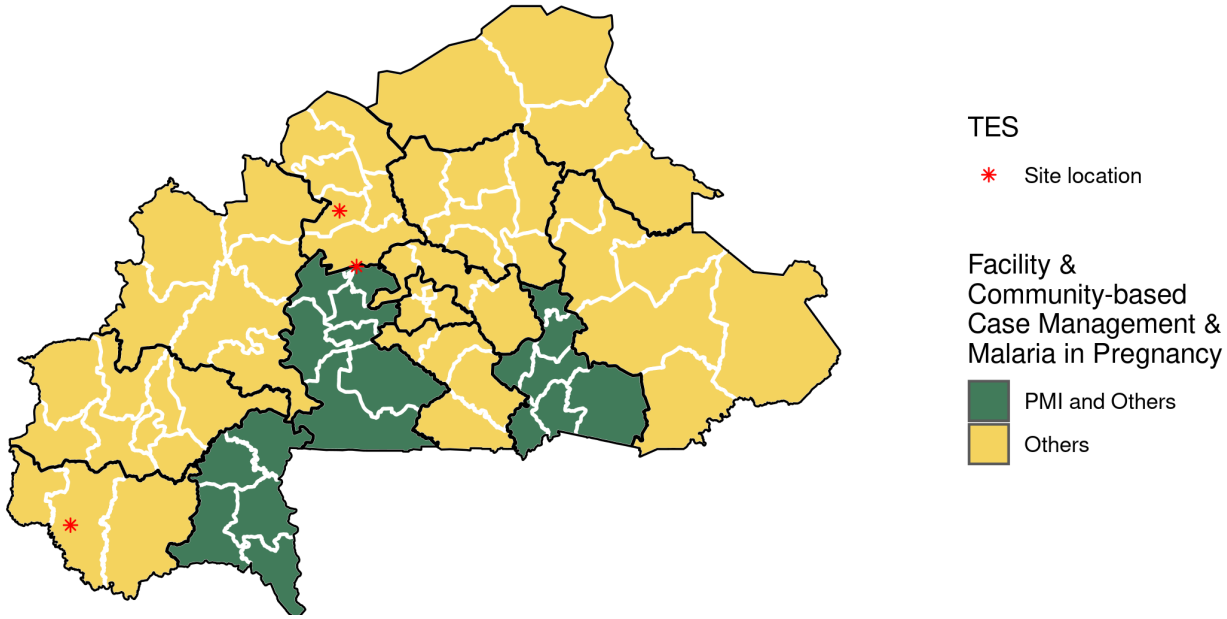
Along with other financial and technical partners, PMI contributes to the nationwide implementation of case management in Burkina Faso through support to national-level policy and programmatic activities, commodity procurement, and improvement of facility- and community-level health worker performance.

PMI supports the supply of 34 percent of the country's malaria RDT needs (excluding the buffer stock), 58 percent of ACTs, and 47 percent of injectable artesunate. Rectal artesunate (RAS) is fully supported by the GOBF, and the Global Fund supports procurement of the remaining case management commodities. PMI also supports outreach training and supervision activities in 19 districts in 3 regions; the GOBF and the Global Fund support the 51 districts in the remaining 10 regions.

The biggest challenges currently faced by the community health system are the irregular payment of incentives for workers, lack of training and supervision, and malaria commodity stockouts. To address these challenges in community case management, PMI supports the training and recurrent supervision of CHWs as well as the malaria commodity supply chain. Under current national plans and guidance, health facility staff should supervise CHWs once every two months in collaboration with civil society. Supervision of CHWs focuses on case management (including diagnostic testing with RDTs and provision of ACTs based on test results), SBC activities, and data reporting. Integrated community case management (iCCM; including malaria case management)

is available from CHWs for children under five years of age in villages located more than 5 km from the nearest health facility. There are at least two CHWs per village throughout Burkina Faso and up to four in villages with more than 2,000 inhabitants. The national policy provides for an incentive of 20,000 CFA francs (about $34) per month for CHWs in addition to remuneration for training and immunization campaigns. At present, the CHW incentive is jointly supported by the GOBF and the Global Fund, or by the GOBF and USAID. PMI does not currently contribute to routine payment of CHWs but plans to do so in the future.

Figure 4. Map of 2021 Case Management, Community Health and MIP Service Delivery Activities in Burkina Faso



4.2. Recent Progress (CY 2021)

Recent process in advancement of case management has been impacted by the significant delay in the award of PMI Burkina Faso's malaria bilateral mechanism and resulting lack of implementing partners for nine months through August 2021.

National-level Case Management Activities

- Updated and validated national malaria diagnostic or treatment guidelines.
- Developed integrated training module (malaria + reproductive, maternal, newborn, and child health [RMNCH]) for health care providers.

Commodities

- Supported the procurement and distribution of 7,000,000 malaria RDTs for nationwide use, accounting for approximately 29 percent of needs.

- Supported the procurement and distribution of 6,000,000 ACTs for nationwide use, accounting for approximately 50 percent of needs.
- Supported the procurement and distribution of 9,500 RAS suppositories for use in targeted districts, accounting for approximately 29 percent of needs.

Facility-level

Due to the delay in procurement for the USAID bilateral project that implements most of the projects, little progress has been made to date. A draft of an integrated training module (malaria + RMNCH) has been developed, and training will begin in June 2022.

- Conducted supportive supervision visits in 15 private facilities through collaboration with private sector associations and NMCP.

Community-level

- Although no routine community interventions were supported in the recent past, PMI staff engaged in activities to improve coordinated efforts to community health digitalization and CHW training in iCCM. A senior technical advisor has been hired and seconded to the Direction de la Promotion et de l'Éducation pour la Santé/Health Promotion and Education Directorate (DPES). This advisor currently helps manage the community health working group and analyzes community malaria data, among other roles. PMI also supports DPES through the provision of internet access and some equipment.

Please note that recent progress with monitoring antimalarial efficacy and implementation of the therapeutic efficacy study (TES) is presented in the **Plans and Justification for FY 2023 Funding section** immediately following.

