This Malaria Operational Plan has been approved by the U.S. Global Malaria Coordinator and reflects collaborative discussions with the national malaria control programs and partners in country. The final funding available to support the plan outlined here is pending final FY 2019 appropriation. If any further changes are made to this plan it will be reflected in a revised posting.


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U.S. PRESIDENT'S MALARIA INITIATIVE



# PRESIDENT'S MALARIA INITIATIVE

# Burkina Faso

# Malaria Operational Plan FY 2019

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## ABBREVIATIONS and ACRONYMS

| | |
|---|---|
| ACT | Artemisinin-based combination therapy |
| AL | Artemether-lumefantrine |
| ANC | Antenatal care |
| ANRP | *Agence nationale de régulation pharmaceutique* |
| ASAQ | Artesunate-amodiaquine |
| CAMEG | *Central d'Achats des Medicaments Essentials Generiques* |
| CCM | Country Coordinating Mechanism |
| CDC | Centers for Disease Control and Prevention |
| CHW | Community health worker |
| CNRFP | *Centre National de Recherche et de Formation sur le Paludisme* |
| CSPS | *Centre de santé et de la promotion social* |
| DGPML | *Direction General de la Pharmacie, Médicine et Laboratoire* |
| DP | Dihydroartemisinin-piperaquine |
| DHS | Demographic and Health Survey |
| EPI | Expanded program on immunizations |
| FETP | Field Epidemiology Training Program |
| EUV | End use verification |
| FY | Fiscal year |
| Global Fund | Global Fund to Fight AIDS, Tuberculosis and Malaria |
| GoBF | Government of Burkina Faso |
| HMIS | Health management information system |
| IDSR | Integrated Disease Surveillance and Response System |
| IPTp | Intermittent preventive treatment for pregnant women |
| IRS | Indoor residual spraying |
| IRSS | *Institut de Recherche en Sciences de la Sante* |
| ITN | Insecticide-treated mosquito net |
| LMIS | Logistic management information system |
| LNSP | *Laboratoire National de Santé Publique* |
| M&E | monitoring and evaluation |
| MIP | Malaria in pregnancy |
| MIS | Malaria indicator survey |
| MoH | Ministry of Health |
| MOP | Malaria operational plan |
| NGO | Non-governmental organization |
| OR | Operational research |
| NMCP | National Malaria Control Program |
| PADS | *Programme d'appui au développement sanitaire* |
| PBO | Piperonyl butoxide |
| PMI | President's Malaria Initiative |
| QA/QC | Quality assurance/quality control |
| RA | Resident Advisor |
| RDT | Rapid diagnostic test |
| SBCC | Social and behavior change communication |
| SM&E | Surveillance, monitoring, and evaluation |
| SMC | Seasonal malaria chemoprevention |
| SP | Sulfadoxine-pyrimethamine |
| TRaC | Tracking results continuously |

| | |
|---|---|
| UNICEF | United Nations Children's Fund |
| USAID | United States Agency for International Development |
| WHO | World Health Organization |

# I. EXECUTIVE SUMMARY

When it was launched in 2005, the goal of the President's Malaria Initiative (PMI) was to reduce malaria-related mortality by 50 percent across 15 high-burden countries in sub-Saharan Africa through a rapid scale-up of four proven and highly effective 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); and intermittent preventive treatment of pregnant women (IPTp). With the passage of the Tom Lantos and Henry J. Hyde Global Leadership against HIV/AIDS, Tuberculosis, and Malaria Act in 2008, PMI developed a U.S. Government Malaria Strategy for 2009-2014. This strategy included a long-term vision for malaria control in which sustained high coverage with malaria prevention and treatment interventions would progressively lead to malaria-free zones in Africa, with the ultimate goal of worldwide malaria eradication by 2040-2050. Consistent with this strategy and the increase in annual appropriations supporting PMI, four new sub-Saharan African countries and one regional program in the Greater Mekong Subregion of Southeast Asia were added in 2011. The contributions of PMI, together with those of other partners, have led to dramatic improvements in the coverage of malaria control interventions in PMI-supported countries, and all 15 original countries have documented substantial declines in all-cause mortality rates among children under five years of age.

In 2015, PMI launched its next six-year strategy, setting forth a bold and ambitious goal and objectives. The PMI Strategy for 2015-2020 takes into account the progress over the past decade and the new challenges that have arisen. Malaria prevention and control remains a major U.S. foreign assistance objective and PMI's strategy fully aligns with the U.S. Government's vision of ending preventable child and maternal deaths and ending extreme poverty. It is also in line with the goals articulated in the RBM Partnership's second-generation global malaria action plan, Action and Investment to defeat Malaria 2016-2030: for a Malaria-Free World and the World Health Organization's updated Global Technical Strategy: 2016-2030. Under the PMI Strategy 2015-2020, the U.S. Government's goal is to work with PMI-supported countries and partners to further reduce malaria deaths and substantially decrease malaria morbidity, towards the long-term goal of elimination.

In 2017, consistent with an increase in annual appropriations, PMI again launched new country programs in Cameroon, Côte d'Ivoire, Niger, and Sierra Leone, and expanded an existing program in Burkina Faso to PMI focus country status. With the addition of these new focus countries, PMI now has programs in 24 countries in sub-Saharan Africa, in addition to two bilateral programs and targeted support in the Greater Mekong Subregion in Asia.

Burkina Faso began implementation as a PMI focus country in FY 2017.

This FY 2019 Malaria Operational Plan presents a detailed implementation plan for Burkina Faso, based on the strategies of PMI and the National Malaria Control Program (NMCP). It was developed in consultation with the NMCP and with the participation of national and international partners involved in malaria prevention and control in the country. The activities that PMI is proposing to support fit in well with the national malaria control strategy and plan and build on investments made by PMI and other partners to improve and expand malaria-related services, including malaria grants from the Global Fund to Fight AIDS, Tuberculosis, and Malaria. This document briefly reviews the current status of malaria control policies and interventions in Burkina Faso, describes progress to date, identifies challenges and unmet needs to achieving the targets of the NMCP and PMI, and provides a description of activities that are planned with FY 2019 funding.

The proposed FY 2019 PMI budget for Burkina Faso is $23 million. PMI will support the following intervention areas with these funds:

**Entomologic monitoring and insecticide resistance management:** Burkina Faso has strong entomological capacity and history of malaria vector research including insecticide resistance monitoring. Resistance to DDT and pyrethroids is widespread and reduced susceptibility to bendiocarb has been detected in two sites. PMI plans to support monitoring at entomological sentinel sites to assess species composition, density, behavior, and infection rates; insecticide susceptibility testing; and IRS quality and residual efficacy of insecticides. In addition, PMI will assist the country to implement a comprehensive plan for resistance monitoring.

**ITNs:** The national strategy for Burkina Faso uses ITNs as the principal tool for malaria prevention, and employs three approaches for ensuring that ITNs are available to the entire population: free distribution of ITNs via nationwide campaigns, free distribution of ITNs through routine antenatal care and expanded programs on immunization at all public health facilities, and the sale of ITNs by the private sector. Burkina Faso has benefitted from three mass campaigns in 2011, 2013, and 2016, and will benefit from another in 2019. With FY 2019 funds, PMI will provide technical assistance for this mass campaign as well 120,000 ITNs for the routine distribution system. With FY 2019 funds, PMI will continue to conduct durability monitoring on nets distributed during the 2019 campaign.

**IRS:** Burkina Faso's national strategy includes IRS, along with ITNs and larval source management, as vector control interventions to prevent malaria. USAID supported a pilot IRS program in Diebougou District from 2010 to 2012, covering around 35,000 structures and protecting approximately 115,000 people annually. However, aside from this pilot, the Government of Burkina Faso has not been able to secure additional resources to support IRS. FY 2017 funding restarted IRS in Burkina Faso in three districts. With FY 2019 funds, PMI will continue to support IRS in three to four high-burden districts with long-lasting non-pyrethroid insecticides, in an effort to mitigate resistance and drive down the burden of malaria.

**Malaria in pregnancy:** All pregnant women in Burkina Faso benefit from free antenatal care services, including prevention and treatment of malaria, with guidelines stating that at least three doses of sulfadoxine-pyrimethamine be given during pregnancy, along with a free ITN. An operational research study on the delivery of sulfadoxine-pyrimethamine to pregnant women by community health workers (CHWs) is underway. Depending on the results of this pilot, PMI plans to fund the rollout of this intervention with FY 2019 funds. Additionally, PMI plans to continue funding training and supervision of malaria in pregnancy activities as part of the integrated malaria case management training package.

**Seasonal malaria chemoprevention:** The NMCP's strategy is to provide seasonal malaria chemoprevention for children 3-59 months of age across the country. USAID malaria funds have supported seasonal malaria chemoprevention implementation in two districts in 2017 and logistics support for a national campaign. For the 2018 campaign, PMI supported training-of-trainers, purchased non-medical consumables, and is currently training stakeholders at the district level. In FY 2019, PMI will support seasonal malaria chemoprevention activities for 417,555 children 3-59 months of age.

**Case management:** PMI supports Burkina Faso's goal of testing 100 percent of suspected cases and correctly treating 100 percent of confirmed cases of malaria with an appropriate antimalarial at all levels of the health system. Burkina Faso, along with partners, is rolling out a nationwide CHW program, with two CHWs per village who are responsible for a wide suite of activities, including malaria case management. With FY 2019 funds, PMI will support the training and supervision of CHWs and health workers in malaria case management. PMI will also procure RDTs, ACTs, and drugs for severe malaria treatment. PMI will also support the expansion of rectal artesunate into districts in the north where

malaria mortality is highest. Finally, PMI will fund a therapeutic efficacy study as well as send a laboratory technician to train in Atlanta through the PARMA network.

**Social and behavior change communication:** Part of the NMCP strategy emphasizes the key areas of advocacy, social mobilization, and behavior change communication, and serves as a guideline for all malaria partners in Burkina Faso. A new national communications strategy for 2016-2020 was finalized in February 2017 and includes seasonal malaria chemoprevention, IPTp, and the administration of pre-referral rectal artesunate at the community level. PMI and USAID malaria funds have supported a range of social and behavior change communication activities in Burkina Faso to increase the uptake of malaria interventions and contribute to reductions in malaria morbidity and mortality. In FY 2019, PMI plans to conduct a malaria behavior survey to provide data on prevalence and determinants of malaria behavioral outcomes. PMI also plans to work with the NMCP to focus on tailoring messages to address barriers to preventive behaviors.

**Surveillance, monitoring, and evaluation:** PMI will work with NMCP to strengthen the quality of malaria data and improve data use at all levels. To that end, PMI will support periodic data review activities at the district level to allow health facility and district staff to meet and jointly analyze malaria data collected using the health management information system.

**Operational research:** PMI does not have plans to support operational research in Burkina Faso with FY 2019 funds.

**Other health systems strengthening:** Health systems strengthening is integral to the success of malaria programming in Burkina Faso. PMI works in close collaboration with the NMCP, Ministry of Health, Global Fund, and other malaria donors to ensure collaborative and coordinated support for sustainable systems and national guidelines that serve as a platform for successful malaria interventions. Together, PMI and the Global Fund supported the 2017/2018 malaria indicator survey. Additionally, PMI provides support to supply chain strengthening and forecasting, health worker training, and capacity building for the NMCP. PMI plans to continue to support the NMCP through courses and learning opportunities as well as training national staff in the advanced regional Field Epidemiology Training Program.

# II. STRATEGY & BACKGROUND

## 1. Introduction

When it was launched in 2005, the goal of PMI was to reduce malaria-related mortality by 50 percent across 15 high-burden countries in sub-Saharan Africa through a rapid scale-up of four proven and highly effective 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); and intermittent preventive treatment of pregnant women (IPTp). With the passage of the Tom Lantos and Henry J. Hyde Global Leadership against HIV/AIDS, Tuberculosis, and Malaria Act in 2008, PMI developed a U.S. Government Malaria Strategy for 2009-2014. This strategy included a long-term vision for malaria control in which sustained high coverage with malaria prevention and treatment interventions would progressively lead to malaria-free zones in Africa, with the ultimate goal of worldwide malaria eradication by 2040-2050. Consistent with this strategy and the increase in annual appropriations supporting PMI, four new sub-Saharan African countries and one regional program in the Greater Mekong Subregion of Southeast Asia were added in 2011. The contributions of PMI, together with those of other partners, have led to dramatic improvements in the coverage of malaria control interventions in PMI-supported countries, and all 15 original countries have documented substantial declines in all-cause mortality rates among children under five years of age.

In 2015, PMI launched the next six-year strategy, setting forth a bold and ambitious goal and objectives. The PMI Strategy for 2015-2020 takes into account the progress over the past decade and the new challenges that have arisen. Malaria prevention and control remains a major U.S. foreign assistance objective and PMI's strategy fully aligns with the U.S. Government's vision of ending preventable child and maternal deaths and ending extreme poverty. It is also in line with the goals articulated in the RBM Partnership's second-generation global malaria action plan, Action and Investment to defeat Malaria 2016-2030: for a Malaria-Free World, and the World Health Organization's (WHO) updated Global Technical Strategy: 2016-2030. Under the PMI Strategy 2015-2020, the U.S. Government's goal is to work with PMI-supported countries and partners to further reduce malaria deaths and substantially decrease malaria morbidity, towards the long-term goal of elimination.

Burkina Faso began implementation as a PMI focus country in FY 2017.

The FY 2019 Malaria Operational Plan presents a detailed implementation plan for Burkina Faso, based on the strategies of PMI and the National Malaria Control Program (NMCP). It was developed in consultation with the NMCP and with the participation of national and international partners involved in malaria prevention and control in the country. The activities that PMI is proposing to support fit in well with the national malaria control strategy and plan and build on prior investments by other partners to improve and expand malaria-related services, including the Global Fund to Fight AIDS, Tuberculosis, and Malaria (Global Fund) malaria grants. This document briefly reviews the current status of malaria control policies and interventions in Burkina Faso, describes progress to date, identifies challenges and unmet needs to achieving the targets of the NMCP and PMI, and provides a description of activities that are planned with FY 2019 funding.

## 2. Malaria situation in Burkina Faso

Burkina Faso is a landlocked Sahel country located in the center of West Africa with a total estimated population of 20.2 million in 2018. Twenty percent of the population lives in urban areas. Women represent 51.8 percent, and children under five years of age represent 18.14 percent of the population. Pregnant women account for 5.49 percent of the total population according to the same estimates.

Data from the 2015 Tracking Results Continuously (TRaC) survey show that the infant mortality rate has decreased from 65 deaths per 1,000 live births in 2010 to 45, while the maternal mortality rate has dropped from 341 deaths to 330 deaths per 100,000 live births during the same period.

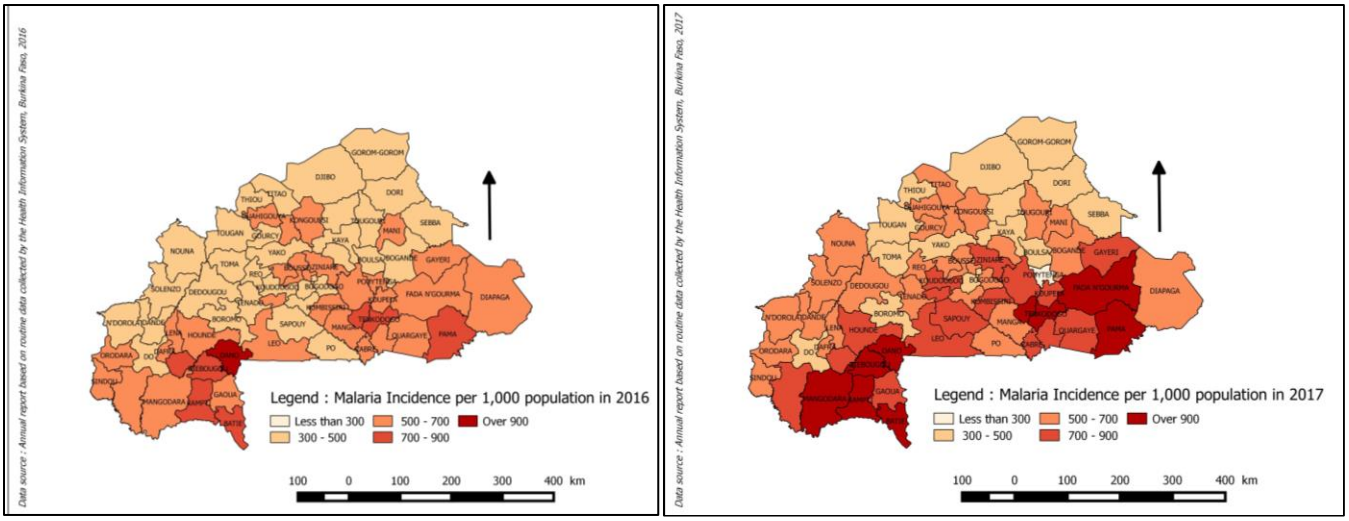
Malaria remains a major public health issue and is endemic throughout the country, with a seasonal upsurge from June through October. In Burkina Faso, the rainy season duration varies across the country with corresponding variances in seasonal malaria transmission based on geographic zones. In the north, the rainy season is up to three months; in the central zone, it lasts up to six months, and in the south, it can last up to nine months.

