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Niger

Malaria Operational Plan FY 2022

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This FY 2022 Malaria Operational Plan has been approved by the U.S. Global Malaria Coordinator and reflects collaborative discussions with national malaria control programs and other partners. Funding available to support outlined plans relies on the final FY 2022 appropriation from U.S. Congress. Any updates will be reflected in revised postings.

This document was prepared in the early months of 2021 as the COVID-19 pandemic continued to evolve worldwide, including in PMI-focus countries. The effects of the pandemic on malaria control and elimination work in 2022 are difficult to predict. However, because U.S. Congressional appropriations for PMI are specific to work against malaria and any appropriations for work against the COVID-19 are specific for that purpose and planned through separate future U.S. Government planning processes, this FY 2022 MOP will not specifically address the malaria-COVID-19 interface and will reassess any complementary work through timely reprogramming in countries.

CONTENTS

ABBREVIATIONS

ACT	Artemisinin-based combination therapy
AL	Artemether-lumefantrine
An.	*Anopheles*
ANC	Antenatal care
ASAQ	Artesunate-amodiaquine
BMGF	Bill & Melinda Gates Foundation
CDC	U.S. Centers for Disease Control and Prevention
CERMES	*Centre de recherche médical et sanitaire*/ Medical research center
CHW	Community health worker
CSI	*Centre de santé integré*/ Integrated health center
CY	Calendar year
DHIS2	District health information software 2
DHS	Demographic and health survey
DPH/MT	*Direction de la pharmacie et de la médecine traditionnelle* / Division of pharmacy and traditional medicine
DS	*Direction des statistiques*/ Division of Statistics
DSME	*Direction de la santé de la mère et de l'enfant*/ Maternal and Child Health Division
EPI	Expanded program of immunization
EUV	End-use verification survey
FETP	Field epidemiology training program
FY	Fiscal year
GHSC-PSM	USAID Global Health Supply Chain Procurement and Supply Management
Global Fund	Global fund to fight AIDS, Tuberculosis, and Malaria
GON	Government of Niger
HLC	Human landing catch
HMIS	Health Management Information System
HSS	Health system strengthening
Ib/p/m	Infective bites per person per month
iCCM	Integrated community case management
IPTp	Intermittent preventive treatment for pregnant women
IRS	Indoor residual spraying
ITN	Insecticide-treated mosquito net
LMIS	Logistics management information system
M&E	Monitoring and evaluation
MIP	Malaria in pregnancy
MIS	Malaria Indicator Survey
MOH	Ministry of Health
MOP	Malaria operational plan
NMCP	National Malaria Control Program
NMSP	National Malaria Strategic Plan

ONPPC	*Office national des produits pharmaceutiques et chimiques*/ National Office of Pharmaceutical Products and Chemicals
OTSS+	Outreach, training, and supportive supervision plus
PBO	Piperonyl butoxide
PMI	U.S. President's Malaria Initiative
PSC	Pyrethrum spray catch
RDT	Rapid diagnostic test
s.l.	*sensu lato*
SARA	Service Availability and Readiness Assessment
SBC	Social and behavior change
SM&E	Surveillance, monitoring, and evaluation
SMC	Seasonal malaria chemoprevention
SP	Sulfadoxine-pyrimethamine
SPAQ	Sulfadoxine-pyrimethamine + amodiaquine
TA	Technical assistance
TES	Therapeutic efficacy studies
TWG	Technical working group
UNICEF	United Nations Children's Fund
USAID	United States agency for International Development
WHO	World Health Organization

EXECUTIVE SUMMARY

The U.S. President's Malaria Initiative (PMI)—led by the U.S. Agency for International Development (USAID) and implemented together with the U.S. Centers for Disease Control and Prevention (CDC)—delivers cost-effective, lifesaving malaria interventions alongside catalytic technical and operational assistance to support Niger to end malaria.

The proposed PMI fiscal year (FY) 2022 budget for Niger is $17.5 million. This Malaria Operational Plan (MOP) outlines planned PMI activities in Niger using FY 2022 funds. Developed in consultation with the national malaria control program (NMCP) and key malaria stakeholders, proposed activities reflect national and PMI strategies, draw on best-available data, and align with the country context and health system. Proposed PMI investments support and build on those made by the Government of Nigea(GON).

PMI will support investments in the following intervention areas with FY 2022 funds in Niger, where malaria is endemic in most of the country:

Vector Control

- Entomological monitoring
  - Summary of progress and key results to-date: PMI supported the entomological monitoring for insecticide resistance in nine sites and bionomics in five sentinel sites and rehabilitated the insectarium at *Centre de recherche médical et sanitaire/* CERMES, including training and the donation of equipment.
  - Summary of proposed investments: PMI will continue the entomological monitoring, training of national and regional staff, and the support to CERMES to conduct entomological surveys and to ensure a functional insectarium.
- Insecticide Treated Nets (ITNs)
  - Summary of progress and key results to-date: PMI supported the ITN routine distribution through updated guidelines and Social and Behavior Change (SBC) messages. PMI supported the durability study in two sites.
  - Summary of proposed investments: PMI will support the ITN routine distribution through adapting guidelines and SBC messages, procurement of piperonyl butoxide (PBO) ITNs and support to routine distribution in two PMI-focus regions.

Human Health

- Case Management
  - Summary of progress and key results to-date: PMI supported the NMCP's goal of ensuring that all suspected malaria cases receive confirmatory diagnosis and all malaria cases receive effective treatment. To date, PMI has trained 211 health workers in Dosso and Tahoua regions. In addition, PMI trained and supported 626 community health workers (CHWs) in line with the country's integrated community case management (iCCM) guidelines.
  - Summary of proposed investments: PMI will support the procurement of case management commodities including rapid diagnostic tests (RDTs) and artemisinin-based combination therapy (ACTs) to complement partners' procurements to cover national needs. PMI will also support training and supervision of healthcare workers and CHWs to promote adherence to national case

management guidelines. PMI will support the expansion of diagnosis and treatment to the community level through ICCM.

- Drug-based Prevention
  - Summary of progress and key results to-date: in 2019 and 2020, PMI has procured drugs for and supported the implementation of seasonal malaria chemoprevention (SMC) campaigns in 17 eligible districts in the two regions of Dosso and Tahoua, and provided 1.2 million children 3 to 59 months of age with four rounds of malaria prophylaxis each year. PMI developed messages for the SBC campaign and supported the dissemination in Dosso and Tahoua. In 2019 and 2020, PMI has procured drugs for prevention of malaria in pregnancy (MIP) and supported the establishment of the MIP technical working group (TWG) in FY 2020.
  - Summary of proposed investments: With FY 2022 funds, PMI will support the development of SBC messages to address the need to take the three days of treatment. PMI investments will focus on the procurement of commodities as well as implementing the 2023 SMC campaign in the regions of Dosso and Tahoua targeting 600,000 children. PMI will also support the procurement of drugs for the intermittent preventive treatment for pregnant women (IPTp) and support SBC messages to encourage early and frequent antenatal care (ANC) attendance. PMI will continue to support the MIP TWG.

Cross Cutting and Other Health Systems

- Supply Chain (with malaria focus)
  - Summary of progress and key results to-date: In addition to procuring and distributing ACTs, RDTs, sulfadoxine-pyrimethamine + amodiaquine (SPAQ), drugs for severe malaria, and ITNs, PMI provided support to the NMCP and the Ministry of health (MOH) in the areas of quantification and supply planning, data reporting and auditing, end-use verification of malaria commodities, supply chain governance, and warehouse management.
  - Summary of proposed investments: With FY 2022 funds, PMI will continue to complement its support in the procurement and distribution of malaria commodities with technical assistance (TA) aimed at strengthening the Logistics Management Information System (LMIS) and improving forecasting, quantification, monitoring (through call centers) and management of malaria commodity in the regions of Dosso and Tahoua.
- Surveillance Monitoring and Evaluation (SM&E)
  - Summary of progress and key results to-date: PMI provided support to the training and supervision of health workers and managers at the facility and district levels and to coordination meetings to strengthen Health Management Information System (HMIS) use and improve data quality.
  - Summary of proposed investments: With FY 2022 funds, PMI/Niger will continue to support a wide range of HMIS strengthening activities aimed at improving data reporting at community, facility, district, and national levels.
- Social Behavior Change (SBC)
  - Summary of progress and key results to-date: PMI supported the update of the national SBC strategy; the net-mapping of SBC partners; and the production, pre-testing, and dissemination of SBC messages for the SMC and ITN campaigns, and launched pilot community engagement activities to accelerate the uptake of malaria prevention practices.

- Summary of proposed investments: PMI will continue its support to update and elaborate key messages on ITN use, malaria in pregnancy (MIP) and case management and support implementation of SBC activities, including for school children.

- Health System Strengthening (HSS) general/other
  - Summary of progress and key results to-date: To date, PMI has assessed the organizational capacity of the NMCP to coordinate the implementation of its strategic plan. PMI also supported the commodity management system at the central level by strengthening quantification methods and supply chains. In addition, PMI supported the implementation of District Health Information Software 2 (DHIS2) and launched the three-month Field Epidemiology Training Program (FETP).
  - Summary of proposed investments: With FY 2022 funds, PMI will continue to train and support health workers at community and facility levels, while also providing TA within key institutions playing critical roles within Niger's health system, including the NMCP for routine surveillance, *Office national des produits pharmaceutiques et chimiques* (ONPPC) for supply chain strengthening, and CERMES for entomological monitoring. PMI will further expand its supply to strengthening reporting systems to improve the availability, quality and use of malaria data.

1. INTRODUCTION

The U.S. President's Malaria Initiative (PMI)—led by the U.S. Agency for International Development (USAID) and implemented together with the U.S. Centers for Disease Control and Prevention (CDC)—delivers cost-effective, lifesaving malaria interventions alongside catalytic technical and operational assistance to support Niger to end malaria. PMI has been a proud partner of Niger since 2017 through investments totaling almost $90 million.

The proposed PMI fiscal year (FY) 2022 budget for Niger is $17.5 million. This Malaria Operational Plan (MOP) outlines planned PMI activities in Niger using FY 2022 funds. Developed in consultation with the national malaria control program (NMCP) and key malaria stakeholders, proposed activities reflect national and PMI strategies, draw on best-available data, and align with the country context and health system. Proposed PMI investments support and build on those made by the Government of Niger (GON) as well as other donors and partners.