4.3. Plans and Justification for FY 2023 Funding

The FY 2023 funding tables contain a full list of case management activities that PMI proposes to support in Burkina Faso with FY 2023 funding. Please visit Malaria Operational Plans (MOPs) for these FY 2023 funding tables.

National-level Case Management Activities

PMI will continue to support coordination through the NMCP steering committee, the technical working group (TWG), and the NMCP multipartite meeting that involves all of PMI's implementing partners. The aim is to support the NMCP in achieving effective coordination that encourages collaboration, avoids redundancy, and reinforces NMCP leadership. PMI will also continue NMCP capacity strengthening through implementation of organizational audit recommendations that may include capacity strengthening for the NMCP case management team.

Commodities

PMI will continue to meet the country's needs for malaria commodities (including those for community case management) in collaboration with the national government and the Global Fund.

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

Facility-level

PMI will continue to support SBC, training, supervision, and mentoring of health workers at the facility level. The SBC activities targeted at changing CHWs behaviors will include adherence to case management guidelines and/or supply chain best practices. Additional SBC activities targeting communities will focus on care-seeking behavior and use of ITNs for malaria prevention. These activities will be implemented in the three USAID focus regions (see Figure 4) with the goal of improving the quality of care delivered and increasing the number of individuals receiving it for uncomplicated and severe malaria. PMI will also continue to support diagnostic laboratories to ensure high-quality and timely microscopy services that will contribute to improved management of malaria cases.

Community-level

PMI will continue to support SBC, training, and supervision and mentoring of CHWs. The SBC activities targeted at changing CHW behaviors will include adherence to case management guidelines and/or supply chain best practices. Additional SBC activities targeting communities will focus on care-seeking behavior and use of ITNs for malaria prevention. Specifically, PMI will support iCCM training in USAID focus areas and community-based case management of malaria for older ages as well as in pre-referral RAS for children six years of age and younger with severe malaria. Following the WHO recommendation on pre-referral RAS, no expansion of this approach outside of areas where already implemented is currently being planned. Using FY 2023 funds, PMI plans to support the payment of CHWs in the three PMI focus regions (Sud-Ouest, Centre-Ouest, Centre-Est). Under the proposed agreement, PMI will cover 25% of the monthly payment for each CHW, with the GOBF covering the remaining 75%.

PMI support to the community health system is aligned and coordinated with support from other USAID funding streams (such as Maternal, Newborn, and Child Health), and from other donors and partners including the Global Fund.

Monitoring Antimalarial Efficacy

Table 2. Ongoing and Planned TES

Ongoing TES			
Year	**Site Name**	**Treatment Arm(s) (ACTs)**	**Plan for Laboratory Testing of Samples**
2021–2022	Gourcy, Nanoro, Niangoloko	AL, DP, As-Pyr	CDC Atlanta University of Cape Town
Planned TESs (Funded with previous or current MOP)			
Year	**Site name**	**Treatment arm(s)**	**Plan for Laboratory Testing of Samples**
2023	TBD	TBD	TBD

ACT=artemisinin-based combination therapies; AL=artemether-lumefantrine; As-Pyr= artesunate-pyronaridine; CDC=Centers for Disease Control and Prevention; DP=dihydroartemisinin-piperaquine

PMI supports TES every two years in accordance with WHO recommendations. Because of the concerns that have been raised regarding possible decreases in SMC effectiveness, for the 2021–2022 TES, PMI plans to test the study samples for molecular markers of SP resistance.

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

5. Health Supply Chain and Pharmaceutical Management

5.1. PMI Goal and Strategic Approach

The NMCP aims to ensure an uninterrupted supply of quality products for malaria control. This falls under Objective 3 of the NSP 2021–2025, which aims to reinforce the NMCP's managerial capacities. To achieve this goal, the country identified four major interventions: improving availability of malaria commodities; strengthening the quality control (QC) system for commodities; strengthening of the pharmacovigilance system; and reinforcement of the fight against substandard and falsified medical products.

The NMCP—in collaboration with the *Direction Générale de l'Accès aux Produits de Santé*/Directorate General for Access to Health Products (DGAP), *Agence Nationale de Régulation Pharmaceutiques*/National Regulation Authority (ANRP), and *Laboratoire National de Santé Publique*/National Public Health Laboratory (LNSP)—have identified key activities for each intervention that include the following:

- Improvement of malaria commodity availability:
    - Quantification of commodities by an inclusive committee
    - Quarterly review of the supply and procurement plan
    - Annual physical inventory of the commodities.
    - Controls, training, and formative supervision of health workers

    - End-Use Verification Survey (EUV)
    - Supply chain data quality assessment (DQA)
    - Reinforcement of the early warning system with civil society organizations
- To reduce the stockout rate for malaria commodities at service delivery points (SDPs) the DGAP, in collaboration with the NMCP, has defined annual targets and launched a pilot project for an electronic Logistics Management Information System (eLMIS) called NetSIGL to strengthen the integrated Logistics Management Information System (LMIS). NetSIGL will be interoperable with the central warehouse system (SAGE) and digital tools at the community level. NetSIGL aims to strengthen the availability of information for decision-making and action.
- Strengthening of the QC system for commodities and reinforcement of the fight against substandard and falsified medical products intervention includes annual post-marketing surveillance (PMS) surveys, organization of periodic PMS TWG meetings, support to LNSP QC International Organization for Standardization (ISO) 17205 accreditation and implementation of milestones toward WHO prequalification, communication activities and controls enhancement.
- Activities to strengthen the pharmacovigilance system include revision of treatment guidelines to introduce artesunate-pyronaridine (As-Pyr) as first-line treatment regimen, surveillance of As-Pyr and SPAQ during SMC campaigns and at all levels of the health system, training health providers, extending the reporting system, and periodically disseminating pharmacovigilance information and alerts.

Key PMI supply chain activities are aligned with the NMCP strategy and will leverage other USAID funding streams to provide technical assistance for quantification of commodities, EUV, *centrale d'achat des médicaments essentiels génériques*/central medical store's (CAMEG's) storage and distribution capacity strengthening, QC for commodities, surveillance, and DQA.

