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Benin

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 the U.S. Congress. Any updates will be reflected in revised postings.

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

CONTENTS

ABBREVIATIONS

ABRP	Benin Agency for Pharmaceutical Regulation
ACT	Artemisinin-based Combination Therapy
AI	Active Ingredient
AL	Artemether-Lumefantrine
ANC	Antenatal Care
ANCQ	Agence Nationale de Contrôle de Qualité des Produits de Santé et de l'Eau
ARCH-AM	Assurance Pour le Renforcement du Capital Humain-Assurance Maladies
ASCQ	Agent de Santé Communautaires Qualifiés
BMGF	Bill & Melinda Gates Foundation
CDC	Centers for Disease Control and Prevention
CHW	Community Health Worker
CI	Confidence Interval
CM	Case Management
CNLS-TP	Conseil National de Lutte Contre le SIDA, la Tuberculose, le Paludisme, les Hépatites et les Épidémies/National AIDS Council on Sexually Transmitted Infections, Tuberculosis, Malaria, Hepatitis, and Epidemics
CREC	Centre de Recherche Entomologique de Cotonou
CU5	Children under Five Years of Age
CY	Calendar Year
DHIS2	District Health Information Software 2
DHS	Demographic Health Survey
DRZS	Dépôt Répartiteurs de Zone/Zone Depots
eLMIS (eSIGL)	Electronic Logistics Management Information System
EPI	Expanded Program on Immunization
EUV	End-Use Verification
FARA	Fixed Amount Reimbursement Agreement
FY	Fiscal Year
GHSC-PSM	Global Health Supply Chain Program-Procurement and Supply Management
Global Fund	Global Fund to Fight AIDS, Tuberculosis and Malaria
GOB	Government of Benin
G2G	Government to Government
HFS	Health Facility Survey
HMIS	Health Management Information System
HZ	Health Zone
IHSA	Integrated Health Services Activity
IPTi	Intermittent Preventive Treatment in Infants-Plus
IPTp	Intermittent Preventive Treatment for Pregnant Women
IRS	Indoor Residual Spraying
ITN	Insecticide-treated Mosquito Net
LMIS	Logistics Management Information System

LSM	Larval Source Management
M&E	Monitoring and Evaluation
MBS	Malaria Behavior Survey
MCH	Maternal and Child Health
MIP	Malaria in Pregnancy
MOH	Ministry of Health
MOP	Malaria Operational Plan
NMCP	National Malaria Control Program
OR	Operational Research
OTSS	Outreach Training and Supportive Supervision
PBO	Piperonyl Butoxide
PE	Program Evaluation
PMI	U.S. President's Malaria Initiative
PPMRm	Procurement Planning and Monitoring Report for Malaria
PSNIE	Plan Strategique Integre oriente vers l'elimination du VIH, la tuberculose, le paludisme, les hepatites virales, les IST et les maladies a potentiel epidemique/National Integrated Strategic Plan to Eliminate HIV/AIDS, TB, Malaria, STIs and Communicable Diseases
RC	Relais Communautaire
RDT	Rapid Diagnostic Test
SBC	Social and Behavior Change
SMC	Seasonal Malaria Chemoprevention
SM&E	Surveillance, Monitoring, and Evaluation
SNCCSC	Stratégie Nationale de Communication pour le Changement Social et Comportemental contre le Paludisme
SoBAPS	Société Béninoise pour l'Approvisionnement en Produits de Santé/Central Medical Stores
SP	Sulfadoxine-Pyrimethamine
SPAQ	Sulfadoxine-Pyrimethamine + Amodiaquine
TA	Technical Assistance
TES	Therapeutic Efficacy Studies
TWG	Technical Working Group
UNICEF	United Nations Children's Fund
USAID	U.S. Agency for International Development
WHO	World Health Organization
YLP	Young Logistician Professional

EXECUTIVE SUMMARY

To review specific country context for Benin, please refer to the Benin Country Malaria Profile located on the U.S. President's Malaria Initiative's (PMI's) Benin 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. Benin began implementation as a PMI focus country in fiscal year (FY) 2008.

Rationale for U.S. President's Malaria Initiative Approach in Benin

This Malaria Operational Plan (MOP) outlines planned PMI activities in Benin using FY 2023 funds. Developed in consultation with the NMCP and key malaria stakeholders, proposed activities reflect national and PMI strategies, draw on best-available data, and align with the country context and health system. Proposed PMI investments support and build on those made by the Government of Benin (GOB) as well as other donors and partners.

Overview of Planned Interventions

The proposed FY 2023 PMI funding for Benin is $15 million. PMI will support the following intervention areas with these funds:

1. Vector Monitoring and Control

PMI will expand entomological monitoring activities from 6 to 12 entomological monitoring sites to reach geo-epidemiologic areas not covered. The activities include insecticide resistance and vector bionomics in all 12 entomological monitoring sites. PMI will continue to strengthen the capacity of local research institutions in malaria surveillance and control and reinforce the country's capacity in the surveillance of new invasive malaria vector *An. stephensi*. Furthermore, PMI will support the distribution of insecticide-treated mosquito nets (ITNs) through routine distribution channels with the procurement of 835,000 piperonyl butoxide (PBO) ITNs during the calendar year (CY) 2024. Social and behavior change (SBC) interventions will also be funded to expand the coverage, use, and care of ITNs. PMI will continue its support for the monitoring of the

entomological and epidemiological impact of PBO and dual active ingredient (AI) nets that will be distributed during the 2023 campaign. PMI does not support indoor residual spraying (IRS) in Benin.

2. Drug-based Prevention

Intermittent preventive treatment for pregnant women (IPTp): Routine data collected using District Health Information Software 2 (DHIS2) shows a notable improvement in IPTp3 uptake (27 percent national uptake in 2019, 38 percent in 2020, and 47 percent in 2021). With support from PMI and the Global Fund to fight AIDS, Tuberculosis and Malaria (Global Fund), the NMCP developed a closer partnership with the country's maternal and child health (MCH) services to improve health facilities' antenatal care (ANC) attendance and IPTp uptake. The NMCP continued conducting community-based distribution of sulfadoxine-pyrimethamine (SP) by midwives working with community health workers (CHWs) for mobilization and referral of pregnant women to health facilities at a select number of health zones (HZs) where IPTp3-related uptake rates are the lowest nationwide. Five HZs were subject to this activity in CY 2019, three in CY 2020, and six in CY 2021. The NMCP is planning to expand the ANC community outreach and IPTp administration to an additional HZ because the results of the evaluation of the past three years demonstrated a significant contribution to IPTp uptake in Benin. PMI supports the creation and functioning of a malaria in pregnancy (MIP) technical working group (TWG) that will reinforce collaboration and coordination between the NMCP and the National Agency for Primary Healthcare. PMI will continue to support the supervision of health providers on IPTp and through the IPTp TWG and will support the NMCP to update and align the national guidelines on IPTp with the ANC guidelines based on 2016 recommendations from the World Health Organization (WHO).

Seasonal malaria chemoprevention: PMI has continued supporting the same two HZs since 2019 in the northern departments of Alibori and Atacora. The geographical scope of Global Fund/NMCP–supported seasonal malaria chemoprevention (SMC) expanded in 2021 to four HZs, up from two in 2020. Although not consistently observed across all SMC-covered communes throughout the past four years, a descriptive analysis of the monthly malaria incidence among children under five years of age (CU5) indicates that SMC has likely contributed, in combination with several other control interventions and programmatic factors, to notably mitigating the anticipated peak in malaria cases. To optimize the anticipated impact of SMC, PMI will continue to support efforts deployed by the NMCP aimed at effectively applying quality standards to the operational field implementation of SMC-related activities, including training, supervision and data management. On the other hand, the same analysis indicates that starting the first round of SMC a month earlier (in June) may prove to be effective in mitigating the July peak observed at some of the SMC-covered communes in the past three years. PMI

plans to procure 270,000 treatments of sulfadoxine-pyrimethamine + amodiaquine (SPAQ) to be combined with existing stocks or stocks from other donors to cover four cycles of implementation, protecting the 139,605 SMC-eligible children in the PMI-supported HZs.

3. Case Management

PMI supports: the NMCP's case management (CM) strengthening efforts through procurement and distribution of commodities (artemisinin-based combination therapies [ACTs], injectable artesunate, malaria rapid diagnostic tests [RDTs], and rectal artesunate [RAS]); national-level policy and programmatic activities; and facility- and community-level CM service delivery–strengthening in 17 of 77 communes of Benin, including through training, supervision, equipment, CHW stipends and community data management system quality improvement. In addition, PMI supports outreach training and supportive supervision (OTSS) for malaria diagnosis in 49 public and private health facility laboratories. PMI continues to support the roll-out of injectable artesunate for the first-line treatment of severe malaria (followed by a full course of ACTs) and the use of RAS for pre-referral treatment of severe disease among CU5. PMI will continue these activities in the same geographic locations with FY 2023 MOP funds. PMI will also continue to collaborate with the NMCP, the Global Fund, and other partners to coordinate procurement and delivery schedules to ensure appropriate stock levels of CM commodities at service delivery points. Based on the most recent national quantification estimates, PMI plans to procure 2,000,000 malaria RDTs, 2,000,000 ACTs, 6,000 RAS, and 300,000 vials of injectable artesunate to fully meet the projected need. PMI will monitor quantifications and pipeline and adjust as needed. PMI will also continue to support OTSS at the facility and community levels.

4. Health Supply Chain and Pharmaceutical Management

The NMCP continues to closely coordinate and align with the management structure of Société Béninoise pour l'Approvisionnement en Produits de Santé/Central Medical Stores (SoBAPS) to ensure that malaria medicines, products, and supplies are available. Additionally, NMCP is working with the Benin Agency for Pharmaceutical Regulation (ABRP) to ensure regulatory functions and compliance on malaria commodities-related issues.

Over the past 12 months (2021–2022), PMI has accomplished the following:

- Provided technical assistance (TA) to the NMCP (quantification, supply plan, Procurement Planning and Monitoring Report for malaria [PPMRm], Global Health Supply Chain Program-Procurement and Supply Management [GHSC-PSM] coordination, end-use verification [EUV] survey, etc.).

- Provided TA to strengthen implementation of the "*panier commun*" or "common basket" approach for all donor-procured commodities.
- Assisted with ITN distribution with the help of PMI-supported Young Logistician Professionals (YLPs).
- Supported the recruitment, training, and placement of 15 new YLPs.
- Finalized and implemented the data visualization platform that will receive funding from other donors for roll-out and will support all health programs including NMCP.
- Piloted the implementation of an electronic Logistics Management Information System (eLMIS) in three departments, rolled out the A7 form for tracer commodities, and ensured the overall good storage conditions and management of the procured antimalarial commodities.

NMCP's strategy is to continue to use different tools, including the Logistics Management Information System (LMIS), EUV survey, joint supervision visits, and weekly monitoring summaries to get feedback and improve supply chain management.

With the FY 2023 funds, PMI will continue to provide TA to the NMCP (quantification, supply planning, PPMRm, SMC, GHSC-PSM coordination, EUV, etc.). PMI will also continue to: reinforce the common basket approach for storage improvement; contribute to SoBAPS storage capacity strengthening, management, and distribution of malaria commodities; support the depots for zone and health facilities supervision by the YLPs; support scale-up of the eLMIS; and roll out the A7 form for tracer commodities and monthly reporting.

5. Social and Behavior Change

In CYs 2021–2022, there was technical and financial support for: development of an SBC plan for NMCP (in draft); contracting with local radios for awareness-raising on malaria prevention and care-seeking, especially targeting pregnant women and CU5; development of over 140 local radio programs which were transmitted in targeted HZs; formative supervision in the communes of CHWs to strengthen local prevention communication activities; and TA to plan for the implementation of the Malaria Behavior Survey (MBS) for more in-depth information on the determinants of behavior and the Health Facility Survey (HFS) for more in-depth information on the determinants of provider behaviors.

SBC activities planned with FY 2023 funds will concentrate on designing and implementing evidence-based SBC interventions according to the results of the MBS and the HFS. While SBC activities encouraging correct and consistent use of ITNs will continue, priority will be placed on addressing prompt care-seeking behavior and provider adherence to guidelines in CM and IPTp. Emphasis will also be placed on

improving institutional capacity to manage and implement SBC activities in Benin at the national, HZ, and community levels, including strengthening the SBC TWG.

6. Surveillance, Monitoring, and Evaluation

To date, PMI is continuing to support the implementation of the DHIS2 platform to facilitate the reporting and use of routine surveillance and malaria service delivery data. PMI supported the training and supervision of health workers and managers at facility and district levels. With FY 2023 funds, PMI will continue to support a wide range of Health Management Information System (HMIS) strengthening activities aimed at improving data reporting at the community, facility, district, and national levels. PMI continues to support the country's efforts toward roll-out and use of digital platforms in routine and campaign-related malaria control–related activities. PMI investments will also be used to provide embedded TA to strengthen the institutional capacity within the NMCP to improve data quality (especially completeness and timeliness) and use.