Niger at a Glance

- Geography: Sahel (25 percent, southern part) and Sahara Desert (75 percent)
- Climate and Malaria Transmission Seasonality: Three seasons: hot (March to May), rainy (June to September), and cold (October to February)
- Population in 2021: 24.1 million[1]
- Population at Risk of Malaria: 24.1million
- Principal Malaria Parasites: *Plasmodium falciparum*[2]
- Principal Malaria Vectors: *Anopheles gambiae*[2]
- Malaria Case Incidence per 1,000 Population: (2020): 175[3]
- Under-Five Mortality Rate: (2019): 80/1m000[4]
- World Bank Income Classification and Gross Domestic Product (GDP) in 2019: Low-income and 12.912 billion USD[5]
- Government Health Budget (2018): 30 USD per capita[5]
- Trafficking in Persons Designations, 2018–2020: Tier 2[6]
- Malaria Funding and Program Support Partners Include:
    - Global Fund to Fight AIDS, Tuberculosis and Malaria (Global Fund)

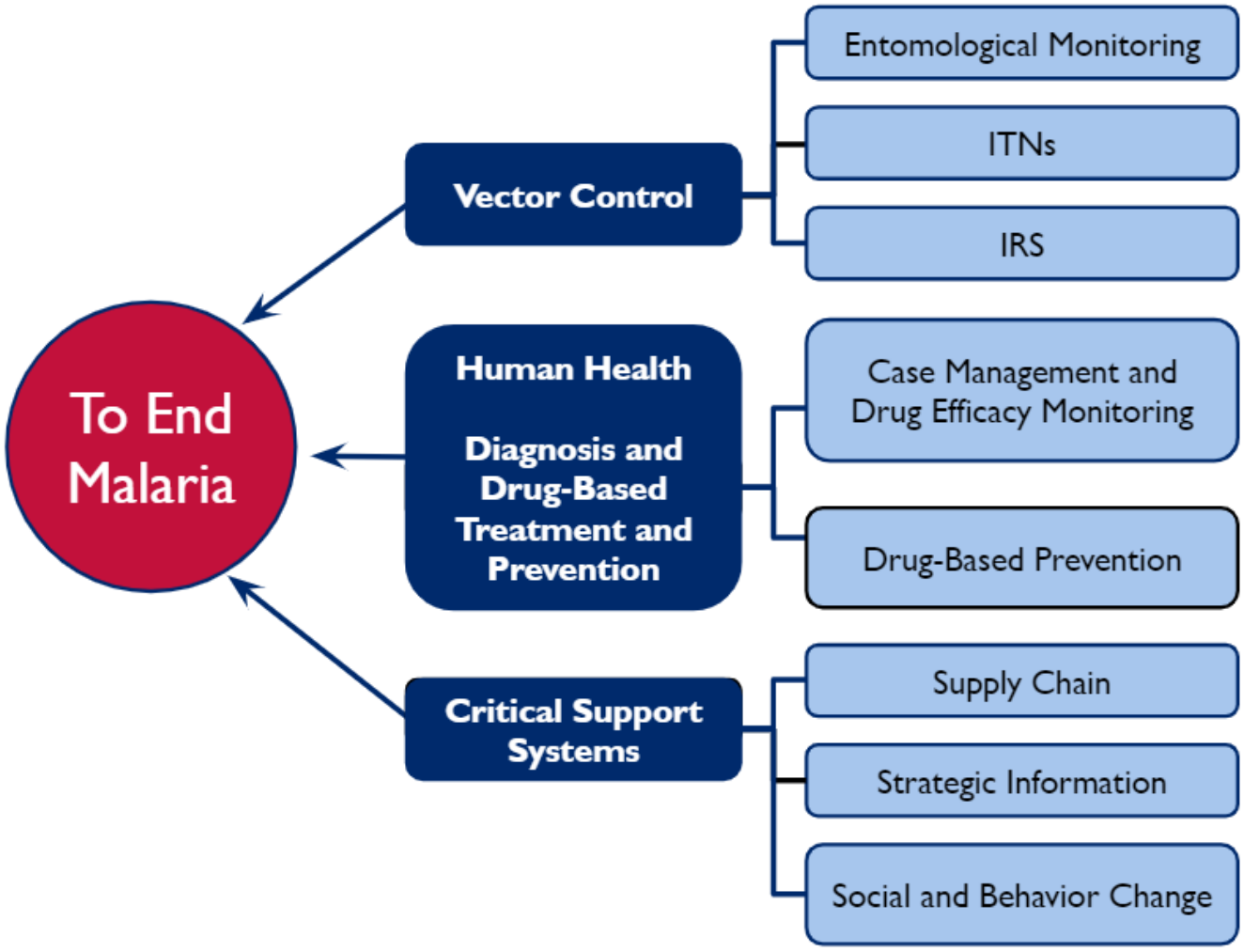
[1] *INS Projection Démographique 2012–2035.*
[2] The PMI VectorLink Project. June 2020. PMI VectorLink Niger Annual Entomology Report April 2019–March 2020. Rockville, MD: Abt Associates.
[3] NMCP report, 2020.
[4] UN Interagency Group for Child Mortality Estimation (IGME).
[5] World Bank.
[6] Department of State.

- U.S. President's Malaria Initiative (PMI)
- World Health Organization (WHO)
- United Nation Children's Fund (UNICEF)

- **PMI Support of National Malaria Control Strategy:** PMI contributes to Niger's overall malaria strategy through supporting the implementation of the national malaria strategic plan (NMSP 2017–2023). Building and strengthening the capacity of Niger's people and institutions—from the central level to communities—to effectively lead and implement evidence-based malaria control and elimination activities remains paramount to PMI. In Niger, the systems such as commodity management, warehousing, and data management are especially weak due to the low-income level of the country, limited qualified human resources, limited investment of the government, and lack of other system strengthening projects such as the President's Emergency Plan for AIDS Relief (PEPFAR) or Global Health Security Agenda. Global Fund and PMI are the two main supporters of the malaria program in Niger. (See III. Overview of PMI's support of Niger's Malaria Control Strategy for additional details.)
- **PMI Investments:** Niger began implementation as a PMI-focus country in FY 2017. The proposed FY 2022 PMI budget for Niger is $17.5 million; this brings the total PMI investment to nearly $107 million.

PMI organizes its investments around the activities below, in line with the Niger national malaria strategy (2017–2023).

Figure 1. PMI's approach to end malaria[7]



Building and strengthening the capacity of Niger's people and institutions—from the central level to communities—to effectively lead and implement evidence-based malaria control and elimination activities is paramount to PMI. The majority of PMI's planned support for FY 2022, across the areas of vector control, human health, and critical support systems such as supply chain, contains elements of capacity-building and system strengthening. PMI/Niger will continue to rely on and engage with partners such as Global Fund and will be expanding its local partner base. In this context, PMI will develop a bilateral program for the implementation of activities related to case management, drug-based prevention activities including seasonal malaria chemoprevention (SMC) and social and behavioral change (SBC). The lessons learned after three years of implementation show the need to make changes in the implementation of activities and to build our approach

[7] A number of actions are cross-cutting in nature. For example, SBC is embedded in all vector control and human health work; program evaluation (PE) and operational research (OR) are relevant in all of the fieldwork; *finance* and. management support and the introduction of new tools/interventions are critical for all programs; and elimination requires work across the full spectrum of transmission

according to the country context and to take advantage of all the existing resources within the investments of the U.S. Government as well as those of other partners and the private sector.

To accelerate sustainable development, PMI developed a programmatic inventory to assess the strengths and persistent challenges of Niger's program (see Annex B). The activities proposed in this MOP are tailored to draw on these strengths and address weaknesses; activities will be monitored to evaluate the effectiveness of capacity-building efforts. In addition, while PMI understands it will take time for Niger to fully finance its development priorities, PMI will work with other partners (e.g., the Global Fund) to jointly track and advocate for Niger's funding commitments across the malaria portfolio.

II. MALARIA SITUATION AND PROGRESS

Figure 2. Trends in *Plasmodium falciparum* parasite rate, Niger

The predicted age-standardized parasite rate for Plasmodium falciparum malaria in children 2 to 10 years of age by year; 95 percent uncertainty intervals are shown via the corresponding colored bands behind the mean lines

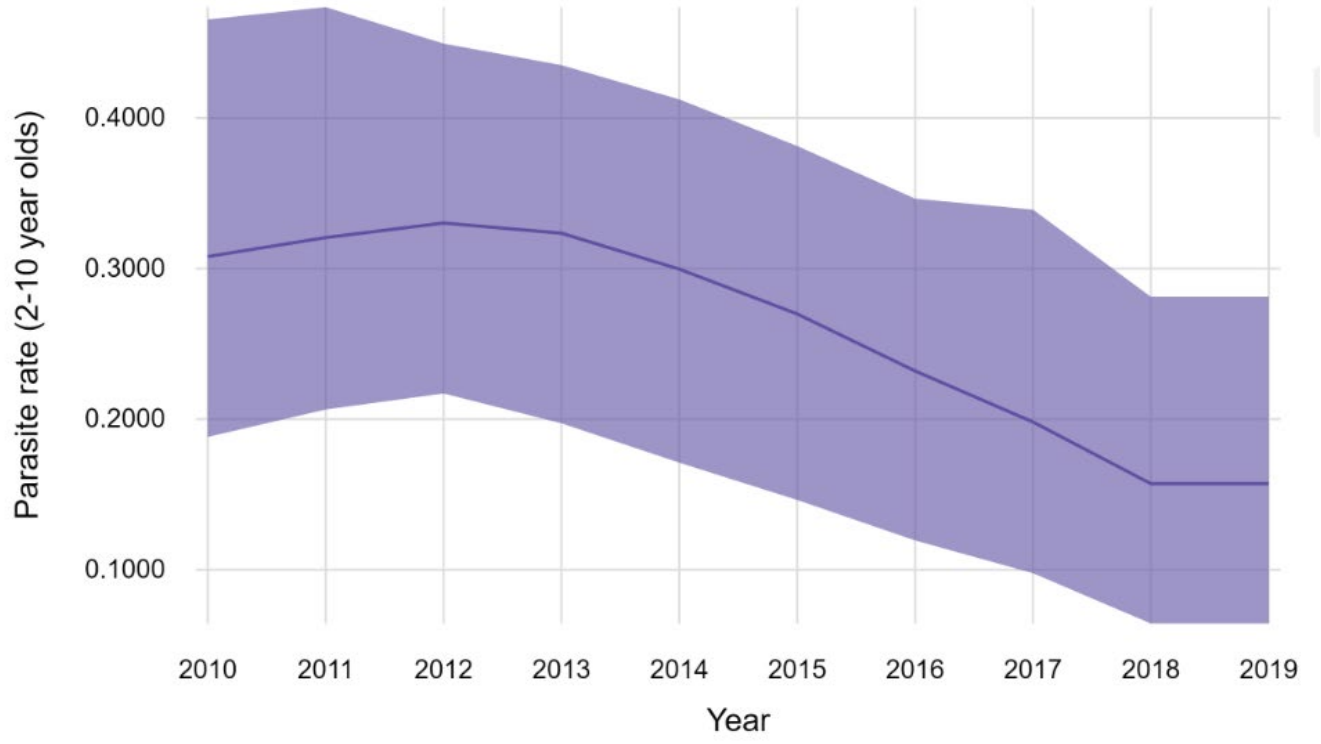


Figure 3. Spatial distribution of *Plasmodium falciparum* malaria endemicity, Niger (2019)