According to routine data collected by the Ministry of Health (MoH), the malaria situation in 2017 was as follows:

- There were 11,915,816 confirmed cases of malaria (with a reported diagnostic confirmation rate of 91.7 percent) compared to 9,785,822 cases in 2016 (with 94.1 percent confirmed cases)
- There were 4,144 deaths linked to malaria in comparison with 3,974 deaths in 2016, a slight increase of 4 percent
- Deaths due to malaria among children under five years of age decreased significantly, with 3,135 deaths being reported, compared to 2,370 in 2016, which represents a 32 percent increase

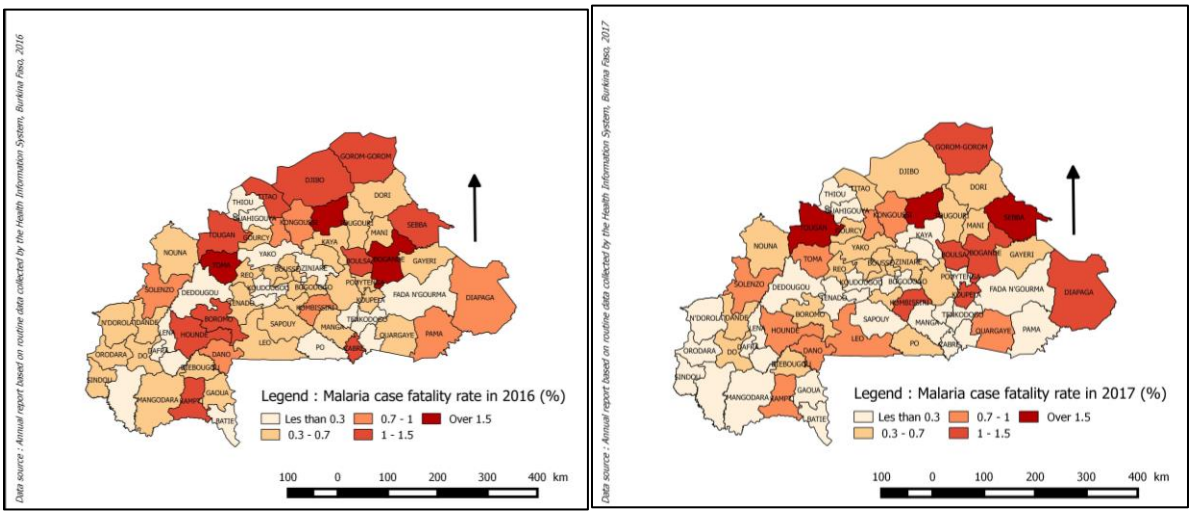
The proportion of children infected with malaria parasites has decreased from 65.9 percent (MIS, 2010) to 45.7 percent (MIS, 2014) and then to 16.9 percent (preliminary data of MIS, 2017). However, the results of the latter survey should be considered with caution, given that the data collection took place in December 2017 and January 2018, after the high malaria transmission period ending in (June-October).

**Figure 1: Malaria incidence per 1,000 inhabitants (Source: NMCP)**



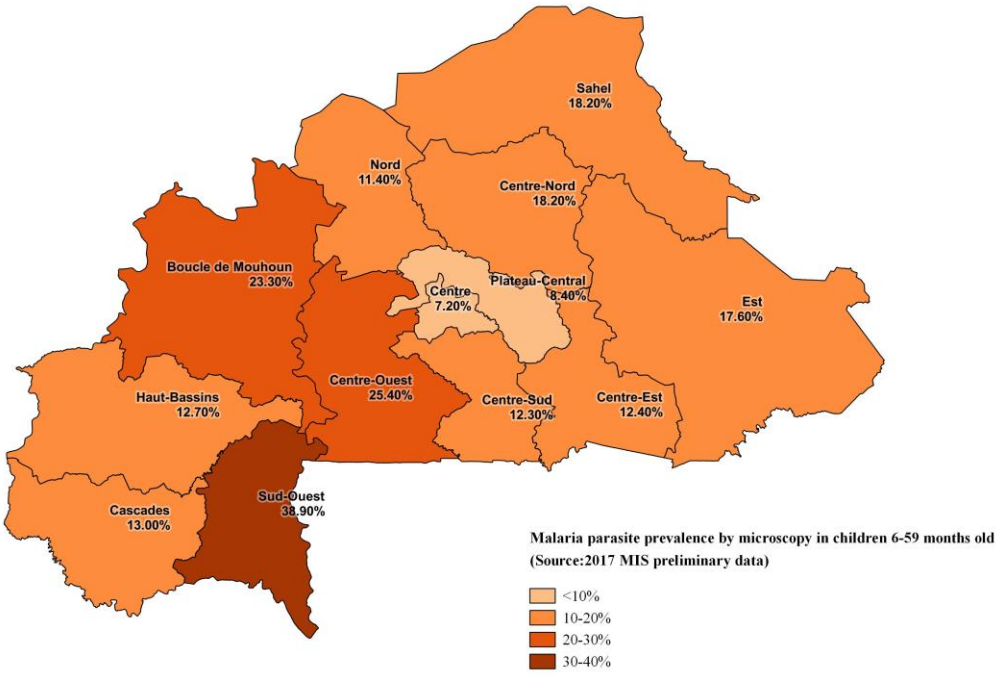

**2016** **2017**

**Figure 2: Malaria case fatality rates by district (Source: NMCP)**




**2016** **2017**

**Figure 3: Malaria parasite prevalence by region (Source: 2017 MIS, preliminary data)**




Principal vectors of malaria in Burkina Faso include three members of the *Anopheles gambiae* complex (*An. gambiae* s.s., *An. Coluzzii*, and *An. arabienesis*) and *An. funestus*. Their relative abundance depends on location and time of year. *Plasmodium falciparum* (in 90 percent of cases responsible for severe and

fatal forms of malaria) infection is widespread across the country and throughout the year, while *P. malariae* and *P. ovale* individually culminate at the end of the rainy season.[1]

According to entomological data available, the vector complex is dominated by members of *An. gambiae* s.l. complex, predominantly *An. gambiae* s.s. and *An. coluzzi* in the central and the central-east regions of the country. *An. arabiensis* is best established in most areas, except in the west where it is relatively uncommon. The Sahel zone is characterized by a strong presence of *An. coluzzi* in suburban areas due to permanent or semi-permanent water collections. *An. funestus* is the second vector group after *An. gambiae* s.l. that transmits in the late rainy season.[2]

Concerning resistance of malaria vectors, especially *An. gambiae* in West Africa (particularly in Burkina Faso), studies conducted by IRSS, *Centre Muraz*, and *Centre National de Recherche et de Formation sur le Paludisme* (CNRFP) indicate that resistance is increasing every year, which could be a medium-term limiting factor in the use of insecticides for vector control.

The resistance of *An. gambiae* s.l to DDT and major pyrethroid insecticides is evident in many parts of the country, but the level is variable according to the location. The resistance level is still acceptable in terms of an operational view in central and eastern areas for deltamethrin. Bendiocarb is potentially still effective in several areas, except in the western part of the country. The most effective insecticides in all parts of the country are fenitrothion and pirimiphos methyl. However, susceptibility data generated by IRSS with PMI's support, suggests possible resistance to pirimiphos-methyl at some proposed spray sites: Kampti District (southwest region) and Solenzo District (*Boucle du Mouhoun* region). Two rounds of susceptibility testing on different species conducted in June and September 2017 give similar results, a status further confirmed by additional tests conducted by IRSS during the same year.

### 3. Country health system delivery structure and Ministry of Health organization

Per the new MoH organogram, the NMCP now falls under the coordination of the Technical Secretariat for the elimination of priority infectious diseases, which includes malaria, HIV/AIDS, tuberculosis (TB), and neglected tropical diseases. This new structure reports directly to the Minister of Health and includes an office dedicated to the malaria program. Overall, malaria activities are organized at all three levels of the public health system:

- The central level is responsible for developing strategies, mobilizing resources, coordinating partners, monitoring implementation, and evaluating performance
- The intermediate level is comprised of 13 health regions with eight regional hospitals that serve as referral centers
- The peripheral level is comprised of 70 health districts with a total of 45 district hospitals, 57 medical centers and 1,839 health facilities

In addition to public sector facilities, the private sector includes about 133 hospitals, 397 medical and nursing centers, 45 health facilities run by NGOs or faith-based organizations, and 140 biomedical laboratories. There are about 246 private pharmacies, with private drug sellers numbering around 617 countrywide. These private health facilities are mainly found in Ouagadougou and Bobo-Dioulasso. The private sector is integrated into the health system—participating in regular meetings with the MoH,

[1] Gneme A, et al. (2015) Equivalent susceptibility of *Anopheles gambiae* M and S molecular forms and *Anopheles arabiensis* to *Plasmodium falciparum* infection in Burkina Faso. Malar J. 2013 June 14; 12:204

[2] IRSS, Centre Muraz 2012, Statut de sensibilité des populations *d'Anopheles gambiae* s.l. dans les zones pilotes du PNLP au Burkina Faso

ensuring at least some compliance with technical guidelines. The NMCP is considering providing private sector staff training on malaria prevention and treatment guidelines, and creating a memorandum of understanding to further engage the private sector in malaria control activities.

The traditional medicine sector is also gradually being incorporated into the health system and organized under the directorate for medicine and traditional medicine in the MoH. Healers provide care for some diseases, including the use of traditional medicinal plants for malaria. As part of the fight against malaria, the government budget will train traditional medicine practitioners to recognize signs of severe malaria to refer these cases to the appropriate health facility.

In 2014, the MoH adopted a policy to formalize community health workers' (CHW) status, including a monthly stipend (CFA 20,000 or $34), job description, and hiring criteria. The Global Fund supported the MoH with the recruitment of 17,668 new CHWs (two per village) through the Global Fund's health system strengthening grant in 2016. This support also included an integrated training package—prevention, diagnostics, and treatment of malaria, pneumonia, and diarrhea—for each CHW. Training was completed in 2017. According to an agreement with the Government of Burkina Faso (GoBF), only one quarter of the CHWs' monthly stipend will come from the Global Fund, while three quarters will be supported through the government budget. Additionally, UNICEF financed toolkits for data collection and reporting, which have recently been distributed by the MoH.

The Global Fund, through its civil society malaria grant, is also providing nationwide coverage to support 252 community-based organizations promoting sensitization of communities on malaria prevention and treatment through group discussions, drama, and videos

Civil society is very active and supports the GoBF in implementation and resource mobilization. Civil society brings together several stakeholders including associations and other NGOs, including an advocacy network and mobilization of funds for maternal and child health. Services include social mobilization, promotion of essential family practices, patient monitoring, location of 'lost' HIV and TB patients, orientation of patients to health facilities, family planning services, and treatment of malaria, diarrhea, etc.

### 4. National malaria control strategy

A new 2016-2020 strategy was adopted in November 2016, in line with the long-term vision of eliminating malaria in Burkina Faso by 2030. The NMCP's strategic objectives align with the Global Fund's Technical Strategy and PMI's Strategy for 2015-2020 and include:

- Reduce malaria death rate by 40 percent in Burkina Faso by 2020 from 2015 levels
- Reduce malaria incidence rate by 40 percent in Burkina Faso by 2020 from 2015 levels
- Reinforce NMCP malaria program management capacities in Burkina Faso by 2020

The NMCP's new strategic plan is comprised of 10 focus areas:

- Parasitological diagnosis of malaria at public and private health facilities, community levels, and through quality control/quality assurance (QA/QC) of laboratories
- Treatment of malaria cases at public and private health facilities and community levels
- Vector control through universal access to ITNs, implementation of IRS in targeted areas, and management of insecticide resistance
- Prevention of malaria in pregnancy (MIP) using IPTp with sulfadoxine-pyrimethamine (SP) and by providing ITNs through routine distribution channels
- Seasonal malaria chemoprevention (SMC) for children aged 3-59 months

- Strengthening of communication through advocacy and social and behavior change communication (SBCC)
- Securing commodity supply chain management
- Monitoring, evaluation, and research
- Epidemic control and emergency management
- Strengthening malaria program management

The NMCP's strategic approach will continue to fall within the following major areas: prevention through malaria vector control, SMC for children under five years of age, IPTp; case management including diagnosis; and SBCC.

The malaria vector control goals are to protect individuals against infective malaria mosquito bites and reduce the intensity of malaria transmission at the community level. The key interventions in this plan include ITN distribution, IRS, and larval source control, including environmental management.

To protect both mother and fetus from the impact of MIP, NMCP policy is to administer IPTp using SP during each antenatal care (ANC) visit starting in the second trimester. Each treatment is administered with direct observation by a health worker and continues at monthly intervals until delivery.

In 2014, SMC was piloted with two NGOs (Terre des Hommes and Alima) in seven health districts. Financial support was provided by the European Union and the World Bank. The study found:

- High acceptability from people living in areas targeted by the intervention with high coverage of the target population (over 90 percent coverage achieved)
- Reduction in the number of cases of malaria among children under five years of age by 15 percent in 2014 compared to 2013, and by 31 percent during the intervention period
- Reduction in the number of severe cases of malaria among children under five years of age by 16 percent compared to 33 percent in 2013
- Reduction in the number of deaths by 45 percent in 2014 compared to 36 percent in 2013

As a result, the MoH started scaling up implementation of SMC to cover 17 health districts in 2015 and 54 health districts in 2016. SMC coverage was expanded to 63 of the 70 total health districts in 2017. Malaria Consortium provided financial and technical assistance in 11 health districts from three regions in 2015, with an expansion to 31 health districts in 2016 and to 39 health districts in 2017. The World Bank provided assistance in four health districts in 2015 and expanded to 18 districts in 2016 and 2017. The World Bank has committed to supporting 22 districts in 2018 and 2019. UNICEF provided operational costs for 2 of the 39 districts supported by Malaria Consortium. The Global Fund supported 3 health districts in 2016 with a commitment to support 9 districts in 2018, 17 districts in 2019, and 39 districts in 2020. In 2016, SMC campaign areas had an average 45 percent malaria incidence reduction in children under five years of age. PMI provided financial support for SMC implementation, including drug procurement, in 2 health districts in 2017 and in 12 health districts in 2018.

Since 2012, the NMCP has strengthened case management, requiring the use of microscopy or RDTs to diagnose all suspected malaria cases presenting in health facilities. A primary difficulty has been ensuring an uninterrupted supply of RDTs at the health facility level. Beginning in 2013, a pilot study on the administration of RDTs by CHWs was conducted in three health districts. Plans for national scale-up are now in process as part of the national free healthcare program, community-based testing and treatment, which is expected to be operational in 2018. The program is currently implemented in just one district (Manni in the eastern region) with UNICEF's support.

## 5. Updates in the strategy section

The NMCP adopted the 2016-2020 strategy in November 2016, building on the outcomes of the malaria program review (which included the evaluation of NMCP's strategic plan for 2011-2015) and based on the country's long-term vision and commitment for malaria elimination and sustainable development by 2030 and with the goal to reduce malaria burden by 40 percent by 2020. So far, there has not been any change or a review of the current strategic plan. It is, however, worth noting that malaria prevention and treatment guidelines were updated in 2017 with the support of USAID to include dihydroartemisinin-piperaquine (DP) on the list of first-line malaria treatment options for uncomplicated malaria.

A pilot plan for the use of rectal artesunate for the pre-referral treatment of severe malaria cases in three districts of the Sahel region has been developed with WHO's support in 2018. PMI will provide support for the implementation and gradual scale up of this pilot intervention through procurement of rectal artesunate and operational costs.

Additionally, the NMCP is working closely with the Technical Secretariat for Universal Health Coverage, the Directorate for Health Promotion and Education, and other technical directorates to design and implement a pilot intervention of the free healthcare program at the community level this year, which will involve malaria testing and treatment for free by CHWs. USAID is ready to provide support for implementation at its pilot phase, but the process has been delayed mainly due to lack of funding and some challenges for the operationalization of the new MoH organizational chart. It is currently piloted in Manni with the support of UNICEF.

## 6. Integration, collaboration, and coordination

The NMCP actively coordinates financial and technical programmatic collaboration among financial and technical partners. The most formal presentation of this collaboration is the biannual malaria steering committee meeting that brings together government ministries, donors, and implementing partners to review and coordinate malaria prevention and control activities. Under the steering committee, five working groups are tasked with different components of malaria prevention and control and include partners engaged in financial and technical collaboration. The five groups are: partnership and communications; planning, monitoring, evaluation, and research; vector control; drug-based case management and medical prevention; and finance and resource mobilization. In the 2016-2020 National Strategic Plan, the NMCP will reach out to the private sector for increased funding opportunities.

The relationships between the above mentioned malaria stakeholders are both collegial and collaborative with genuine interest in complimenting one another and seeking information sharing and harmonization of strategies and action plans.

*Integration and collaboration with key development partners*

As of FY 2017, PMI is the largest malaria donor in Burkina Faso, followed by the Global Fund.

**Global Fund:** The next Global Fund malaria grant started on January 1, 2018, and will end on December 31, 2020. Total funding is about €84 million with up to €68.2 million for malaria and about €4.8 for health systems strengthening, including catalytic funding.

The public sector, civil society, and health system strengthening components of the malaria grant have all been awarded to PADS (*Programme d'appui au development sanitaire*). Three secondary recipients will assist with implementation under PADS' leadership: 1) the NMCP, which is the secondary recipient

for the public sector; 2) *ProgetttoMondo MLAL*, an Italian NGO and secondary recipient for civil society; and 3) *Centre pour l'information et la documentation*, a local community organization that will be in charge of crosscutting health system strengthening for community-based organizations that work to reinforce prevention and treatment for malaria, tuberculosis, and HIV/AIDS. Major areas of intervention include procurement of ITNs for the 2019 mass distribution campaign; nationwide supervision of regional, district, and health facility staff; malaria treatment at the community level; resilient and sustainable health systems; health information management systems (HMIS); and monitoring and evaluation (M&E).