7. Operational Research and Program Evaluation

In 2021, the ANC group phase of the study "Assessing the Impact of Group ANC on IPTp Uptake in Benin" continued. Field implementation will continue for most of CY 2022. Two studies were conducted in CY 2021: HFS and MBS. Final results dissemination is planned in mid-CY 2022.

No PMI operational research (OR)–or program evaluation (PE)–supported activities are currently anticipated with FY 2023 funds. However, efforts are underway to identify relevant program challenges that would potentially warrant considering further OR/PE–related activities.

8. Capacity Strengthening

PMI supports the NMCP through a direct government-to-government (G2G) agreement (Fixed Amount Reimbursement Agreement [FARA]). Through the FARA and the special account, PMI contributes to the support of NMCP's management and capacity development including staff support, equipment and infrastructure needs, and internet connectivity support. The Conseil National de Lutte Contre le SIDA, la Tuberculose, le Paludisme, les Hépatites et les Épidémies/National AIDS Council on Sexually Transmitted Infections, Tuberculosis, Malaria, Hepatitis, and Epidemics (CNLS-TP) oversees all disease programs, including the malaria program, and there is an increasing need for the NMCP to align the National Malaria Strategic Plan to the Plan Strategique Integre oriente vers l'elimination du VIH, la tuberculose, le paludisme, les hepatites virales, les IST et les maladies a potentiel epidemique/National Integrated Strategic Plan to Eliminate HIV/AIDS, TB, Malaria, STIs and Communicable Diseases (PSNIE) 2019–2023, whose role is to provide technical and coordination support on malaria-related activities. PMI will continue to support the NMCP through the FARA for

management and capacity development, infrastructure upkeep, and staff support. Peace Corps volunteers are returning in FY 2022 and PMI will resume its support for volunteer malaria activities.

I. CONTEXT AND STRATEGY

1. Introduction

Benin began implementation as a U.S. President's Malaria Initiative (PMI) focus country in fiscal year (FY) 2008. This FY 2023 Malaria Operational Plan (MOP) presents a detailed implementation plan for Benin, 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 and donors. 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) and the Bill & Melinda Gates Foundation (BMGF). This document provides an overview of the strategies and interventions in Benin, describes progress to date, identifies challenges and relevant contextual factors, and provides a description of activities planned with FY 2023 funding. For more detailed information on the country context, please refer to the Benin Malaria Profile, which provides an overview of the country's malaria situation, key indicators, the NMCP strategic plan, and the partner landscape.

2. U.S. President's Malaria Initiative

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 the U.S. President's Malaria Initiative Approach in Benin

3.1. Malaria Overview for Benin

Malaria transmission across Benin is variable with seasonal and geographic patterns associated with climate, rainfall, and topography. The country is divided into three main regions: southern, central, and northern. The southern region, a sub-equatorial coastal zone, has two rainy seasons (April to July and October to November) and two dry seasons (August to September and December to March). The central plateau region is characterized by a Sudan-Guinea climate. The northern region is hilly and has a Sahelian climate with one rainy season (May to October) and one dry season (November to April). These geo-climatic variations result in three malaria transmission zones: southern (heterogeneous transmission), central (holo-endemic), and northern (seasonal peaks during the rainy season).

Benin has made substantial progress in malaria control since the early 2000s; however, since 2014, cases began to rise steadily from approximately 4.1 million in 2015 to 4.7 million in 2020. Malaria-related deaths, however, remained relatively constant during 2017–2020, from 2,182 in 2017 to 2,336 in 2020 (range 2,138–2,589; World Malaria Report 2021). Improvements in routine data-reporting systems may partially explain the increasing cases since 2014, but additional factors are being assessed to identify risks and find effective solutions to reduce morbidity and mortality due to malaria.

Improving the quality of core malaria interventions—including vector control, drug-based prevention, and prompt case management (CM)—remain priorities for the NMCP and PMI. Routine data suggest that IPTp3+ uptake has overall increased from 23 percent in 2018 to 47 percent in 2021 (see Figure 3). An increase from 14 percent of eligible pregnant women (Demographic Health Survey [DHS] 2017) to 32 percent or greater in 2021 was noted as well. Seasonal malaria chemoprevention (SMC), which began in two districts in 2019, increased to 17 districts in 2021. The most recent data regarding prompt care-seeking among febrile children are from the 2017 DHS (53 percent) and suggest room for improvement.

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

3.2. Key Challenges and Contextual Factors

Benin faces several challenges to malaria control programs. For vector control interventions, insecticide resistance poses an ongoing challenge. Entomologic monitoring in Benin has revealed widespread resistance to the current ITN pyrethroids (alpha-cypermethrin, deltamethrin, and permethrin) in the main malaria vector, *An. gambiae sensu lato*. Exposure of these vector populations to PBO and a pyrethroid has induced partial restoration of pyrethroid susceptibility, where the absolute increase (change/difference) in mortality ranged between 31 percent and 73 percent, after exposure to PBO + a pyrethroid versus exposure to a pyrethroid alone. However, resistance remains an ongoing threat given the mosquito's ability to evolve. For preventing malaria among pregnant women, low antenatal care (ANC) participation, frequent stockouts of sulfadoxine-pyrimethamine (SP) at the health facility level, poor IPTp uptake, and limited information regarding barriers to uptake present challenges. Access to prompt, quality CM for fever illness and appropriate referrals continue to be a challenge at all levels of the health care system. A new community health policy is being rolled out; however, details of this system with respect to malaria CM are unclear and potentially problematic (see the Case Management section below for additional information). Additional system-level constraints also pose challenges. For example, frequent rotations of health providers make implementing training and mentorship programs difficult. Data quality indicators including completeness, timeliness of reporting, and the use of health data in the District Health Information Software 2 (DHIS2) for decision-making remain suboptimal.

Benin has implemented policies to address some of these challenges. For example, fiscal decentralization of the governance in its 77 communes was initiated and virtual platforms have been used for training to reduce time-away-from-post for health care workers. In addition, a universal health coverage scheme, Assurance Pour le Renforcement du Capital Humain-Assurance Maladies (ARCH-AM), was launched. To

date, approximately one million Beninese have health coverage under ARCH-AM and the numbers are increasing. These initiatives face challenges and will require ongoing attention. For example, commune- and department-level governments remain dependent on fund transfers from central accounts, and weak governance structures result in limited direct fund allocation and release for health institutions at commune and department levels.

Lack of domestic resources to support malaria control interventions remains an important challenge. Much of the financing for malaria control comes from international sources. In some sectors, Benin is progressively graduating from international support as its economy grows. However, mobilization of domestic resources for malaria control remains limited.

Terrorist activity in West Africa in recent years has become a major destabilizing factor in the region. After Mali, Niger, Burkina Faso and Nigeria, the terrorist threat has recently evolved toward northern Benin, Togo, and the Ivory Coast. Terrorist activity could affect security conditions in PMI intervention areas in northern Benin.

3.3. The U.S. President's Malaria Initiative Approach for Benin

The Plan Strategique Integre oriente vers l'elimination du VIH, la tuberculose, le paludisme, les hepatites virales, les IST et les maladies a potentiel epidemique/National Integrated Strategic Plan to Eliminate HIV/AIDS, TB, Malaria, STIs and Communicable Diseases (PSNIE) 2019–2023 aims to contribute to the elimination of malaria in Benin by 2030 with the specific objectives of reducing new malaria-related infections by 50 percent and reducing mortality and morbidity linked to malaria by 60 percent by 2023. The strategies include IPTp, SMC, diagnosis and treatment of malaria through routine health services and iCCM, the distribution of ITNs, targeted IRS, and larval source management (LSM). Cross-cutting strategies include procurement and supply chain management and SBC.

PMI aligns its funding and technical assistance (TA) to support Benin's overall malaria strategies that reflect the five focus areas of the PMI Strategy (2021–2026). PMI supports key intervention areas with the highest burden of malaria (Alibori, Atacora, Donga, Oueme, Mono, and Zou) to achieve the greatest reduction in malaria morbidity and mortality. PMI support is also focused on addressing key challenges with the expansion of malaria vector insecticide resistance monitoring to 12 sites and prioritizing the susceptibility testing of new classes of insecticide to allow the deployment of dual active ingredient (AI) ITNs to address insecticide resistance challenges. PMI will also support data quality improvement by strengthening the national malaria SM&E systems with the monthly validation of data at the decentralized health zone (HZ)–level. PMI will continue its support for capacity-building and training of health workers involved in malaria CM both in public and private sectors to ensure full compliance to the new

national malaria treatment policy and guidance. PMI will also help the country reinforce SBC using existing community-level structures and groups (e.g., religious groups, local authorities, and health workers) to improve ANC attendance and the IPTp uptake in 34 HZs where IPTp uptake is low.

PMI promotes accountability through its citizen oversight activities, building the capacity of community members, local government leaders, and health care workers to use health data to monitor performance in the health sector and hold leaders accountable for the availability and quality of health services.

3.4. Key Changes in This Malaria Operational Plan

PMI intends to continue the efforts outlined above. This will include effective use of quality data generated through a more reliable data management system at central and regional levels, incorporating SBC research findings (Benin's 2021 Malaria Behavior Survey; MBS) to influence behavior- and attitude-related determinants of consistent ITN use, IPTp uptake and SMC coverage and adherence, and facilitating decentralization of malaria program management. New activities will include revitalization of community outreach involving the collaboration of religious groups, local authorities, and health workers through the establishment of *comités villageois de lutte contre le paludisme*/village health committees to drive stronger SBC activities. Other changes occurring in CY 2022, and planned to be reinforced throughout CYs 2023 and 2024, include strengthening SM&E systems by shifting from a central-level quarterly malaria data validation and review to monthly validation at the HZ-level. PMI will also initiate support for a pilot of community-level entomological monitoring. Results of this pilot will inform mid- and long-term plans for community-level entomological monitoring. PMI will pilot the use of automated rapid diagnostic test (RDT) readers to estimate RDT positivity rates and explore determinants of provider adherence to malaria treatment guidelines. PMI will foster efforts to optimize in-country data sharing and dissemination to inform planning and decision-making among key malaria control stakeholders. Finally, PMI will support efforts to begin monitoring for *An. stephensi*, an invasive malaria vector recently introduced to the African continent, but not yet detected in Benin. Benin has shown great interest in receiving GAVI's support to implement the RTS,S/AS01 as an additional tool to significantly make an impact in its malaria control efforts. The PMI country team has emphasized its willingness to actively support the Ministry of Health's (MOH's) entities involved in this process, including the NMCP.

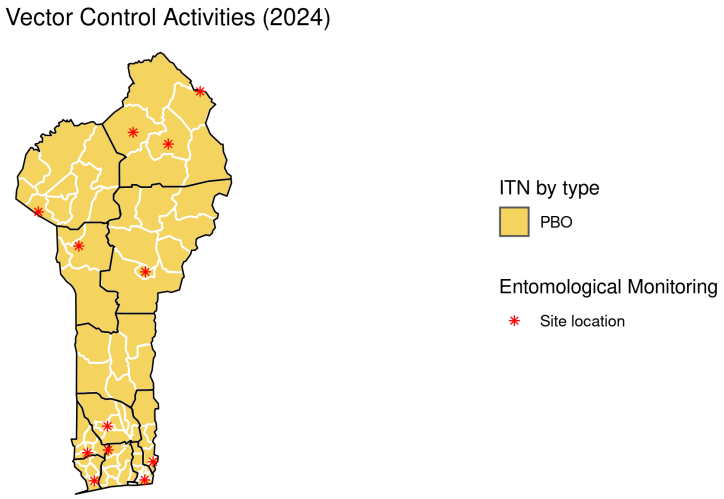
II. OPERATIONAL PLAN FOR FY 2023

1. Vector Monitoring and Control

1.1. PMI Goal and Strategic Approach

The National Integrated Strategic Plan 2020–2024 promotes an integrated vector management strategy, including vector surveillance, insecticide resistance management, continuous and mass distribution for universal access to ITNs, geographically targeted IRS, and LSM. PMI supports the use of all of these interventions, with the exception of IRS and LSM. PMI supports insecticide resistance monitoring and bionomics surveillance in 12 communes (see Figure 1). Global Fund and PMI support mass ITN campaigns every three years, while PMI supports continuous distribution of ITNs via ANC and Expanded Program on Immunization (EPI) channels nationwide. PMI ITN support includes procurement of PBO ITNs, ITN distribution, and promotion of net use. PMI is supporting susceptibility testing of new insecticides to determine which nets would be most effective, including dual AI ITNs.

Figure 1. Map of Vector Control Activities in Benin



1.2. Recent Progress (between October 2020 and September 2021)

With PMI support, the MOH/NMCP and PMI-IRS project conducted the last IRS campaign in Benin; clothianidin/deltamethrin-based insecticides were used. Satellite imagery helped strengthen the monitoring of spray coverage. This effort led to an increase in the number of households found and sprayed during the 2021 IRS campaign compared with previous campaigns. The project shared final results, achievements, challenges, and lessons learned with the MOH and malaria stakeholders during IRS closeout events. The final IRS report is available on the PMI.gov website.