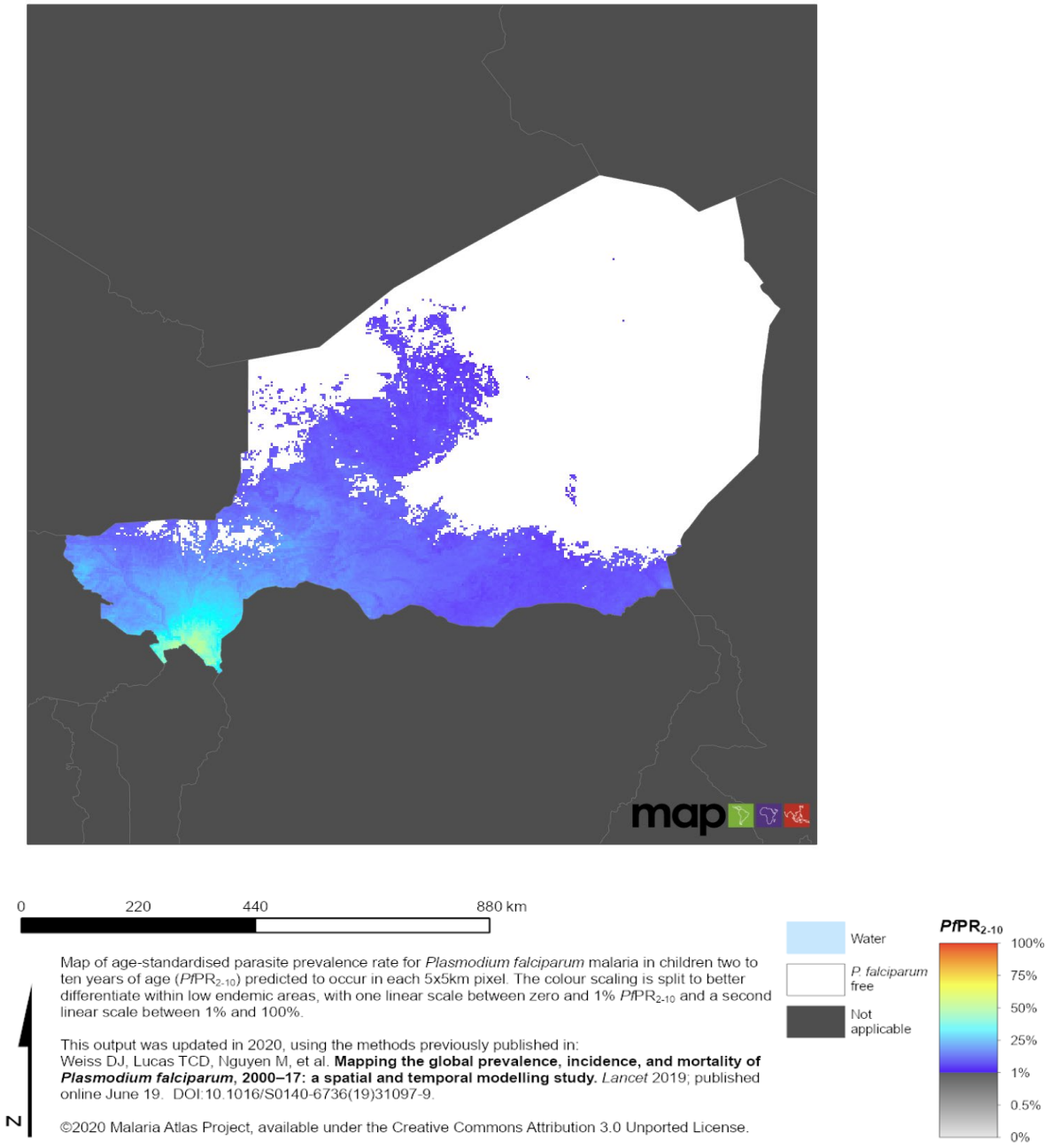


Table 1. Key indicators from Demographic and Health Surveys (DHS)

Indicator	2006 DHS	2012 DHS[1]
% Households with at least one ITN	43	61
% Households with at least one ITN for every two people	5	17
% Population with access to an ITN	20	37
% Population that slept under an ITN the previous night	4	14
% Children under five years of age who slept under an ITN the previous night	7	20
% Pregnant women who slept under an ITN the previous night	7	20
% Children under five years of age with a fever in the last two weeks for whom advice or treatment was sought	64	64
% Children under five years of age with a fever in the last two weeks who had a finger or heel stick	N/A	14
% Children receiving an ACT among children under five years of age with a fever in the last two weeks who received any antimalarial drug	N/A	80
% Women who received two or more doses of IPTp during their last pregnancy in the last two years	1	35
% Women who received three or more doses of IPTp during their last pregnancy in the last two years	N/A	9
<5 mortality rate per 1,000 live births	198	127
% Children under five years of age with parasitemia by microscopy	N/A	N/A
% Children under five years of age with parasitemia by RDT	N/A	N/A
% Children under five years of age with severe anemia (Hb<8gm/dl)	18	9

[1] Because a Malaria Indicator Survey (MIS) is scheduled to take place in 2021, more recent data is expected to be available in the coming months.

Table 2. Evolution of key malaria indicators reported through routine surveillance systems

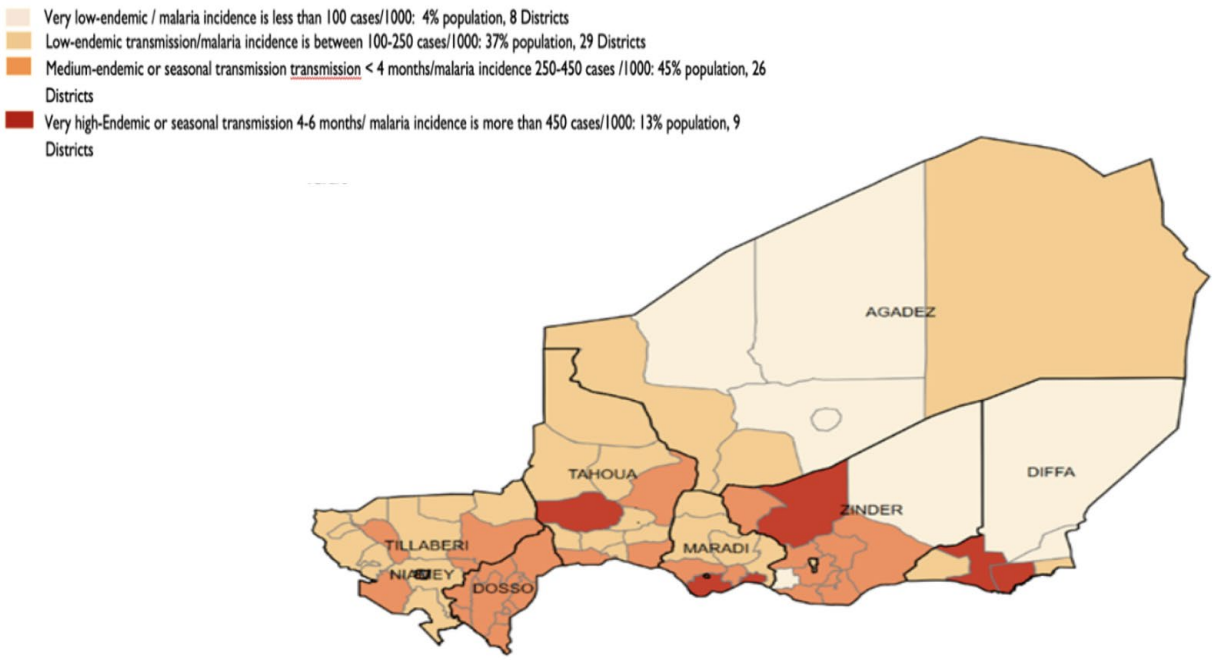
Indicator	2016	2017	2018	2019	2020
# Suspect malaria cases[1]	N/A	4,112,292	4,726,885	4,993,739	6,052,859
# Patients receiving diagnostic test for malaria[2]	N/A	3,874,040	4,483,533	4,932,697	5,645,012
Total # malaria cases[3]	3,642,967	2,918,057	3,338,211	4,090,349	4,933,504
# Confirmed cases[4]	3,021,595	2,663,709	3,036,699	3,331,416	4,225,569
# Presumed cases[5]	N/A	N/A	N/A	758,933	707,935
% Malaria cases confirmed[6]	83%	91%	91%	81.4%	85.6%
Test positivity rate (TPR)[7]	N/A	69%	68%	67.6%	74.8%
Total # under five years of age malaria cases[8]	2,053,113	1,326,836	1,804,783	2,117,391	2,549,562
% Cases in children under five years of age [9]	55%	58%	54%	51.7%	51.7%
Total # severe cases[10]	172,407	144,045	241,172	217,522	346,064
Total # malaria deaths[11]	3,506	2,316	4,035	4,527	5,826
# Facilities reporting[12]	1,280	3,389	3,495	3,551	3,824
% Data completeness[13]	92%	85%	84%	98.2%	96%

1. Number of patients presenting with signs or symptoms possibly due to malaria (e.g., fever). 2. RDT or microscopy, all ages, outpatient and inpatient. 3. Total reported malaria cases; all ages, outpatient and inpatient, confirmed and unconfirmed cases. 4. Diagnostically confirmed; all ages, outpatient and inpatient. 5. Clinical/presumed/unconfirmed; all ages, outpatient and inpatient. 6. # confirmed cases divided by total # cases. 7. Confirmed cases divided by # patients receiving a diagnostic test for malaria (RDT or microscopy). 8. Outpatient and inpatient, confirmed and unconfirmed. 9. Total # <5 cases divided by total # of cases. 10. Malaria, lab confirmed cases caused by *Plasmodium Falciparum* with at least one of the severe symptoms as defined by WHO. 11. All ages, outpatient, inpatient, confirmed, and unconfirmed. 12. Total # of health facilities reporting data into the HMIS/DHIS2 system that year. 13. # monthly reports from health facilities divided by # health facility reports expected.