The Global Fund will procure more than 12 million nets for the mass distribution campaign, which represents over 40 percent of the Global Fund malaria grant budget.

The recent recruitment by the MoH of 17,668 new CHWs (two per village) was supported through the Global Fund's health system strengthening grant. The Global Fund's support for CHWs includes an integrated training package: prevention, diagnostics, and treatment of malaria, pneumonia, and diarrhea. The Global Fund will finance a quarter of the total $34 CHW monthly stipend, while the GoBF will pay the rest. The Global Fund will also finance trimestral supervision of CHWs by head nurses from corresponding health facilities. The Global Fund, through its civil society malaria grant, is also providing nationwide coverage to support 252 community-based organizations: promoting sensitization of communities on malaria prevention and treatment through group discussions, theatre, and video.

**UNICEF:** Provides technical support, including the hiring of consultants, through their country health team. UNICEF provided technical assistance to the NMCP during the creation of the Global Fund malaria concept note, and has provided limited financial assistance for the procurement of routine ITNs, SMC, and campaign implementation. UNICEF is likely to reduce its technical and financial support going forward due to a lack of funding and shifting priorities.

**WHO:** Provides technical assistance in setting standards and norms, and supports studies on vector resistance to insecticides and on therapeutic efficacy. WHO support also includes limited resources provided for SBCC, in particular for the celebration of World Malaria Day; M&E; program management; and operational research (OR). WHO has also provided assistance for the evaluation and the development of the NMCP's 2016-2020 National Strategic Plan through technical assistance provided by the malaria advisor. Additionally, WHO's support includes strengthening data quality and microscopy QA/QC systems.

**The World Bank:** Is providing financial assistance to the GoBF through a $37 million loan that supports neglected tropical diseases, including malaria. The project started in January 2015 and will end in December 2019. Malaria resources have been focused on SMC interventions in 22 health districts located at borders with Niger and Mali. Other types of support include financial resources for the procurement of ACTs to fill gaps, SBC, program management, and technical assistance.

**Malaria Consortium:** Provides support for commodity procurement and implementation of SMC campaigns, program management, and technical assistance. Malaria Consortium, with funding from UNITAID, has provided financial and technical assistance for SMC commodity procurement and campaign implementation in 11 health districts in 2015, 31 health districts in 2016, and 39 health districts in 2017 (of which 8 districts were financially supported by Give Well, a U.K-based donor). UNITAID funding ends in 2017 and negotiations are currently ongoing as to how many health districts Give Well can cover in the future.

**Italian Cooperation:** Through their malaria training and research program, provides support for M&E, program management, OR, and technical assistance. The estimated total budget for this three-year project is more than $5 million.

**Terre des Hommes:** A Switzerland-based NGO, provides support for SMC, purchase of ACTs, and SBCC, as part of the integrated case management of child illnesses at health facility levels. Will receive about 2.7 million from PADS (Global Fund Primary Recipient for malaria grant) for the procurement of smart phones to be used as electronic registry tools and for the provision of targeted technical assistance.

**Liverpool School of Tropical Medicine:** Collaborated with the MoH to launch a new project, Partnership for Increasing the Impact of Vector Control, in June 2018. It is a four-year project involving the NMCP, the Neglected Tropical Diseases Division of the MoH, and two research institutions (IRSS and CNRFP), each with their own project coordinator (the national coordinator is based at the latter research center). The project will focus on the following areas: 1) capacity building of researchers working in the field of vector control through master and PhD training; 2) strengthening research centers institutional capacity; and 3) supporting the country to build a strong vector control working group. The project is a component of a larger project covering Cameroon and Malawi.

**GoBF:** Provides support through the procurement of SP for IPTp, ACTs, and microscopy tests, and support for malaria case management at the community level, pharmaceutical management, severe malaria case management, SBCC, and program management. However, government commitment is not easy to track or monitor with shifting priorities and commitments (transitional government, new free healthcare program for children under five years of age and pregnant and lactating women, etc.)

*Existing mechanisms for coordination of malaria prevention and control activities*

**RBM Partnership:** Does not have a strong physical presence in Burkina Faso. The RBM focal point in country, the NMCP Coordinator, chairs partner meetings on a quarterly basis.

**Country Coordinating Mechanism (CCM):** Includes representatives from public and private sectors, multilateral or bilateral agencies, governments, NGOs, private business, and academic institutions. CCM is central to the Global Fund's structure and commitment to local ownership. CCM assists with initial grant creation and oversight of progress during grant implementation. In 2014, after a CCM assessment to determine eligibility for Global Fund financing in Burkina Faso, it was decided that a redrafting of the CCM constitution was needed. Changes made to the CCM constitution in 2015 left financial partners (USAID, European Union, and French Cooperation) with one voting seat on a rotating basis. USAID is currently the Second Vice President of CCM, providing technical assistance to revitalize it and ensure its Global Fund eligibility. In 2015 and 2016, USAID provided support to CCM through technical assistance provided by Global Management Solutions to the Primary Recipients in drafting and updating grant monitoring tools for implementation. PMI continues to coordinate regularly with the Global Fund portfolio manager regarding grant implementation issues and exploring ways to best leverage funds.

**Malaria Steering Committee:** Provides directives and guidance to the NMCP and implementing partners and works to strengthen partnerships and coordination. (See integration, collaboration, and coordination for more information).

*Current status of malaria OR activities*

There are four national research institutions working on malaria OR, with three of them overseen by the MoH: Centre Muraz, CNRFP, and the *Centre de Recherche en Santé de Nouna*. The fourth center, IRSS,

is overseen by the Ministry of Education. These centers receive limited resources from the GoBF and rely on external resources from partnerships with European and North American research institutions.

## 7. PMI goal, objectives, strategic areas, and key indicators

Under the PMI Strategy for 2015-2020, the U.S. Government's goal is to work with PMI-supported countries and partners to further reduce malaria deaths and substantially decrease malaria morbidity, towards the long-term goal of elimination. Building upon the progress to date in PMI-supported countries, PMI will work with NMCPs and partners to accomplish the following objectives by 2020:

1. Reduce malaria mortality by one-third from 2015 levels in PMI-supported countries, achieving a greater than 80 percent reduction from PMI's original 2000 baseline levels
2. Reduce malaria morbidity in PMI-supported countries by 40 percent from 2015 levels
3. Assist at least five PMI-supported countries to meet the WHO criteria for national or subnational pre-elimination[3]

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

1. Achieving and sustaining scale of proven interventions
2. Adapting to changing epidemiology and incorporating new tools
3. Improving countries' capacity to collect and use information
4. Mitigating risk against the current malaria control gains
5. Building capacity and health systems towards full country ownership

To track progress toward achieving and sustaining scale of proven interventions, PMI will continue to track the key household survey indicators recommended by the RBM M&E Reference Group below:

- Proportion of households with at least one ITN
- Proportion of the population with access to an ITN[4]
- Proportion of children under five years old who slept under an ITN the previous night
- Proportion of pregnant women who slept under an ITN the previous night
- Proportion of the population that slept under an ITN the previous night
- Proportion of children under five years old with fever in the last two weeks for whom advice or treatment was sought
- Proportion of children under five with fever in the last two weeks who had a finger or heel stick
- Proportion receiving an ACT among children under five years old with fever in the last two weeks who received any antimalarial drugs
- Proportion of women who received two or more doses of IPTp for malaria during ANC visits during their last pregnancy
- Proportion of women who received three or more doses of IPTp for malaria during ANC visits during their last pregnancy

[3] http://whqlibdoc.who.int/publications/2007/9789241596084_eng.pdf
[4] http://www.malariasurveys.org/documents/Household%20Survey%20Indicators%20for%20Malaria%20Control.pdf

## 8. Progress on coverage/impact indicators to date

**Table 1: Evolution of key survey-based malaria indicators in Burkina Faso, 2010-2017**

| Indicator | 2010, DHS | 2014, MIS | 2015, TraC | 2017, MIS[1] |
|---|---|---|---|---|
| % Households with at least one ITN | 66 | 90 | N/A | 75 |
| % Population with access to an ITN | N/A | 49 | 87 | 33 |
| % Children under five years who slept under an ITN the previous night | 53 | 75 | 86 | 54 |
| % Pregnant women who slept under an ITN the previous night | 53 | 77 | N/A | 58 |
| % Population that slept under an ITN the previous night | | 75 | N/A | 44 |
| % Children under five years with fever in the last two weeks for whom advice or treatment was sought | 21 | 61 | 77 | 74 |
| % Children under five years with fever in the last two weeks who had a finger or heel stick | 5 | 30 | 43 | 49 |
| % Children receiving an ACT among children under five years with fever in the last two weeks who received any antimalarial drugs | 35.1 | 30 | N/A | 80 |
| % Women who received two or more doses of IPTp during their last pregnancy in the last two years | 39 | 48 | N/A | 82 |
| % Women who received three or more doses of IPTp during their last pregnancy in the last two years | | 22 | N/A | 58 |
| Under-5 mortality rate per 1,000 live births | 129 | N/A | 82 | N/A |
| % Children under five years with parasitemia (by microscopy**,** if done) | 66 | 46 | N/A | 17 |
| % Children under five years with parasitemia (by RDT, if done) | 76 | 61 | N/A | 20 |

[1] MIS data are preliminary and not yet published
[2] ACT was not the only treatment in 2010

**Table 2: Evolution of key malaria indicators reported via routine surveillance systems, 2012-2017**

| | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 |
|---|---|---|---|---|---|---|
| **Total no. cases[1]** | 6,526,493 | 7,146,026 | 8,278,408 | 8,285,251 | 10,629,272 | 11,915,816 |
| **No. confirmed cases[2]** | N/A | 3,772,051 | 5,428,003 | 7,014,657 | 9,785,822 | 10,527,304 |
| **No. presumed cases[3]** | N/A | 3,373,975 | 2,850,405 | 1,270,594 | 843,450 | 1,388,512 |
| **Total no. <5 cases[4]** | 3,348,222 | 3,346,725 | 3,894,247 | 3,688,077 | 4,970,689 | 6,082,216 |
| **Total no. malaria deaths[5]** | 7,963 | 6,294 | 5,632 | 5,379 | 3,974 | 4,144 |
| **Data completeness[6]** | 95% | 93% | 98% | 92% | 95% | 94% |
| **Test positivity rate (TPR)[7]** | N/A | 84% | 85% | 87% | 82% | 81% |

[1]Total no. of reported malaria cases. All ages, outpatient, inpatient, confirmed and unconfirmed.
[2]Total diagnostically confirmed cases. All ages, outpatient, inpatient.
[3]Total clinical/presumed/unconfirmed cases. All ages, outpatient, inpatient.
[4]Total number of <5 cases. Outpatient, inpatient, confirmed, and unconfirmed.
[5]Total no. of malaria deaths reported: All ages, outpatient, inpatient, confirmed, and unconfirmed
[6]No. of monthly reports received from health facilities/no. of health facility reports expected
[7]No. of confirmed cases (no.2) divided by no. patients receiving a diagnostic test for malaria (RDT or microscopy)

**Figure 4: Trends in key malaria indicators reported in routine surveillance systems**

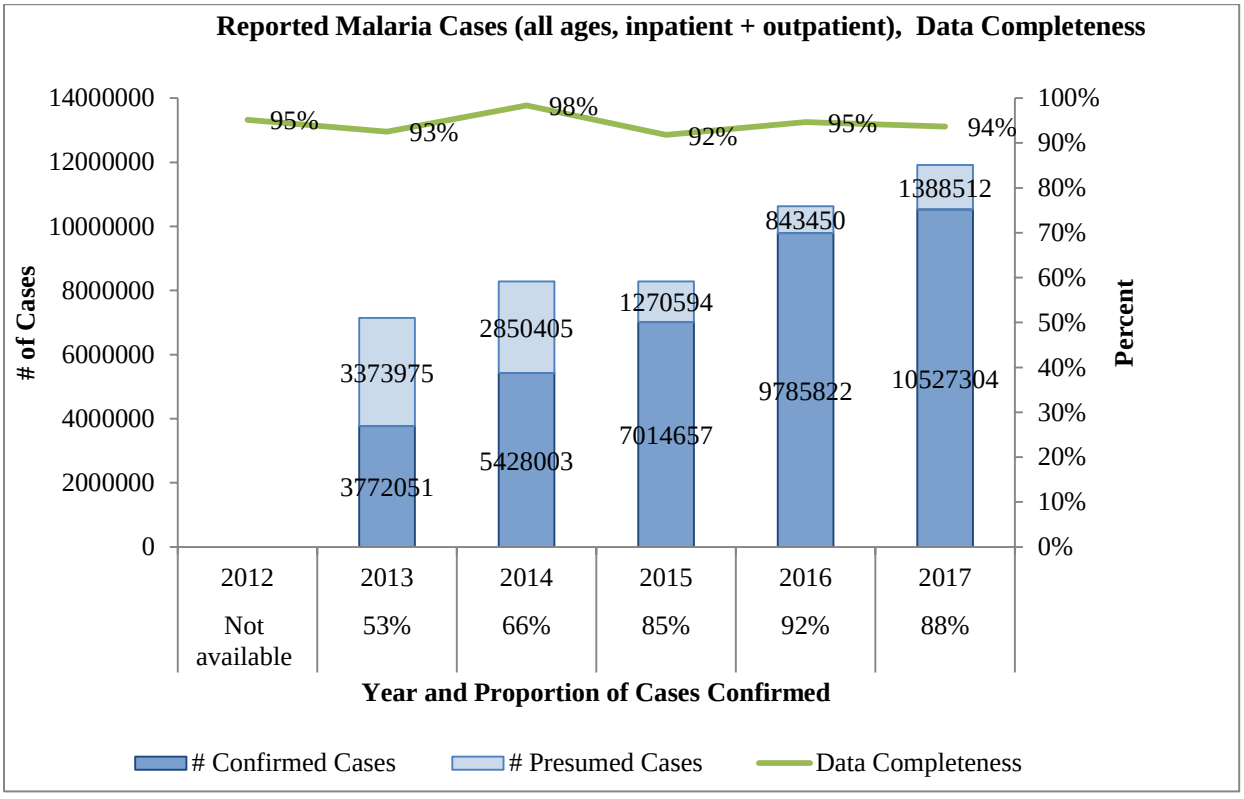
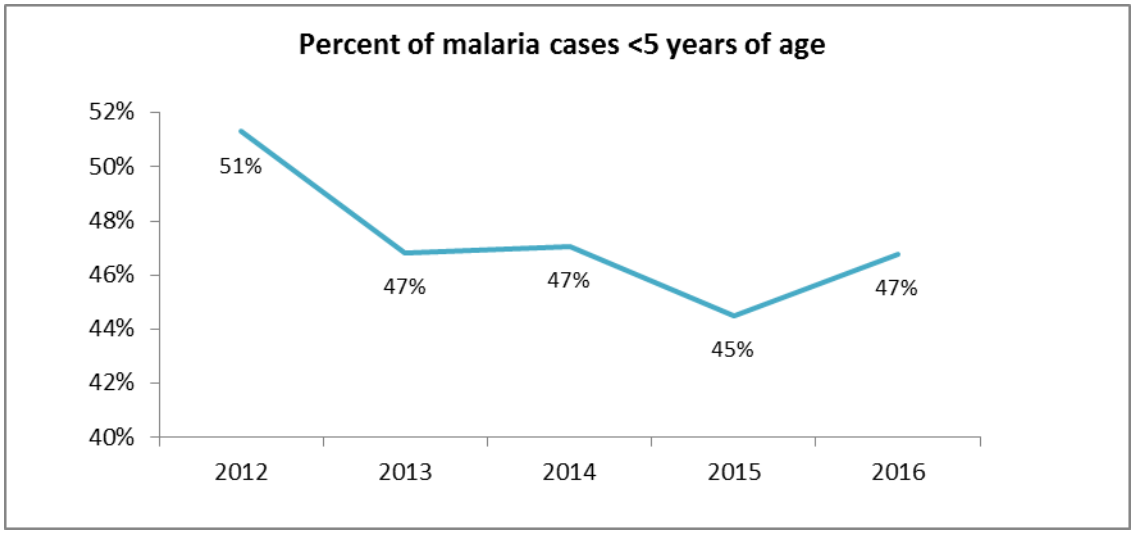


**Figure 5: Trends in key malaria indicators reported in routine surveillance systems**




## 9. Other relevant evidence on progress

There is no other relevant evidence in progress within the activities currently supported by PMI. The 2017 MIS data are final but all relevant studies supported by PMI have not yet been completed. These include:

- The ACT efficacy study that started in November 2017 and was then delayed to 2018 due to a low recruitment rate of cases with the start of the dry season
- The performance evaluation of the Improving Malaria Care Project (a bilateral project funded by USAID) was completed but the report is yet to be finalized taking account the 2017 MIS data
- Community IPTp OR study that is expected to be completed by November 2018

# III. OPERATIONAL PLAN

PMI fully supports all elements of the NMCP's national malaria strategy.

## 1. Vector control

*NMCP/PMI objectives*

Malaria vector control is one of three major prevention interventions within the NMCP's strategic approach to protect individuals against infective malaria mosquito bites and to reduce the intensity of malaria transmission at the community level. Key vector control interventions in the NMCP's strategic plan include ITN distribution via mass campaigns every three years (one ITN per two people) and routine distribution via ANC and EPI channels, IRS in selected districts, and larval source control including environmental management.