PMI supported capacity-building and results-dissemination of IRS and entomological monitoring activities at the NMCP and Centre de Recherche Entomologique de Cotonou (CREC). CREC researchers presented two posters at the 2021 American Society of Tropical Medicine and Hygiene Annual Meeting. During FY 2021, researchers and scientists from CREC and NMCP published five manuscripts related to USAID-funded activities. Vector control activities included the following:

- Supported entomological monitoring in six sentinel sites in four departments, in partnership with CREC. 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 Report (https://www.pmi.gov/resources/).
- Supported activities collecting data on human/vector behavior in eight sites. Provided TA to CREC for entomological monitoring.
- Supported the procurement and distribution of PBO ITNs to pregnant women and children under five years of age (CU5) nationwide through continuous distribution channels.
- Supported prevention of malaria in pregnancy (MIP) by providing ITNs to women at their first ANC visit.
- Supported ITN durability monitoring (streamlined), by implementing 18-month data collection, monitoring the standard and PBO nets from the 2020 cohort.

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 Benin 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 conduct entomological monitoring in several communes receiving PBO ITNs. These data will help to inform decisions (monitor impact of new nets; describe gaps in protection due to outdoor human/vector behavior). Benin will also start monitoring for the presence of *An. stephensi,* an invasive malaria vector recently introduced to the continent of Africa. *An. stephensi* has not yet been detected in Benin, but the risk of introduction is high due to high habitat suitability. Activities for enhanced surveillance of *An. stephensi* will be included in accordance with the PMI *An. stephensi* action plan guidance for high-risk countries.

PMI is expanding support of entomological monitoring from 6 to 12 sites. In the additional 6 sites, entomological monitoring activities will be done by local communities as a pilot. Entomological monitoring will include insecticide resistance and vector bionomics monitoring; however, in pilot sites, these activities will be modified to fit the

capabilities of the community-based staff. Susceptibility testing for new classes of insecticides including clothianidin, pyriproxyfen, and chlorfenapyr is a priority to mitigate insecticide resistance. PMI continues to provide TA to strengthen the capacity of local research institutions.

Summary of Distribution and Bionomics of Malaria Vectors in Benin

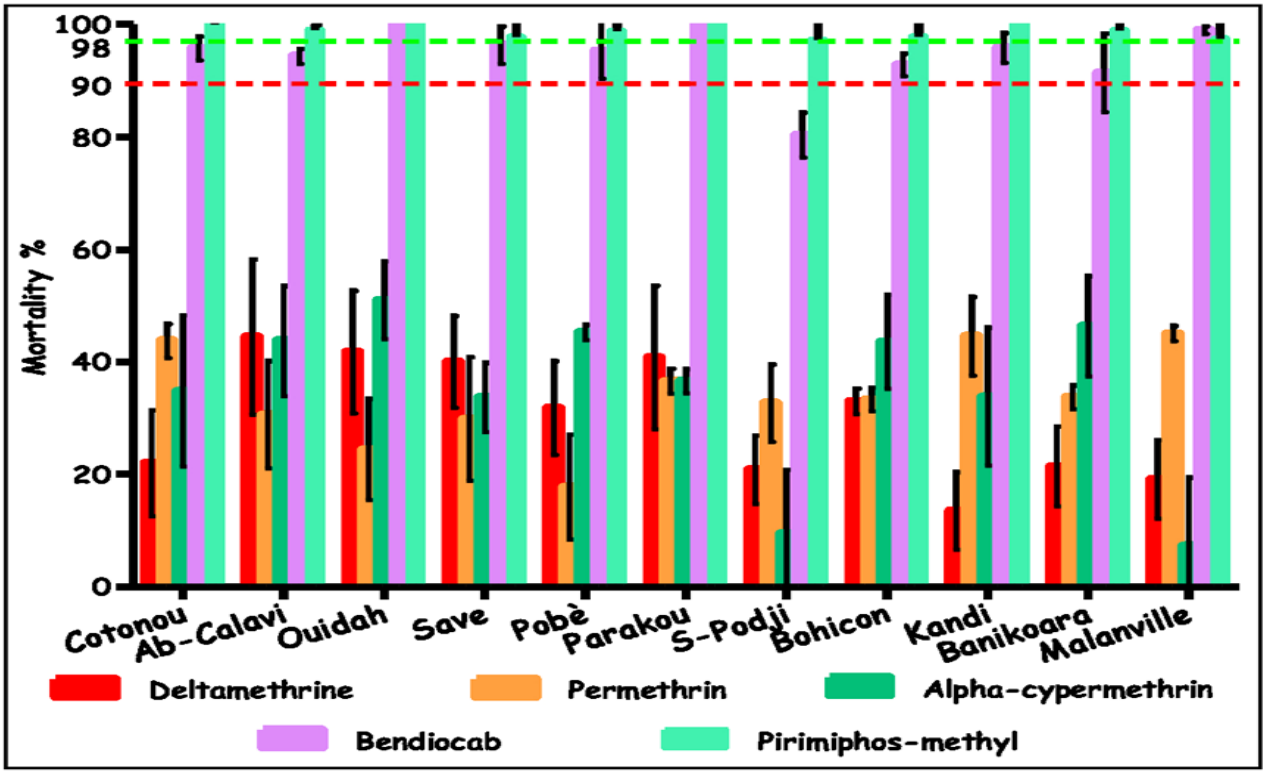
As of 2021, the primary malaria vector in Benin is *An. gambiae* s.l. (91.32 percent of *An. coluzzii* and 7.73 percent *An. gambiae* s.s.); the secondary vector is *An. funestus* s.l. There is a consistently higher abundance of *An. gambiae* s.l. over vector *An. funestus* s.l. throughout the country. Peak transmission season is from April to July. Currently, there are no studies on preferred resting locations of malaria vectors. Resting behavior is evaluated only by pyrethrum spray catches done indoors. However, exophily rates, determined by counting the number of mosquitoes that escape a household, measured in past studies in other sites in Benin show rates ranging between 22 and 44 percent after IRS withdrawal.[1]

Status of Insecticide Resistance in Benin

Insecticide resistance testing was performed in five communes in 2021. Susceptibility of local vectors to different insecticides was tested for bendiocarb, pirimiphos methyl, alpha-cypermethrin, with/without PBO, deltamethrin with/without PBO, clothianidin, and chlorfenapyr. All mosquito populations tested were susceptible to pirimiphos methyl (mortality>98 percent). However, a decrease in the susceptibility of vectors to bendiocarb (mortality between 90 percent and 98 percent) was observed in the localities of Toffo, Zogbodomey and Ifangni and resistance to this insecticide was noted in Abomey-Calavi and Semè-Kpodji. For pyrethroids (deltamethrin and alpha-cypermethrin), *An. gambiae* s.l. mosquitoes were resistant in all districts (mortality<90 percent; see Figure 2 below; https://www.pmi.gov/resources/). As of 2021, PBO partially restores susceptibility to pyrethroids in *An. gambiae* s.l. populations (mortality range: 43.3 to 97.91 percent); also, *An. gambiae* s.l. populations in Benin are currently susceptible to clothianidin and chlorfenapyr (mortality >98 percent).

[1] Ossè, Razaki A., Rock Aïkpon, Ghélus Louis Gbédjissi, Virgile Gnanguenon, Michel Sézonlin, Renaud Govoétchan, Arthur Sovi, and Martin Akogbéto. “A Shift from Indoor Residual Spraying (IRS) with Bendiocarb to Long-Lasting Insecticidal (Mosquito) Nets (LLINS) Associated with Changes in Malaria Transmission Indicators in Pyrethroid Resistance Areas in Benin.” Parasites & Vectors 6, no. 73 (16 March 2013): doi: 10.1186/1756-3305-6-73.

Figure 2: Mortality Rate after Exposure of An. Gambiae s.l. Collected in Abomey-Calavi, Cotonou, Ouidah, Parakou, Pobè, and Save to Deltamethrin, Alpha-Cypermethrin and Pirimiphos-Methyl Using the World Health Organization Tube Test



1.3.2. Insecticide-treated Mosquito Nets

PMI continues to support procurement and distribution of ITNs through continuous distribution. PMI also supports SBC to improve use and care of ITNs and to mitigate against misuse. PMI supported the durability monitoring of PBO nets distributed during the 2020 mass distribution and will not support the durability monitoring of PBO nets distributed in the 2023 campaign.

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

Insecticide-treated Mosquito Net Distribution in Benin

In Benin, ITNs are distributed via mass campaigns every three years with a target of universal coverage of one net per two people. ITNs that remain after campaigns are transitioned for continuous distribution. Continuous distribution channels are to pregnant women at ANC and children at EPI clinics. The country transitioned from standard to PBO nets during its 2020 mass distribution campaign. There are plans to distribute dual AI nets in select districts, based on resistance data, during the 2023 campaign. Of the total 8,948,775 million nets required for calendar year (CY) 2023 mass campaigns, PMI is procuring 557,103 PBO ITNs, Global Fund plans to procure 6,996,795 PBO ITNs,

and the Government of Benin (GOB) had planned to procure 500,000 PBO ITNs but has recently canceled this plan leading to an overall gap of 894,000 ITNs. During the CY 2023 campaigns, there are plans to distribute dual AI nets in select communes based on mosquito resistance data. For CY 2024, PMI plans to procure 835,000 PBO nets for continuous distributions.

There will be a gap of 265,676 ITNs to be filled by continuous distribution during the CY 2024.

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

Of note, a durability monitoring study of PBO ITNs was conducted after the 2020 mass-distribution campaign and this will not be repeated after the 2023 campaign. Benin will focus on assessing the epidemiological and entomological impact of PBO ITNs.

1.3.3. Indoor Residual Spraying

PMI does not support IRS in Benin.

2. Malaria in Pregnancy

2.1. PMI Goal and Strategic Approach

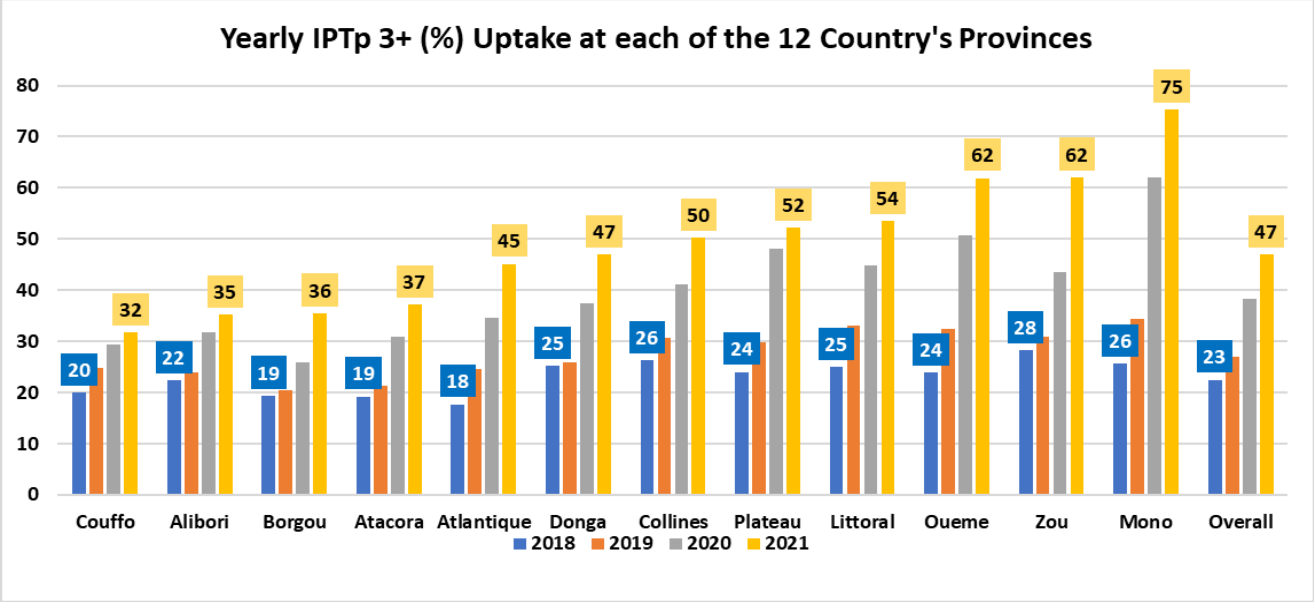
PMI will continue supporting the national strategy for MIP which includes providing ITNs at the first ANC visit and facilitating their effective use, ensuring pregnant women have access to a minimum of three doses of IPTp in malaria endemic areas starting at 13 weeks gestational age, and ensuring prompt access to quality CM of malaria per World Health Organization (WHO) guidelines.