III. OVERVIEW OF PMI'S SUPPORT OF NIGER'S MALARIA STRATEGY

Malaria is a health problem throughout Niger, but the number of malaria cases and malaria deaths recorded in the national health statistics reports show that the burden is disproportionately higher in the southern part of the country (see Figure 5).

Figure 4. Malaria transmission (Niger 2020)



The National Malaria Control Program carried out the midterm review of its 2017–2021 strategic plan. Taking into account the updated malaria risk map (2020) and the lessons learned from the review allowed for a revision of the NMSP 2017–2021 with an extension until 2023. The objectives of Niger's malaria strategy are as follows:

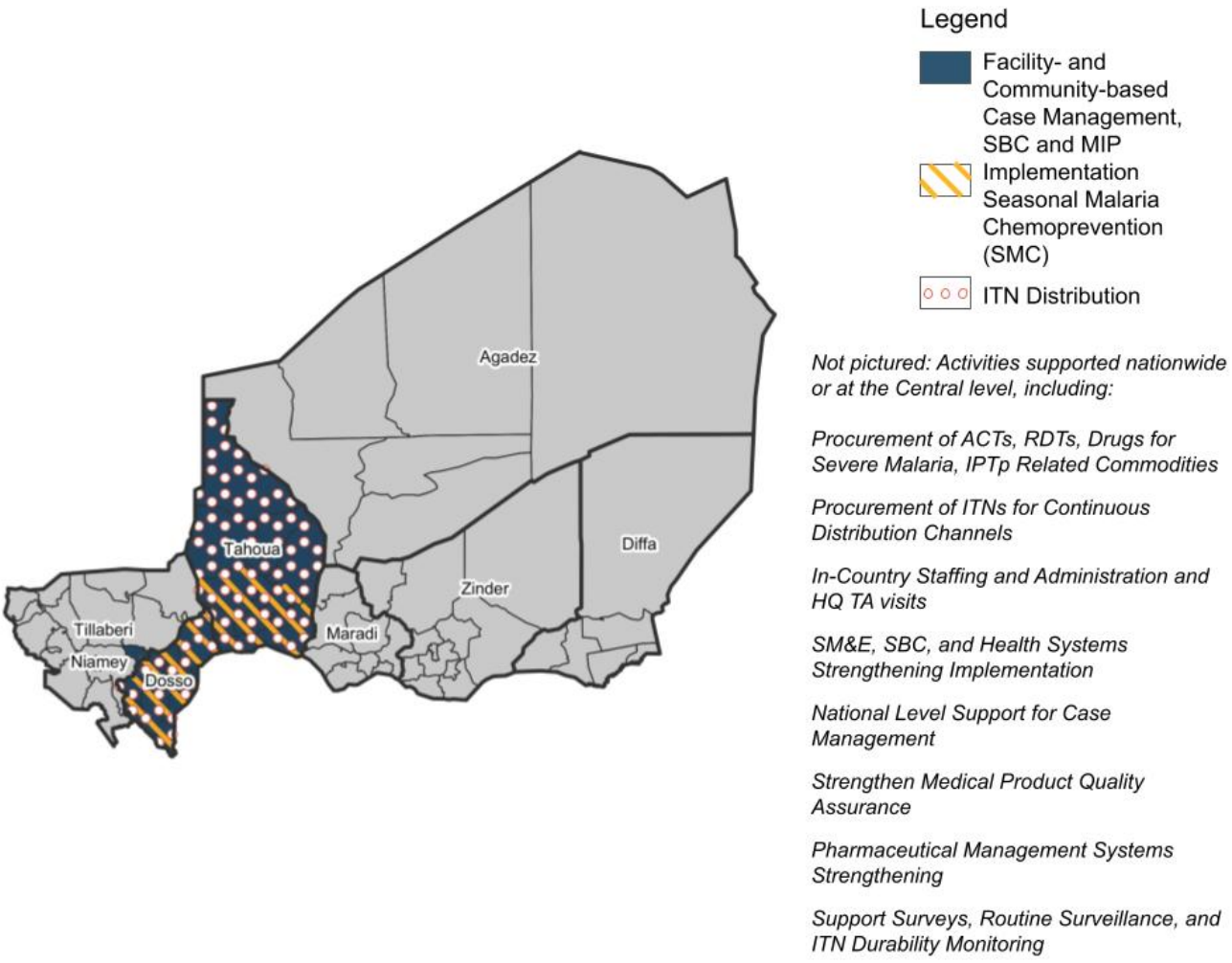
- At least 80 percent of the population at risk will be protected from malaria with vector control interventions by 2023.
- Provide chemoprevention coverage to at least 80 percent of pregnant women and children under five years of age by 2023.
- Ensure correct case management (diagnosis and treatment) of at least 90 percent of suspected malaria cases by 2023.
- Bring at least 80 percent of the population to know the major signs and national measures for the prevention of malaria by 2023.
- Improve the monitoring and evaluation system by having at least 80 percent of health facilities reporting quality data on time to the central level by 2023.
- Strengthen managerial capacities by having at least 85 percent of activities and budget executed by 2023.

PMI will contribute to Niger's overall malaria strategy and will support the NMCP to implement the NMSP 2017–2023 to control malaria in Niger but will emphasize specific interventions and geographic areas to maximize impact and complement existing activities.

PMI will prioritize investments across key proven interventions including vector control, service delivery (case management, malaria in pregnancy, and seasonal malaria chemoprevention), and commodities, and will provide support to strengthen key aspects of the health system including supply chain management, surveillance,

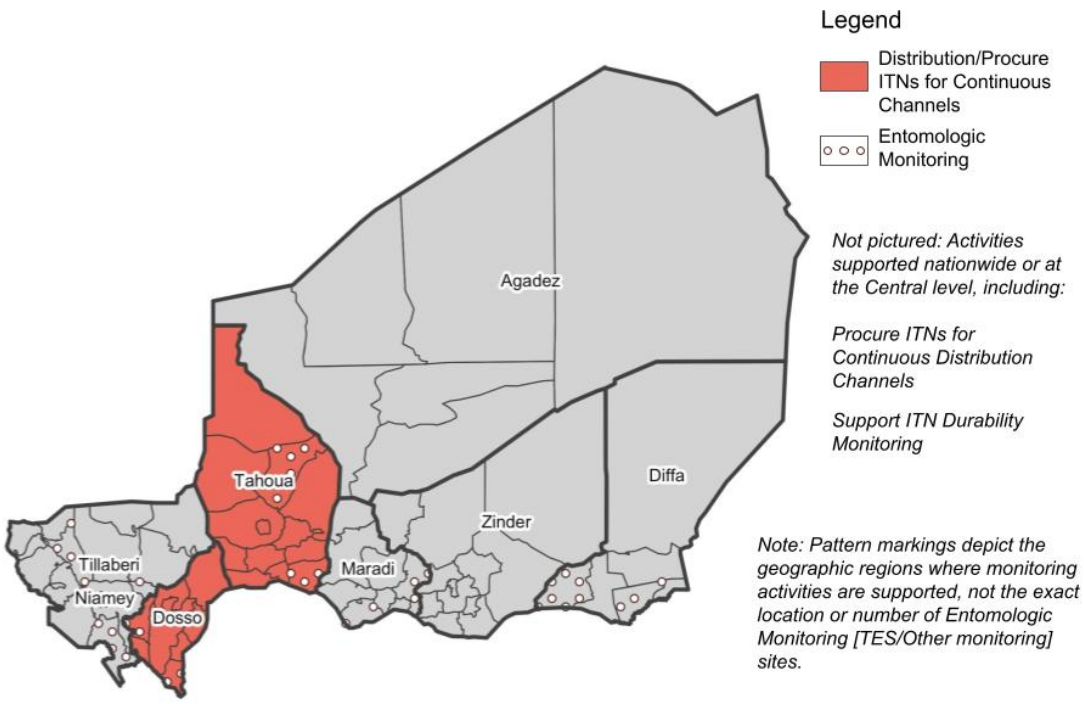
monitoring and evaluation (M&E), and SBC. PMI's contributions will complement the assistance provided by the Global Fund to ensure the whole country is supported. PMI will provide TA at the national level to the NMCP and other divisions of the MOH and will support direct implementation in two PMI focus regions (Dosso and Tahoua) in the southern part of the country. PMI and the Global Fund will provide malaria commodities in a common basket to ensure nationwide coverage.