In order to achieve the NMCP's supply chain–related objective and improve the availability of malaria commodities at SDPs, PMI worked with the NMCP and supply chain actors in 2021 to develop the country's stockout reduction strategy. After defining the average baseline for the ACT, RDT, and SP stockout rates, the NMCP set its three-year targets. PMI will support the DGAP to operationalize the stockout reduction strategy initiative countrywide with a focus on the three USAID-supported regions. PMI will continue to support the extension of NetSIGL at a regional level after the evaluation of the first phase.

5.2. Recent Progress (CY 2021)

PMI has supported various activities to strengthen the health supply chain and pharmaceutical management, including annual commodities quantification exercises, physical inventories of malaria commodities, and DQAs.

Additionally, PMI has supported the development of the eLMIS pilot project in two districts, technical assistance for temperature and humidity monitoring in central and regional CAMEG warehouses, bi-annual EUV exercises, and warehousing and distribution of malaria commodities across all regions in Burkina Faso. PMI supported the dissemination of EUV results to the regional and health district teams and reinforced formative supervision in the three PMI focus regions.

PMI continued to support LMIS pre-service training for the health workforce in 48 public and 27 private health schools. Since 2019, 1,926 students have been trained. PMI supported the NMCP to improve collaboration with the private sector and provided assistance to the *Programme National de Lutte Contre le Paludisme* with the provision of subsidized RDTs to reinforce case management, stock management, and reporting. PMI also supported NMCP collaboration with the private sector by organizing regular meetings on malaria case management challenges and data reporting quality.

With PMI technical assistance, on May 27, 2021, CAMEG achieved ISO 9001: 2015 certification for its headquarters and its 11 regional agencies and warehouses countrywide. Unfortunately, the recent fire in November 2021 that consumed one of the CAMEG warehouses has negatively impacted CAMEG's warehousing capacity. PMI leveraged other funding streams to conduct a fire security assessment of all CAMEG central and regional warehouses. A fire security reinforcement plan was developed and is being implemented in collaboration with other health supply chain donors.

PMI supported ANRP in collaboration with LNSP to use the risk-based approach and MedRs tool for the annual antimalarial PMS exercise. This survey showed the safety and the quality of all the samples of antimalarials. PMI also supported the roll-out of technical assistance for the LNSP ISO 17025 accreditation plan.

The main challenge that continues to threaten the supply chain is the security crisis. The worsening security situation has affected the distribution to the last mile, reduced field visits/supervisions and control possibilities in some areas and consequently affected technical assistance and EUV to the operational teams. The COVID-19 crisis affected supply chain performance by diverting country human and financial resources to the COVID-19 response, disrupting commodity deliveries, increasing shipping costs, and channeling domestic resources initially planned for malaria commodities to other urgent needs.

The latest EUV from Burkina Faso was conducted by Global Health Supply Chain Program-Procurement and Supply Management (GHSC-PSM) in 72 health facilities and 30 warehouses in March 2021. All facilities visited had at least one presentation of artemether-lumefantrine on the day of the visit, 54 percent had all four presentations. The availability of RDTs was 97 percent. This performance was due to partners' commitment in procurement and adherence to product delivery schedules at different levels. Forty-seven percent of SDPs were stocked out of quinine 200mg on the day of the visit. This may be related to the high availability of injectable artesunate (94 percent) because injectable artesunate is used as the first intervention for the treatment of severe malaria in accordance with the guidelines. The stock card updating rates ranged between 21 percent and 48 percent. These are slightly better than the previous EUV (26 to 34 percent) but remain insufficient. This minor improvement could be explained by the implementation of supportive supervision in the SDPs with GHSC-PSM's and GHSC-Technical Assistance Francophone Task Order's financial and technical assistance. In FY 2021, GHSC-PSM provided technical assistance in three regions and GHSC-Technical Assistance Francophone Task Order covered two regions. However, it is worth noting that although 74 percent of staff working in stock management received related training, 21 percent of SDPs reported that the staff did not see value in keeping stock cards up to date.

On average, 95 percent of malaria cases were diagnosed with RDTs. Ninety-five percent of malaria cases in children under five years of age were treated with ACTs. These high rates were partly attributed to the high availability of RDTs and ACTs at the SDP level and at district warehouses. Also, it indicates the efforts made by the health workers to respect malaria diagnosis guidelines. Forty-three percent of health workers were trained in malaria case management, with the last annual training implemented in 2019. This low performance is likely caused by the COVID-19 pandemic in 2020 and lack of NMCP funding in FY 2021 to conduct health worker training. Fortunately, 94 percent of SDPs had the latest malaria treatment guidelines available to provide written case management guidance.

5.3. Plans and Justification with FY 2023 Funding

The FY 2023 funding tables contain a full list of health supply chain and pharmaceutical management systems strengthening that PMI proposes to support in Burkina Faso with FY 2023 funding. Please visit Malaria Operational Plans (MOPs) for these FY 2023 funding tables.

PMI will ensure continual availability of quality products needed for malaria control (ACTs, RDTs, injectable artesunate, and ITNs) at health facilities and the community levels. This includes the commodities for the CHWs who will provide iCCM in the three PMI focus regions.

PMI will continue to support annual commodity quantification exercises, the extension of the eLMIS pilot project in co-share with the Global Fund and World Bank, and all the activities included in the stockout reduction strategic plan (such as the supportive supervision, on-the-job training, pre-service training, EUV exercises and results dissemination, DQA, supply chain data validation, and last-mile distribution reinforcement), along with providing continued technical assistance to CAMEG for their product location management system, temperature monitoring, fire security reinforcement, and the warehousing and distribution of malaria commodities. PMI will support CAMEG to reinforce the fire security plan for the main central warehouse. PMI will support the NMCP to expand the coverage of private health care structures which will benefit from the subsidized RDTs and ensure that private health establishment stock managers are trained and supervised.

PMI will continue to procure As-Pyr to support the NMCP to roll out the introduction of As-Pyr. This will complement FY 2021 funds that will be supporting the initial procurement of As-Pyr and some As-Pyr pharmacovigilance activities.