### a. Entomologic monitoring and insecticide resistance management

*Intervention overview/current status*

Burkina Faso has three institutions with a history of conducting entomological work including insecticide resistance testing: CNRFP and Centre Muraz within the MoH, and IRSS in the Ministry of Education. CNRFP laboratories, including an insectary, are located in Ouagadougou. Centre Muraz laboratories and insectary are located in Bobo-Dioulasso and the entomologists employed by IRSS essentially work in Centre Muraz laboratories. Both CNRFP and IRSS house colonies of members of the *An. gambiae* complex, as well as *An. funestus*.

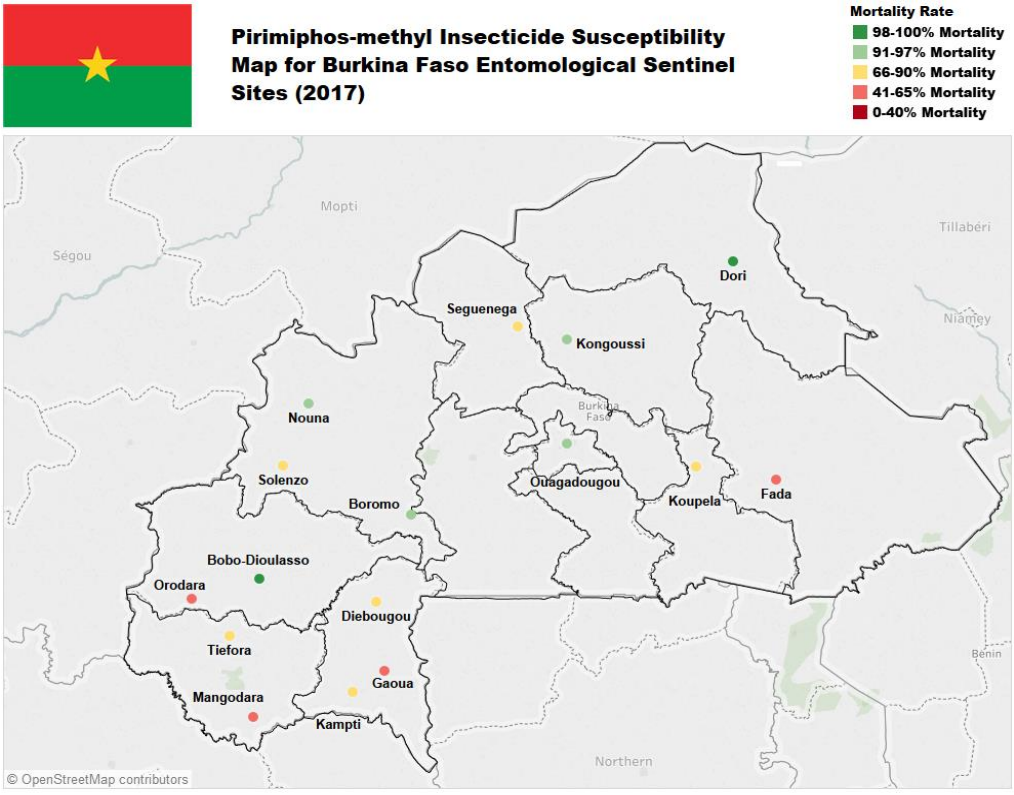
In February 2017, a committee of key stakeholders, including PMI, met in Bobo-Dioulasso to review the insecticide resistance monitoring plan and to select four districts as potential IRS sites, four control comparison districts, and eight additional sites for insecticide resistance monitoring. With FY 2016 funds, USAID supported entomological monitoring in villages in 16 districts throughout Burkina Faso. Four districts (Mangodara, Kampti, Solenzo, and Kongoussi) were selected as potential IRS sites to be sprayed in 2018 with FY 2017 PMI funds and four adjoining districts (Tiefora, Gaoua, Nouna, and Seguenega) to serve as comparison districts. Starting June 2017, these districts received the full package of monthly entomological monitoring activities including human landing catches, pyrethrum spray catches, parity testing, species identification, sporozoite detection, blood meal analyses, and insecticide resistance testing.

*An. gambiae* s.l. was the predominant vector in the human landing catches representing 95.9 percent of the anophelines captured. The other 4.1 percent were composed of *An. pharoensis, An. nili, An. Funestus,* and *An. coustani*. Members of the *An. gambiae* complex identified were *An. gambaie* s.s., *An. coluzzi*, and *An. arabiensis*, and their relative abundance with respect to each other varied based on month and district. *An. coluzzi* was the predominant species in the four northern districts. In more southern districts, *An. coluzzi* was predominant in June but *An. gambiae* s.s. became more dominant as the months progressed. Biting rates varied by month and district but in general the greatest number of mosquitoes were collected in September. Approximately the same numbers were collected outdoors as indoors. Interestingly, peak collection period was between 4-5 a.m., the time when people were waking to go to the fields. Blood meal analyses revealed that approximately 90 percent of the *An. gambiae* s.l. had fed on humans. The other blood sources included goats, sheep, pigs, and bovines. In southern districts, *P. falciparum* infected *An. gambiae* s.l. were found as early as June, whereas infected mosquitoes were found in only one of the northern districts in June. By August, infected mosquitoes were found in all districts. The average infection rates in these vectors were higher in the southern

districts (Mangodora, 7.3 percent; Tiefora, 7.3 percent; Kampti, 11.7 percent; and Gaoua, 6.7 percent) than in the other districts (Solenza, 1.3 percent; Nouna, 2.0 percent; Kongoussi, 3.3 percent; and Seguenega, 4.7 percent).

Insecticide resistance testing with the WHO tube test was carried out twice (in June and September 2017) in the four potential IRS districts and their comparison districts. The second round in September coincided with highest agricultural use of insecticides, which may contribute to resistance selection. In all eight districts during both June and September testing, less than 30 percent of the *An. gambiae* s.l. were susceptible to the three pyrethroids tested (alpha-cypermethrin, deltamethrin, and permethrin). Susceptibility to bendiocarb ranged from approximately 45 percent in Mangodora to almost 80 percent in Seguenega and Solenzo. Possible resistance to the organophosphate pirimiphos-methyl was detected in multiple districts (Kampti, Gaoua, and Mangodara) in June. Mortality rates in tests ranged from 45 to 65 percent where in the other five districts very little resistance was detected (susceptibility to the insecticide was approximately 95 percent or more). The situation was worse in September, but data from a third round of testing against pirimiphos-methyl in November showed increased susceptibility to this insecticide in some districts. Only in Kongoussi were more than 90 percent of mosquitoes susceptible to the insecticide. Insecticide resisting was also conducted with *An. gambiae* s.l. at 16 other NMCP sites.

**Figure 6: 2017 Map of pirimiphos-methyl susceptibility in Burkina Faso**




Susceptibility to permethrin and alphacypermethrin was less than 50 percent at all sites tested and less than 10 percent at some. Susceptibility to deltamethrin was less than 40 percent in all sites except Fada and Tenkodogo, where it was around 60 percent. Susceptibility to Bendiocarb varied considerably throughout the country. In four sites (Dori, Dioulassoba, Koupela, and Vallee du Kou) susceptibility ranged from 97-100 percent. In six sites (Kaya, Dedougou, Fada, Tenkodogo, Ouagadougou, and Koudougou) the range was between 80 and 90 percent susceptible, whereas in the remaining six sites (Boromo, Manga, Kombissiri, Orodoara, Soumousso, and Diedougou) susceptibility was less than 80

percent. Intensity assays with deltamethrin conducted in eight sites did not show any resistance above two times the diagnostic dose.

*Progress since PMI launched*

Entomological staff at IRSS were trained in piperonyl butoxide (PBO) testing in late May 2018. Monthly cone bioassays in the IRS districts and entomological monitoring in the IRS and control districts began within one of week of commencing spraying. Insecticide resistance testing including tests with exposure to PBO were carried out during the peak of the transmission season.

*Plans and justification*

Because PMI plans to continue to fund IRS with FY 2019 funds, PMI will also fund entomological monitoring activities associated with IRS. These activities include cone bioassays on walls to ensure quality of spraying in each of the spraying districts. In addition, the following entomological indicators will be monitored monthly in sprayed and matched control districts: density and identity of vectors (including molecular identification), biting and resting behavior, parity rates, blood meal analyses, and infection rates. Lastly, insecticide resistance monitoring including mechanism determinations will be carried out in the sprayed and control districts as well as in eight other sentinel sites in the country.

Please see Table 2: Budget Breakdown by Activity for a detailed list of proposed activities with FY 2019 funding.

**b. Insecticide treated nets**

*Intervention overview/current status*

The 2016-2020 National Malaria Control Strategy for Burkina Faso uses ITNs as the principal tool for malaria prevention. This strategy employs three approaches for ensuring that ITNs are available to the entire population: 1) free distribution of ITNs via nationwide campaigns, with one ITN made available for every 1.8 people; 2) free distribution of ITNs through ANC and expanded program on immunization (EPI) services provided at all public health facilities, ensuring that pregnant women and infants are protected; and 3) the sale of ITNs by the private sector.

The 2010 Demographic and Health Survey (DHS) shows that 44 percent of pregnant women and 45 percent of children under five years of age slept under an ITN the night prior to the survey. These results are up from the 2003 DHS, where only 2 percent of pregnant women and 3 percent of children under five years of age slept under an ITN the night prior to the survey. Data from the Malaria Indicator Survey (MIS) conducted in 2014 shows that 77 percent of pregnant women and 75 percent of children under five years of age slept under an ITN the night prior to the survey, both significant increases from the 2010 DHS. Preliminary data from the 2017 MIS indicate a significant reduction in these latter two indicators, 58 percent and 54 percent, respectively, but it must be noted that the MIS was delayed and actually took place in early 2018 during the dry season.

Burkina Faso has conducted three nationwide, universal coverage ITN campaigns: 1) in 2010 with approximately 7.5 million ITNs distributed; 2) from July through early November 2013, with 9,267,584 nets distributed, covering 95 percent of all households that were identified during the pre-campaign census; and 3) in 2016, with almost 11 million nets purchased and distributed, with Global Fund resources covering most of the costs. USAID contributed 400,000 nets to the 2016 campaign. Estimates for the nets needed for the 2016 campaign were based on a population estimate of 19 million, but the inflated pre-campaign census estimated the population size at 22 million since households often want to

take advantage of additional free nets. Therefore, insufficient nets were available and universal coverage was not fully achieved. To address this underestimation, a 5 percent buffer stock has been added to the estimated quantity of nets needed for the campaign. In addition, the overestimation of the census will be addressed with high-quality training and supervision of all stakeholders involved in the household registration and net distribution.

Health facilities in all districts are supposed to provide ITNs free of charge to pregnant women during their first ANC visit and to children less than one year of age as a part of EPI services. During 2015, due to the late arrival of Global Fund-procured nets, an estimated 1.7 million were needed for these vulnerable populations but only 529,836 were distributed, with all districts reporting a stockout at some point from October 2015 through September 2016. Nets are delivered to districts via the *Central d'Achats des Medicaments Essentials Generiques* (CAMEG), the central medical supplies store. Each health facility is supposed obtain their nets from the district depot.

Late arrival of ITNs in the country limited the routine (ANC and EPI) distribution of nets during 2017. One estimate was that 61 percent of pregnant women received nets from April to June 2017. In August and September, CAMEG distributed approximately 1 million ITNs to the district depots where health facilities obtain their supply of nets. However, due to shortages in storage space at the district level, in late 2017, CAMEG had 995,864 ITNs in stock. According the NMCP and CAMEG, stocks of ITNs currently in country are sufficient for routine distribution in 2018. As of June 2018, 589,014 nets remained at the CAMEG and 1,284,138 in the regional depots.

Another emerging issue is regarding ITN durability, with preliminary information from other countries indicating that net life expectancy is less than three years. The NMCP is already leading discussions to consider additional approaches to extend the life of an ITN. As ITN durability data becomes available throughout Africa, and in West Africa in particular, the NMCP will continue to review their national strategy and make changes if needed. PMI will monitor the situation, and participate in country-level discussions, keeping the NMCP and other stakeholders informed on the latest information regarding best approaches for extending the life of a net that may lead to policy revisions.

*Progress since PMI was launched*

In 2018, PMI purchased 400,000 ITNs for routine distribution during ANC and EPI and provided technical assistance to assess the routine distribution system in Burkina Faso.

**Table 3: ITN gap analysis**

| Calendar Year | 2018 | 2019 | 2020 |
|---|---|---|---|
| Total targeted population | 20,244,079 | 20,870,060 | 21,478,529 |
| **Continuous Distribution Needs** | | | |
| Channel 1: ANC | 983,338 | 1,013,035 | 1,043,629 |
| Channel 2: EPI | 777,145 | 792,134 | 805,961 |
| *Estimated total need for continuous channels* | 1,760,483 | 1,805,169 | 1,849,590 |
| **Mass Campaign Distribution Needs** | | | |
| 2019 mass distribution campaign | | 12,174,202 | |
| *Estimated total need for campaigns* | 0 | 12,174,202 | 0 |
| *Total ITN need: routine and campaign* | 1,760,483 | 13,979,371 | 1,849,590 |
| **Partner Contributions** | | | |
| ITNs carried over from previous year | 1,873,152 | 512,669 | |
| ITNs from MoH | 0 | 792,134 | 805,961 |
| ITNs from Global Fund | - | 12,500,000[2] | 889,619 |
| ITNs planned with PMI funding | 400,000[1] | 120,000 | 0 |
| *Total ITNs available* | 1,873,152 | 13,924,803 | 1,695,580 |
| **Total ITN surplus (gap)** | **112,669** | **(54,568)** | **(154,010)** |

[1]Includes 350,000 ITNs purchased with GHSC-PSM pipeline.

[2]The Global Fund plans to purchase 9 million standard ITNs, 1.5 million PBO nets, and 2 million Interceptor G2 nets for the mass campaign (Next Generation ITNs will not be distributed in IRS districts). A portion of the PBO nets and Interceptor G2 nets will be reserved for routine distribution (ANC and EPI) in their respective districts in the year following the campaign.

*Plans and justification*

PMI will conduct durability monitoring on standard ITNs, PBO nets, and Interceptor G2 nets. This monitoring exercise will begin in 2019 with reprogrammed FY 2018 funds.

Please see Table 2: Budget Breakdown by Activity for a detailed list of proposed activities with FY 2019 funding.

### c. Indoor residual spraying

*Progress since PMI was launched*

Burkina Faso's 2016-2020 National Strategic Plan, which was adopted in 2016, calls for the reintroduction of IRS in high-transmission regions of the country, which would complement universal coverage of ITNs and larval source management (currently not funded by any donor). USAID/Burkina Faso supported an IRS pilot in Diebougou District from 2010 to 2012; however, USAID support for IRS ceased due to other funding priorities highlighted by the NMCP. During the IRS pilot, NMCP staff, along with regional and district health officials, were involved in key activities of the IRS campaign: training-of-trainers and training of spray teams, supervision of spray teams, and monitoring progress.

With FY 2017 funds, PMI reintroduced IRS in three districts with high malaria burden: Kampti, Kongoussi, and Solenzo. The districts were selected by the NMCP, PMI and relevant stakeholders after reviewing HMIS and entomological data. Burkina Faso was selected as a participant country for the UNITAID-funded NgenIRS Project, allowing the country to benefit from a co-payment on insecticide procurement. It is anticipated that FY 2018-funded IRS in Burkina Faso will also benefit from the NgenIRS Project, which would allow PMI to maintain targets from FY 2017. The NMCP's objective is to cover 100 percent of areas that are selected for IRS, utilizing long-lasting or new insecticide

formulations to combat insecticide resistance that is quite prevalent in Burkina Faso. With FY 2017 funds, both pirimiphos methyl and clothianidin were selected for IRS, based on insecticide susceptibility data (see entomological monitoring section).

With FY 2018 funds, PMI will continue to support IRS in the three initial districts. The insecticide selection for IRS will be made based on susceptibility data, WHO recommended new insecticides on the market, and in alignment with Burkina Faso's insecticide resistance management plan.

**Table 4: Estimated PMI-supported IRS activities 2018-2020**

| Calendar Year[1] | No. of Districts Sprayed[1] | Insecticide Used | No. of Structures Sprayed | Coverage Rate | Population Protected |
|---|---|---|---|---|---|
| **2018** | 3 districts: Kampti, Kongoussi, Solenzo | organophosphate & clothianidin | 245,192 | TBD | 814,369 |
| **2019** | 3 districts: Kampti, Kongoussi, Solenzo | organophosphate, clothianidin &/or clothiandin mixtures | 245,192 | TBD | 814,369 |
| **2020** | 4 districts: TBD | organophosphate, clothianidin &/or clothiandin mixtures | 250,000 | TBD | 850,000 |

[1]Represents targets based on the 2018 IRS work plan, and/or projected targets based on national strategic plan and/or discussions with the NMCP

*Plans and justification for proposed activities with FY 2019 funding*

With FY 2019 funds, PMI plans to continue supporting blanket IRS in up to four high-burden districts in Burkina Faso, as requested by the NMCP. The selection of districts to be covered is dependent on HMIS data, entomological data (including residual efficacy of previously sprayed insecticides), and presence of other vector control interventions, such as next-generation ITNs, which will not be distributed in IRS districts. PMI support will include procurement of insecticide and personal protective equipment, training, operations, environmental compliance mitigation, SBCC and mobilization activities in IRS areas, and overall monitoring.

Please see Table 2: Budget Breakdown by Activity for a detailed list of proposed activities with FY 2019 funding.