Figure 5. PMI-supported activities in Niger



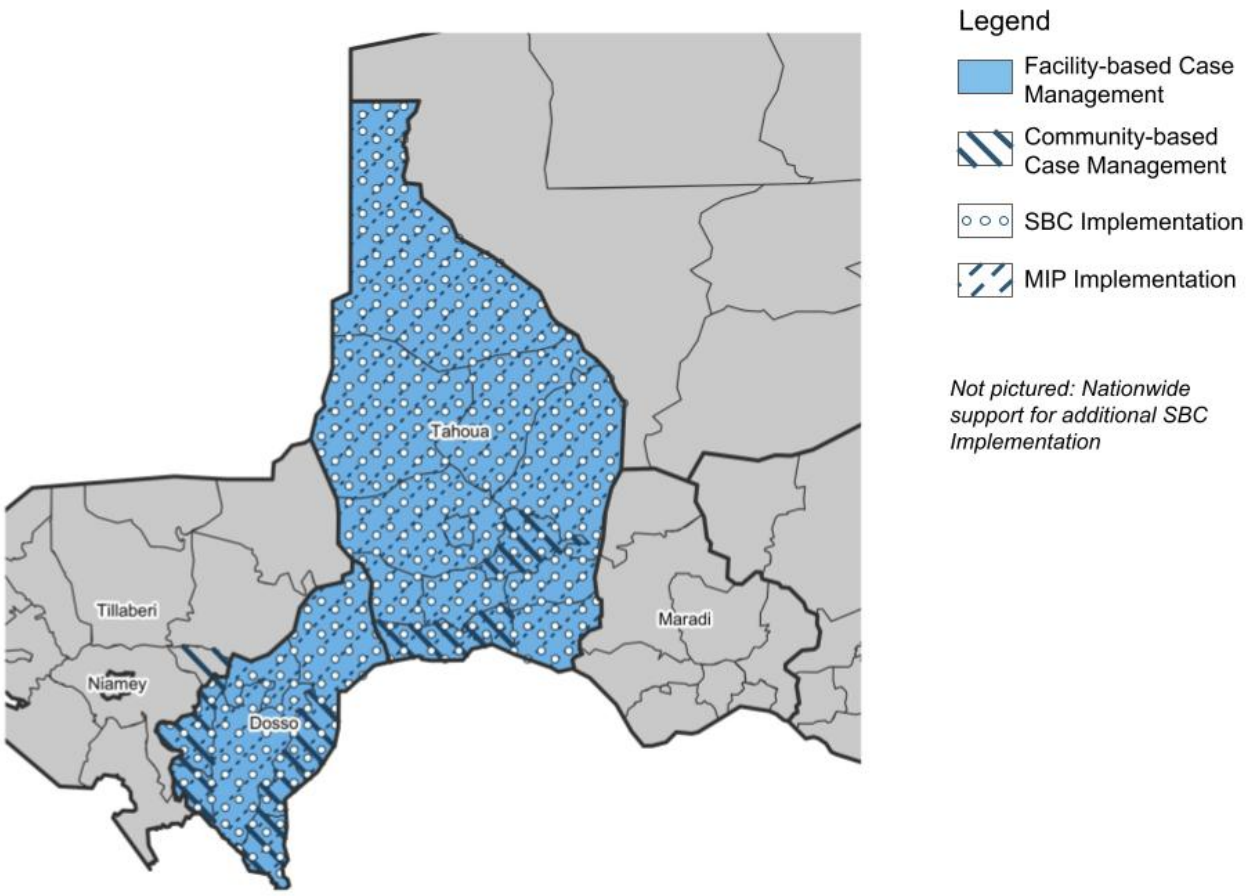
Source: Niger MOP Funding Table 2, Fiscal Year 2021 Malaria Data Integration and Visualization (M-DIVE).

Figure 6. PMI-supported vector control activities in Niger



Source: Niger MOP Funding Table 2, Fiscal Year 2021 Malaria Data Integration and Visualization (M-DIVE).

Figure 7. PMI-supported service delivery and social and behavior change activities in Niger



Source: Niger MOP Funding Table 2, Fiscal Year 2021 Malaria Data Integration and Visualization (M-DIVE).

PMI Intervention Support Map

Depending on the specific activity, the PMI support is targeted nationwide, to the central level, or focused on the two PMI target regions of Dosso and Tahoua. Figure 8 shows the geographical intervention area for PMI and other donors for seasonal malaria chemoprevention (SMC), case management, and commodities.

Figure 8a. Donor landscape for SMC, 2021

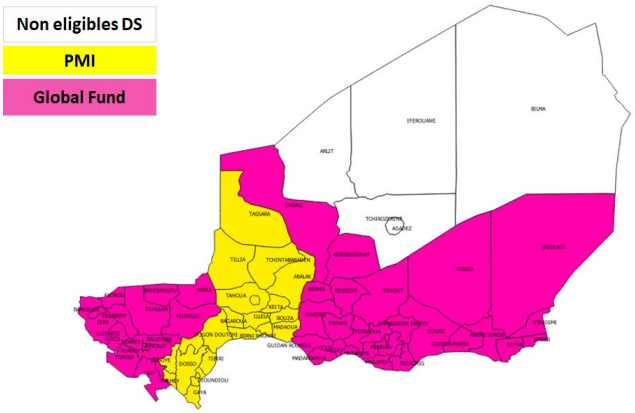


Figure 8b. Donor landscape for case management, 2021

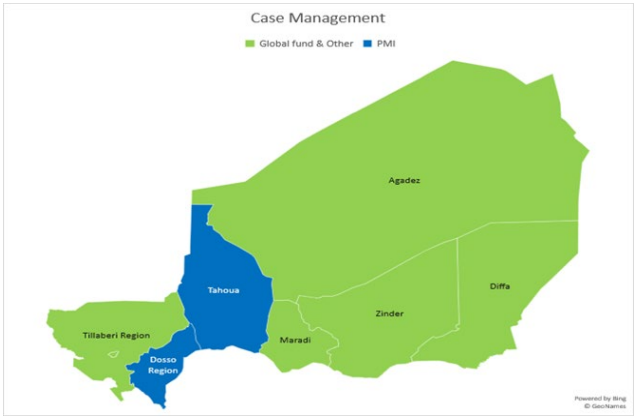
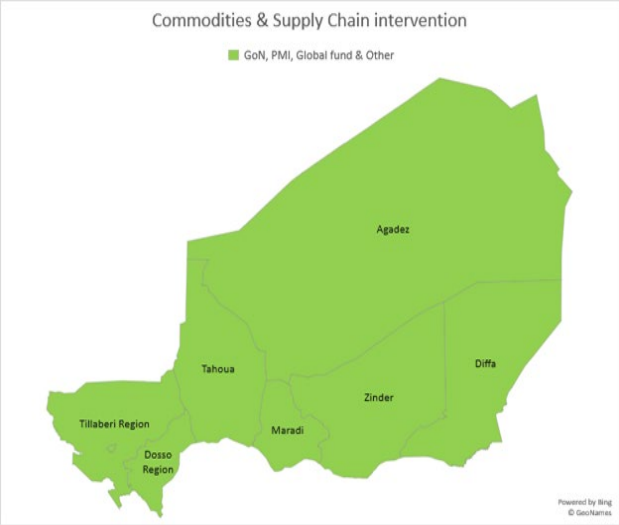


Figure 8c. Donor landscape for commodities and supply chain intervention, 2021



IV. PARTNER FUNDING LANDSCAPE

PMI emphasizes the importance of partner alignment for malaria control, recognizing that different partners bring complementary expertise and resources. In recent years, PMI, the Global Fund, and the Bill & Melinda Gates Foundation (BMGF) have harmonized financial, supply chain, and programmatic data. In particular, PMI and the Global Fund agreed to a harmonized financial taxonomy to aid comparison of investments to better identify potential overlap or gaps.

Due to the U.S. Government fiscal year budget cycle and approximate timing of annual appropriations, PMI MOP resources fund activities that largely occur during the following fiscal year. For example, this FY 2022 MOP is anticipated to largely fund implementation of activities starting in 2023. Global Fund resources are based on the calendar year (CY) and planned for a three-year grant cycle. Most partner country governments and other partners also budget based on the calendar year.

The tables below summarize contributions by key external partners and partner country governments in CY 2020–2022, providing insight into total country investments. Because new grants funded through the Global Fund 2021–2023 grant cycle are just beginning, or will begin later in 2021, Global Fund country investments may still evolve. The partner country government invests substantial funding into the national-to-local infrastructure and service delivery that benefits malaria programs and many others. However, it is not always possible to attribute funding for malaria specifically from the partner country government without a standardized method. There may be similar challenges for attributing other partner funds.

Table 3a. Annual budget by Level 1 category for FY 2019/CY 2020

Funder[1]	Vector Control	Case Management	Drug-Based Prevention[2]	Supply Chain[3]	Monitoring, Evaluation & Research	Cross-cutting and HSS[4]	Total Per Funder
PMI	$1.8M	$5.2M	$5.7M	$1.7M	$1.1M	$2.5M	$18.0M
Global Fund	$20.3M	$4.8M	$9.1M	$0.0M	$0.9M	$5.0M	$40.1M
Total Per Category	$22.1M	$10.0M	$14.8M	$1.7M	$2.0M	$7.5M	$58.1M

Table 3b. Annual budget by Level 1 category for FY 2020/CY 2021

Funder[1]	Vector Control	Case Management	Drug-Based Prevention[2]	Supply Chain[3]	Monitoring, Evaluation & Research	Cross-cutting and HSS[4]	Total Per Funder
PMI	$0.9M	$4.8M	$7.1M	$2.0M	$1.0M	$2.3M	$18.1M
Global Fund	$0.0M	$4.6M	$8.6M	$0.0M	$2.3M	$39.3M	$54.8M
Total Per Category	$0.9M	$9.7M	$15.7M	$2.0M	$3.3M	$41.6M	$72.9M

Table 3c. Annual budget by Level 1 category for FY 2021/CY 2022

Funder[1]	Vector Control	Case Management	Drug-Based Prevention[2]	Supply Chain[3]	Monitoring, Evaluation & Research	Cross-cutting and HSS[4]	Total Per Funder
PMI	$1.1M	$4.8M	$6.2M	$2.2M	$1.2M	$2.0M	$17.5M
Global Fund	$0.0M	$2.2M	$10.1M	$0.0M	$0.2M	$14.9M	$27.4M
Total Per Category	$1.1M	$7.0M	$16.3M	$2.2M	$1.4M	$16.9M	$44.9M

1. Other donors include GON, WHO, UNICEF, and World Bank, but specific amounts are not known but are minimal. 2. Drug-based prevention, including SMC and MIP where applicable. 3. Covers management of in-country warehousing and distribution of malaria commodities, except for ITNs, which are separately captured under Vector Control. 4. HSS = health systems strengthening.

Table 4a. Annual budget, breakdown by commodity, FY 2019/CY 2020

Funder[1]	ITNs *Continu-ous Distri-bution*	ITNs *Mass Distri-bution*	IRS[1] *Insecticide*	ACTs	RDTs	Severe Malaria	SMC-Related	IPTp-Related	Total
PMI[3]	$0.9M	$0.0M	$0.0M	$1.1M	$0.6M	$2.1M	$2.0M	$0.0M	$6.7M
Global Fund[4]	$3.2M	$8.8M	$0.0M	$1.4M	$1.5M	$0.6M	$3.9M	$0.7M	$20.1M
Total	$4.1M	$8.8M	$0.0M	$2.5M	$2.1M	$2.7M	$5.9M	$0.7M	$26.8M

Table 4b. Annual budget, breakdown by commodity, FY 2020/CY 2021

Funder	ITNs *Continuous Distribution*	ITNs *Mass Distribution*	IRS[1] *Insecticide*	ACTs	RDTs	Severe Malaria	SMC-Related	IPTp-Related	Total
PMI[3]	$0.0M	$0.0M	$0.0M	$1.2M	$1.2M	$0.9M	$2.4M	$0.0M	$5.7M
Global Fund[4]	$0.0M	$0.0M	$0.0M	$2.4M	$1.2M	$0.0M	$2.8M	$0.0M	$6.4M
Total	$0.0M	$0.0M	$0.0M	$3.6M	$2.4M	$0.9M	$5.2M	$0	$12.1M

Table 4c. Annual budget, breakdown by commodity, FY 2021/CY 2022

Funder	ITNs *Continuous Distribution*	ITNs *Mass Distribution*	IRS[1] *Insecticide*	ACTs	RDTs	Severe Malaria	SMC-Related	IPTp-Related	Total
PMI[3]	$0.4M	$0.0M	$0.0M	$1.2M	$1.3M	$0.5M	$2.5M	$0.0M	$5.9M
Global Fund[4]	$0.0M	$0.0M	$0.0M	$1.0M	$0.7M	$0.0M	$3.6M	$0.4M	$5.7M
Total	$0.4M	$0.0M	$0.0M	$2.2M	$2.0M	$0.5M	$6.1M	$0.4M	$11.6M

Note: Categories reflect the harmonized financial taxonomy (Levels 1-3) developed by BMGF, Global Fund, and PMI in 2019, as part of a broader data harmonization initiative but may continue to evolve.1. Other donors include GON, WHO, UNICEF, and World Bank but specific amounts are not known 2. Indoor residual spraying (IRS) insecticide: for PMI, commodity costs may be inextricable from IRS implementation costs in historical data – field identified as ND where this is the case. 3. PMI commodity costs are fully loaded, including costs for the ex-works price of the commodity, quality control, freight, insurance, and customs. 4. Global Fund commodity costs in the table above only include ex-works commodity value; additional costs, including quality control, freight, insurance, and customs, totaled $7.8 million (MOU) over the CY 2021–2023 period.