2.2. Recent Progress (between January 2021 to December 2021)

HZ-specific administrative coverage rates for recommended ANC1 visits remained above 90 percent. Despite the adoption of the 2016 WHO recommendation for a minimum of eight ANC contacts and the NMCP's revised guidelines to provide for up to five doses of IPTp at monthly intervals beginning in the second trimester of pregnancy until delivery, a gap between ANC attendance and receipt of IPTp persists. However, routine data in the country's 12 departments show an increase in the national IPTp3+ uptake from 23 percent of eligible women in 2018 to 47 percent in 2021. Furthermore, in 2018, none of the departments had more than 30 percent IPTp3+ uptake, but by 2021, 100 percent (12/12) reported greater than 30 percent IPTp uptake. In addition, 6 of 12 departments reported at least 50 percent IPTp3+ uptake (see Figure 3 below). In 2021, an MBS survey was conducted in Benin. The survey aimed mainly at identifying demographic and socioeconomic determinants to IPTp uptake and ITN use and other aspects including perceived susceptibility to malaria and consistent self-efficacy to use

bed nets. The sample enrolled in the study included 3,600 households, 4,075 women of childbearing age, and 1,200 men, all from the country's three key geographic zones (north, center and south [coast]). The survey was not designed to provide coverage estimates but preliminary results showed comparatively higher uptake rates among the survey's respondents of IPTp1+ and IPTp3+. The MBS also demonstrated an increase in the overall proportion of women who attended ANC at least once during their most recent pregnancy. Increased ANC attendance likely contributed to improvement in IPTp uptake throughout the past few years, particularly in light of the 50 percent ANC4 attendance rate shown per the Benin 2017–2018 DHS. Expansion of community ANC outreach and IPTp administration by midwives is thought to have contributed to improving IPTp uptake, at least in some of the communes in the Southern coastal part of the country that were performing poorly. However, there continues to be a dearth of knowledge on intermediate determinants of behavior change in Benin, and additional examination of determinants of provider behavior is needed to understand why IPTp does not track with ANC attendance. A 2015 study showed that while pregnant women had adequate knowledge of ANC and its importance, sociocultural factors such as religion, husbands' level of education, nature of pregnancy (intended or not), patients' ages, and women's behaviors toward pregnancy (concealment or not) affected their ANC attendance. Concealment of pregnancy was the reason provided by 38 percent of women for not attending ANC early. Women indicated that they hid their pregnancy in the first trimester for several reasons, including awaiting pregnancy announcement ceremonies (56 percent), feeling ashamed to be pregnant (76 percent), and gaps in knowledge or fear of witchcraft or evil spirits (66 percent). Final results from Benin's MBS are anticipated to improve understanding of barriers and facilitators of IPTp uptake and enable tailoring of SBC activities to improve uptake.

Figure 3. IPTp3+ Uptake by Year and Department, Routine Health Information System, Benin 2018–2021

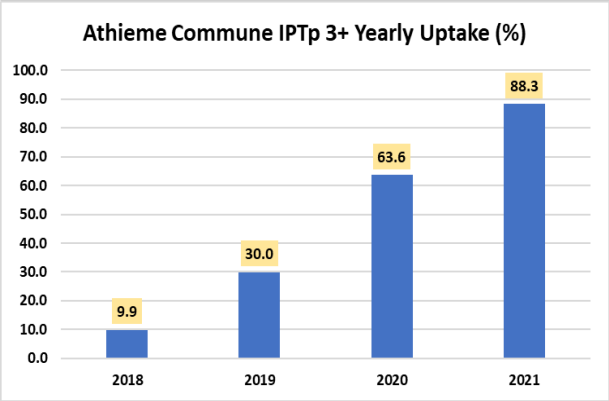


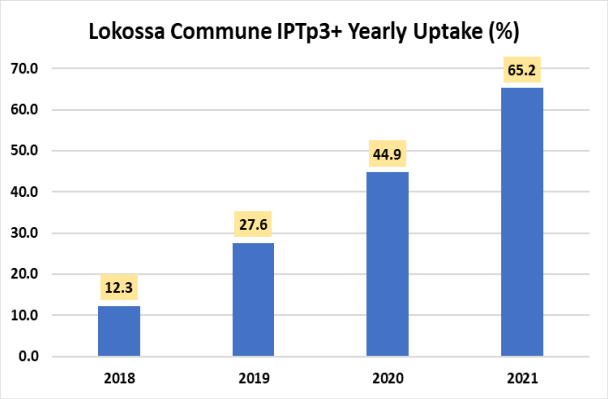
The NMCP initiated ANC outreach in 2017 as a pilot intervention (consisting of community distribution of SP, mobilization, and referral of pregnant women to health facilities) with PMI funding. The yearly geographical scope ranged from two HZs (five communes) in 2017 at the start of the intervention to four HZs (10 communes) by 2019. In 2020 and 2021, community outreach activities aimed at IPTp improvement took place in three HZs (six to eight communes; see Figure 6). The approach uses outreach strategies where low-performing HZs are identified using data in the DHIS2, and targeted for ANC outreach activities, in which teams consisting of health facility staff and community health workers (CHWs) go to rural areas to sensitize women, provide ANC, and administer IPTp.

The community outreach strategy has contributed to a significant improvement of IPTp3+ uptake, as shown in the Mono Department where uptake rates increased from 12.3 percent and 10 percent in Lokossa and Athieme communes in 2018, respectively, to 65.2 percent and 88.3 percent in these communes in 2021, respectively (see Figure 4). Gradual geographical expansion of the strategy to include additional low-performing communes in the 34 HZs of Benin is planned from 2022 through 2024. To ensure quality implementation of these community outreach activities, HZ management teams will develop work plans based on root cause analysis of barriers to IPTp3+ uptake. Memoranda of understanding will be signed by NMCP and HZ (and/or commune) officials that include clearly defined standards with indicators to assure accountability. A robust system for monitoring progress will be established and used for continuous quality improvement. The NMCP will also continue its support for optimal national roll-

out of WHO's most up-to-date ANC guidelines, as well as their effective availability to health providers.

Figure 4: Iptp 3+ Uptake Yearly Rates at Two Mono Department's Communes with Community Outreach Activities (2018–2021).





2.3. Plans and Justification for FY 2023 Funding

With FY 2023 funding, Benin will continue to support MIP activities as described in the **MIP Recent Progress section**. The FY 2023 funding tables contain a full list of MIP activities that PMI proposes to support in Benin with FY 2023 funding. Please visit www.pmi.gov/resources/malaria-operational-plans-mops for these FY 2023 funding tables.

Efforts will continue to strengthen the implementation of IPTp in public and private structures and on extending community IPTp. The community strategy has demonstrated remarkable potential to improve uptake of IPTp3+ in areas of low uptake; during the four years of implementation, IPTp3+ has increased from 10 to 20 percent in targeted areas.

With the new district-level Integrated Communication Plan, activities and messages will be designed to sensitize pregnant women to attend ANC services through existing community-level platforms including village women's groups and local opinion leaders.

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

PMI/Benin will continue to procure SP. The SP gap for CY 2023 is estimated to be 817,770 per the commodities gap analysis. This is planned to be addressed through a reprogramming of pipeline from previous MOPs. CY 2024's gap of 721,110 will be covered within MOP 2023 funding.

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

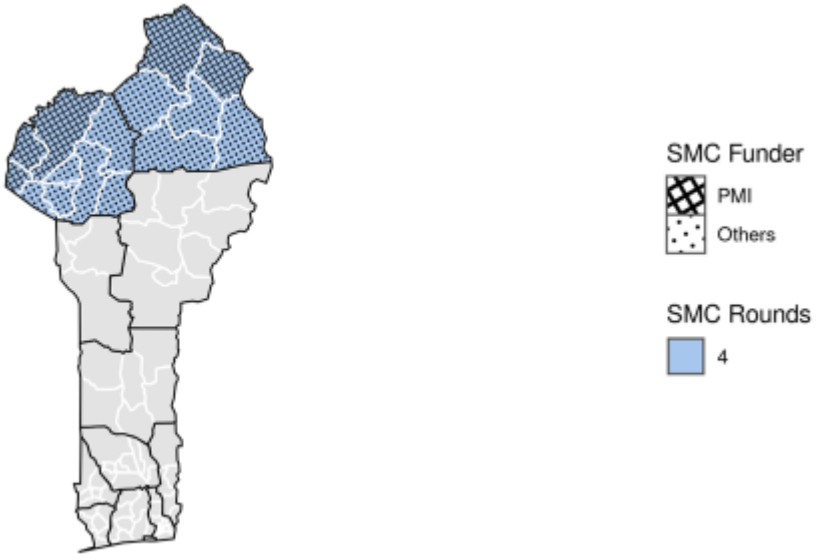
3. Drug-based Prevention

3.1. Seasonal Malaria Chemoprevention

PMI Goal and Strategic Approach

The NMCP's Malaria Strategic Plan promotes SMC as a malaria prevention intervention in areas with high seasonal malaria transmission. PMI supports the use of SMC as defined in WHO guidance. SMC began in Benin in 2019 with support from PMI and the Global Fund. As of 2021, 15 of the total 34 eligible communes in six HZs implement SMC. From 2019 to 2021, PMI has consistently supported SMC, in the same two HZs (comprising five communes) in the northern part of the country through its bilateral partner (see Figure 5). PMI has also supported sulfadoxine-pyrimethamine + amodiaquine (SPAQ) procurement and implementation, which includes planning, training, paying distributors, and conducting SBC activities.

Figure 5. Map of Seasonal Malaria Chemoprevention Implementation in Benin 2021



3.2. Recent Progress: July to October 2021 Campaign

In 2021, PMI supported the SMC campaign, achieving an overall coverage ranging from 91 to 95 percent (cycles 1 to 4) of the 123,816 children aged 3 to 59 months targeted at the start of the campaign (the proportion of children covered via PMI-supported SMC represented 30 percent of the total number of children covered by the SMC campaign regardless of the source of funding). PMI's support covered a geographical scope that consisted of five communes located in two HZs. SMC activities in the remaining 10 communes (four HZs) were supported via the Global Fund and Catholic Relief Services. PMI's approach consisted of one directly observed therapy dose followed by two days of medication given by the child's guardian. This approach was used at all five

communes throughout the three SMC campaigns in 2019, 2020, and 2021. In Global Fund–supported communes, all three days of SMC medication (SPAQ) were given via directly observed therapy. Throughout the three SMC campaigns since 2019, neither the age category of targeted children nor the number of cycles has changed.

Benin will continue to support SMC activities as described in the **Recent Progress section**. No changes to the implementation approach or criteria, namely age of targeted children and the number of cycles, are expected. In 2019, the NMCP identified 34 communes eligible per WHO-recommended criteria for SMC implementation. As of 2021, 15 of these 34 communes have been, and will continue to be, covered for the next two to three years. Supported through the BMGF and Catholic Relief Services, the digitalization of the campaign has contributed since its onset in 2020 to ensuring higher efficiency and better-quality data and commodities management. Quality training and supervision remain a challenge to an optimal digitalization process and will be addressed throughout the upcoming campaigns. Geographical expansion is not planned for the 2022 campaign, but efforts will likely be made by the NMCP to ensure larger coverage of CU5 in the eligible areas in the next few years. A simple descriptive analysis of malaria incidence trends in CU5 throughout the past four to five years at all districts that have so far been covered by SMC implementation implies that starting the campaign in June instead of July in Atacora province may be more effective in mitigating the early transmission season–related peak in malaria cases, a peak that has so far thought to be occurring in July. This trend was confirmed with Entomological Inoculation Rate data that showed a peak from June in Atacora and Donga Departments (Copargo, Djougou, and Kouande) and from July in Alibori department (Bembereke, Gogounou, and Kamdi; (CREC Entomological Inoculation Rate Trend Report). This timing will be taken into account for the upcoming 2022 SMC campaign.

Benin is actively involved in the SMC alliance, along with other SMC-implementing countries in efforts to define quality implementation standards and improve campaign evaluations and coverage and adherence estimates. These efforts aim at achieving WHO's impact target of cutting case incidence during the high transmission by at least 75 percent.

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 Benin with FY 2023 funding. Please visit www.pmi.gov/resources/malaria-operational-plans-mops for these FY 2023 funding tables.

In Benin, SMC has been implemented every year since 2019 via door-to-door campaigns in eligible districts for four months during the peak malaria transmission season. FY 2023 funding will be used to contribute to the implementation of SMC-related activities, including quantification and procurement, meeting coordination to

review SMC targets, SMC tool and material review and update, microplanning, supplying HZs with essential medicines and equipment, training of distributors and supervisors, community mobilization, and monitoring and evaluation (M&E) review and validation processes. There will be no changes in targeted districts or age groups; however, starting in 2022, SMC campaigns will explore methods to improve uptake assessments including post-campaign adherence surveys. The NMCP will support SBC activities focused on demand generation at the community level through collaborations with women's groups and civil society organizations. For more information, please refer to the **SBC section** below.

The SPAQ Gap Analysis Table in the annex provides more detail on the planned quantities and distribution channels.

The gap for SPAQ in CYs 2023 and 2024 is estimated per the commodities gap analysis at 536,822 and 600,324, respectively. The gap will be addressed together with the Global Fund.

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

3.4. Other Drug-based Prevention

Benin is one of several countries participating in a Unitaid-supported project aimed at evaluating the implementation of intermittent preventive treatment in infants (IPTi+). IPTi+ differs from the current WHO-recommended IPTi in that there are more frequent interactions between the child and the health system. In the Benin model, children will receive a minimum of eight SP treatments, coinciding with the MOH's recommended immunization schedule for children. This project is to be implemented in one HZ (three districts) in the North-Western province of Borgou, and in the Southern provinces of Zou and Couffo in 2022.