### 2. Malaria in pregnancy

*NMCP/PMI objectives*

The NMCP updated their national strategy for IPTp in 2017 to align with the new WHO guidance for the prevention of MIP. The current policy recommends administration of a treatment dose of SP under direct observation of a health worker at each visit to an ANC—starting in the 13th week of pregnancy, fundal height of 13cm, or after the feeling of fetal movement—at four-week intervals, with at least three (and up to six) treatments provided before delivery. The guidelines state that SP can be given until delivery. The guidelines also include the provision of an ITN at the time of the first ANC visit, and 30 tablets (60mg/0.25mg per tablet) per month of iron/folate (taking one per day) to manage anemia. There was a validation workshop of the country ANC revised policy to consider the WHO recommendations. Next steps include the development of operational guidelines, data collection tools, and cascade training to support these upcoming activities with FY 2018 and FY 2019 MOP funds.

The MoH policy (as described in the NMCP strategy) is to provide all ANC services, free of charge, to pregnant women, including provision of an ITN as well as three or more doses of IPTp. In general, MIP services are well integrated into ANC services as all health workers are trained on an integrated platform, which includes provision of correct malaria prevention and treatment services including those related to management of uncomplicated and severe malaria cases and pregnant women who are HIV positive. All pregnant women who attend ANC have an ANC card, which records updates of all the services they receive at each visit. ANC registers allow for monitoring of IPTp1-3 uptake. Registers have not yet been updated to include eight ANC visits as per the 2016 WHO recommendations.

Regarding case management of MIP, pregnant women who are diagnosed with uncomplicated malaria should receive quinine in the first trimester and ACTs in the second and third trimesters. Treatment for those diagnosed with severe malaria follow national protocols (see case management section). The strategy also follows WHO guidance regarding pregnant women who are HIV positive. Malaria cases during pregnancy are tracked in registers at the facility level. The NMCP uses ANC attendance numbers to calculate the quantification for SP and ITN distribution among pregnant women.

The national strategy articulates a target of 100 percent of pregnant women receiving at least three SP treatments (IPTp3) throughout their pregnancy. PMI will continue to work with the NMCP and partners to achieve progress towards IPTp uptake and ITN distribution targets. The NMCP collaborates with the Division of Maternal and Reproductive Health through the National Coordinating Committee for Malaria. A case management and medical prevention technical group, which includes MIP, is housed under the Malaria Control Steering Committee and meets regularly to work on relevant technical issues.

*Progress since PMI was launched*

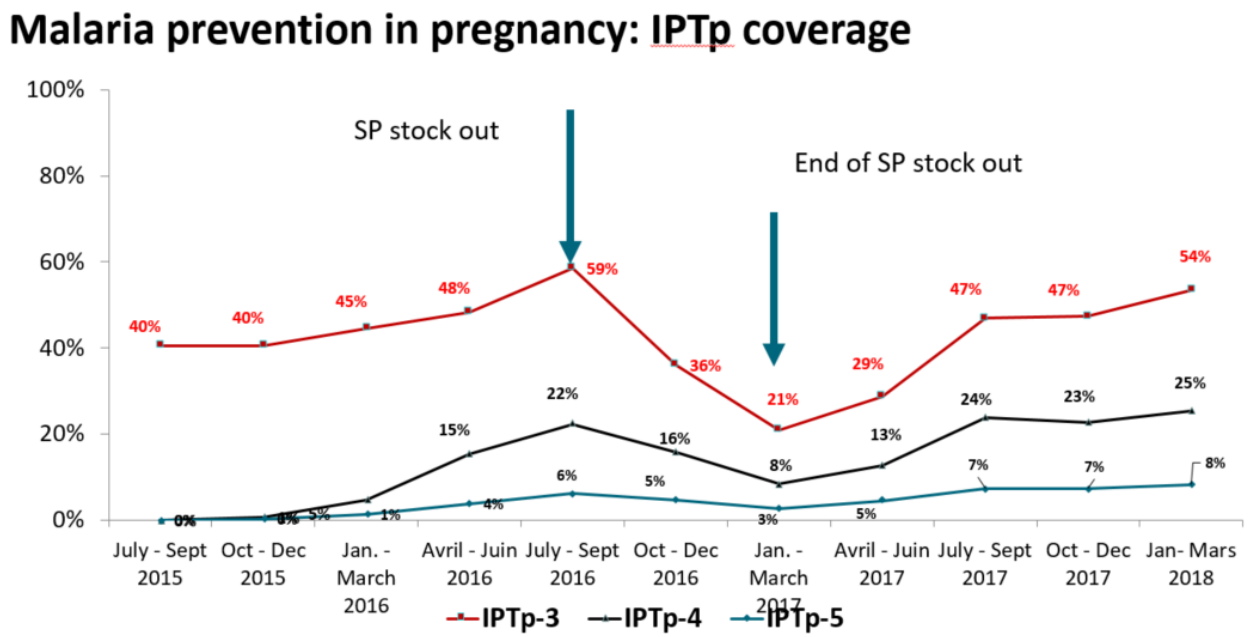
Among women attending an ANC visit, the percentage who received an ITN increased from 23 percent in 2015, to 40 percent in 2016, to 72 percent in 2017 (HMIS data). Pregnant women who reported sleeping under an ITN the night before decreased from 77.1 percent in 2014, to 58.2 percent in 2017 (2017 MIS preliminary data and 2014 MIS data). The latest data were collected from November 2017 to March 2018, during the dry, hot season where transmission is lower and therefore may not be comparable to the 2014 MIS data.

In 2017, among women aged 15-49 years old who delivered a baby in the two preceding years, 82.3 percent received two or more doses of SP during their last pregnancy, compared to 45.7 percent in 2014; 57.7 percent received three or more doses in 2017, compared to 21.5 percent in 2014 (2017 MIS preliminary data and 2014 MIS data).

PMI has been supporting supervision of health workers and CHWs on MIP, included in the integrated supervision of case management activities. PMI supports CHWs in providing communication messages regarding ANC, IPTp, and the importance of using ITNs during pregnancy, but some challenges in the recruitment of female CHWs hinder the success of this activity (see SBCC section).

PMI currently supports an OR study (combined core and country funded) to determine whether use of CHWs for delivery of IPTp in three districts can increase coverage of three or more IPTp doses compared to IPTp delivery only at ANC, and without having a negative impact on ANC attendance. This is described in further detail in the OR section.

**Figure 7: IPTp coverage in Burkina Faso**




*1 Data source: National HMIS*

The figure above shows that SP stockout was aligned with a reduction in IPTp coverage in Burkina Faso in 2016.

**Table 5. Status of IPTp policy in Burkina Faso**

| Status of training on updated IPTp policy | | No. of health workers trained on new policy in last year if training not yet completed | Updated IPTp guidelines available at facility level? | ANC register updated to capture IPTp3 | HMIS/ DHIS2 updated to capture IPTp3 |
|---|---|---|---|---|---|
| Complete/Not Complete | Date | | | | |
| Completed | 2017 | 1,194 (1360 targeted) | Yes | Yes | Yes |

**Table 6. Status of ANC guidelines in Burkina Faso**

| Status of 2016 WHO ANC guidelines adoption | | No. of health workers trained in new ANC guidelines in last year | Updated ANC guidelines available at facility level? | Additional IPTp contact added to ANC schedule at 13 weeks? | ANC register updated to capture 8-9 ANC contacts? | HMIS/ DHIS2 updated to capture 8-9 ANC contacts |
|---|---|---|---|---|---|---|
| Complete/ Not complete | Date expected | | | | | |
| Not completed | 2019 | NA | No | | No | No |

*Commodity gap analysis*

**Table 7. SP gap analysis for MIP[1]**

| | 2018 | 2019 | 2020 |
|---|---|---|---|
| Total Population | 20,244,079 | 20,870,060 | 21,478,529 |
| **SP Needs** | | | |
| Total number of pregnant women attending ANC[2] | 983,338 | 1,013,035 | 1,043,629 |
| *Total SP Need (in treatments)*[3] | 5,900,029 | 6,078,210 | 6,261,773 |
| **Partner Contributions** | | | |
| SP carried over from previous years | 486,832 | 6,146,037[4] | 2,093,897[5] |
| SP from Government | 5,643,000 | - | 4,167,876 |
| SP from Global Fund | - | - | - |
| SP from Other Donors | 3,782,558 | - | - |
| SP planned with PMI funding | 167,000 | - | - |
| *Total SP Available* | 10,079,390 | 6,146,037 | 6,261,773 |
| **Total SP Surplus (Gap)** | **4,179,361** | **67,827** | **0** |

[1]Six months of buffer stock has been added to SP quantification due to previous issues of stock outs in country
[2]Number of women received at ANC1 from 2017 HMIS. The projections for future years are based on the increase of 3.02% between 2016 and 2017, applied for each year of projection.
[3]Assumption is that each pregnant woman will receive 4 doses, according to the NMCP guidelines
[4] This figure contains end of year 2018 stock + 2018 six-month buffer stock

*Plans and justification for proposed activities with FY 2019 funding*

Pending the results of the community-distributed IPTp study, PMI plans to support the scale-up of this intervention, including cascade regional and district training as well as development and reproduction of job aids. PMI will also support the continued training and supervision of health workers on MIP as part of integrated case management training and supervision activities. These supervision visits include ANC staff in regards to MIP as well as ensure SP is in stock, prenatal forms are filled out correctly, and that pregnant women are being recruited and followed in line with national directives. These activities will be complementary to Burkina Faso's Global Fund grant to support integrated supervision.

Please see Table 2: Budget Breakdown by Activity for a detailed list of proposed activities with FY 2019 funding.

### 3. Drug-based prevention

#### a. Seasonal malaria chemoprevention

*NMCP/PMI objectives*

NMCP's strategy is to provide SMC for children 3-59 months of age throughout the country.

In 2014, Burkina Faso began SMC for children 3-59 months of age in 7 districts, expanding rapidly to 63 districts in 2017 and 65 districts in 2018. Campaigns occur during a four-month period (starting this year on July 20) corresponding to the peak malaria transmission period, and rely on the established network of CHWs for distribution of medication. UNITAID, through Malaria Consortium, has been the leading donor of SMC in Burkina Faso; however, the landscape is now changing with the end of UNITAID funding in 2018. Going forward, Malaria Consortium is being funded for the next two years

at reduced levels by the Open Philanthropy Project Fund. To ensure continued coverage, PMI and the Global Fund have increased SMC funding in Burkina Faso. With the object of full nationwide coverage, the NMCP has requested the Global Fund support the remaining five central districts, those in the capital city of Ouagadougou.

There has been in-country discussion regarding SMC eligibility, especially in the southwest region of the country. While the NMCP has included full nationwide coverage of SMC in all 70 districts in the 2016-2020 National Strategic Plan, PMI only supports districts that meet WHO SMC eligibility criteria and has used country data to ensure PMI-funded districts have clinical malaria cases during a short period of about four months and that 60 percent of average annual rainfall falls within three months.

**Table 8: SMC coverage by district, 2017-2020***

| | **2017** | **2018** | **2019** | **2020** |
|---|---|---|---|---|
| **PMI** | 2 | 12** | 12** | 12** |
| **UNITAID** | 31 | 0 | 0 | 0 |
| **Global Fund** | 0 | 13*** | 18 | 39 |
| **World Bank** | 22 | 22 | 22 | Unknown |
| **Give Well** | 8 | 18 | 18 | Unknown |

* Burkina Faso did not become a PMI country until 2018. In 2017, SMC was funded through USAID.
** From 2018-2020, each year PMI will cover between 405,000 and 430,000 children with SMC.
***UNICEF will implement SMC in two of the Global Fund districts, but will not procure SP+AQ

*Progress since PMI was launched*

In 2017, USAID malaria funds supported SMC in the districts of Dano and Boromo during the months of July, August, September, and October, the period of high malaria transmission in Burkina Faso. The campaign reached all villages connected with corresponding health facilities, reaching 50,007 children in Dano and 58,246 children in Boromo for a total coverage of 106 percent and 108 percent respectively.

Leading up to the 2017 SMC campaign, USAID malaria funds supported a number of activities in each district to ensure successful implementation. This included microplanning; cascade training for stakeholders including health providers, community distributors, and street criers for 1,625 people trained; advocacy meetings with administrative, political, and traditional leaders; and communication for the general population. During the SMC campaign, USAID malaria funds supported cascade supervision, management of drug stocks, campaign data management, and daily debriefing meetings.

Although some SP+AQ arrived late in country, the NMCP assured partners it had sufficient drugs to maintain the SMC delivery schedule. Going forward, the country has chosen to create a basket fund for SP+AQ to ease movement of drugs within districts and among partners and better prevent expiration of these commodities.

Although the GoBF has recruited two CHWs for each village who serve as an integral part of the SMC campaign, two CHWs are not always sufficient given variations in population density; therefore, some additional community distributors have been recruited for the duration of the campaign. Supervision of CHWs is done on a trimestral basis at the community level and is financed by the Global Fund.

The country is currently preparing for the 2018 SMC campaign. PMI has attended planning workshops, funded the training-of-trainers, purchased non-medical consumables, and is currently training stakeholders at the district level.

**Table 9: Partner-supported SMC activities**

| Calendar Year | No.of districts targeted for SMC | No. of children <5 targeted | Coverage rate (from program records) |
|---|---|---|---|
| **2015** | 17 | 900,842 | 106% |
| **2016** | 54 | 2,576,045 | 103% |
| **2017[1]** | 59 | 2,856,345 | 103% |
| **2018[1]** | 65 | 3,100,839 | TBD |
| **2019[1]** | 70 | 3,581,374 | TBD |
| **2020[1]** | 70 | 3,658,009 | TBD |

[1]Represents targets based on national malaria strategic plan and discussions with the NMCP

**Table 10: Commodity gap analysis for nationwide SMC coverage**

| | 2018 | 2019 | 2020 |
|---|---|---|---|
| **SMC drug (SP+AQ) Needs** | | | |
| Population targeted for SMC | 2,996,059 | 3,455,614 | 3,528,582 |
| PMI-targeted population for SMC[1] | 392,523 | 400,669 | 409,057 |
| *Total SP+AQ Needs* | 15,160,881 | 15,895,823 | 16,231,475 |
| **Partner Contributions (to PMI target population if not entire area at risk)** | | | |
| SP+AQ carried over | 2,202,260 | 1,140,583 | - |
| SP+AQ from Government | - | - | - |
| SP+AQ from Global Fund | 2,609,856 | 2,682,919 | 2,757,268 |
| SP+AQ from Malaria Consortium | 3,286,800 | - | - |
| SP+AQ from World Bank | 5,802,548 | 5,933,457 | - |
| SP+AQ planned with PMI funding[2] | 2,400,000 | 2,405,000 | 2,460,000 |
| *Total SP+AQ Available* | 16,301,464 | 12,161,959 | 5,217,268 |
| **Total SP+AQ Surplus (Gap)** | **1,140,583** | **(3,733,864)** | **(11,014,207)** |

[1] SP+AQ quantification data was calculated using population projection, per health district from 2011 to 2020.

*Plans and justification for proposed activities with FY 2019 funding*

PMI will support four rounds of SMC for approximately 400,000 children 3-59 months of age. Per UNITAID's 2016 costing study, the full cost of SMC per child, per round, in Burkina Faso is about $3.36 for door-to-door distribution, of which $1.20 are commodity costs. Smaller-scale distribution planned for 2018 may raise the cost to $4. PMI will support the procurement of SP+AQ, as well as costs related to the distribution campaign itself, including supervision, training, and transport.

Please see Table 2: Budget Breakdown by Activity for a detailed list of proposed activities with FY 2019 funding.

## 4. Case management

*NMCP/PMI objectives*

PMI is committed to assisting the NMCP reach its objective of testing 100 percent of suspected cases of malaria and treating 100 percent of confirmed cases with an appropriate antimalarial at all levels of the health system, including public health, the community, and the private sector.

There are about 21,196 health workers in Burkina Faso. According to the 2014 MIS, the majority of fever cases in children (56.4 percent) sought care in the public sector, compared to 3.5 percent in the private sector, 1.1 percent with CHWs, and 3.5 percent witht traditional healers and other sources. However, with the scale-up of the CHW program, the NMCP is working to increase the proportion of malaria care delivered at the community level. The NMCP has also expressed interest in working more closely with the private sector on case management and malaria surveillance.

Midway through 2017, free healthcare in public health facilities for children under five years of age and pregnant women was instituted in Burkina Faso. Anecdotally, there has been an increase in care-seeking behavior since this change occurred.

**Community case management:** Training and supervising CHWs in malaria case management is part of the NMCP's strategy to improve nationwide diagnosis and treatment of malaria. There are two CHWs per village throughout Burkina Faso, and up to four in villages with more than 2,000 inhabitants. Integrated community case management occurs in villages that are further than 5km from the nearest health facility by 17,668 CHWs in Burkina Faso. All CHWs are responsible for SBCC activities as well. The scale-up of malaria care delivery by CHWs was formalized by the nationwide identification and training of CHWs in integrated management of childhood illness in late 2016. CHWs are paid 20,000 CFA (about $34) per month, as well as compensation for training, vaccination campaigns, etc.

**Diagnosis:** Obligatory laboratory testing of suspect malaria cases is done either by microscopy or RDT. Microscopy is largely restricted to Burkina Faso's nine district hospitals and four university hospitals. In 2017, 91.7 percent of reported malaria cases were confirmed with either RDT or microscopy. Of suspected malaria cases that were tested, 1.5 percent were tested by microscopy with the remaining tested by RDT. The expansion of RDT testing to the community level was implemented in 2016 following a successful pilot program in three districts from 2012 to 2014.