V. ACTIVITIES TO BE SUPPORTED WITH FY 2022 FUNDING

The FY 2022 budget tables contain a full list of activities that PMI proposes to support in Niger with FY 2022 funding. Please visit www.pmi.gov/resource-library/mops for these FY 2022 budget tables. Key data used for decision-making for this MOP planned investments is provided in Annex A of this document.

ANNEX A: INTERVENTION-SPECIFIC DATA

This section outlines key data that helped inform decision-making around FY 2022 MOP funding allocations to PMI-supported activities.

1. VECTOR CONTROL

NMCP Objective

The Niger NMSP 2017–2023 calls for several insecticide-based vector control interventions: insecticide-treated nets (ITN), indoor and outdoor residual spraying (IRS), larval control as well as improved management of insecticide resistance and waste management, and reinforcement of entomology capacities. Niger prioritizes the distribution and promotion of the use of ITNs as a key component of its national malaria prevention strategy. The target goal is to have 80 percent of the population sleeping under a ITN by 2023 and data indicate that with coverage of 87 percent, this objective was reached in 2021 (NMSP 2017–2023). The plan also calls for comprehensive entomology monitoring, based on the World Health Organization (WHO) recommended methods, to inform strategy and to document impact.

NMCP Approach

The NMCP applies the WHO recommended quantification of one ITN for every 1.8 people. To attain this, the NMCP implements a strategy comprising two main components: rolling mass distribution campaigns every three years to cover the population at risk, and routine distribution nationwide targeting vulnerable populations through ANC clinic attendees and children under one year of age through the expanded program of immunization (EPI) vaccination clinics. According to the updated malaria treatment guidelines (2020), the official government policy is to provide an ITN at the first ANC visit accompanied by counseling on its use and at the measles vaccination EPI consultation. No financial support for IRS, larval control, or waste management is available at this time and, to date, no recent outdoor or indoor residual spraying has occurred in the country.

PMI Objective in Support of NMCP

The NMCP and partners are conducting mass campaigns targeting coverage of the whole country every three years using a rolling campaign strategy. There will be no campaign in 2023, but in 2024, a national campaign will cover all the hyper- and mesoendemic regions.

PMI will continue providing support to the routine ITN distribution through ANC consultations and EPI activities. PMI supported the NMCP to move away from a verticalization of the routine ITN distribution. The Direction of Maternal Health (*Direction de la santé de la mère et de l'enfant,* DSME) and the Direction of Immunization at the MOH added ITN distribution as a routine activity during the ANC and EPI activities. PMI will continue its support to NMCP to ensure that ITN distribution according to NMCP guidelines is included in DSME and Direction of Immunization guidelines, training modules, supervision tools, and patient booklets and tools. PMI will ensure that the guidelines are communicated on a national level and on all levels of the health structure in the regions of Dosso and Tahoua. PMI will also SBC to promote the use of ITNs on a national level and in the two PMI focus regions.

The last Demographic and Health Survey (DHS) in 2012 indicated that 71 percent of the households owned at least one ITN. ITN distribution campaigns in 2017 and 2019 increased coverage from 80 percent to 87 percent according to the NMSP midterm review. The ITN use:access ratio in Niger, which measures population-level use

in relation to population-level access to an ITN, ranged from 0.23 in Tahoua and 0.39 in Dosso to 0.66 in Niamey (2012 DHS).

PMI will continue support to NMCP to conduct entomological monitoring in 15 sentinel sites representing all malaria epidemiological risk levels in the country. PMI will also continue to support the insectarium at CERMES through donations of equipment, training and TA where needed. Due to limited funding, ITN durability monitoring will be discontinued after the finalization of the current three-year cohort and the procurement of ITN will be limited.

PMI-Supported Recent Progress (CY 2020)

Longitudinal vector monitoring using human landing catch (HLC) and pyrethrum spray catch (PSC) methods was conducted in 10 sentinel sites in the different malaria risk areas in the country:

- *An. gambiae* s.l. represented more than 95 percent (15,469 of 17,091) of the vectors collected.
- The biting behavior of *An. gambiae* s.l. and *An. funestus* s.l. vary across sites with endophilic tendency in all sites except one.
- The average peak biting of *An. gambiae* s.l. occurred mostly between 10:00 p.m. and 4:00 a.m.
- The entomological inoculation rate (EIR) was higher in hyperendemic areas including Gaya (180.72 infective bites per person per month [ib/p/m]), Zindarou (168.12 ib/p/m), Niamey V (75.90 ib/p/m) than in the mesoendemic sites: Fararrat (0 ib/p/m) and Tessaoua (15.72 ib/p/m). No infective bites were recorded in hypoendemic sites (Agadez and Ingall).
- Resistance to the three pyrethroids tested was observed in nine sites where larval collection was productive: high deltamethrin resistance was observed in all sites while permethrin and alpha-cypermethrin showed moderate resistance in Gaya and Tessaoua.
- Pre-exposure of mosquitoes to piperonyl butoxide (PBO) before exposure to the pyrethroids did not completely reverse the resistance status of the *An. gambiae* s.l. populations in any of the sites surveyed except in Agadez.
- Chlorfenapyr susceptibility was recorded at the dose of 200 µg/bottle in all nine sites, while clothianidin susceptibility was recorded in seven of the nine sites. The vector showed full susceptibility to pirimiphos-methyl in six of the nine sites and moderate resistance in the other three sites.
- The *kdr-w* and *Ace*-1 mutations were recorded at frequencies between 0.22 and 0.38 and between 0.05 and 0.09, respectively, across the nine sites.
- In 2020, 375,238 pyrethroid ITNs were procured.
- Routine distribution guidelines were updated and distributed.
- ITN durability was monitored.
- A high-level data analysis meeting was supported.

PMI-Supported Planned Activities (CY 2021)

- Conduct insecticide resistance monitoring in 15 sites.
- Support CERMES in conducting all the entomological surveys, including routine entomological surveillance, support to the insectarium, and training of national and regional staff where needed.
- Support the ITN routine distribution and provide continuous support to update and distribute guidelines and SBC messages to encourage ITN utilization.

- Procure 100,000 PBO ITNs for continuous distribution in 2022.
- Collect final data on ITN durability monitoring.
- Distribute 580,000 ITNs via routine distribution channels (ANC consultation and EPI) in Dosso and Tahoua.

1.1. ENTOMOLOGICAL MONITORING

Key Goal

Determine the geographic distribution, bionomics, and insecticide-resistance profiles of the main malaria vectors in the country to inform vector control decision-making.

Key Question 1

Where is entomological monitoring taking place, what types of activities are occurring, and what is the source of funding?