PMI will also support the country's efforts to reinforce the coordination of quality assurance/QC activities and the implementation of LNSP strategic plan activities to upgrade laboratory capacity to meet international standards by achieving ISO 17025 accreditation. The ANRP will be reinforced for PMS coordination through TWG activities and annual PMS exercises.

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

6. SBC

6.1. PMI Goal and Strategic Approach

PMI supports the NMCP's 2021–2025 NSP, which includes SBC under Objective 2, emphasizing advocacy, social mobilization, and behavior change communication to strengthen the capacity of the NMCP to effectively manage the response against malaria. The NMCP aims to improve the population's knowledge of malaria, care-seeking practices, ITN use, and uptake of SMC, IRS, and IPTp, and it has the following goals:

- At least 80 percent of the population knows three signs of malaria and three preventive measures for malaria.
- At least 90 percent of community leaders (traditional, civil, religious) targeted engage in the response against malaria.

Activities to advance these goals include community advocacy, interpersonal communication with CHWs and community-based organizations, development/adaptation of SBC tools, and mass communication campaigns.

Key PMI interventions are aligned with the NMCP strategy except for interventions related to larval source management. Areas of PMI support for SBC have included revising national malaria SBC strategies; building country capacities in SBC; and implementing SBC to improve intervention uptake. PMI will continue working at the national level with the NMCP communication unit and ensure coordination with Global Fund–supported activities to maximize resources. More targeted PMI SBC support will take place in the three PMI focus regions (Centre Est, Centre Ouest, and Sud Ouest) and will leverage other USAID funding streams. PMI will continue to support ~5,000 CHWs in these regions to deliver both routine SBC activities and activities carried out during the campaigns (SMC and ITNs). Additionally, tailored interventions will utilize a mix of communication channels, including mass communication campaigns promoting ITN use, IPTp and community IPTp, and early care-seeking behavior, and the targeting of social norms of early ANC, perceived risk of malaria infection, and early care-seeking response efficacy. As in previous years, campaigns will continue via a variety of channels including short television spots, radio messages, messages from influential cultural leaders/icons, and billboards.

6.2. Recent Progress (CY 2021)

Burkina Faso's malaria bilateral mechanism was awarded in August 2021; the significant delay of the award and lack of implementing partner for nine months caused key activities, including some SBC interventions, to be postponed. Additionally, challenges including the growing insecurity and the COVID-19 pandemic also led to a reduction of SBC interventions.

Despite these challenges, PMI support for SBC activities included:

- Preparation and data collection during the 2021 Demographic and Health Survey (DHS; preliminary results expected late April 2022), which will assess and identify SBC priorities.
- Periodic SBC TWG meetings.
- World Malaria Day celebration advocacy and awareness activities.
- Implementation of a baseline evaluation and indicator development in the three PMI focus regions with audience profiles and segmentation (draft baseline report shared end of March 2022).
- IRS and SMC 2021 campaigns.

Key challenges by technical area are listed below:

- **ITNs:** ITN accessibility; The security situation and the more than 1.8 million IDPs (as of March 2022) make access to ITNs more difficult.
- **MIP:** Ensuring the availability of both ITNs and SP for ANC visits at the facility level; targeting communication on the importance of early attendance at ANC and IPTp; and advocating for better access to IPTp through administration of community IPTp through CHWs. Population movement and the insecurity in many parts of the country also complicate adherence to and update of IPTp. NMCP is scaling up community IPTp and the training of CHWs, after the successful pilot in Burkina Faso.
- **SMC:** Population movement (IDPs) and the timing of SMC phases vis-á-vis farming and agricultural activities. Additional messaging for care-giver administration of subsequent doses will need to be reinforced (i.e., side effects and actions if a child spits up a subsequent dose at home).
- **Case Management:** Existing gap of early care-seeking behavior, which in some instances is compounded by the security challenges, which has closed several health facilities, and the reluctance to travel far to seek care.

6.3. Plans and Justification with FY 2023 Funding

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

PMI plans to reinforce the capacity of CHWs and other care providers to improve adherence to case management guidelines for severe and uncomplicated malaria cases and to increase IPTp uptake in the community. Based on the forthcoming 2021 DHS results, the NMCP, along with support from PMI and other partners, will determine the optimal mix of SBC interventions in order to appropriately tailor messaging/activities.

Priorities

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

Table 3. Priority Behaviors to Address

Behavior	Target Population	Geographic Focus	Programming to Address Behavior
Prompt care-seeking for fever for children under five years of age	Caregivers of children under five years of age	Nationwide and three PMI focus regions	Conduct community- and household-level interpersonal communication in prompt care-seeking, informed by recent surveys. Provide technical assistance to media stations for production and airing of radio shows and spots to promote prompt care-seeking.

Behavior	Target Population	Geographic Focus	Programming to Address Behavior
Consistent, nightly use of ITNs	Caregivers of children under five years of age and pregnant women	Nationwide	Conduct community- and household-level interpersonal communication in prompt care-seeking, informed by recent surveys.
Adherence to case management and supply chain guidelines	Health workers	Nationwide and three PMI focus regions	Conduct training/refresher training to ensure that all health workers are educated on providing routine ITNs during ANC and EPI visits and on adhering to RDT results. Continue roll-out of eLMIS training to facilitate up-to-date inventory status and reduce stockouts. Training will also emphasize timeliness of reporting and completeness of reporting to ensure commodities can be replenished on time.

Additional Support Activities

No additional SBC data collection is planned due to funding limitations and prioritization of other activities.

7. SM&E

7.1. PMI Goal and Strategic Approach

Malaria SM&E activities are led by the NMCP's monitoring and evaluation team. This includes collection, validation, and analysis of case count data routinely reported by health workers through the National Health Information System (NHIS) using the District Health Information Software 2 (DHIS2) platform as well as the Excel-based weekly Integrated Disease Surveillance and Response (IDSR) system known as the weekly MOH telegram-letter. Using these data, the NMCP generates a weekly malaria surveillance bulletin, which provides a national snapshot of the malaria situation in the country and reports key indicators over time and stratified by district.