4. Case Management

4.1. PMI Goal and Strategic Approach

The Benin National Strategic Plan 2017–2021 promotes comprehensive CM according to WHO guidelines with the following specific goals:

- Test 99 percent of all suspected malaria cases in public and authorized private health facilities and at the community level.
- Correctly treat 99 percent of all confirmed malaria cases according to national guidelines in public and authorized private health facilities and at the community level.

- Correctly manage 100 percent of severe malaria cases according to national guidelines in public and authorized private health facilities.

PMI supports the Benin NMCP approach through assistance to national-level policy and programmatic activities, commodity procurement and distribution, and support for facility- and community-level CM service delivery–strengthening in 17 communes (see Figure 6 below). This includes the provision of TA, supportive supervision, and other CM activities. PMI also supports an additional 29 communes with a limited package of services including on-site CHW supervision and training in leadership, management, and governance to support decision-making and community health financing. The NMCP implements CM interventions in the remaining communes with support from the Global Fund and others.

PMI and Global Fund procure nearly all malaria commodities (e.g., ACTs, RDTs, SP, parenteral artesunate, and RAS) used in Benin. PMI works with staff from the NMCP, MOH, and Global Fund to conduct commodity quantification exercises, plan and ensure timely commodity procurement, and support distribution and monitoring efforts.

The GOB (upon the technical work of Conseil National de Lutte Contre le SIDA, la Tuberculose, le Paludisme, les Hépatites et les Épidémies/National AIDS Council on Sexually Transmitted Infections, Tuberculosis, Malaria, Hepatitis, and Epidemics [CNLS-TP], MOH, Ministries of Social Affairs, Agriculture, Environment) approved the new community health policy in May 2020 based on the following vision: “By 2030, Benin has an integrated, efficient, resilient and sustainable community health system based on the ‘One Health’ approach through an improved, permanent availability of basic curative, promotional, preventive and palliative care services and full participation of all community stakeholders for the well-being of all.” The development and roll-out of the new policy is being coordinated by the MOH with the support of the executive secretariat of the CNLS-TP . The policy includes establishing two cadres of paid CHWs. The first, *relais communautaire* (RC), will conduct prevention and promotional health services, including home visits and SBC activities. RCs will assess CU5 for fever and refer febrile children to the second cadre of community-level worker called *agent de santé communautaires qualifiés* (ASCQ). The ASCQ are nurses or midwives who will test children for malaria using an RDT and treat those who are positive with ACTs. The ASCQ can administer pre-referral rectal artesunate to CU5 with severe disease, and they will refer children with severe disease to health facilities. In addition, ASCQs will supervise RCs.

Benin’s CHW policy is in transition; in 17 communes supported by PMI/USAID, the current policy continues to be implemented, whereas in 20 communes supported by the United Nations Children’s Fund (UNICEF), the Islamic Bank, and the GOB, the new

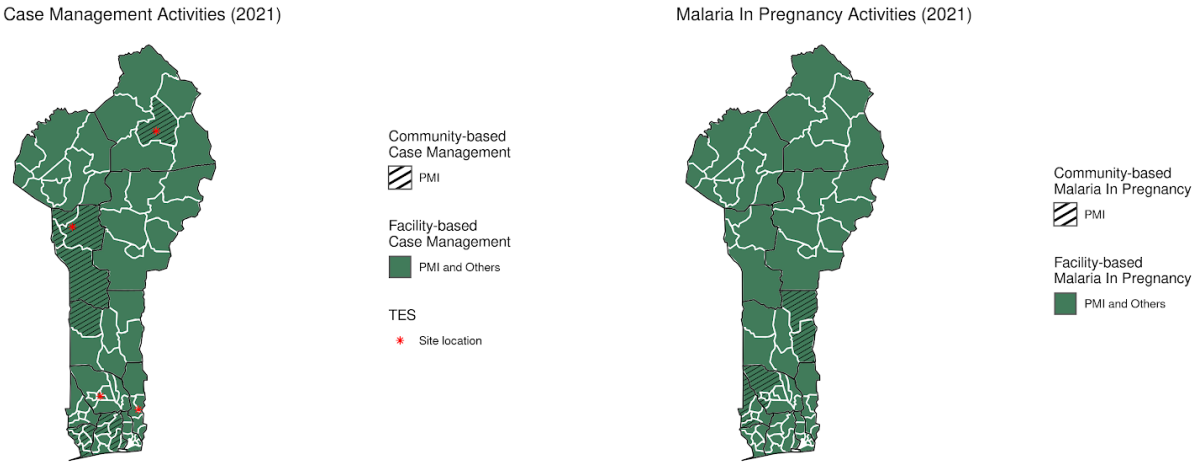
policy is being piloted. Discussions are underway to extend this pilot implementation to 32 communes in 2022.

Key challenges include potential barriers to effective and timely access to malaria CM resources in the community and the optimal severe malaria pre-referral processes. The new community health policy may contribute to these challenges since the policy implies that RCs are excluded from testing and treating malaria; they are expected to defer the testing and treatment to the ASCQ, which may potentially delay effective and timely CM. The new cadre of ASCQs—who would be sitting at the *arrondissement* level, an administratively higher-entity level consisting of several villages—will require training. Operational implementation plans for this training are not yet clearly defined in a financial sustainability roadmap.

In the 17 PMI-supported communes, 1,740 CHWs received support in 2021. PMI also provided on-site supervision, coaching, and training for sustainability of funding CHW payment to an additional 2,664 CHWs in 29 communes in four focus departments (Alibori, Atacora, Plateau and Oueme) through their bilateral partner, Integrated Health Services Activity (IHSA).

PMI supports pre-referral treatment with RAS for CU5 with severe malaria in all 77 communes.

Figure 6. Map of Case Management, Community Health and Malaria in Pregnancy Service Delivery Activities in Benin, 2021



4.2. Recent Progress (between January 2021 and December 2021)

PMI-supported CM strengthening activities continued to be impacted by the COVID-19 pandemic and the associated restrictions and mitigation measures implemented by the GOB. CM strengthening activities were impacted by staffing shortages, funding

limitations and technological challenges. PMI worked with the NMCP and partners to adjust to these challenges and implement the following:

National-level Case Management Activities

- Supported activities to improve policy, governance, strategy, and coordination of the national pharmaceutical management system, including:
    - Trained the head pharmacist and supply chain manager at the National Public Health Department, 34 supply chain managers, 7 regional supply chain supervisors, 69 health workers, and 124 local supply chain committees on supply management.
    - Provided computer equipment and internet connection to facilitate supply chain improvement.
    - Conducted a national quantification workshop.
    - Developed a national pharmaceutical catalog

- Launched a technical working group (TWG) of the newly formed Agence Nationale de Contrôle de Qualité des Produits de Santé et de l'Eau (ANCQ) to ensure availability of health products in the marketplace and monitor the quality of these products:
    - ANCQ TWG developed a monitoring protocol and training tools for 2022 implementation.
    - ANCQ developed tools for conducting internal audits of health products and with staff training beginning in 2022.

- Continued to improve CM services for severe malaria:
    - Trained 26 department-level trainers and 87 pediatric emergency service staff in the Triage, Evaluation and Emergency Treatment approach.
    - Began data collection using tools for monitoring adherence to severe malaria treatment and malaria mortality in two HZs: Alibori and l'Ouémé.
    - Distributed updated training materials.
    - Continued to support the use of injectable artesunate as the first-line treatment for severe malaria (followed by a full course of ACTs) in Benin's referral hospitals.
    - Continued to support the implementation of rectal artesunate for pre-referral treatment for CU5 with severe malaria.

- Strengthened quality assurance of malaria diagnostics in private health facilities and laboratories through training, professional development, and laboratory supervision.
- Started the roll-out of digitalized Outreach Training and Supportive Supervision (OTSS) tools for use in all 12 departments.
- Monitored the NMCP/CNLS-TP efforts to launch the new CHW policy which includes the introduction of a new health care worker cadre, ASCQ. ASCQs would receive enhanced training and would cover an entire commune. The NMCP's expectation is that the new policy will be pilot-tested in a few areas followed by a gradual roll-out.

Commodities

- Supported the procurement and distribution of two million malaria RDTs for nationwide use, accounting for approximately 35 percent of needs.
- Supported the procurement and distribution of two million ACTs for nationwide use, accounting for approximately 44 percent of needs.
- Supported the procurement and distribution of approximately 200,000 vials of parenteral artesunate for nationwide use, accounting for approximately 40 percent of needs.
- Supported the procurement and distribution of 6,000 rectal artesunate suppositories for use in health facilities for pre-referral treatment of CU5 with severe malaria, accounting for approximately 70 percent of needs.

Facility-level

- Trained 93 supervisors in on-site training and supportive supervision.
- Conducted 312 on-site training and supportive supervision visits in 312 health facilities (IHSA Year 3 report and NMCP supervision report).
- Conducted 11 on-site trainings in 5 departments with 579 providers trained through collaboration between private sector associations and commune health teams (IHSA Year 3 report).
- Conducted OTSS for malaria diagnosis in 49 hospitals that use microscopy.
- During the past reporting period (FY 2021), 97 percent of health facilities had their malaria clinical performance assessed in all areas supported by the mission bilateral activity. The report showed an increase from 70 to 79 percent in health facilities that reached a minimum standard score for clinical management of malaria of 80 percent with a 36 percent improvement in malaria diagnostic tests. The percentage of health facilities meeting the minimum performance standard for malaria diagnostic tests increased from 82 percent to 92 percent, and the percentage of pregnant women attending ANC who received IPTp3+ under direct observation of a health worker increased from 37 percent to 46 percent (IHSA Year 3 report).

- Conducted data quality assessments for 145 health facilities (IHSA Year 3 report).
- Coached 2,852 health workers and 1618 CHWs (57 percent) during the three years of the bilateral project IHSA project.

Community-level

- Conducted 34 on-site training and supportive supervision or mentorship visits reaching 1,020 CHWs.
- Supported CHW activities in four departments where PMI's bilateral integrated health project (IHSA) is focused: Alibori (three HZs); Atacora (three HZs); Plateau (two HZs) and Oueme (three HZs). An estimated 3,000 CHWs received support (25 percent of CHWs nationwide).
- Please note that recent progress with monitoring antimalarial efficacy and the Therapeutic Efficacy Studies (TES) approach is presented in the **Plans and Justification for FY 2023 Funding section** below.

PMI/Benin co-funded a malaria-specific health facility survey in a nationally representative sample of health facilities to assess malaria CM practices and health worker performance and attitudes. Preliminary results from the survey suggest there is room for improvement in management of suspect malaria cases. For example, 58 percent (95 percent confidence interval (CI): 41 to 73 percent) of suspect cases were tested for malaria by the health worker during the consultation. Among those tested who were positive, 84 percent (95 percent CI: 77 to 89 percent) were correctly treated; however, among those who tested negative for malaria, 26 percent (95 percent CI: 16 to 40 percent) received antimalarial treatment. Of the true malaria cases confirmed by the survey team during the re-examination, 79 percent (95 percent CI: 68 to 87 percent) had received an appropriate antimalarial during the visit. A high level of provider knowledge about CM was associated with more than a two-fold increase in the odds of correct CM (2:3 odds [OR]; 1.2 to 4.5, 95 percent CI) (2021 Benin HFS draft report, report in progress). Results of this survey will be used when designing updates to training materials.

PMI/Benin supported an MBS to describe malaria-related behaviors including prompt care seeking for febrile illness and their ideational determinants. Preliminary results from this survey will inform SBC activities at multiple levels of the health care system.

4.3. Plans and Justification for FY 2023 Funding

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

National-level Case Management Activities

PMI/Benin will continue to support national-level CM activities as described in the **CM Recent Progress section.**

Commodities

Please refer to the ACT, artesunate suppository, injectable artesunate, and RDT Gap Analysis Table in the annex for details on planned quantities and distribution channels.

PMI/Benin will continue to procure ACTs, artesunate suppositories, injectable artesunate, and RDTs, for CM services as described in the **CM Recent Progress section.** Quantities of these commodities may be adjusted through reprogramming based on contributions of partners and updated gap analyses.

Facility-level

PMI/Benin will continue to support OTSS for health facility staff and supervisors to support improving adherence to CM guidelines and use of data for decision-making as described in the **CM Recent Progress section.**

Community-level

PMI/Benin will continue to support OTSS activities at the community level as described in the **CM Recent Progress section.** There are currently no plans for CHW compensation through direct PMI funding in Benin; however the team is developing an agreement with the MOH to pay a portion of CHW wages with the proceeds from the sale of PMI-donated commodities.

4.4. Monitoring Antimalarial Efficacy

Table 1. Ongoing and Planned Therapeutic Efficacy Studies (TES)

Ongoing Therapeutic Efficacy Studies (TES)			
Year	**Site name**	**Treatment arm(s)**	**Plan for laboratory testing of samples**
2022*	Bohicon, Dassa, Parakou	AL	TBD
Planned TESs (funded with previous or current MOP)			
2024	TBD	AL	TBD

AL=artemether-lumefantrine; TBD=to be determined

*Proposed start date is June 2022 and is subject to change.