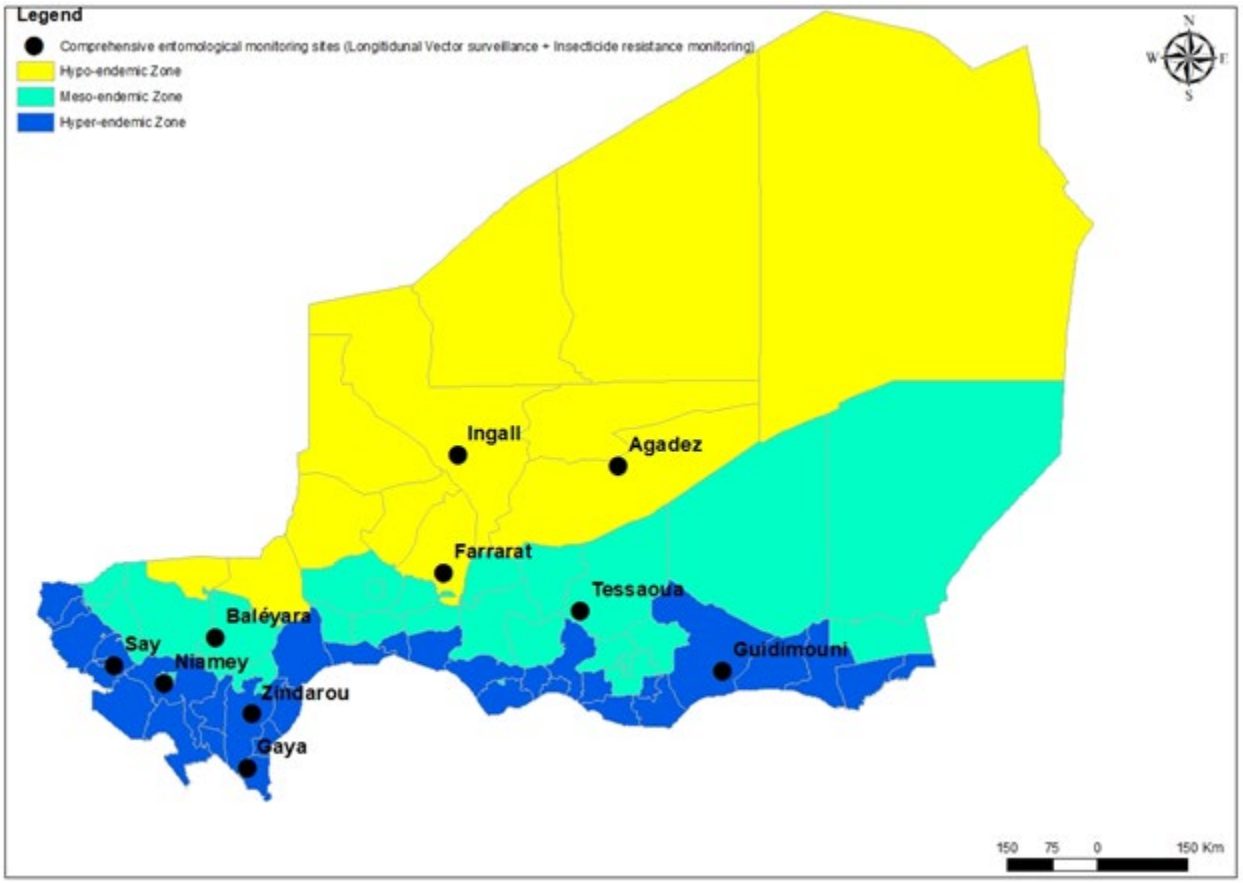
Supporting Data

Since 2018, PMI supports entomological monitoring activities to generate data to enable the NMCP to make strategic vector control decisions and to establish baseline data in anticipation of future expanded insecticide-based vector control activities. The entomological surveillance data provide information on the susceptibility status of *An. gambiae s.l.* across the four endemicity strata in Niger. In addition, comprehensive vector bionomics monitoring, paired with health facility-based information on malaria incidence and population density, will help generate a robust foundation of data for decision-making as part of the integrated vector control strategy in future years. The NMCP and other donors agreed that PMI is the only funding source and technical advisor for this activity. From April 2019 to March 2020 longitudinal vector monitoring using human landing catch (HLC) and pyrethrum spray catch (PSC) methods was conducted in 10 sentinel sites (Agadez and Ingall in hypo- endemic areas; Balleyara, Fararrat, and Tessaoua in mesoendemic areas; Gaya, Guidimouni, Niamey V, Say, and Zindarou in hyperendemic areas) selected by the NMCP (Table A-1). Routine surveillance was undertaken every two months in nine sites, and monthly in Niamey. PMI will continue to support CERMES to conduct the entomological monitoring of malaria vectors in the selected sites of Niger under the leadership of NMCP. The sites represent all the malaria endemicity zones in Niger and were adapted due to an updated malaria risk map in 2020 and due to security concerns resulting in inaccessibility for the entomological team.

Table A-1. History of PMI-supported entomological monitoring in Niger, 2018–2021

Project Year	Number of Sentinel Sites	Vector Surveillance Sites	Insecticide Susceptibility Sites
Year 1 (2018–2019)	9	Agadez, Balleyara, Gaya, Ingall, Niamey V, Tessaoua, and Zindarou	Agadez, Balleyara, Gaya, Keita, Niamey V, Tchintabaraden, Tessaoua, Zindarou, and Zinder
Year 2 (2019–2020)	10	Agadez, Balleyara, Fararrat, Gaya, Guidimouni, Ingall, Niamey V, Say, Tessaoua, and Zindarou	Agadez, Balleyara, Fararrat, Gaya, Guidimouni, Ingall, Niamey V, Say, Tessaoua, and Zindarou
Year 3 (2020–2021)	15	Agadez, Balleyara, Gaya, Guidimouni, Keita, and Niamey V	Agadez, Balleyara, Boboye, Gaya, Guidimouni, Keita, Madaoua, Madarounfa, Magaria, Matamey, Niamey V, Say, Tchintabaraden, Tessaoua, and Tillaberi

Figure A-1. Entomological monitoring sites supported by PMI VectorLink Niger in 2019–2020



In all the selected sites, longitudinal vector monitoring using HLC and PSC is conducted (Table A-1). PMI assesses the following parameters: species composition (Figure A-1 and Table A-2), vector density (Table A-3), biting rates and times, age structure, blood meal types, and infection rates. Bionomic data collected using both HLC and PSC methods showed that *An. gambiae* s.l. was the predominant malaria vector (90.5 percent) at the 10 sentinel sites. *An. funestus* s.l. was found in only two sites: the highest proportion was in Guidimouni (Figure A-2).

PMI also supports the susceptibility testing of *An. gambiae* s.l. mosquitoes against pyrethroid insecticides (pirimiphos-methyl, bendiocarb, chlorfenapyr, and clothianidin) using WHO susceptibility test kits and CDC bottle assays for chlorfenapyr. When resistance is observed, resistance intensity and synergist effects of PBO are also evaluated in the sites where enough larvae are collected. PMI supported laboratory evaluations including molecular testing for the presence of the knockdown resistance mechanism *Kdr* and *Ace1* mutations as well as the presence of sporozoites.

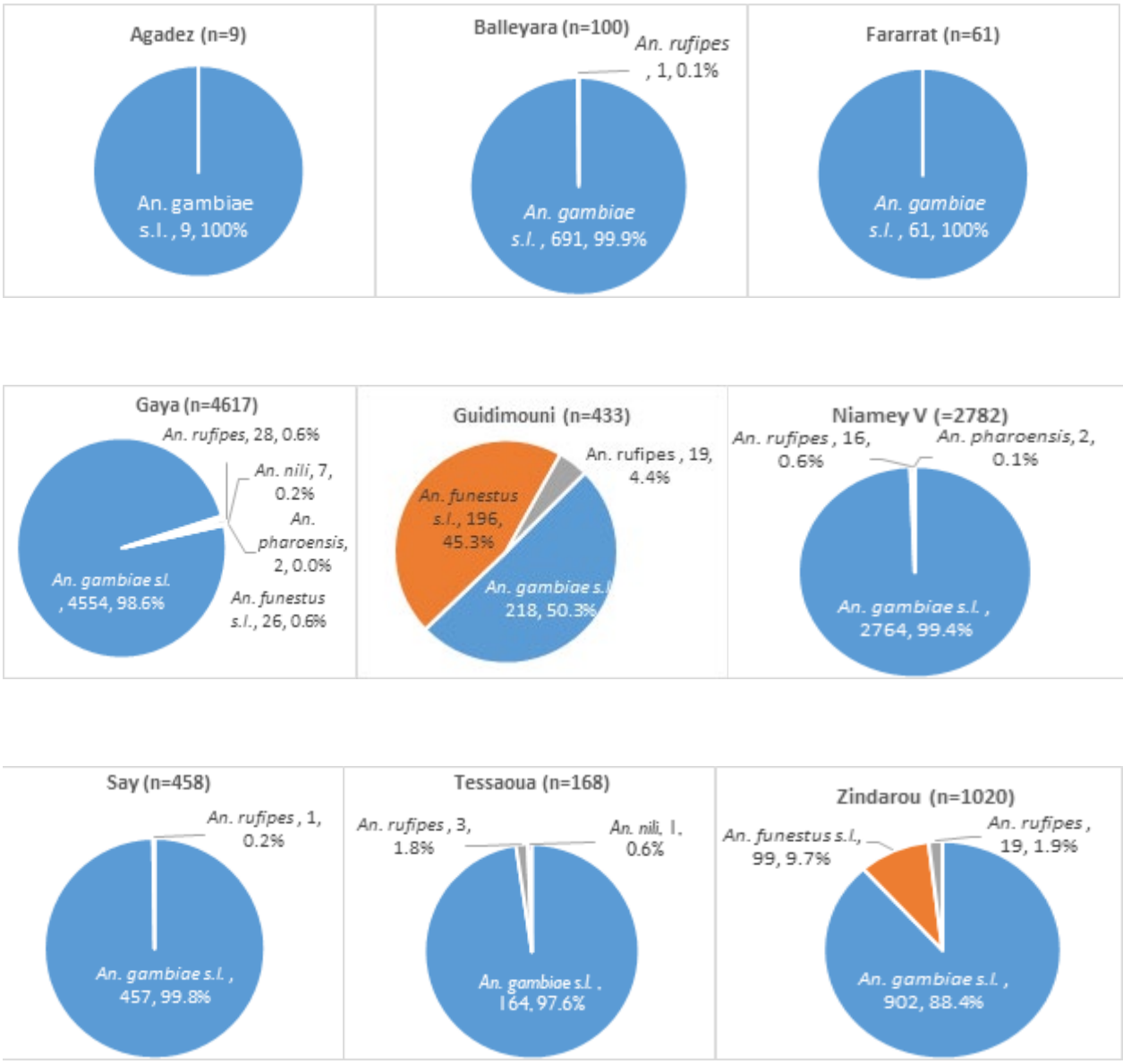
Table A-2. Entomological monitoring sites activities in 2019 and 2020

District/Site	Region	Activities	Supported by
Agadez	Agadez	HLC/PSC/ PSCs/Insecticide susceptibility	PMI
Balleyara	Balleyara	HLC/PSC/ PSCs/Insecticide susceptibility	PMI
Fararrat	Fararrat	HLC/PSC/ PSCs/Insecticide susceptibility	PMI
Gaya	Gaya	HLC/PSC/ PSCs/Insecticide susceptibility	PMI
Guidimouni	Guidimouni	HLC/PSC/ PSCs/Insecticide susceptibility	PMI
Ingall	Ingall	HLC/PSC	PMI
Niamey V	Niamey V	HLC/PSC/ PSCs/Insecticide susceptibility	PMI
Say	Say	HLC/PSC/ PSCs/Insecticide susceptibility	PMI
Tessaoua	Tessaoua	HLC/PSC/ PSCs/Insecticide susceptibility	PMI
Zindarou	Zindarou	HLC/PSC/ PSCs/Insecticide susceptibility	PMI

Table A-3. Distribution and bionomics of malaria vectors

Site/ District	Vector	Season (month)	Preferred Biting Location	Peak Biting Time	Preferred Resting Location	Preferred Host	Annual EIR
Agadez	*An. gambiae s.l.*	Aug–Oct	indoor/outdoor (0.16/0.04)	10:00 p.m.–4:00 a.m.	N/A	Human	0
Balleyara	*An. gambiae s.l.*	Jul–Sept	indoor/outdoor (1.4/10.1)	10:00 p.m.–4:00 a.m.	N/A	Human	62.46
Fararrat	*An. gambiae s.l.*	Jul–Sept	indoor/outdoor	10:00 p.m.–4:00 a.m.	N/A	Human	0
Gaya	*An. gambiae s.l.*	Jun–Sept	indoor/outdoor (43.5/30.9)	10:00 p.m.–4:00 a.m.	N/A	Human	180.72
Guidi-mouni	*An. gambiae s.l.*	Feb–Aug	indoor/outdoor (20.5/10.2)	10:00 p.m.–4:00 a.m.	N/A	Human	15.12
Ingall*	*An. gambiae s.l.*	N/A	N/A	N/A	N/A	N/A	N/A
Niamey V	*An. gambiae s.l.*	Aug–Sept	indoor/outdoor (29/31.5)	10:00 p.m.–4:00 a.m.	N/A	Human	N/A
Say	*An. gambiae s.l.*	Feb–Aug	indoor/outdoor (11.2/8.8)	10:00 p.m.–4:00 a.m.	N/A	Human	75.72
Tessaoua	*An. gambiae s.l.*	Aug–Sep	indoor/outdoor	10:00 p.m.–4:00 a.m.	N/A	Human	25.90
Zindarou	*An. gambiae s.l.*	Aug–Sep	indoor/outdoor	10:00 p.m.–4:00 a.m.	N/A	Human	168.12

Figure A-2. Species composition of the *Anopheles* collected using PSC, by site*



*Ingall yielded only a single An. gambiae s.l.