Additional activities led by the monitoring and evaluation team include coordinating population-based surveys, health facility surveys, and efficacy studies, all of which complement the routine data. The NMCP design and implement these SM&E activities with many partners, including the Bill & Melinda Gates Foundation, the Clinton Health Access Initiative (CHAI), the Global Fund, PMI, Terre des hommes, World Bank, and the WHO.

PMI is committed to supporting the NMCP to improve its SM&E system at all levels of the health system. This includes strengthening the NMCP's capacity to conduct surveillance as a core intervention providing high-quality data from both surveys and

routine health information systems. At the central level, PMI supports the NMCP, the MOH *Direction des Statistiques Sectorielles*/Data Management Directorate (DSS) and the *Direction des Systèmes d'Information en Santé*/Health Information Systems Directorate (DSIS) to review policies and to plan, coordinate, and implement broader SM&E strengthening initiatives. Strengthening SM&E capacity efforts are available through a Field Epidemiology Training Program (FETP) for limited NMCP staff and regional data managers who support surveillance across all diseases, and regional francophone SM&E courses are offered by a health research institution in country. However, national SM&E courses have not been routinely funded.

7.2. Recent Progress (CY 2021)

Two assessments were recently conducted to inform the MOH and the NMCP on the state of their health information systems and structures:

1. An assessment of the Burkina Faso NHIS and the implementation of the NHIS 2010–2020 Strategic Plan was conducted by the GOBF and Cooper/Smith.
2. An evaluation of the malaria surveillance system was completed by the NMCP and CHAI in 2021.

Results from these two assessments demonstrated that the national system is fragmented and complex and contains duplicative processes. Using these assessments and the recommendations contained therein, the NMCP is working with CHAI to develop a roadmap to inform the design and implementation of future SM&E activities. PMI is working with the NMCP, CHAI, and partners to determine how the recommendations will be implemented.

The COVID-19 pandemic and insecurity issues in Burkina Faso have negatively impacted many SM&E activities, resulting in slowed progress, delays, and suboptimal participation in stakeholder meetings. PMI support for SM&E has also been impacted by the significant delay in the award of PMI Burkina Faso's malaria bilateral mechanism and resulting lack of implementing partner for nine months through August 2021. However, despite the challenges, PMI has continued to work with the NMCP and partners with the following results:

- Data collection for the DHS was completed in December 2021 and preliminary results are expected in April 2022.
- The 2022–2025 NHIS strategic plan was successfully developed.
- A second malaria-focused Intermediate FETP cohort of 12 residents is scheduled to begin training in April 2022.
- With financial support from Global Fund for application development by DSIS and Dimagi, an initial version of a CommCare-based digital tool for CHWs has been developed, which includes malaria case management and reporting

modules. User acceptability testing and piloting are expected to start in April 2022. PMI provided technical assistance related to project coordination, human centered design/user acceptability, and collaborative requirements development.

Additional SM&E challenges include:

- Lack of a functioning SM&E TWG and regular coordination meetings.
- Data availability, quality, and use for appropriate analyses remain limited.
- Digitization efforts are fragmented.
- Community health system SM&E capacity is low.

7.3. Plans and Justification with FY 2023 Funding

The FY 2023 funding tables contain a full list of SM&E activities that PMI proposes to support in Burkina Faso with FY 2023 funding. Please visit Malaria Operational Plans (MOPs) for these FY 2023 funding tables.

PMI awarded a new bilateral agreement in August 2021 to support malaria activities in Burkina Faso. This new award provides an opportunity for additional SM&E support, including the addition of an SM&E advisor on staff. PMI will also be onboarding a new malaria data specialist on the PMI in-country team in 2022. These efforts in combination with the existing local capacity of health research institutions in Burkina Faso, which have conducted SM&E trainings since 2011, will strengthen and advance malaria SM&E efforts.

PMI will continue to provide central-level support for planning, coordination, and implementation of SM&E activities. PMI will provide support to the NMCP and other relevant directorates of the MOH to strengthen health information systems, including eLMIS, particularly at the health-facility level. Activities will include data quality improvement, supportive supervision, data review meetings at the district level, and DHIS2 data analysis and use.

PMI will support the curriculum development and implementation of two integrated SM&E courses for regional- and district-level doctors and SM&E officers, prioritizing staff in PMI-supported regions first.

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				P		
Malaria Surveillance and Routine System Support	Therapeutic Efficacy Studies		X		P		
Malaria Surveillance and Routine System Support	Support to Health Management Information System	X	X	P	P	P	P
Malaria Surveillance and Routine System Support	Support to Integrated Disease Surveillance and Response	*X	*X	*P	*P	*P	*P
Malaria Surveillance and Routine System Support	Electronic Logistics Management Information System		X	P	P	P	P
Other	End-Use Verification Survey	X	X	P	P	P	P
Other	Entomologic Monitoring Surveys	X	X	P	P	P	P
Other	Entomology, net durability, and indoor residual spray data collection	X	X	P	P		

* Non-PMI funded activities; X=completed activities; P=planned activities.

Integration of this data into the national Health Management Information System is a goal of the NCMP that PMI is committed to supporting.

8. Operational Research and Program Evaluation

8.1. PMI Goal and Strategic Approach

Burkina Faso does not have a specific strategy for malaria-related operational research. Ensuring the availability and use of relevant data, including survey and research data, to inform decision-making is included as an objective in the NSP for malaria control. There is a strong network of research institutes in Burkina Faso and most research activities are led by these institutes in collaboration with the NMCP.

PMI does not plan to support operational research or program evaluation in Burkina Faso using FY 2023 funds. However, in support of the NMCP objective for the use of research data to inform programmatic decision-making, PMI plans to provide funding for an annual scientific meeting to facilitate information-sharing among researchers and malaria stakeholders, including the NMCP and other decision-makers.

8.2. Progress (CY 2021)

No PMI-supported operational research or program evaluation is ongoing or has been recently completed; however, the table below summarizes non-PMI funded studies planned or ongoing in Burkina Faso.