Other Planned Case Management Activities

PMI/Benin will support the use of RDT automated readers to evaluate the test positivity rate and provider behaviors in malaria diagnosis and treatment aimed at improving adherence to treatment guidelines.

5. Health Supply Chain and Pharmaceutical Management

5.1. U.S. President's Malaria Initiative Goal and Strategic Approach

PMI's goal and strategic approach is aligned to the NMCP's objective of securing the timely availability of quality commodities to support the diagnosis, prevention, and treatment of all types of malaria cases for the Beninese population.

Following the government decree N° 2020-324 of June 24, 2020, the Centrale d'Achat des Medicaments Essentiels (CAME)/Central Medical Store was dissolved on September 3, 2020, and replaced with a new management structure and renamed Société Béninoise pour l'Approvisionnement en Produits de Santé/Central Medical Stores (SoBAPS). SoBAPS S.A. is a public limited company whose capital is 100 percent owned by the state. SoBAPS will continue to support the same functions of ensuring supply, management, storage, and distribution of medical products and equipment, including ACTs, laboratory reagents and consumables, ITNs, and other medical products.

PMI supported the implementation of the five-year supply chain system strengthening action plan that started in 2016. This included support for interventions related to the improvement of supply chain governance, integration and harmonization, quantification, procurement, warehousing and distribution, Logistics Management Information System (LMIS), human resources for supply chain management, malaria commodity quality assurance, and system performance monitoring. This strategic plan must be updated to address new supply chain challenges due to recent health sector reforms.

Together with the NMCP, Global Fund, and other implementing partners, PMI will continue to procure antimalarials and other commodities based on the NMCP's national quantification and procurement plan. Reception and distribution of commodities is coordinated by the NMCP and SoBAPS. The pharmaceutical and diagnostic commodities are stored in SoBAPS's warehouses at the central level before transferring to regional warehouses which deliver them to HZs depots. PMI does not support their distribution to the lower levels but provides TA to strengthen the supply chain system countrywide through the above-listed interventions. However, PMI does support the distribution of LLINs to service delivery points through the use of freight forwarders to carry out in-country distribution.

Benin has adopted a "*panier commun*" or "common basket" system for the management of all donor-procured commodities and for their distribution. A pull strategy is used from the central level to the zonal depot except for products intended for community levels where the push system is used to grant quantities of malaria commodities to Dépôt Répartiteurs de Zone/zone depots (DRZS). The same principle is applied from the zonal depot to health facilities and CHWs. Benin has also recently experimented in some

DRZs with the grouped delivery of products to health facilities via push, whereas CHWs continue to pick up their supplies from the health facility during monthly follow-up meetings.

The NMCP closely coordinates with SoBAPS to ensure malaria medicines and other commodities are available. Additionally, it works with the new Benin Agency for Pharmaceutical Regulation (ABRP) to ensure regulatory functions and compliance on malaria-related issues. The strategy is to use different tools, including the LMIS, end-use verification (EUV) survey, joint supervision visits, and weekly monitoring summaries, to give feedback and to improve supply chain management.

Specifically, the NMCP strategic approach to supply chain–strengthening includes the following:

- Provide free access to ACTs and RDTs for CU5 at the community level and at health facilities.
- Provide free access to prevention and treatment for pregnant women.
- Integrate antimalarial commodities into the national supply chain, including conducting EUVs that include commodities for other priority programs.
- Scale up injectable artesunate in the public sector for severe malaria treatment.
- Ensure availability of malaria commodities for adolescents and adults (e.g., ACTs, injectable artesunate, and RDTs).
- Implement a common basket approach to secure access to products at the health facility and community levels regardless of the funding source and to ensure rational use.
- Conduct routine distribution of ITNs and mass campaigns supported through the use of Young Logistician Professionals (YLPs).
- Conduct annual consumption and morbidity-based quantification exercises and develop supply plans.
- Review quarterly supply plans and conduct inventories to make necessary adjustments to avoid stockouts or overstock of products at the different levels of the supply chain.
- Strengthen data collection, visibility, and analysis for malaria commodities through the utilization of the Système de Visualisation des Données Logistiques and the scale-up of the electronic Logistics Management System (eLMIS) mechanism nationwide.

5.2. Recent Progress (between October 2020 and April 2022)

- Provided TA to the NMCP on quantification, supply plans, Procurement Planning and Monitoring Report for malaria (PPMRm), Global Health Supply

Chain Program-Procurement and Supply Management (GHSC-PSM) Coordination, EUV, etc.
- Provided TA to strengthen implementation of the common basket approach.
- Assisted with ITN distribution with the help of PMI-supported YLPs.
- Continued to provide closer support to the supply chain (inventory, stock management, product ordering) through the work of the YLPs in support of facilities and depots in HZs.
- Finalized and implemented the data visualization platform that will receive funding from other donors for roll-out and will support all health programs including NMCP.
- Updated and rolled out the A7 tracer commodities reporting form and strengthened monthly reporting (100 percent of DRZS) report on A7 format and this report is entered into DHIS2 and e-SIGL).
- Started pilot implementation of electronic Logistics Management Information System (eLMIS) in three departments and started the national expansion of the system to improve data.
- Contributed to the SoBAPS regional warehouse extension to ensure good storage conditions for the procured antimalarial commodities as recommended in the economic and logistic study conducted in 2018.
- Conducted assessment of last-mile distribution.

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 Benin with FY 2023 funding. Please visit www.pmi.gov/resources/malaria-operational-plans-mops for these FY 2023 funding tables.

In this year, Benin will continue to support the following activities to strengthen the supply chain:

- Provide close support to the supply chain at the peripheral level (inventory, stock management, product ordering, reporting) through the work of the YLPs in support of health facilities and HZ depots.
- Develop a sustainability plan for the YLP program.
- Support routine LLIN distribution.
- Contribute to the mass distribution campaign of LLINs.
- Reinforce the reorganization of LLIN stock in the DRZS and health facilities to improve traceability and visibility.
- Contribute to the continuous availability of commodities (e.g., ACT, injectable artesunate, RAS, RDT, SP, SPAQ) at all levels of the supply chain.

- Support the NMCP in the annual quantification and the quarterly reviews of the supply plan.
- Continue support for reporting through DHIS2/SDVL utilizing the A7 reporting form.
- Continue supporting the LMIS through the scale-up of the eSIGL.
- Support the realization of the EUV study in all departments.
- Continue to strengthen capacity of SoBAPS, the national pharmaceutical quality assurance and regulation entity, in the quality control of health products and the Beninese Agency for Pharmaceutical Regulation in the fight against substandard and counterfeit pharmaceuticals.
- Consider the design of supply chain training modules and the use of eSIGL through the DSI/MOH e-learning platform.

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

6. Social and Behavior Change

6.1. U.S. President's Malaria Initative Goal and Strategic Approach

PMI's SBC support to the NMCP's Malaria National Strategy for Malaria Social and Behavioral Change Communication 2021–2025 (Stratégie Nationale de Communication pour le Changement Social et Comportemental contre le Paludisme 2021–2025; SNCCSC) fully aligns with and contributes to country's vision of "a Benin without malaria by 2030" through ensuring universal access to malaria prevention and correct treatment of malaria to reduce rates of malaria morbidity and mortality.

The key behavioral objectives highlighted in the SNCCSC (note that this is the wording directly from the current version of the strategy) include the following:

- Getting 90 percent of the population (the whole family) to sleep every night under an impregnated mosquito net all year round (ITNs effective use).
- Ensuring 95 percent of pregnant women know that IPTp is free and that at least three doses are administered in the presence of a health care provider during antenatal visits and other contacts (effective uptake of IPTp).
- Promoting early care-seeking (health facility attendance and easier access to community health services).

PMI's support is achieved through evidence-based, coordinated communication interventions deployed across PMI geographic focus areas. Through partnerships with local media organizations, community-based organizations, and collaboration with CHWs (RC), PMI supports the NMCP's efforts to expand mass media and community-level interpersonal communication (IPC) activities aimed at increasing correct and

consistent ITN use and care, prompt care-seeking for fever, uptake of RDTs, and IPTp, and provider adherence to diagnostic results for treatment with ACTs. At the national level, PMI provides TA, support for capacity-strengthening activities including for coordination, and the development of materials and relevant guidelines. PMI is also currently supporting ongoing efforts to improve coordination and the development of other relevant guidelines to align with the National Malaria Strategic Plan. At the district level, PMI continues to support the adaptation of the national SBC Strategy to local contexts through the development of zonal- and communal-level operational plans and materials, and to support partner coordination efforts.

Finally, regarding the behavior objectives, PMI will support the generation, analysis, and translation of malaria SBC evidence from the MBS survey, through the review and adaptation of the SBC strategic plan and the district-level operational plans as well as through the development of current messages into easily digestible formats, tailored to multiple audiences, and informing near real-time adaptations to ongoing malaria SBC program implementation.

6.2. Recent Progress (between October 2020 and September 2021)

- Technical and financial support for the finalization of an SBC strategic plan for NMCP, the SNCCSC. This plan has been validated and approved by the MOH. The next phase will be the dissemination of the new strategic plan and the development of tailored messages.
- Continued contracting with local radios for awareness-raising on malaria prevention and care-seeking, especially targeting pregnant women and CU5. The support included technical and financial assistance to contract with local radio stations and broadcast messages. Throughout the year, mass communication activities were carried out under contract with 23 local radio stations in Alibori (4), Atacora (4), Ouémé (3), Donga (4), Atlantique (3), Collines (2), and Mono (3).
- Support for the development and updating of the zonal and communal operational plans of integrated communication plan including technical and financial support to four HZs to develop and validate their integrated communications plans—three in Atacora (NBT, TMC, and 2KP HZs) and one in Ouémé (3A HZ). The development and updating process is underway in two other HZs—KGS in the Alibori Department and PAK in the Plateau.
- Technical and financial support to communes for formative supervision of CHWs to strengthen local prevention communication activities (household visits and group education sessions) in the four PMI departments.
- Production and broadcasting of 141 radio programs in the target HZs with over 5,997 group education sessions on malaria led by the RCs in *paquet*

d'interventions à haut impact (high-impact interventions package) zones on the use of ITNs and other prevention interventions.

PMI will support a number of SBC activities over the next year. Most activities will be a continuation of ongoing activities, however the results of the MBS and HFS conducted this year will inform the design of new activities. The MBS is a household survey that will provide information on factors related to uptake of key malaria behaviors. The HFS will provide insights on determinants of provider behaviors for malaria CM and MIP service delivery (see preliminary results under intervention-specific sections). Final results for both studies will be expected by April 2022. However, preliminary results of the MBS support the relevance of messages and activities that are based on ideation models, and relevant strategies should include: 1) strengthen perceived susceptibility to malaria; 2) strengthen perceived self-efficacy to use ITNs consistently. As for IPTp uptake, results showed that across all surveyed areas, women need to be encouraged to go for ANC at least four times. In addition, the results showed that special focus needs to be put on targeting women with little or no education. In the coming year, special emphasis will be put on strengthening NMCP capacity through the government-to-government (G2G) agreement to manage SBC implementation including:

- Implement MBS and HFS recommendations.
- Support the dissemination of the final SNCCSC.
- Support the implementation of the validated SNCCSC.
- Support the update of the SNCCSC including the integration of MBS and HFS data when available.
- Support the SBC TWG to increase coordination of SBC activities in the country and collaboration among relevant stakeholders.
- Support departmental and HZ teams to develop and implement integrated communication plans, including training health workers in SBC.
- Continue to support local radios to raise awareness on malaria prevention and care-seeking.
- Continue to support CHWs and RCs to implement community mobilization and interpersonal communication activities (e.g., group education sessions and household visits) in PMI-supported zones. (Note: Details for this support may change due to the new Community Health Strategy.)
- Support to NMCP and partners to prepare and celebrate World Malaria Day, including satellite activities and events.
- For NMCP, continue malaria school clubs and increase the number of schools in the targeted HZs.

Through the use of SBC interventions and in alignment with the NMCP communication strategy, PMI supports the uptake of and correct and consistent use of malaria

interventions, thereby improving the overall quality of malaria control efforts that contribute to reducing the malaria burden in Benin.

The DHS 2017–2018 shows a significant gap between ANC4 and IPTp3. In most health centers, CM and ANC are provided by the same health care worker. These two issues point to a need for better understanding of determinants of provider behavior and SBC activities geared toward increasing adherence to national guidelines.

According to the DHS 2017–2018, although 53 percent of caregivers eventually seek treatment for fevers only 28 percent do so promptly. This suggests a need for increased SBC activities promoting prompt care-seeking. The DHS 2017–2018 shows a weakness in correct diagnosis and treatment of fever. Analysis of Système National d'Information et de Gestion Sanitaires data suggests a further weakness in correct diagnosis and treatment.

To improve care-seeking, more information is needed on intermediate determinants of care-seeking behavior among caregivers for CU5 as well as the frequency of use of unqualified private or non-traditional providers as the first recourse for caregivers of CU5.

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 Benin with FY 2023 funding. Please visit www.pmi.gov/resources/malaria-operational-plans-mops for these FY 2023 funding tables.