**Treatment:** National treatment guidelines call for artemether-lumefantrine (AL), DP, or artesunate-amodiaquine (ASAQ) as first-line drugs for treatment of uncomplicated malaria. However, with large-scale expansion of SMC, recently modified NMCP guidelines phase out ASAQ by June of 2018. Pregnant women are to be treated with oral quinine in the first trimester and an ACT in second and third trimesters.

Treatment of severe malaria is performed at the hospital and *centre de santé et de la promotion social* (CSPS) level. The NMCP is currently piloting pre-referral rectal artesunate for children under five years of age by CHWs in three districts in North and Sahel regions, where malaria mortality is the highest. The first-line treatment for severe malaria in public health facilities is intravenous artesunate; in its absence, injectable quinine may be used. The NMCP recommends the use of intramuscular artemether in private health facilities capable of providing severe malaria treatment. In 2017, 4.32 percent of malaria cases were documented as severe according to HMIS data.

Routine therapeutic efficacy monitoring has been limited to only two published studies from the central site of Nanoro, conducted first in 2008-2010 and then in 2010-2012. Unusually, both therapeutic efficacy studies (TES) were explicitly designed to measure effectiveness rather than efficacy, without

supervised administration of the ACTs. A PMI-funded TES for 2018 began in May after delays in approval postponed the study planned for the high-transmission season in 2017 to 2018.

**Training, supervision, and QA/QC:** Doctors and nurses receive instruction on malaria case management during their regular pre-service training. Since the start of PMI in Burkina Faso, PMI funding has supported re-training and on-the-job supervision for malaria case management. Benefits of this can be seen when comparing end-use verification (EUV) surveys conducted in May 2016 and July 2017: only 22 percent of interviewed health workers reported being trained in malaria case management guidelines in May 2016, compared to 70 percent in 2017. In the first quarter of 2018, 58 percent of the health workers were reported trained, while 85 percent of health facilities sampled had formal malaria prevention and treatment guidelines.

Health workers at the CSPS level are supervised by district health authorities. In turn, the head nurse of each CSPS is tasked with the supervision of all the CHWs attached to his or her CSPS. Supervision of laboratory technicians conducting malaria microscopy falls under the purview of the *Direction General de la Pharmacie, Médicine et Laboratoire* (DGPML).

**Table 11. Status of case management policy and implementation in Burkina Faso**

| **Status of case management policy in Burkina Faso per national case management guidelines, August 2017** | | **Currently implemented? Plans to modify?** |
|---|---|---|
| What is the first-line treatment for uncomplicated *P. falciparum* malaria?* | AL, ASAQ,* DP | Yes; phasing out ASAQ due to nationwide rollout of SMC |
| What is the second-line treatment for uncomplicated *P.falciparum* malaria?* | N/A | |
| What is the first-line treatment for severe malaria? | Injectable artesunate | Frequent stockouts have led country to use injectable quinine more frequently |
| In pregnancy, what is the first-line treatment for uncomplicated *P. falciparum* malaria in the first trimester?* | Quinine | Yes |
| In pregnancy, what is the first-line treatment for uncomplicated *P. falciparum* malaria in the second and third trimesters?* | AL | Yes |
| In pregnancy, what is the first-line treatment for severe malaria? | Injectable quinine for 1st trimester, injectable artesunate for 2nd and 3rd | Yes |
| Is pre-referral treatment of severe disease recommended at peripheral health facilities? If so, with what drug(s)? | Yes; rectal artesunate for children under 5, parenteral artesunate, artemether, or quinine for others | Yes |
| Is pre-referral treatment of severe disease recommended for CHWs? If so, with what drug(s)? | Yes, rectal artesunate | Pilots of pre-referral rectal artesunate underway in 3 districts in the north |
| If pre-referral rectal artesunate is recommended, for what age group? (Note: international guidelines do not recommend administrating to those ≥6 years) | Children under 5 | Yes |

*Phasing out ASAQ

*Progress since PMI was launched*

Since PMI launched in Burkina Faso in September 2017, the national case management guidelines for malaria prevention and control were updated and more than 4,000 copies disseminated nationwide. To date, 1,194 providers from referral hospitals (including district, regional, and university hospitals), 38 teachers from the nursing and midwifery school, and 80 staff members from the private sector have been trained on these guidelines.

PMI has also supported the training of 185 trainers/supervisors and 1,819 peripheral health providers on the integrated malaria training package, including MIP during ANC. Additionally, PMI supported the NMCP to organize supervision visits in 54 of 70 health districts and organized 13 supervision workshops at the regional level.

PMI supported the NMCP to develop performance and quality improvement standards, which are being progressively implemented in 61 health facilities. The Malaria National Steering Committee and technical working groups have been revitalized and now meet regularly. PMI also supported the development of the National CHW Integrated Supervision Guide.

A TES is underway as of June 2018 after challenges obtaining Institutional Review Board approval delayed the study from 2017. This year there are no plans to participate in the PARMA network, but there are plans to participate for the next TES with FY 2019 funding.

A retrospective quality of care assessment for overall case management and MIP is underway since September 2018. The assessment is reviewing case records for calendar year 2017 to determine how well providers are applying case management guidelines. A prospective phase including focus group discussions and direct observation of providers will be carried out in early 2019 to complement the case records review and provide a more complete picture of overall case management quality. Results from these assessments will be used to determine the need for, and content of, future case management guideline training, and eventually lead to a reduction in the proportion of reported malaria cases without a positive diagnostic test result.

**Table 12: Past ACT Efficacy and Effectiveness Results from Burkina Faso (not PMI funded)**

| | | **PCR-uncorrected 28-day efficacy** | | | **PCR-corrected 28-day efficacy[1]** | | |
|---|---|---|---|---|---|---|---|
| **Year** | **Site** | **AL** | **ASAQ** | **DP** | **AL** | **ASAQ** | **DP** |
| 2004-2006 | Koupela | - | 92.8 | - | - | 95.7 | - |
| 2005[2] | Bobo-Dioulasso | 84.9 | - | - | 98.1 | - | - |
| 2006[3] | Nouna | - | 65.6 | - | - | 82.0 | - |
| 2006-2007[2] | Bobo-Dioulasso | 70.9 | - | 97.8 | 95.4 | - | 97.8 |
| 2007-2009 | Nanoro | 39.4 | 68.6 | 85.4 | 82.1 | 95.7 | 95.9 |
| 2008-2010[4] | Nanoro | 46.1 | 58.4 | - | 81.9 | 85.1 | - |
| 2009 | Comoé | 66.7 | - | - | 87.5 | - | - |
| 2010-2012[4] | Nanoro | 43.3 | 63.1 | - | 64.5 | 77.4 | - |
| 2010-2013[5] | Unavailable | 43.5 | 65.4 | - | 86.0 | 95.4 | - |
| 2011 | Nouna | - | 55.4 | - | - | 80.0 | - |

[1]Calculated using WHO per-protocol definition; may differ from published results due to non-standard use of definitions by study authors
[2]Assessed in participants of all ages
[3]Assessed in children 6-10 years of age

**Table 13: TES in Burkina Faso**

| Year | Site name | Treatment arm(s) | Plans for K13 Genotyping |
|---|---|---|---|
| **Ongoing TES** | | | |
| 2018 | Niangoloko | AL, DP | No |
| 2018 | Nanoro | AL, DP | No |
| 2018 | Gourcy | AL, DP | No |
| **Planned TES (funded with previous or current MOP)** | | | |
| 2020 | TBD | AL, DP | Yes, via PARMA network |

*Commodity gap analysis*

**Table 14: RDT gap analysis**

| Calendar Year | 2018 | 2019 | 2020 |
|---|---|---|---|
| **RDT Needs** | | | |
| Total country population | 20,244,079 | 20,870,060 | 21,478,529 |
| Population at risk for malaria[1] | 20,244,079 | 20,870,060 | 21,478,529 |
| PMI-targeted at-risk population | 20,244,079 | 20,870,060 | 21,478,529 |
| Total number of projected fever cases | 17,165,333 | 17,594,466 | 18,034,328 |
| *Total RDT Need*[2] | 25,747,999 | 26,391,699 | 27,051,491 |
| **Partner Contributions (to PMI target population if not entire area at risk)*** | | | |
| RDTs carried over from previous year | 5,961,226 | 4,600,156[3] | 8,797,233[4] |
| RDTs from Government | | 2,695,955 | 3,200,854 |
| RDTs from Global Fund | 5,468,713 | 4,687,280 | 5,469,987 |
| RDTs from other donors (World Bank) | 2,335,550 | 881,000 | - |
| RDTs planned with PMI funding | 8,000,000 | 8,573,000 | 7,750,000 |
| *Total RDTs Available* | 21,765,489 | 21,437,391 | 25,218,074 |
| **Total RDT Surplus (Gap)** | **(3,982,510)** | **(4,954,308)** | **(1,833,417)** |

[1]National quantification.
[2]Needs to fill the pipeline are included.
[3] The 3.9 million RDT gap was not filled in 2018; therefore, the previous 6-month buffer stock has reduced to 3 months at the beginning of 2019 .
[4]Assuming the 4.9 million RDT gap is filled in 2019, 6 months of buffer stock will be carried over from the previous year. Method of NMCP calculation: 1) Take # of RDTs reported used in health facilities; 2) Take the number of reporting health facilities and adjust it to 100%. The reporting rate last year, pre-adjustment, was 96%. 3) Take the average variation in number of RDTs reportedly used (RDTs) from last 2 years with fully reported data. 4.) Add this variation to base number to estimate future needs. 4) Add 6 month of buffer stock to the total projected need.

**Table 15: ACT gap analysis**

| Calendar Year | 2018 | 2019 | 2020 |
|---|---|---|---|
| **ACT Needs** | | | |
| Total country population | 20,244,079 | 20,870,060 | 21,478,529 |
| Population at risk for malaria | 20,244,079 | 20,870,060 | 21,478,529 |
| PMI-targeted at-risk population[1] | 20,244,079 | 20,870,060 | 21,478,529 |
| Total projected no. of malaria cases | 14,081,218 | 14,433,248 | 14,794,080 |
| *Total ACT Needs*[2] | 21,121,827 | 21,649,873 | 22,191,119 |
| **Partner Contributions (to PMI target population if not entire area at risk)[1]** | | | |
| ACTs carried over from previous year | 4,748,017 | 7,040,609[1] | 7,216,624[2] |
| ACTs from Government | 2,900,000 | 2,872,412 | 5,511,116 |
| ACTs from Global Fund | 4,390,680 | 2,172,686 | - |
| ACTs from other donors | 2,813,431 | 763,625 | - |
| ACTs planned with PMI funding | 6,300,090 | 6,450,000 | 6,000,000 |
| *Total ACTs Available* | 21,152,218 | 19,299,332 | 19,227,740 |
| **Total ACT Surplus (Gap)** | 30,391 | (2,350,541) | (3,463,379) |

[1]6 months of buffer stock was carried over from 2018
[2]Assuming the 2.3 million ACT gap is filled in 2019, 6 months of buffer stock will be carried over from the previous year
[3]National quantification
[4]Needs to fill the pipeline are included
Method of NMCP calculation: 1) Take no. of uncomplicated malaria cases reported in health facilities. 2) Take the number of reporting health facilities and adjust it to 100%. The reporting rate last year, pre-adjustment, was 96%. 3) Take the average variation in number of reported cases (ACTs) from last 2 years with fully reported data. Add this variation to base number to estimate future needs. 4) Add 6 month of buffer stock to the total projected need.

**Quantification of intravenous artesunate/intramuscular artemether:** Quantification of injectable artesunate needs is described in the table below. PMI plans to procure 1 million ampoules of intravenous artesunate in 2020, complementing the 1.3 million ampoules from the Global Fund. The GoBF is planning to procure the remaining quantity needed.

**Table 16: Injectable artesunate needs**

| Population | Expected cases in 2020 | No. of ampoules per case | No. of ampoules needed (inc. security stock) |
|---|---|---|---|
| Children under age five | 322,950 | 4 | 1,291,801 |
| Pregnant women | 38,942 | 12 | 467,304 |
| Population over age five (excluding pregnant women) | 242,489 | 8 | 1,939,914 |
| **Total** | - | - | **3,699,019** |

**Quantification of rectal artesunate**: With funding from the Burkina Faso FY 2018 MOP, PMI supports the pilot implementation of rectal artesunate administered by CHWs for pre-referral treatment in two districts in the North, where malaria mortality is highest and access to health facilities is difficult in some areas. Following this pilot, PMI will support expansion of this activity into six districts. According to Burkina Faso case management guidelines, rectal artesunate is only to be administered in children under five years of age. With FY 2019 funds, PMI plans to procure 9,300 suppository capsules for pre-referral treatment by CHWs. This figure was calculated by estimating cases of severe malaria at

the community level in the targeted districts. The estimated number of CHWs implementing this intervention is about 1,500. Because the pilot of this intervention is being implemented in FY 2018, the quantification will be updated based on the results and estimated based on the number of suppositories needed to keep CHWs sufficiently stocked.

*Plans and justification for proposed activities with FY 2019 funding*

PMI will procure roughly 30 percent of RDT needs and 30 percent of ACT needs in 2020. Additionally, PMI will procure an estimated 1,964,000 ampoules of injectable artesunate for severe malaria treatment, and 9,300 rectal artesunate suppository capsules as pre-referral treatment by CHWs, expanding to six districts after the pilot is completed in 2019. PMI will support CAMEG to store and distribute these commodities. PMI will continue to support the training of more health workers in national case management guidelines, with the goal of training another 10 percent of health workers (approximately 2,000) across all levels of the health system.

PMI funds will support the training of CHWs in six districts in the northern region, where malaria mortality is highest, in the administration of rectal artesunate for pre-referral treatment after successful implementation of the pilot in 2019. PMI will also support integrated supervision visits for CHWs as well as health facility workers including MIP during ANC visits. Lastly, PMI will provide technical assistance through one CDC TDY for case management activities.

Please see Table 2: Budget Breakdown by Activity for a detailed list of proposed activities with FY 2019 funding.

### 5. Crosscutting and other health systems strengthening

To successfully implement the aforementioned activities, PMI Burkina Faso supports a suite of activities that cut across and benefit insecticide- and drug-based prevention and case management activities. For example, availability of high-quality commodities is necessary to ensure high ITN coverage and effective case management, and care-seeking behavior of individuals and communities is necessary to improve coverage of all interventions. In addition, gains achieved in malaria control in Burkina Faso can only be sustained with strong health systems and local capacity. Hence, systems strengthening and capacity building are intrinsic in all PMI intervention-specific activities previously mentioned (e.g., training and supervision of health workers, technical assistance for planning and monitoring interventions, etc.) Non-intervention specific or crosscutting health systems strengthening activities are described below.

#### a. Pharmaceutical management

*NMCP/PMI objectives*

The NMCP's strategies are to ensure an uninterrupted supply of malaria commodities and to strengthen the QA/QC of antimalarial medicines at all levels. These strategies fall under Objective 3 of the NMCP's 2016-2020 strategic plan adopted in November 2016, which aimed to reinforce NMCP managerial capacities. The NMCP recognizes that universal confirmation and treatment of malaria cases, scaling up prevention interventions through SMC for children 3-59 months, and IPTp can only be achieved in the context of a well-functioning pharmaceutical supply chain that minimizes the risk of stockouts and the use of counterfeit antimalarial drugs. PMI fully acknowledges these strategies and is committed to supporting them.

*Progress since PMI was launched*

**Purchasing commodities and strengthening the supply management system.** Before PMI launched, USAID/Burkina Faso provided support from FY 2009 to FY 2016 for the procurement of malaria commodities and technical assistance for strengthening the supply chain management system through capacity building of the NMCP's commodities management staff, regional and district level staff, needs quantification and forecast planning, and storage and distribution from the central level (including from CAMEG, to district levels). The support has significantly improved availability of malaria commodities procured with USAID funds and Global Fund resources at the health facility level. This has largely impacted the quality of case management with more malaria cases tested with RDTs before treatment and treatment with ACTs over the years, which may explain a decreasing trend of deaths attributed to malaria reported at the health facility level, which has more than halved from 9,020 in 2010 to 4,144 deaths in 2017.