Table 5. Non-PMI-funded Operational Research/Program Evaluation Studies Planned/Ongoing in Burkina Faso

Source of Funding	Implementing Institution	Research Question/Topic	Current Status/Timeline
Chinese Center for Disease Control and Prevention via WHO	NMCP	The implementation of the 1.7-mRCTR strategy for the reduction of malaria incidence by over 66%.	Protocol available with ethics committee approval.
Medicines for Malaria Venture	Groupe de Recherche Action en Santé (GRAS)	Feasibility, acceptability, and costs of a multiple (ACT) strategy for first-line treatment of uncomplicated malaria.	Data analysis phase
Bill & Melinda Gates Foundation	GRAS	Evaluation of plasmodium falciparum genotypes and resistance markers in malaria patients.	Data collection phase
European and Developing Countries Clinical Trials Partnership (EDCTP)	GRAS	Baseline study for the evaluation of malaria morbidity in children 1.5 to 12 years of age living in a future malaria vaccine candidate trial site in the Banfora region of Burkina Faso.	Data analysis phase
EDCTP	GRAS	Community dynamics of human and mosquito malaria transmission in the Sabou region of Burkina Faso.	Data collection phase
EDCTP	GRAS	Phase 1b randomized, controlled, double-blind, dose-escalation clinical trial to evaluate the safety and immunogenicity of different adjuvant formulations of the R0.6C and ProC6C transmission-blocking plasmodium falciparum vaccine candidates in adults in Burkina Faso.	Preparation phase for the start-up
EDCTP	GRAS	Evaluation of the efficacy, safety, and tolerability of the combination of KAF156 and lumefantrine solid dispersion formulation, under fasting or fed conditions, in the treatment of acute uncomplicated plasmodium falciparum malaria in a pediatric population.	Data collection phase
UK Joint Global Health Trials with additional funding from PATH Malaria Vaccine Initiative	Institut de Recherche en Sciences de la Santé (IRSS), Burkina Faso; London School of Hygiene and Tropical Medicine	Seasonal malaria vaccination with SMC: Multiple research questions.	Initial phase completed. Investigations into the safety and efficacy of additional vaccine doses, immune response, the rebound effect, and alternative approaches to

Source of Funding	Implementing Institution	Research Question/Topic	Current Status/Timeline
			vaccine delivery (e.g., with routine childhood vaccination).

8.3. Plans and Justification with FY 2023 Funding

No operational research or program evaluation activities are proposed with FY 2023 funding.

9. Capacity Strengthening

9.1. PMI Goal and Strategic Approach

The goals of the Burkina Faso NMCP include strengthening the leadership and management skills of the NMCP team and introducing appropriately trained malaria focal points at the regional and/or district levels. As described in the case management and SM&E sections, the country also aims to strengthen the malaria case management and data collection capabilities of CHWs.

- In line with PMI's strategic priority of investing locally, PMI/Burkina Faso is supporting capacity strengthening of local institutions and staff to improve management and technical oversight of malaria interventions. Capacity strengthening efforts will help streamline NMCP management processes, effectively coordinate the implementation of malaria interventions, and improve monitoring of activities.

PMI is supporting the NMCP to conduct a capacity assessment covering both technical and management aspects during CY 2022. The primary focus of the assessment will be on identifying areas for improvement in the NMCP's management of malaria prevention and control activities, including opportunities to build on the leadership and strategic planning skills of key staff. The assessment will likely also examine professional development needs for technical staff. The results of this assessment will provide much of the information needed to target central-level PMI capacity-building support.

9.2. Recent Progress (CY 2021)

- Planning was completed for a second PMI-supported FETP cohort of 12 residents from the central and regional levels of the MOH. Training of the residents is to take place from April to November 2022.
- The NMCP began planning for a technical and managerial capacity assessment.
- A technical advisor, supported by PMI in collaboration with Global Fund, was seconded to the MOH's DPES. The advisor supported the MOH in their

efforts to improve stakeholder coordination, capacity strengthening, and overall implementation of the National Community Health Strategic Plan.

9.3. Plans and Justification with FY 2023 Funding

The FY 2023 funding tables contain a full list of capacity strengthening activities that PMI proposes to support in Burkina Faso with FY 2023 funding. Please visit Malaria Operational Plans (MOPs) for these FY 2023 funding tables.

Strengthening the community health system continues to be a priority for both PMI and the Burkina Faso MOH. Therefore, PMI will continue to support a community health technical advisor secondee to the MOH's DPES (with co-funding for the advisor's activities from Global Fund and other USAID funding streams). As described in the **SM&E section** above, malaria-specific capacity strengthening support will mostly be focused on curriculum development for, and implementation of, two integrated SM&E courses for regional- and district-level doctors and SM&E officers, prioritizing staff in PMI focus regions.

Additionally, following the recent WHO recommendation of the RTS,S/AS01 malaria vaccine in regions with moderate-to-high transmission of *P. falciparum* malaria and promising results from a Phase 2b trial of the R21 malaria vaccine in Nanoro, Burkina Faso, PMI will support the MOH to develop a malaria vaccine roadmap and timeline.