The NMCP is planning to establish *comités villageois de lutte contre le paludisme*/village health committees for malaria prevention and control in two HZs. Village health committees will be set up in 47 districts and 417 villages in 56 communes. Each committee will be composed of 5 members including the head of the village (*chef du village*), a community leader, and key representatives, including at least one youth and woman. A minimum package of activities will be entrusted to them and they will carry out sensitization activities in their respective villages and be involved in implementing SMC and ITN campaign activities.

SBC activities funded under this MOP will concentrate on designing and implementing evidence-based SBC interventions based on the results of the MBS and the HFS. While SBC activities to encourage correct and consistent use of ITNs will continue, priority will be placed on addressing prompt care-seeking behavior and provider adherence to guidelines in CM and IPTp. Emphasis will also be placed on improving institutional capacity to manage and implement SBC activities in Benin at the national, HZ, and community levels including strengthening the SBC TWG.

While PMI/Benin supports SBC activities that promote the uptake and maintenance of all key malaria interventions, the following behaviors (see Table 1 above) will be prioritized with FY 2023 funds:

Table 2. Priority Behaviors to Address

Behavior	Target Population	Geographic Focus	Programming to Address Behavior
Prompt care-seeking for fever for CU5	Caregivers of CU5	All PMI-supported HZs	• Conduct community and household level IPC informed by data in prompt care-seeking. • Promote improved quality of care at health facilities through quality assurance committees and the village health committees. • Provide evidence-adapted messages to local radio stations airing and spots to promote prompt care-seeking.
Adherence to CM guidelines	Health facility–based providers	All PMI-supported HZs	• Support TA in service delivery for the scaling up of behavioral design to all PMI-supported health facilities and CHWs using recommendations from the MBS and the HFA to promote provider behavior change regarding the use of RDTs for testing and treatment decisions.

Based on the results and recommendations from the health facility and MBS studies in 2021, activities will be designed to address specific determinants for the community and provider and also determine if there is a need to collect more data on the specific behavioral factors for prompt care-seeking and those factors associated with provider behavior for diagnosis and treatment of malaria.

With the finalization of the SBC strategic plan, there is a need for its dissemination nationwide which will be reinforced by continued capacity building at both the national and subnational levels, with increased effort at the zonal and the communal levels. To bolster the NMCP's capacity for the planning, design, implementation, and evaluation of SBC activities, PMI will continue to support:

- Coordination at the national level through targeted support to improve the effectiveness of the SBC Technical Working Group;
- Development of decentralized-level SBC operational plans
- Increased coordination to ensure the impact of SBC investments, specifically by:
    - Capacity strengthening of key partners and stakeholders for effective SBC design, implementation, and evaluation

- Capacity-building for NMCP staff on data use (e.g. from the MBS, the HFA, and upcoming Malaria Indicator Survey; MIS) to inform SBC program priorities and strategies.

7. Surveillance, Monitoring, and Evaluation

7.1. PMI Goal and Strategic Approach

The 2017–2021 National Strategic Plan describes indicators and targets set forth by the NMCP to capture the spatial distribution of malaria morbidity and mortality across the country. This information can be used to longitudinally track malaria trends over time to adjust program interventions or propose new strategies and ultimately reduce the malaria burden. An updated NSP is being developed but it is unclear when the finalized version will be made available.

PMI's investment in SM&E in Benin aims to help the NMCP and MOH improve the availability, accuracy, timeliness, and completeness of malaria-related data. Through its direct G2G support to the NMCP, PMI seeks to strengthen the routine data system implementation at district and national levels, including data review and analysis. In the four USAID focus departments of Alibori, Atacora, Oueme, and Plateau, PMI provides more intensive TA to the MOH to strengthen Health Management Information System (HMIS), including at the community level. PMI support for SM&E complements efforts supported by other USAID health programs as well as the Global Fund and other donors, including in the area of digital tools roll-out and use in key interventions and program activities implementation to maximize efficiency and overall data quality for decision-making. Of note, a comprehensive malaria-related surveillance systems assessment is currently being conducted by CHAI with the BMGF's support, and its results will be available in early 2023. As of 2022, digital tools were either being already used (SMC and ITNs distribution campaigns since 2020), considered or in an advanced stage of the roll-out process (community health and supervision–related activities).

7.2. Recent Progress (between April 2021 and April 2022)

PMI supported the following activities:

National and Department (Admin 1) Levels:

- NMCP supported validation of HMIS data in all 12 of the country's departments. Malaria-related data validation quarterly workshops have as of mid-CY 2022 been taking place at the central level for 10 of the 12 departments. Validation took place at a lower health system–level (the HZ level) at the two remaining departments. Plans are underway to expand HZ-level data validation activities to all 12 departments aiming for a more timely and higher quality of available data in the DHIS2.

- HZ and Commune (Admin II) Levels: HZ-level data validation–related activities continued with PMI support until mid-2022. Plans are underway to expand the approach to more HZs with the aim of ultimately institutionalizing nationwide HZ-level data quality improvement processes.

Facility and Community Levels:

- AlafiaComm is a community health app that is interoperable with the national data platforms—DHIS2 and the Système National d'Information et de Gestion Sanitaires—and can be used by all partners implementing community health activities. It was developed by DIMAGI at the request of PMI-supported MSH's IHSA. The AlafiaComm app, developed in line with the existing registers used by CHWs, was piloted at a select number of communes in 2019 and 2020. Results of the pilot were satisfying, prompting MOH's interest in considering it as the community health digital tool of choice. Other digital tools were explored in 2021, and a final decision is expected in 2022. Fifty community volunteers have been trained on AlafiaComm.

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 Benin with FY 2023 funding. Please visit www.pmi.gov/resources/malaria-operational-plans-mops for these FY 2023 funding tables.

PMI plans to maintain investments in SM&E by supporting data review and analysis, through the continuation of quarterly review meetings, production and dissemination of malaria bulletins, and routine data quality monitoring performed by the district health offices. PMI support for this activity is part of a broader HMIS strengthening effort supported by USAID, Global Fund, and other partners. This includes the decentralization of the data validation workshops to the HZ level and biannual audit of malaria deaths. To improve the data-use culture at the national level, PMI, through an implementing partner, will provide technical support through an embedded advisor to the NMCP for two years beginning with FY 2021 funds to strengthen HMIS and improve data collection. Additionally, PMI will provide support to the MOH to strengthen HMIS, including strengthening data collection, making data validation more efficient, decentralizing data supervision responsibilities, improving data quality, and disseminating data with timeliness.

PMI will also support CHW training/refresher training as well as group- and on-site-supervision to improve community-level data collection.

Review of clinical record reporting as part of supportive supervision of CM practices will take place at all registered private hospitals and health centers. Department and HZ staff will be actively involved in supervision activities.

PMI supports the NMCP to build its capacity to conduct surveillance as a core malaria intervention using high-quality data from both surveys and routine health information systems outlined above.

Table 3. Available Malaria Surveillance Sources

Source	Data Collection Activity	2019	2020	2021	2022	2023	2024
Household Surveys	Demographic Health Survey					P	
Household Surveys	Malaria Indicator Survey				P*		
Household Surveys	Multiple Indicator Cluster Survey		X*		X		
Household Surveys	EPI survey						
Household Surveys	Malaria Behavior Survey (MBS)				X		
Health Facility Surveys	Service Provision Assessment						
Health Facility Surveys	Service Availability Readiness Assessment (SARA) survey						
Health Facility Surveys	Other Health Facility Survey				X		
Malaria Surveillance and Routine System Support	Therapeutic Efficacy Studies		X		P		P
Malaria Surveillance and Routine System Support	Support to Parallel Malaria Surveillance System						
Malaria Surveillance and Routine System Support	Support to Health Management Information System (HMIS)	X	X	X	P	P	P
Malaria Surveillance and Routine System Support	Support to Integrated Disease Surveillance and Response						
Malaria Surveillance and Routine System Support	eLMIS	X	X	X	P	P	P
Malaria Surveillance and Routine System Support	Malaria Rapid Reporting System						
Other	EUV	X	X	X	P	P	P
Other	School-based Malaria Survey						
Other	Knowledge, Attitudes, and Practices Survey, MBS						
Other	Malaria Impact Evaluation						
Other	Entomologic Monitoring Surveys	X	X	X	P	P	P

*Asterisk denotes non-PMI funded activities, X denotes completed activities, and P denotes planned activities. The National Census is planned in CY 2023.

PMI continues to support a wide range of HMIS-strengthening activities aimed at improving data reporting at the community, facility, district, and national levels. Activities seek to improve data quality and use. PMI investments also support household and facility surveys to provide additional information to complement routine surveillance data.

Additional PMI investments are being programmed through the G2G agreement with the NMCP and will continue to be envisaged to address long-standing reporting timeliness issues that have impeded the country's ability to appropriately use data to inform program planning and monitoring. PMI will be supporting NMCP in moving away from the department-level quarterly data validation process further down to the HZ level and at a more frequent pace. Ultimately by the start of 2023, NMCP plans on institutionalizing monthly HZ-level data validation workshops aimed at routinely ensuring that data collected at the health facility and consolidated at the commune level is complying with quality data standards and is readily available for use to inform NMCP and decentralized health authorities–led actions to address challenges to the optimal implementation of malaria control–related activities, including CM.

Successfully piloted in 2019 and 2020, AlafiaComm is being considered along with other potential digital tools and platforms to manage the country's community health–related data. The discussion is ongoing for a consensus to be reached in 2022 among the government entities (National Agency for Primary Healthcare, CNLS-TP , and MOH) involved in the new community health policy and operational implementation as to the digital tool that will ultimately be implemented.

8. Operational Research and Program Evaluation

8.1. PMI Goal and Strategic Approach

The NMCP does not define clear objectives with regards to operational research (OR) in Benin. However, the NMCP is putting in place a strategy and a repository for all past and ongoing malaria research projects in Benin. The NMCP is deeply involved in the process of reviewing malaria-related research design, implementation, and publication. PMI continues to support NMCP's annual plans of organizing the national malaria research symposium.

8.2. Recent Progress (between January 2021 and December 2022)

The Group Antenatal Care study continued through CY 2021 and will be continuing in CY 2022. Efforts to address operational challenges as they arise including those that significantly affect optimal and effective enrollment of eligible pregnant women are ongoing as are efforts to ensure optimal data collection from the study's health facilities.

Table 4. PMI-funded Operational Research/Program Evaluation Studies in Benin

Recently Completed OR/PE Studies	Status of Dissemination	Start Date	End Date
Digital Community Health Initiative	Completed (Workshop)	2021	2021
Ongoing or Planned OR/PE Studies	**Status**	**Start Date**	**End Date**
Group Antenatal Care	Ongoing	2020	2023

The PMI Insights Supportive Supervision Program Evaluation	Ongoing	2021	2022

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

Source of Funding	Implementing Institution	Research Question/Topic	Current Status/Timeline
Unitaid	LSHTM/PSI	IPTi+ feasibility evaluation	Starting 2022
BMGF	CHAI	SUREVAL: Evaluation of the National Malaria Surveillance System	Starting 2022
Unitaid	LSHTM/CREC	Assessing the efficacy of two dual ITNs for control of malaria transmitted by pyrethroid-resistant vectors in Benin	Ending 2022

8.3. Plans and Justification with FY 2023 Funding

PMI has engaged in discussion with the program to identify key areas of research on pertinent topics. No OR/PE activities are proposed with FY 2023 funding.

9. Capacity Strengthening

9.1. PMI Goal and Strategic Approach

The NMCP has not set any specific objectives with regard to program infrastructure. However, infrastructure and capacity-building needs have been identified and discussed with PMI for support through the G2G agreements currently being redesigned.

PMI's objective is to support the NMCP's management and technical capacity development needs to meet the objectives of the NSP and the goal of the PSNIE.

9.2. Recent Progress (between November 2020 and November 2021)

In addition to international and local implementing organizations, PMI supports the NMCP through a direct G2G agreement (Fixed Amount Reimbursement Agreement [FARA]) and the special account funds that are generated from revenues of ACTs given to populations other than CU5 and pregnant women as per Benin's policy. Through the FARA and the special account, PMI has supported some of the NMCP's management and capacity development including staff support, equipment, and infrastructure needs (purchase of IT equipment [e.g., laptops, software needs, and databases] and internet connectivity support).

Together with the maternal and child health (MCH) and the family planning/reproductive health programs, PMI supports other activities aimed at strengthening the health system and improving access to quality health care.

PMI supported the implementation of the national action plan for the strengthening of Laboratoire National de Controle de Qualite for quality control to perform routine testing

of malaria commodities at the port and spot checks in public and private health facilities. This included support for the cost of reagents and equipment for drug quality testing and staff time as well as support to the ABRP to perform its functions of ensuring the quality of pharmaceutical products and monitoring of illegal malaria commodities in markets and formal health services.

Furthermore, PMI continued to support the monitoring of illegal malaria commodities in markets and formal health services, the auditing of malaria services under national health insurance and the training of journalists on malaria and governance. This activity was and continues to be co-funded with malaria, MCH, and other non-health funds.

With the oversight role of the CNLS-TP over all disease programs, including the malaria program and the increasing need for the NMCP to align the National Malaria Strategic Plan to the PSNIE, PMI has also provided staff support within the CNLS-TP , whose role is to provide technical and coordination support on malaria-related activities.