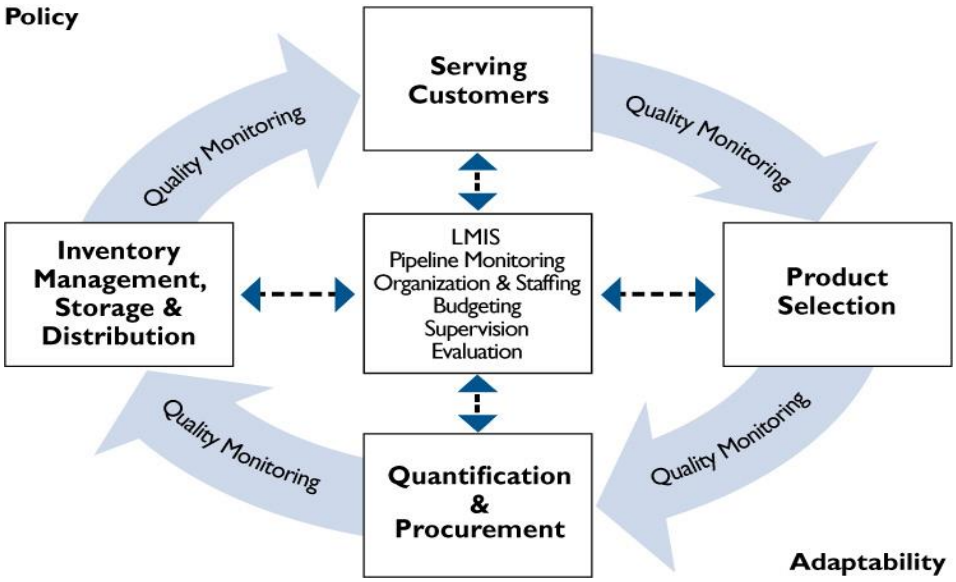
**QA/QC of antimalarials:** In 2015, USAID/Burkina Faso began to provide support to the country in the area of QA/QC of antimalarials. The support started with a rapid assessment, which revealed an immediate need to strengthen DGPML and *Laboratoire National de Santé Publique* (LNSP) capacities. Strengthening these two entities was essential to advancing the country from the use of unregulated medicines to use of regulated, quality-assured medicines based on international standards. In 2016, USAID support facilitated collaboration among LNSP, DGPML, CAMEG, NMCP, and the University of Ouagadougou to conduct a survey on the quality of antimalarial drugs in six communes of Ouagadougou. Prior to the survey, 17 participants from these institutions were trained on sampling and screening of antimalarial medicines. Following the training, 124 antimalarial samples were collected, visually inspected, and screened using Minilab™ testing kits. USAID supported assisted the laboratory in reviewing and analyzing the data and drafted a report. Using the testing kits, 11 samples were determined as doubtful and needed further laboratory testing. LNSP conducted confirmatory testing on the 11 doubtful samples. One sample was confirmed noncompliant with quality specifications.

**Commodities procurement and technical assistance to strengthen the supply management system:** With FY 2017 funds, PMI has worked across the logistics cycle (see figure below) to ensure malaria products are available when and where needed. PMI has targeted several parts of the logistics cycle to strengthen the supply chain as part of efforts to reduce malaria incidence and mortality, in close collaboration with the MoH, NMCP, and CAMEG to plan, implement, and monitor supply chain strengthening efforts.

In recent years, the main challenges facing the national supply chain include: 1) the delay in data reporting through the supply chain; 2) the low quality of both epidemiological and logistics data with discrepancies between HMIS and logistics data received from the districts through the national database; 3) the lead time for some commodities, such as kits for severe malaria was long (more than 15 months); 4) stock cards were not used or were not up to date, particularly for the products distributed free of charge through the supply chain such as RDTs, SP, ITNs for routine distribution, and kits for severe malaria. Additionally, most of the health facilities do not have stock cards for free commodities or do not track, monitor, or store them in a consistent way; and 5) the quantity of ACTs distributed through CHWs are not always taken into account in some health facility monthly reports as well as the high turnover of data managers at district and central levels.

PMI coordinates closely with the Global Fund, GoBF, and other stakeholders in the ACT Committee to ensure that procurement quantities meet country needs without duplicating efforts or leaving gaps. This committee is a venue for stakeholders to discuss ACT and other malaria commodity issues.

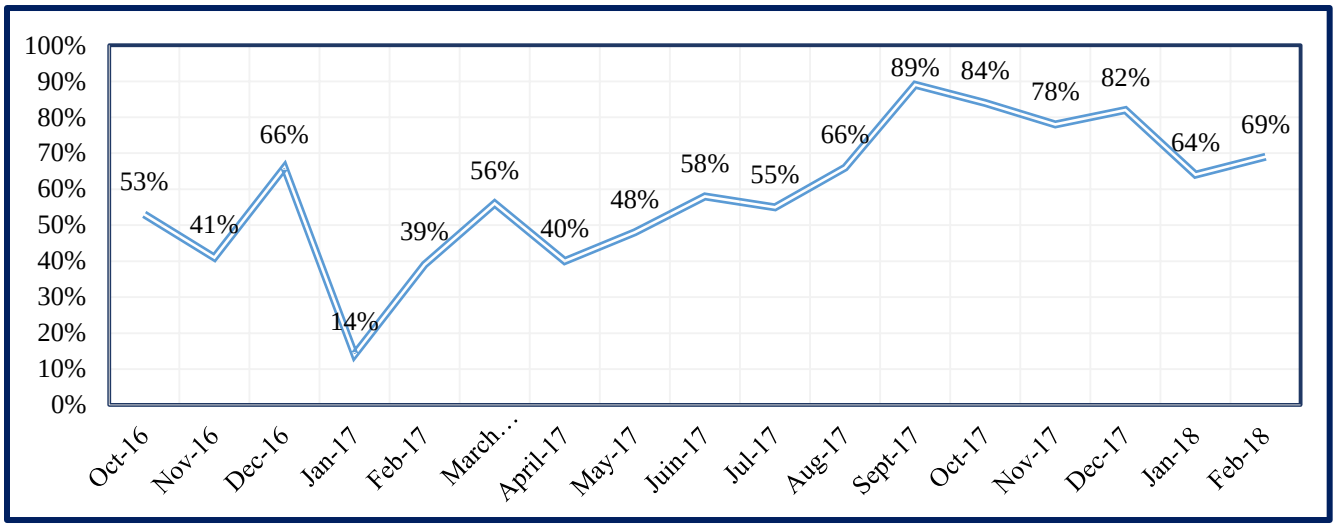
**Figure 8. The logistics cycle**




With the reorganization of the MoH and high staff turnover, there is a need to strengthen the national coordination committee for malaria commodity quantification and supply planning. PMI has continued to build capacity on procurement planning, forecasting, and quantification by training different cadres of staff. At the end of FY 2018, the malaria commodity quantification and supply planning will be conducted by the technical committee with minimum support. Quantification of malaria commodities has improved with a positive impact on product availability at the health facility level. The health facility stockout rate (data from the HMIS database) has been reduced from 20 percent in Q1 of 2017 to around 10 percent in Q2 of 2018.

In 2016, the malaria logistics data was integrated into HMIS (known locally as ENDOS) to avoid duplication of health information databases with USAID support. To increase data visibility, especially the logistics data reporting rate, PMI provided modems for internet connection to all districts and hospitals; as a result, timely data reporting has been improved as shown in the figure below.

**Figure 9: Health facility timely reporting rate (Source: HMIS, 2016-2018)**



PMI also provided training to central level personnel on how to extract malaria commodity logistics data from the HMIS, analyze and use data for decision-making to improve malaria commodity availability in the supply chain. PMI is providing technical support to the pharmacy department to implement the integrated logistics management information system (LMIS). The project produced and 6,000 health facility reporting books and more than 2,000 integrated LMIS standard operating procedures to all health facilities.

To support the in-country storage and distribution, PMI is providing technical support to CAMEG for reconfiguration of the central warehouses and temperature monitoring to improve storage conditions and reduce expiries. PMI's support also produced thousands storage guidelines for all the health facilities and district stores.

To mitigate the lack of qualified human resources in health commodity Logistics management, PMI is working with the National Public Health School to Integrate LMIS SOPs training materials into the training curriculum of pre-service training for nurses, midwives, and pharmacist assistants.

Other key activities supported include: the assessment of the 2012-2016 pharmaceutical strategic plan, the update of 2018-2020 malaria commodities needs with the development of the 2018 supply chain plan and quarterly supply plan review; the printing and the dissemination of two thousand health commodity good storage guidelines.

Since 2015, USAID has been sponsoring quarterly EUVs, which provide a picture of the malaria commodity stock situation in a sampling of health facilities. In 2017, three rounds of EUV activities were completed, and due to a shift in methodology, two rounds of EUV activities are planned for 2018. The EUV reports assist the MoH and the NMCP to improve commodity availability and use at the health facility level.

Two key challenges that the country faces are the difficulty to access Government budget allocated to Malaria commodities procurement and delay due to the MoH reorganization has affected the implementation of some important activities.

With FY 2019 funds, PMI will continue to support the NMCP in the areas of supply chain strengthening including paying for storage and distribution feed with CAMEG and on the job training of regional, district and health facility staff on malaria stock management and reporting. Additionally, PMI will provide assistance for the strengthening of malaria commodities quantification committee in quantification methodologies and for the implementation of health commodities supply chain plan currently in development with Global Fund's support.

**QA/QC of antimalarial drugs and RDTs:** In 2017, USAID provided assistance to the national medicine quality control laboratory (NMQCL) for implementation of its development plan, training laboratory staff on several analytical methods, and procurement of a spectrophotometer (essential equipment). In addition, 12 staff received training in good documentation practices, laboratory safety, ultraviolet-visible spectrophotometry, dissolution, and high-performance liquid chromatography, and then started applying their training. Laboratory staff skills were also built in performance verification and preventive maintenance of high-performance liquid chromatography systems to allow them to better manage laboratory equipment and reduce maintenance cost. Trainings increased laboratory management confidence in pursuing efforts to attain ISO 17025 accreditation. Lastly, USAID supported DGPML and LNSP to develop a sampling plan for antimalarial drugs in eight regions of Burkina Faso.

With FY 2017 funds, PMI has worked closely with the NMCP, CAMEG, new *Agence nationale de régulation pharmaceutique* (ANRP), and NMQCL to ensure the quality of ACTs is maintained

throughout the supply chain through to distribution. In the past, PMI has invested limited funds to strengthen quality control for microscopy to compliment WHO, the principle organization supporting microscopy QA/QC. In 2017, WHO supported a microscopy assessment to identify capacity building needs. In 2018, WHO trained 12 national master trainers who will in turn train, coach, and supervise national laboratory staff.

Post-market surveillance of pharmaceutical product quality remains a challenge for the national regulatory authority. Currently, all post-market surveillance activities rely on funding from donors (Global Fund, WHO, and the West African Health Organization). Hence, surveillance has been limited to products of interest for donors with an annual budget for these activities estimated to be $230,000 for an average of 270 samples of select products (ACTs, RDTs, antiretrovirals, TB medicines, family planning products, and maternal and child health medicines). The budget includes cost of sampling, testing, reporting, and dissemination of results. There is no actual post-market surveillance program that is fully planned and implemented by the regulatory authority.

Since the ANRP is currently being established, there is an opportunity to create a functional post-market surveillance program. One priority is to develop a guidance/protocol for the implementation of risk-based post-market surveillance that can be applied to all types of medicines. This approach would reduce the cost of surveillance activities and would allow testing of larger number of samples, including medicines not currently covered by donors. In addition, as of 2018, there is currently no quality control of RDTs in Burkina Faso; therefore, such activities could be included in a new surveillance program.

NMQCL is seeking ISO 17025 accreditation that will allow it to test samples for the malaria program. Currently these samples are sent to WHO prequalified laboratories outside the country. However, becoming accredited or WHO prequalified will not address all challenges the laboratory faces, and development of human resources and technical qualification of analysts are needed to strengthen its capacity. The laboratory has a limited number of technical staff and faces challenges in providing testing results in timely manner, which in the past has prevented or delayed taking action against non-compliant products.

PMI will use FY 2018 funds to support CAMEG, ANRP, and NMQCL for the monitoring the quality control of ACTs, RDTs, and other commodities, focusing on the following programmatic objectives: 1) continue to strengthen the capacity of the NMQCL to attain ISO 17025 accreditation; 2) support sustainable local capacity to monitor the quality of medicine; and 3) support establishment of ANRP.

*Plans and justification for proposed activities with FY 2019 funding*

DGPML has been restructured in its regulatory component will become the soon to be created ANRP. As part of the restructuring, the Directorate of Medicines Quality Control, which was previously under the former LNSP will now be part of the national agency for health security of the environment, food, health products and at work. It will serve as the national medicine quality control laboratory, and will provide quality control services with a direct reporting of findings to ANRP for decision-making and regulatory actions.

PMI will support the *directeur général de l'accès au produit de santé* and the NMCP to improve national-level capacity in forecasting country needs of malaria commodities. Given current capacity at the national and regional levels for management of malaria commodities, the focus of PMI will be on strengthening district-level capacity to store and distribute malaria commodities. With the incorporation of stock and consumption data into HMIS, PMI will support on-the-job training and supervision of regional, district, and health facility staff on the reporting and use of malaria commodity data to better maintain appropriate stock levels at health facilities. Furthermore, PMI will provide support for

monitoring of the availability and use of key antimalarial commodities at the health facility level with two rounds of EUV per year. PMI will support ANRP and NMQCL in routine quality control testing of ACTs and RDTs at all levels of the supply chain to ensure good quality is maintained through to administration to the end-user.

Please see Table 2: Budget Breakdown by Activity for a detailed list of proposed activities with FY 2019 funding.

### b. Social and behavior change communication

*NMCP/PMI objectives*

SBCC falls under the Objective 3 of the NMCP's 2016-2020 National Strategic Plan: By 2020, strengthen the capacity of the NMCP to effectively manage the fight against malaria. The strategy emphasizes key areas of advocacy, social mobilization, and behavior change communication, and serves as a guideline for all malaria partners in Burkina Faso. Through advocacy, the NMCP will build malaria support from administrators, traditional and religious leaders, media organizations, and public and private companies. Social mobilization will strengthen the skills of those relaying SBCC messages such as CHWs, community-based organizations, traditional healers, teachers, and media professionals with the aim of increasing malaria knowledge and care-seeking behavior. The NMCP will conduct SBCC using interpersonal communication as well as mass media campaigns.

A new National 2016-2020 Communication Strategy was finalized in February 2017. Communication strategy objectives now include SMC, IPTp, and the administration of pre-referral rectal artesunate at the community level. Activities to advance these new strategies include advocacy with community leaders, interpersonal communication with CHWs, development of new SBCC tools, and mass communication campaigns.

The NMCP has identified the following SBCC indicators:

- 60 percent of mothers and caregivers can identify the signs and symptoms of severe malaria in children under five years of age
- 90 percent of the population knows the cause of malaria
- 100 percent of the population knows three signs of malaria
- 100 percent of the population knows two methods of malaria prevention
- 90 percent of the population knows the advantages of receiving malaria treatment in the first 24 hours of illness
- By 2020, 100 percent of fathers, mothers, and caregivers adhere to the SMC campaign
- By 2020, 80 percent of eligible pregnant women receive three doses of IPTp

In 2014 the MIS showed 80 percent of women aged 15-49 knew fever is a principal symptom of malaria, 49 percent of women knew mosquito bites transmit malaria, and 84 percent of women knew sleeping under an ITN helps prevent malaria infection. Although 90 percent of households reported owning an ITN, 69 percent of the population reported actually sleeping under one. While IPTp information has been widely disseminated, until recently coverage of pregnant women with SP has remained low. Sixty eight percent of pregnant women reportedly received IPTp1, 48 percent IPTp2, and 22 percent IPTp3.

**Table 17. Objectives for key malaria-related behaviors in Burkina Faso[1]**

| Behavioral Objective | Baseline | Midline | Target |
|---|---|---|---|
| Pregnant women take at least 3 doses of SP under direct CHW observation during ANC | 22% MIS, 2014 | N/A | 80% By 2020 |
| **Behavioral Objective** | **Baseline** | **Midline** | **Target** |
| Children under five years of age who slept under an ITN the previous night | 75.3% MIS, 2014 | 54.4% Preliminary MIS 2017 | 100% By 2020 |
| **Behavioral Objective** | **Baseline** | **Midline** | **Target** |
| Pregnant women who slept under an ITN the previous night | 77.1% MIS, 2014 | 58.2% Preliminary MIS 2017 | 100% By 2020 |
| **Communication Objective** | **Baseline** | **Midline** | **Target** |
| People who know at least 3 signs of malaria and 3 prevention methods | 48.8% MIS, 2014 | N/A | 80% By 2020 |
| **Communication Objective** | **Baseline** | **Midline** | **Target** |
| People touched with outreach activities | 100% NMCP 2015 | N/A | 100% By 2020 |

[1]Behavioral and communication objectives were taken from the NMCP's monitoring and evaluation section of the 2016-2020 National Strategic Plan. No subcategories of communication objectives leading to behavior objective exist.

With limited preliminary data from the 2017 MIS recently available, a positive trend in IPTp uptake has emerged with 82.3 percent of pregnant women taking at least two doses of SP, compared to 48 percent in 2014. ITN use in both pregnant women and children under five years of age has declined from 77.1 percent to 58.2 percent and 75.3 percent to 54.4 percent respectively. Unfortunately, the 2014 MIS and the 2017 MIS were conducted in different transmission seasons making comparison of ITN use more challenging. The country awaits final 2017 MIS data for further analysis and reflection.

*Progress since PMI was launched*

In past years, significant support for SBCC activities has come from PMI as well as the Global Fund. PMI and USAID malaria funds have supported a range of SBCC activities in Burkina Faso to increase the uptake of malaria interventions and contribute to reductions in malaria morbidity and mortality. Key areas of PMI support for SBCC have included revising national malaria SBCC strategies; capacity building and strengthening for SBCC; implementing SBCC to target improvement in intervention uptake; and M&E of SBCC. The Global Fund continues to support 256 community-based organizations at the district level to bring films, theater, forums, and discussions to the community. Themes include malaria, nutrition, HIV, family planning, hygiene, and other important health themes. Community-based organizations work in tandem with CHWs who mobilize the local population for larger events while also conducting smaller communication activities in their respective villages.