10. Staffing and Administration

A minimum of three health professionals oversee PMI in Burkina Faso. The single interagency team led by the USAID mission director or their designee consists of a resident advisor representing USAID and the CDC as well as 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	2022	2023	2024
Total country population	22,830,839	23,538,595	24,268,291
Total population at risk for malaria	22,830,839	23,538,595	24,268,291
PMI-targeted at-risk population	22,830,839	23,538,595	24,268,291
Population targeted for ITNs	22,830,839	23,538,595	24,268,291
Continuous Distribution Needs			
Channel 1: ANC	1,135,158	1,151,939	1,168,967
Channel 1: ANC Type of ITN	Dual AI and PBO	Dual AI and PBO	Dual AI and PBO
Channel 2: EPI	886,539	900,149	913,968
Channel 2: EPI Type of ITN	Dual AI and PBO	Dual AI and PBO	Dual AI and PBO
Channel 3: School	77,000	17,600	17,600
Channel 3: School Type of ITN	PBO	PBO	PBO
Channel 4: Internally displaced persons (IDP)	1,225,730	122,573	134,830
Channel 4: IDP Type of ITN	Dual AI and PBO	Dual AI and PBO	Dual AI and PBO
Channel 5: Hospitals	691,617	746,947	806,703
Channel 5: Type of ITN	Dual AI and PBO	Dual AI and PBO	Dual AI and PBO
Estimated Total Need for Continuous Channels	4,016,045	2,939,208	3,042,068
Mass Campaign Distribution Needs			
Mass distribution campaigns	16,051,518		
Mass distribution ITN type	Dual AI and PBO	Dual AI and PBO	Dual AI and PBO
Estimated Total Need for Campaigns	16,051,518	0	0
Total ITN Need: Continuous and Campaign	**20,067,563**	**2,939,208**	**3,042,068**
Partner Contributions			
ITNs carried over from previous year	1,977,783	366,492	0
ITNs from Government			
Type of ITNs from Government			
ITNs from Global Fund	14,799,263	899,302	1,571,232
Type of ITNs from Global Fund	Dual AI and PBO	Dual AI and PBO	Dual AI and PBO
ITNs from other donors			
Type of ITNs from other donors			
ITNs planned with PMI funding	1,679,226	520,000	520,000
Type of ITNs with PMI funding	PBO	PBO	PBO
Total ITNs Contribution Per Calendar Year	**18,456,272**	**1,785,794**	**2,091,232**
Ending Balance	**366,492**	**(786,921)**	**(950,836)**
Desired End of Year ITN (months of stock)	3	3	3
Desired End of Year ITN (quantities)	505,424	513,022	520,734
Total ITN Surplus (Gap)	**(138,932)**	**(1,299,943)**	**(1,471,570)**

Table A-2. RDT Gap Analysis Table

Calendar Year	2022	2023	2024
Total country population	22,830,839	23,538,595	24,268,291
Population at risk for malaria	22,830,839	23,538,595	24,268,291
PMI-targeted at-risk population	22,830,839	23,538,595	24,268,291
RDT Needs			
Total number of projected suspected malaria cases	21,918,428	23,900,551	26,300,925
Percent of suspected malaria cases tested with an RDT	100%	100%	100%
RDT Needs (tests)	**21,918,428**	**23,900,551**	**26,300,925**
Select Data Source			
Partner Contributions (tests)			
RDTs from Government	*0*		
RDTs from Global Fund	11,820,626	12,368,159	12,601,174
RDTs from other donors			
RDTs planned with PMI funding	7,000,000	7,500,000	8,000,000
Total RDT Contributions per Calendar Year	**18,820,626**	**19,868,159**	**20,601,174**
Stock Balance (tests)			
Beginning Balance	16,123,897	13,026,095	8,993,703
- Product Need	21,918,428	23,900,551	26,300,925
+ Total Contributions (received/expected)	18,820,626	19,868,159	20,601,174
Ending Balance	**13,026,095**	**8,993,703**	**3,293,952**
Desired End of Year Stock (months of stock)	6	6	6
Desired End of Year Stock (quantities)	10,959,214	11,950,275	13,150,462
Total Surplus (Gap)	**2,066,881**	**(2,956,572)**	**(9,856,511)**

Table A-3. ACT Gap Analysis Table

Calendar Year	2022	2023	2024
Total country population	22,830,839	23,538,595	24,268,291
Population at risk for malaria	22,830,839	23,538,595	24,268,291
PMI-targeted at-risk population	22,830,839	23,538,595	24,268,291
ACT Needs			
Total projected number of malaria cases	14,328,075	14,806,920	15,274,395
Total projected number of malaria cases (with NCMP objective reduction)	14,328,074	14,682,351	14,971,975
Total projected number of malaria cases for Children under 5 old years	6,407,720	6,566,158	6,695,682
Total projected number of malaria cases for Pregnant Women and population older than 5 years	7,920,354	8,116,193	8,276,293
Total ACT Needs (treatments)	**14,328,074**	**14,682,351**	**14,971,975**
AL box de 6 tablets	4,017,592	2,151,138	2,193,571
AL box de 12 tablets	4,423,077	2,368,246	2,414,962
AL box de 18 tablets	1,819,665	974,303	993,522
AL box de 24 tablets	4,067,740	2,177,989	2,220,952
DHA-PPQ 20/160mg blister de 3cp		699,610	713,410
DHA-PPQ 40/320mg blister de 3cp		2,486,297	2,535,342
DHA-PPQ 40/320mg blister de 6cp		1,004,334	1,024,145
DHA-PPQ 40/320mg blister de 12cp		1,516,202	1,546,110
Pyronaridine/Artesunate 60 mg/20 mg Granules for Oral Suspension (Granules) 3 sachets		**1,166,544**	**1,189,555**
Pyronaridine/Artesunate 180 mg/60 mg Tablets 9 tablets		**1,081,442**	**1,102,775**
Needs Estimated based on HMIS Data			
Partner Contributions (treatments)			
ACTs from Government	48,000		
ACTs from Global Fund	9,778,700	4,327,946	4,292,880
ACTs from other donors			
ACTs planned with PMI funding	6,000,060	6,000,000	6,000,000
Total ACTs Contributions per Calendar Year	**15,826,760**	**10,327,946**	**10,292,880**
Stock Balance (treatments)			
Beginning Balance	5,716,964	7,215,650	2,861,245
- Product Need	14,328,074	14,682,351	14,971,975
+ Total Contributions (received/expected)	15,826,760	10,327,946	10,292,880
Ending Balance	**7,215,650**	**2,861,245**	**(1,817,851)**
Desired End of Year Stock (months of stock)	6	6	6
Desired End of Year Stock (quantities)	7,164,037	7,341,175	7,485,988
Total Surplus (Gap)	**51,612**	**(4,479,931)**	**(9,303,838)**