The Programme d'action du gouvernement/Government of Benin Action Plan 2021–2026 focuses on improving the accessibility of populations (including the most vulnerable) to health services by 2026 using e-health under the MOH leadership. In line with this new government vision of improving health access through technology, human capacity strengthening is one of the areas that will be prioritized. This will include the development, introduction, and roll-out of online training. A few online modules, mostly related to emergency obstetric and newborn care, have been made available through the Information Systems Department and the initial targeted health staff have been trained. PMI and other donors are closely monitoring the process to ensure that the support area will be aligned because the plan is to expand the modules to other health areas, including malaria.

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 Benin with FY 2023 funding. Please visit www.pmi.gov/resources/malaria-operational-plans-mops for these FY 2023 funding tables.

PMI/Benin will continue to support capacity-strengthening activities as described in the **Capacity Strengthening Recent Progress section,** which will include among other things:

- Maintenance and repair of the NMCP motor pool.
- Provision of equipment and office supplies.
- Routine maintenance and repair of office equipment.

- Acquisition of IT equipment and software (e.g., laptops, electronic stock management, motor pool management, and mail management software), installation and configuration of accounting systems software, and acquisition of a video conference system.

To reinforce the management capacity of the NMCP and its coordination with the CNLS-TP , PMI will continue staff support within the NMCP and leverage the Global Fund support through the Systems Strengthening grant under the CNLS-TP .

The NMCP intends to make all its training modules, manuals, and protocols used in face-to-face training available on the MOH e-learning platform (hosted by the Information Systems Department). This will allow the NMCP to reach a larger target group and offer its beneficiaries the opportunity of continuous capacity strengthening.

PMI will also continue to support the country's efforts toward universal health coverage through the provision of TA in the roll-out of ARCH-AM, including improvement of the quality of care of services offered to ARCH-AM beneficiaries, refinement of the reimbursement mechanism for health facilities, improving communication and strengthening inclusive dialogue, strengthening M&E and continuous learning to inform the national scale-up of ARCH-AM.

10. Staffing and Administration

A minimum of three health professionals are the core in-country team that oversees PMI in Benin. The single interagency team led by the USAID health office director consists of a resident advisor representing USAID, a resident advisor representing CDC, and two locally hired experts known as "foreign service nationals" who include a malaria program specialist and a data manager. The PMI interagency team works together to oversee all technical and administrative aspects of PMI, including finalizing details of the project design, implementing malaria prevention and treatment activities, M&E of outcomes and impact, reporting of results, and providing guidance and direction to PMI implementing partners.

ANNEX: GAP ANALYSIS TABLES

Table A-1. ITN Gap Analysis Table

Calendar Year	2022	2023	2024
Total country population	13,610,498	14,088,227	14,582,724
Total population at risk for malaria	13,610,498	14,088,227	14,582,724
PMI-targeted at-risk population	13,610,498	14,088,227	14,582,724
Population targeted for ITNs	13,610,498	14,088,227	14,582,724
Continuous Distribution Needs			
Channel 1: ANC	605,017	695,491	791,570
Channel 1: ANC Type of ITN	PBO	PBO	PBO
Channel 2: EPI	459,381	475,505	492,195
Channel 2: EPI Type of ITN	PBO	PBO	PBO
Channel 3: School		45,112	
Channel 3: School Type of ITN		Single Pyrethroid	
Channel 4: Community			
Channel 4: Community Type of ITN			
Channel 5:			
Channel 5: Type of ITN			
Estimated Total Need for Continuous Channels	1,064,398	1,216,108	1,283,765
Mass Campaign Distribution Needs			
Mass distribution campaigns		8,948,775	
Mass distribution ITN type		All three (Dual AI, PBO and Single Pyrethroid)	
Estimated Total Need for Campaigns	0	8,948,775	0
Total ITN Need: Continuous and Campaign	**1,064,398**	**10,164,883**	**1,283,765**
Partner Contributions			
ITNs carried over from previous year	956,794	492,396	111,288
ITNs from Government		1,394,877	0
Type of ITNs from Government		Single Pyrethroid	0
ITNs from Global Fund		6,996,795	0
Type of ITNs from Global Fund		All three (Dual AI, PBO and Single Pyrethroid)	
ITNs from other donors			0
Type of ITNs from other donors			
ITNs planned with PMI funding	600,000	1,392,103	835,000
Type of ITNs with PMI funding	PBO	PBO	PBO
Total ITNs Contribution Per Calendar Year	**1,556,794**	**10,276,171**	**946,288**
Total ITN Surplus (Gap)	**492,396**	**111,288**	**(337,477)**

Table A-2. RDT Gap Analysis Table

Calendar Year	2022	2023	2024
Total country population	13,610,498	14,088,227	14,582,724
Population at risk for malaria	13,610,498	14,088,227	14,582,724
PMI-targeted at-risk population	13,610,498	14,088,227	14,582,724
RDT Needs			
Total number of projected suspected malaria cases	4,815,719	5,465,737	6,203,493
Percent of suspected malaria cases tested with an RDT	100%	100%	100%
RDT Needs (tests)	**4,815,719**	**5,465,737**	**6,203,493**
Needs Estimated based on Other (specify in comments)			
Partner Contributions (tests)			
RDTs from Government	250,000	250,000	250,000
RDTs from Global Fund	5,993,500	4,320,625	4,320,625
RDTs from other donors	72,500	72,500	72,500
RDTs planned with PMI funding	2,000,000	2,000,000	2,000,000
Total RDT Contributions per Calendar Year	**8,316,000**	**6,643,125**	**6,643,125**
Stock Balance (tests)	**1,022,400**		
Beginning Balance	1,022,400	4,522,681	5,700,069
- Product Need	4,815,719	5,465,737	6,203,493
+ Total Contributions (received/expected)	8,316,000	6,643,125	6,643,125
Ending Balance	**4,522,681**	**5,700,069**	**6,139,701**
Desired End of Year Stock (months of stock)	6	6	6
Desired End of Year Stock (quantities)	2,407,860	2,732,869	3,101,747
Total Surplus (Gap)	**2,114,822**	**2,967,200**	**3,037,954**

Table A-3. ACT Gap Analysis Table

Calendar Year	2022	2023	2024
Total country population	13,610,498	14,088,227	14,582,724
Population at risk for malaria	13,610,498	14,088,227	14,582,724
PMI-targeted at-risk population	13,610,498	14,088,227	14,582,724
ACT Needs			
Total projected number of malaria cases	4,582,494	5,214,900	5,397,943
Total ACT Needs (treatments)	**4,582,494**	**5,214,900**	**5,397,943**
Needs Estimated based on Other (specify in comments)			
Partner Contributions (treatments)			
ACTs from Government	602,490	602,490	602,490
ACTs from Global Fund	2,744,685	3,480,720	3,480,720
ACTs from other donors	72,500	72,500	72,500
ACTs planned with PMI funding	2,000,000	2,000,000	2,000,000
Total ACTs Contributions per Calendar Year	**5,419,675**	**6,155,710**	**6,155,710**
Stock Balance (treatments)	1,860,835		
Beginning Balance	1,860,835	2,698,016	3,638,826
- Product Need	4,582,494	5,214,900	5,397,943
+ Total Contributions (received/expected)	5,419,675	6,155,710	6,155,710
Ending Balance	**2,698,016**	**3,638,826**	**4,396,593**
Desired End of Year Stock (months of stock)	6	6	6
Desired End of Year Stock (quantities)	2,291,247	2,607,450	2,698,971
Total Surplus (Gap)	**406,769**	**1,031,376**	**1,697,622**

Table A-4. Inj. Artesunate Gap Analysis Table

Calendar Year	2022	2023	2024
Injectable Artesunate Needs			
Projected number of severe cases	86,371	89,411	92,549
Projected number of severe cases among children	46,640	48,282	49,977
Average number of vials required for severe cases among children	3	3	3
Projected number of severe cases among adults	39,731	41,129	42,573
Average number of vials required for severe cases among adults	9	9	9
Total Injectable Artesunate Needs (vials)	**497,499**	**515,007**	**533,084**
Select Data Source	**DHIS2**	**DHIS2**	**DHIS2**
Partner Contributions (vials)			
Injectable artesunate from Government	10,000	10,000	10,000
Injectable artesunate from Global Fund	180,823	183,141	183,141
Injectable artesunate from other donors	0	0	
Injectable artesunate planned with PMI funding	200,000	300,000	300,000
Total Injectable Artesunate Contributions per Calendar Year	**390,823**	**493,141**	**493,141**
Stock Balance (vials)	368,475		
Beginning Balance	368,475	261,799	239,933
- Product Need	497,499	515,007	533,084
+ Total Contributions (received/expected)	390,823	493,141	493,141
Ending Balance	**261,799**	**239,933**	**199,990**
Desired End of Year Stock (months of stock)	6	6	6
Desired End of Year Stock (quantities)	248,750	257,504	266,542
Total Surplus (Gap)	**13,050**	**(17,571)**	**(66,552)**

Table A-5. RAS Gap Analysis Table

Calendar Year	2022	2023	2024
Artesunate Suppository Needs			
Number of severe cases expected to require pre-referral dose (or expected to require pre-referral dose based on number of providers for the service)	8,499	8,797	9,106
Total Artesunate Suppository Needs (suppositories)	**8,499**	**8,797**	**9,106**
Needs Estimated based on # of providers offering pre-referral services			
Partner Contributions (suppositories)			
Artesunate suppositories from Government			
Artesunate suppositories from Global Fund	0	0	0
Artesunate suppositories from other donors			
Artesunate suppositories planned with PMI funding	6,000	9,000	9,000
Total Artesunate Suppositories Available	**6,000**	**9,000**	**9,000**
Stock Balance (suppositories)	612		
Beginning Balance	612	0	203
- Product Need	8,499	8,797	9,106
+ Total Contributions (received/expected)	6,000	9,000	9,000
Ending Balance	**(1,887)**	**203**	**97**
Desired End of Year Stock (months of stock)	0	0	0
Desired End of Year Stock (quantities)	0	0	0
Total Surplus (Gap)	**(1,887)**	**203**	**97**

Table A-6. SP Gap Analysis Table

Calendar Year	2022	2023	2024
Total Country Population	13,610,498	14,088,227	14,582,724
Total Population at Risk for Malaria	13,610,498	14,088,227	14,582,724
PMI Targeted at Risk Population	13,610,498	14,088,227	14,582,724
SP Needs			
Total Number of Pregnant Women	528,518	547,069	566,271
Percent of pregnant women expected to receive IPTp1	60%	60%	60%
Percent of pregnant women expected to receive IPTp2	50%	50%	50%
Percent of pregnant women expected to receive IPTp3	40%	40%	40%
Percent of pregnant women expected to receive IPTp4	40%	40%	40%
Percent of pregnant women expected to receive IPTp5	40%	40%	40%
Total SP Needs (doses)	**574,605**	**594,773**	**615,650**
Needs Estimated based on Household Survey Data (e.g. DHS)			
Partner Contributions (doses)			
SP from Government	52,500	52,500	52,500
SP from Global Fund	0	150,025	150,025
SP from other donors	0	0	0
SP planned with PMI funding	1,030,000	0	1,030,000
Total SP Contributions per Calendar Year	**1,082,500**	**202,525**	**1,232,525**
Stock Balance (doses)	1,000,184		
Beginning balance	1,000,184	1,508,079	1,115,831
- Product Need	574,605	594,773	615,650
+ Total Contributions (Received/expected)	1,082,500	202,525	1,232,525
Ending Balance	**1,508,079**	**1,115,831**	**1,732,706**
Desired End of Year Stock (months of stock)	6	6	6
Desired End of Year Stock (quantities)	287,302	297,387	307,825
Total Surplus (Gap)	**1,220,777**	**818,444**	**1,424,881**

Table A-7. SMC Gap Analysis Table

Calendar Year	2022	2023	2024
Total population in the SMC targeted age range	431,577	452,293	468,168
SMC Drug (SP+AQ) Needs			
National population 3-11 months targeted for SMC	61,213	64,152	66,404
National population 12-59 months targeted for SMC	370,364	388,141	401,765
Total national population targeted for SMC	**431,577**	**452,293**	**468,168**
PMI population 3-11 months targeted for SMC	18,253	19,130	19,801
PMI population 12-59 months targeted for SMC	110,440	115,741	119,804
Total PMI population targeted for SMC	**128,693**	**134,871**	**139,605**
Total SP+AQ Needs (co-blisters)	**2,244,200**	**1,809,172**	**1,872,674**
Partner Contributions (co-blisters, national)			
SP+AQ carried over from previous year	513,211	0	0
SP+AQ from Government	0	0	0
SP+AQ from Global Fund	867,200	1,002,350	1,002,350
SP+AQ from other donors	0	0	0
SP+AQ planned with PMI funding	580,000	270,000	270,000
Total SP+AQ Contributions per Calendar Year	1,960,411	1,272,350	1,272,350
Total SP+AQ Surplus (Gap)	**(283,789)**	**(536,822)**	**(600,324)**