This year, PMI is transitioning from directly supporting 416 CHWs in 19 districts to providing broader support to the MoH after GoBH's commitment to recruit and hire two CHWs per village (about 17,000 nationwide). Instead of PMI paying the 416 CHW's stipends, these will now be paid per national guidelines: 20,000 CFA (15,000 from the GoBF and 5,000 from the Global Fund). While this initiative is welcomed, there have been challenges with ensuring CHWs receive monthly payments. As a solution, payments are currently being made through mobile money. With new minimum CHW education standards in place, there have been challenges recruiting one female CHW per village, which leaves only male CHWs in some villages for gender sensitive activities such as the recruitment of pregnant

women for IPTp. To work around this challenge, some organizations have temporarily recruited female CHWs to work during limited activity implementation. PMI has documented activities implemented by the 416 CHWs, as well as best practices, as part of the transition to full ownership by the GoBF. This past year, PMI funded a national workshop to plan the scale up of interpersonal communication through CHWs. PMI also provided the NMCP with a set of tools including flip charts, referral cards, data collection forms, and films to reinforce CHWs communication activities.

During the CHW transition period from PMI to the MoH, some sensitization activities continued under PMI's support. In the first half of this year, the 416 CHWs conducted 6,508 sessions including health talks, household visits, and individual sessions reaching 99,704 people, of which 64 percent were women. CHWs referred 3,191 pregnant women to a CSPS, which tracked through referral cards found that almost 65 percent of women were seen and received IPTp.

PMI is continuing to support mass communication campaign messaging that promotes ITN use, IPTp, and early care-seeking behavior, targeting social norms of early ANC, perceived risk of malaria infection, and early care-seeking response efficacy. As in previous years, campaigns will continue via a variety of channels including short television spots, radio messages, and billboards. Follow up monitoring will be conducted to determine response efficacy to care seeking and social norms for early ANC attendance and SP administration. Following the departure of a key SBCC staff member, the message production was delayed; however, messages are currently under development and will be diffused in peak malaria transmission season in July. Message themes are drawn from TRaC surveys and are geared towards information sharing and SBCC. Following the mass communication campaign, an audience survey will be conducted to assess audience reach and message absorption. A mid-term TRaC study was initially planned for this year, but has now been rescheduled for next year and will serve as the final study for PMI's current SBCC implementing partner.

This year PMI provided significant support to the NMCP for the first ever stand-alone malaria day event in Burkina Faso celebrated on April 25, 2018. Other donors included the Global Fund, UNICEF, WHO, and Malaria Consortium. Weeklong events included interactive malaria events at schools, nursing schools, blood drives, nationwide radio show trivia contests, social media messaging, and the creation of an NMCP World Malaria Day song. The President of Burkina Faso and many ministers recognized the day by wearing World Malaria Day cloth and the President gave a speech on malaria prevention, the importance of sleeping under a bed net every night, and the push to try to eliminate malaria from Burkina Faso by 2030.

*Plans and justification for proposed activities with FY 2019 funding*

In FY 2019, PMI plans to conduct a malaria behavior survey designed to provide data on prevalence and determinants of various malaria behavioral outcomes, including use of ITNs, prompt care seeking for children under five years of age, MIP including uptake of IPTp, and acceptance of IRS and SMC. The survey will allow a deeper insight into behavioral determinants and thus a better understanding of the context of behavior change. This will allow SBCC activities, both interpersonal and mass distribution, to target barriers to behavior change instead of simple messaging with the hopes behavior change will come with increased knowledge.

With FY 2019 funds, PMI will continue working with the NMCP communication unit and will focus on tailored messaging to address barriers impeding effective behavior change including IPTp3 uptake, ITN use, and early care seeking for pregnant women and children under five years of age focused on pregnant women, fathers, and other influential family members. PMI will support mass media and interpersonal communication, including the correct use of nets from the 2019 mass ITN campaign that will be complementary to the Global Fund's SBCC support of the campaign.

PMI, in collaboration with the Global Fund, will support the NMCP to hold a stand-alone malaria day on April 25, 2020. This will provide another opportunity to elevate malaria work in Burkina Faso, spread malaria prevention messages, and highlight the President of Burkina Faso's support working towards malaria elimination in the country.

PMI will work specifically to inform the population about SMC and IRS campaigns. Community sensitization and mobilization for SMC will be done prior to and during the July-October SMC campaign season and will inform the population of the prevention benefits of SMC. Special emphasis will be placed on direct communication with mothers and caregivers to reduce behavior barriers and ensure high adherence rates. IRS messaging will be done pre-spray and will inform beneficiaries of the health benefits of IRS and what to expect during spray campaigns. SBCC messaging will seek to address population concerns and ensure high IRS acceptance.

Please see Table 2: Budget Breakdown by Activity for a detailed list of proposed activities with FY 2019 funding.

### c. Surveillance, monitoring, and evaluation

*NMCP/PMI objectives*

Malaria SM&E activities are led by the M&E team at the NMCP, which oversees the data sources providing routine malaria data, as well as coordinating surveys and other studies aimed at monitoring NMCP interventions. PMI is committed to supporting the NMCP in collecting high-quality, complete, and timely data on malaria morbidity, mortality, and commodity stocks from health facilities and CHWs. In addition, PMI will work with the NMCP to support household surveys, health facility surveys, and efficacy studies to complement routine surveillance data. The table below summarizes key surveys undertaken and planned for Burkina Faso.

**Table 18. SM&E data sources**

| Data Source | Survey Activities | Year | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
| Household Surveys | DHS | | | | | | | | | |
| | MIS | | | X* | | | X | | | X |
| Other Support | Support to HMIS | | | | | X | X | X | (X) | (X) |
| | Integrated Disease Surveillance and Response System (IDSR) | | | | | X* | X* | X* | (X) | |
| Other Surveys | Health Facility Survey | | | | | | | X | | |
| | EUV | | | | X | X | X | X | (X) | (X) |
| | TES | X* | | | | | X | | (X) | |
| | Entomological surveillance and resistance monitoring | X | X | X | X | X | X | X | (X) | (X) |

* Not PMI-funded activity; Parentheses denote planned activities and non-parentheses denote completed activities

*Progress since PMI was launched*

**Routine Data:** Prior to 2016, the NMCP relied on a monthly parallel routine malaria information system, BD-malaria. However, with the adoption of the DHIS2 for the country's HMIS, the parallel malaria database was phased out in early 2016 and the HMIS became the national and primary source for routine malaria data for NMCP. The HMIS is digitized in all 70 districts, but is still paper-based at the majority of health facilities. Monthly paper reports are sent by all health facilities to the data manager of the health district, who has the responsibility to enter it into DHIS2. The system is able to record and report data on malaria case management performed at the community level, and was updated in 2017 to also record and report data on malaria commodity stocks and consumption. Supervision and control of the data quality by the NMCP has been limited due to lack of funding and MoH staff dedicated to malaria at the regional or district levels. However, the NMCP is still able to produce weekly malaria reports from the HMIS data, which are shared among malaria stakeholders.

In addition to HMIS, there is a functioning, WHO-supported IDSR in country, which includes malaria as one of the notifiable diseases. This weekly, telephone-based surveillance system is based on HMIS data, and serves as a secondary source for routine malaria data. Global Health Security Agenda funding has been supporting the IDSR and the pilot of the web-based OneHealth platform, which would facilitate interoperability of IDSR with HMIS.

**Surveys:** The last nationwide DHS was conducted in 2010, with the most recent MIS conducted in 2017/2018. The 2017 MIS was funded primarily by the Global Fund, with additional support for technical assistance from USAID malaria funds. Data collection was completed in March 2018, and preliminary results were shared with stakeholders in June 2018.

To provide detailed information on the quality of malaria case management and health facility readiness, FY 2017 PMI funds will support a malaria-specific, nationally representative health facility survey in fall 2018. The results of the survey will allow the NMCP and its partners to identify strengths and weaknesses in malaria care delivery, and better design training and supervision activities.

**Demographic surveillance sites:** Burkina Faso is the site of four established demographic surveillance sites: Nouna since 1993 (run by the *Centre de Recherche en Santé de Nouna*), Oubritenga since 1993 (CNRFP), Nanoro since 2009 (*Centre de Recherche en Santé de Nanoro*), and Ouagadougou since 2008 (University of Ouagadougou). Although most of these sites perform malaria research, there have historically been challenges to sharing the data with the NMCP, limiting the ability of the NMCP to use the data to implement and improve malaria programs.

With FY 2018 funds, PMI will support the next population-based survey, a DHS that will include a malaria module, which will take place during the high-transmission season in 2020. This activity will also be supported by other donors, including the Global Fund.

*Plans and justification for proposed activities with FY 2019 funding*

With FY 2019 funds, PMI will support the NMCP's goal of improving routine malaria data quality by the implementation of periodic data quality monitoring activities. These data quality monitoring visits will focus on assessing data quality, troubleshooting any issues, and conducting data analysis by health facility and district staff. Selection of the facilities varies, and some factors that influence selection include other corresponding activities (i.e., EUV or other health-related supervision), previously flagged issues (stockouts, staff vacancies, uptick in cases, etc.) and accessibility. These visits will involve all levels of the health system, and will allow NMCP, district, and health facility staff to jointly review malaria data collected and reported at the health facility level. PMI will continue to advocate with other

malaria partners to share the cost of this activity and strengthen malaria data quality nationwide. In addition, PMI funds will support overall strengthening of the HMIS, leveraging existing Global Health Security Agenda funds and partners.

Please see Table 2: Budget Breakdown by Activity for a detailed list of proposed activities with FY 2019 funding.

### d. Operational research

*NMCP/PMI objectives*

The NMCP strategy contains a description of the importance of OR and their collaboration with various research institutions that conduct OR related to malaria in Burkina Faso. The principal research institutions with whom they work include: CNRFP, Centre Muraz, IRSS, and Centre de Recherche en Santé de Nouna. These research institutes have past, current, or future plans to conduct OR in partnership with the NMCP in the following areas: insecticide resistance, therapeutic efficacy of antimalarial drugs, SBCC, morbidity/mortality due to malaria, MIP (including IPTp), and case management in health facilities and at the community level.

*Progress since PMI was launched*

There is currently one OR activity that PMI is supporting in Burkina Faso, which is a study to determine whether utilization of CHWs for delivery of IPTp in three districts can increase coverage of three or more IPTp doses compared to IPTp delivery only at ANC, and without having a negative impact on ANC attendance. This study began in September 2016 and focuses on rural areas, which was determined based on data gathered from the 2010 DHS indicating that around 44 percent of rural women never attend ANC during their pregnancy. The study was core funded although some country-level funds were included in FY 2016 and FY 2017 to help support this study. The expectation is that the results will inform whether it would be advisable to scale-up delivery of IPTp at the community level, particularly in more rural areas where access to ANC is limited. The plan of this OR study is to conduct research for two years, and then share recommendations once the data is analyzed, likely in early 2019.

**Table 19. PMI-funded OR studies**

| Ongoing OR Studies | Start date | End date | Budget |
|---|---|---|---|
| Community IPTp | September 2016 | September 2018 | $415,000* |

*Includes FY 2015 and FY 2016 core funding, plus FY 2016 and FY 2017 country funding

*Plans and justification for proposed activities with FY 2019 funding*

Currently no OR activities are planned with support from FY2019 funds from PMI/Burkina Faso.

### e. Other health systems strengthening

*NMCP/PMI objectives*

PMI supports a broad array of health system strengthening activities that cut across intervention areas, such as training of health workers, supply chain management, health information system strengthening, drug quality monitoring, and NMCP capacity building. PMI works to enable countries to implement their own programs rather than building parallel or standalone systems. This approach allows countries to possess appropriately skilled human resources and the necessary infrastructure to plan, implement, and monitor progress of their malaria control activities.

In Burkina Faso, health system strengthening and capacity building are represented in the NMCP's validated 2016-2020 National Strategic Plan. Objective 3 focuses directly on capacity building, while other objectives incorporate health system strengthening and capacity building into their activities. These fall under the objectives of reducing malaria morbidity and malaria mortality by 40 percent by 2020. Under Objective 3, the NMCP strives to strengthen the capacity of communication, commodity security, evaluation and research, response to epidemics and emergencies, and NMCP program management. Capacity building objectives will be obtained through a variety of approaches including trainings, workshops, advocacy, procurement, and evaluation. While the Minister of Health has committed to a forward-thinking transformation process within the MoH, which includes elevation of the NMCP to that of technical secretariat, the multistep process has been slow with questions and confusion remaining as to when the system will finally be in place and what pieces of each system should be currently followed. Uncertainty has meant certain malaria activities have moved forward more slowly than planned; however, in the long term, the transformation will be a very welcome change for the NMCP. As a technical secretariat, the NMCP will be closer in proximity to the MoH, have a line item in the MoH budget, and an easier time getting necessary approvals for activities to move forward.

*Progress during the last 12-18 months*

Health systems strengthening is integral to the success of malaria programming in Burkina Faso. PMI works in close collaboration with the NMCP, MoH, Global Fund, and other malaria donors to ensure collaborative and coordinated support for sustainable systems and national guidelines that serve as a platform for successful malaria interventions.

To continue close collaboration, reduce duplication of efforts, and maximize impact, PMI and PADS (the Global Funds Principal Recipient for malaria and health system strengthening activities), have established quarterly meetings to review program activities and commodity orders. PMI also holds frequent calls with the Global Fund in Geneva to continue close coordination at all levels of malaria and health systems strengthening planning. Internally, PMI holds individual monthly meetings with all implementing partners, and joins a larger monthly meeting called by the NMCP, which includes all PMI malaria implementing partners, to leverage efforts and coordinate implementation of activities.

Together, PMI and the Global Fund supported the 2017/2018 MIS with preliminary data currently available and the final report due in the summer of 2018. New MIS data are much needed and will allow stakeholders to better understand the current epidemiology of malaria in Burkina Faso, the population's malaria prevention and care-seeking behavior, and track progress and data-driven decision-making. The last MIS was conducted in 2014; a DHS is planned for 2019. PMI is currently supporting the MoH to conduct a TES that supports important policy decisions for the national care and treatment guidelines.

PMI provided supply chain strengthening and malaria commodity forecasting expertise to the NMCP, MoH, and CAMEG. PMI continued to serve as a valuable member of the malaria commodity quantification committee, carrying out quarterly reviews of the malaria commodity supply chain, and taking into account the annual physical inventory data. PMI supported the NMCP and the pharmacy the CAMEG regional warehouses. This allowed for more accurate accounting of all malaria commodities helping better determine future commodity needs. PMI also supported the MoH and the pharmacy department to complete a strategic review of the 2012-2016 National Pharmaceutical Strategic Plan, with a new 2018-2022 plan in development. EUV—spot checks—continued at health facilities, district pharmacies, and regional agencies, which provided valuable information to help increase data quality and better align malaria commodity procurement to country needs. PMI has worked closely with Alliance Français and the Global Fund to support the country's creation and rollout of the new LMIS on the DHIS-2 platform.

PMI continued training health professionals on the updated national guidelines for malaria prevention and care and worked with university hospital medical providers to strengthen provider capacity for severe malaria case management with post training follow-up and supervision to ensure successful adoption of new skills.

PMI has supported the NMCP to attend international conferences and trainings, targeted to strengthen gaps in current staff knowledge and skills. Emphasis has been placed on M&E and the exchange of information through regional information sharing.

*Plans and justification for proposed activities with FY 2019 funding*

PMI will continue supporting the NMCP's capacity building through specific courses and learning opportunities on management and M&E. Opportunities will be selected to address key gaps in knowledge, with the aim of strengthening the NMCP to more effectively lead malaria control efforts given the NMCP's new elevated level within the MoH. Courses will focus on increasing management capacity of NMCP staff and their ability to use data for decision-making. Both the establishment of a Field Epidemiology Training Program and a national malariology course for MoH staff will increase health workers' knowledge of malaria care and treatment, as well as malaria surveillance competencies— in turn strengthening malaria prevention and care. National dissemination and information sharing of malaria-related research in Burkina Faso will also be funded. PMI has placed on hold support for 13 regional malaria focal points while the MoH conducts additional reviews on sustainability and integration.

Please see Table 2: Budget Breakdown by Activity for a detailed list of proposed activities with FY 2019 funding.

### f. Staffing and administration

Two health professionals serve as Resident Advisors (RAs) to oversee PMI in Burkina Faso, one representing CDC and one representing USAID. In addition, one or more Foreign Service Nationals (FSNs) work as part of the PMI team. All PMI staff members are part of a single interagency team led by the USAID Mission Director or his/her designee in country. The PMI team shares responsibility for development and implementation of PMI strategies and work plans, coordination with national authorities, managing collaborating agencies, and supervising day-to-day activities. Candidates for RA positions (whether initial hires or replacements) will be evaluated and/or interviewed jointly by USAID and CDC, and both agencies will be involved in hiring decisions with the final decision made by the individual agency.

PMI interagency professional staff work 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.

The PMI lead in country is the USAID Mission Director. The day-to-day lead for PMI is delegated to the USAID Health Office Director and thus the two PMI RAs, one from USAID and one from CDC, report to the USAID Health Office Director for day-to-day leadership, and work together as a part of a single interagency team. Technical expertise housed in Atlanta and Washington complements PMI programmatic efforts.

The two PMI RAs are physically based within the USAID health office but are expected to spend approximately half of their time with and providing technical assistance to the NMCP and implementing partners, including time in the field monitoring program implementation and impact.

The number of locally hired staff and necessary qualifications to successfully support PMI activities either in ministries or in USAID will be approved by the USAID Mission Director. Because of the need to adhere to specific country policies and USAID accounting regulations, any transfer of PMI funds directly to ministries or host governments will need to be approved by the USAID Mission Director and Controller, in addition to the U.S. Global Malaria Coordinator.

Please see Table 2: Budget Breakdown by Activity for a detailed list of proposed activities with FY 2019 funding.