Table A-4. Inj. Artesunate Gap Analysis Table

Calendar Year	2022	2023	2024
Injectable Artesunate Needs			
Projected number of severe cases	700,747	737,615	771,325
Projected number of severe cases among children	293,220	304,456	313,078
Average number of vials required for severe cases among children	4	4	4
Total number of Injectable Artesunate 60 mg needs for children under 5 years of age	**1,172,880**	**1,217,823**	**1,252,311**
Projected number of severe cases among pregnant women	41,449	43,415	45,258
Average number of vials required for severe cases among pregnant women	6	6	6
Total number of Injectable Artesunate needs for pregnant women	**248,692**	**260,492**	**271,550**
Projected number of severe cases among population age group above 5 years (except pregnant women)	366,078	389,743	412,990
Average number of vials required for severe cases among more than 5 years (except pregnant women)	4	4	4
Total number of Injectable Artesunate needs for Population age group above 5 years old (except Pregnant women)	**1,464,314**	**1,558,974**	**1,651,958**
Total number of Injectable Artesunate 60 mg needs for children under 5 years	**1,172,880**	**1,217,823**	**1,252,311**
Total number of Injectable Artesunate 120 mg needs for above 5 years and pregnant women	**1,713,005**	**1,819,466**	**1,923,508**
Total Injectable Artesunate Needs (vials)	**2,885,885**	**3,037,289**	**3,175,818**
Needs Estimated based on HMIS Data			
Partner Contributions (vials)			
Injectable artesunate from Government			
Injectable artesunate from Global Fund	3,711,721	1,733,802	1,237,648
Injectable artesunate from other donors			
Injectable artesunate planned with PMI funding	200,000	1,000,000	1,500,000
Total Injectable Artesunate Contributions per Calendar Year	**3,911,721**	**2,733,802**	**2,737,648**
Stock Balance (vials)			
Beginning Balance	331,949	1,357,785	1,054,298
- Product Need	2,885,885	3,037,289	3,175,818
+ Total Contributions (received/expected)	3,911,721	2,733,802	2,737,648
Ending Balance	**1,357,785**	**1,054,298**	**616,128**
Desired End of Year Stock (months of stock)	6	6	6
Desired End of Year Stock (quantities)	1,442,943	1,518,644	1,587,909
Total Surplus (Gap)	**(85,158)**	**(464,346)**	**(971,781)**

Table A-5. RAS Gap Analysis Table

Calendar Year	2022	2023	2024
Artesunate Suppository Needs			
Number of severe cases expected in children under five years	293,220	304,456	313,078
Proportion of severe malaria cases transferred by community level	15%	15%	15%
Total number of severe malaria cases expected to be transferred from the community level	43,983	45,668	46,962
Target coverage	47.39%	47.39%	47.39%
Number of severe cases expected to require pre-referral dose	20,844	21,642	22,255
Total Artesunate Suppository Needs (suppositories)	**31,265**	**32,463**	**33,383**
Needs Estimated based on HMIS Data			
Partner Contributions (suppositories)			
Artesunate suppositories from Government	100,000		
Artesunate suppositories from Global Fund			
Artesunate suppositories from other donors			
Artesunate suppositories planned with PMI funding		0	0
Total Artesunate Suppositories Available	**100,000**	**0**	**0**
Stock Balance (suppositories)			
Beginning Balance	5,800	74,535	42,071
- Product Need	31,265	32,463	33,383
+ Total Contributions (received/expected)	100,000	0	0
Ending Balance	**74,535**	**42,071**	**8,689**
Desired End of Year Stock (months of stock)	3	3	3
Desired End of Year Stock (quantities)	7,816	8,116	8,346
Total Surplus (Gap)	**66,718**	**33,955**	**343**

Table A-6. SP Gap Analysis Table

Calendar Year	2022	2023	2024
Total Country Population	22,830,839	23,538,595	24,268,291
Total Population at Risk for Malaria	22,830,839	23,538,595	24,268,291
PMI Targeted at Risk Population	22,830,839	23,538,595	24,268,291
SP Needs			
Total Number of Pregnant Women	N/A	N/A	N/A
Total number of pregnant women expected to attend ANC1	1,135,158	1,151,939	1,168,967
Number of doses per woman	4	4	4
Total SP Needs (doses)	**4,540,633**	**4,607,755**	**4,675,870**
Needs Estimated based on HMIS Data			
Partner Contributions (doses)			
SP from Government	6,660,194	3,494,374	4,709,927
SP from Global Fund	0	0	0
SP from other donors	0	0	0
SP planned with PMI funding			
Total SP Contributions per Calendar Year	**6,660,194**	**3,494,374**	**4,709,927**
Stock Balance (doses)			
Beginning balance	1,297,698	3,417,259	2,303,878
- Product Need	4,540,633	4,607,755	4,675,870
+ Total Contributions (Received/expected)	6,660,194	3,494,374	4,709,927
Ending Balance	**3,417,259**	**2,303,878**	**2,337,935**
Desired End of Year Stock (months of stock)	6	6	6
Desired End of Year Stock (quantities)	2,270,316	2,303,878	2,337,935
Total Surplus (Gap)	**1,146,943**	**0**	**0**

Table A-7. SMC Gap Analysis Table

Calendar Year	2022	2023	2024
Total population in the SMC targeted age range	4,007,541	4,131,774	4,259,859
SMC Drug (SP+AQ) Needs			
National population 3-11 months targeted for SMC	685,030	706,266	728,161
National population 12-59 months targeted for SMC	3,322,510	3,425,508	3,531,699
Total national population targeted for SMC	**4,007,541**	**4,131,774**	**4,259,859**
PMI population 3-11 months targeted for SMC	127,420	131,370	135,442
PMI population 12-59 months targeted for SMC	659,153	679,587	700,654
Total PMI population targeted for SMC	**786,573**	**810,957**	**836,096**
Total SP+AQ Needs (co-blisters) for population 3-11 months	3,040,702	3,134,963	3,232,147
Total SP+AQ Needs (co-blisters) for population 12-59months	15,194,008	15,665,022	16,150,638
Total SP+AQ Needs (co-blisters)	**20,969,916**	**21,619,984**	**22,290,203**
Partner Contributions (co-blisters, national)			
SP+AQ carried over from previous year			
SP+AQ from Government			
SP+AQ from Global Fund	6,617,766	6,822,917	7,034,428
SP+AQ from other donors	10,098,021	10,411,060	10,733,803
SP+AQ planned with PMI funding	4,254,129	4,386,007	4,521,973
Total SP+AQ Contributions per Calendar Year	20,969,916	21,619,984	22,290,203
Total SP+AQ Surplus (Gap)	**0**	**0**	**0**