Figure A-3. Distribution of members of the *An. gambiae* species complex based on data collected in 2019 and 2020

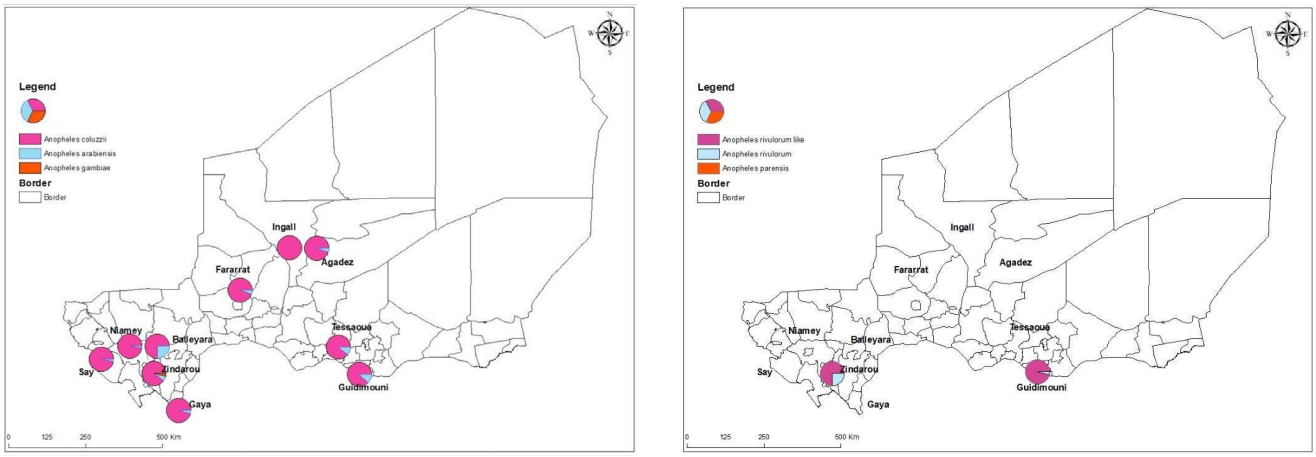
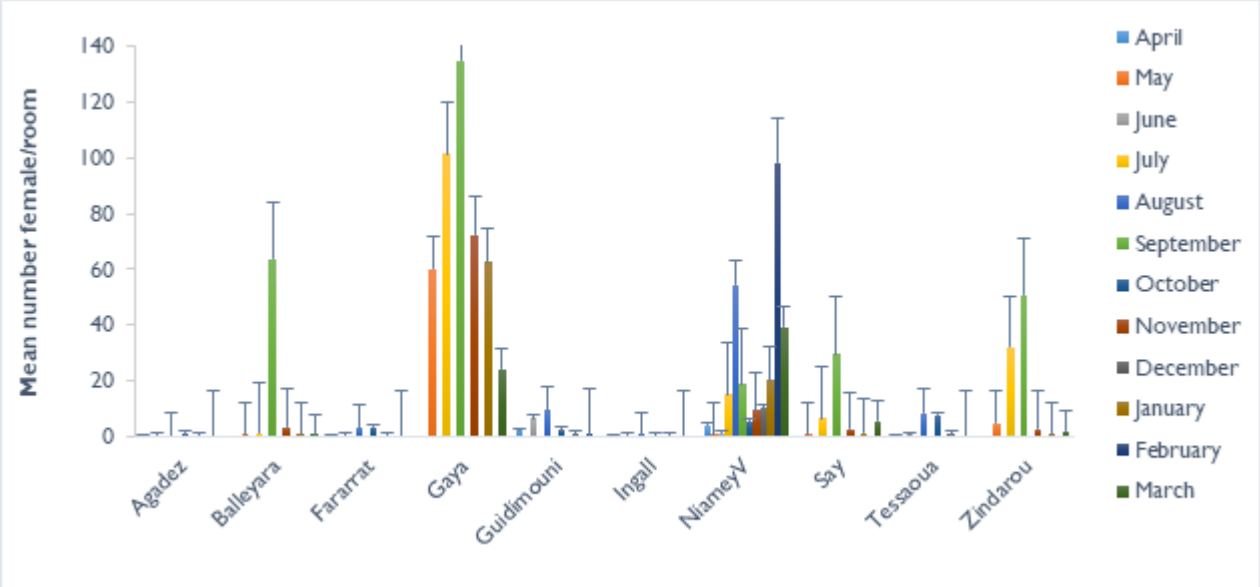


Figure A-4. Monthly mean density of *An. gambiae* s.l. per house from April 2019 to March 2020



For any additional information, please refer to the Entomological Monitoring Report.[8]

[8] The PMI VectorLink Niger 2019 Annual Entomological Report, Rockville, MD. The PMI VectorLink Project, Abt Associates Inc.

https://d1u4sg1s9ptc4z.cloudfront.net/uploads/2021/03/niger2019-entomological-monitoring-final-report.pdf

Key Question 2

What is the current insecticide resistance profile of the primary malaria vectors?

Supporting Data

Resistance in *An. gambiae* s.l. was observed to the diagnostic dose of all pyrethroids in all sentinel sites (Table A-2). Pirimiphos-methyl showed susceptibility at six sites (Balleyara, Fararrat, Gaya, Guidimouni, Niamey V, and Tessaoua) and possible resistance in Agadez, Say and Zindarou. The pre-exposure of mosquitoes to PBO before deltamethrin, permethrin, and alpha-cypermethrin exposure did not completely reverse the resistance status of the *An. gambiae* s.l. at any of the sites surveyed, but a significant increment of mortality was observed for deltamethrin + PBO in Agadez and Balleyara and alpha-cypermethrin + PBO in Guidimouni and Tessaoua.

Table A-4. *An. gambiae* s.l. susceptibility status to insecticides tested at all the sites*

Insecticide Tested	Agadez	Balleyara	Fararrat	Gaya	Guidimouni	Niamey V	Say	Tessaoua	Zindarou
	Number tested (% mortality)								
Deltamethrin (0.05%)	76 (35.5)	96 (14.6)	84 (22.6)	91 (1.1)	95 (35.8)	98 (6.1)	102 (6.9)	83 (4.8)	99 (9.1)
PBO +Deltamethrin (0.05)	88 (92.8)	99 (83.8)	98 (81.6)	99 (37.4)	98 (68.4)	82 (37.8)	94 (36.2)	95 (69.5)	96 (65.6)
Deltamethrin (0.25%)	90 (76.7)	101 (77.2)	89 (68.5)	91 (26.4)	105 (45.7)	98 (22.4)	98 (43.9)	87 (56.3)	95 (72.6)
Deltamethrin (0.5%)	109 (91.7)	88 (87.5)	97 (94.8)	101 (91.1)	100 (61)	68 (23.5)	102 (58.8)	51 (90.2)	100 (75.0)
Permethrin (0.75%)	82 (1.2)	103 (15.5)	121 (15.7)	100 (0)	96 (32.3)	91 (2.2)	99 (5.1)	85 (3.5)	79 (51.9)
PBO+Permethrin (0.75%)	81 (16.0)	99 (76.8)	102 (62.7)	96 (12.5)	105 (65.7)	80 (6.3)	105 (21.9)	80 (5.0)	78 (76.9)
Permethrin (3.75%)	102 (51.0)	102 (70.7)	94 (64.9)	93 (79.6)	108 (74.1)	90 (22.2)	94 (45.7)	96 (67.7)	89 (70.8)
Permethrin (7.5%)	101(80.2)	94 (83)	95 (88.4)	92 (100)	106 (94.3)	89 (49.4)	93 (58.1)	47 (100)	109 (96.3)
Alphacypermethrin (0.05)	82 (2.4)	95 (14.7)	100 (11.0)	90 (2.2)	86 (12.8)	91 (0)	84 (2.4)	86 (8.1)	87 (26.4)
PBO+Alphacypermethrin (0.05)	90 (78.9)	102 (78.4)	93 (67.7)	92 (32.6)	84 (83.3)	93 (4.3)	86 (23.3)	81 (82.7)	74 (50.0)
Alpacypermethrin (0.25)	97 (68.0)	97 (64.9)	104 (57.7)	102 (91.2)	100 (31.5)	90 (1.1)	92 (196)	50 (90.0)	100 (62.0)
Alphacypermethrin (0.5)	96 (90.6)	98 (67.3)	88 (73.8)	102 (100)	107 (41.1)	74 (39.2)	84 (41.7)	51 (100)	95 (71.6)
Bendiocarb (0.1%)	96 (61.1)	98 (99.0)	95 (95.3)	101 (94.1)	97 (93.8)	77 (88.3)	90 (96.7)	x	99 (78.0)
Pirimiphosmethyl (0.25%)	81 (90.1)	95 (98.9)	92 (100)	109 (100)	101 (99.0)	88 (98.9)	90 (97.8)	55 (100)	93 (94.6)

Resistant confirmed *Possible resistance* *Susceptible;* x=test not completed

* No susceptibility test at Ingall due to insufficient mosquitos.

Mosquitos from the sentinel sites surveyed showed full susceptibility to chlorfenapyr at the 200 ug/ bottle dose within 24 hours post-exposure except in Agadez and Fararrat (Table A-4). Susceptibility to clothianidin was also observed within 24 hours post-exposure in Fararrat and Tessaoua and within two to three days at Balleyara, Guidimouni, Niamey V, Say and Zindarou, but took four to five days in Agadez and Gaya (Figure A-6).

Figure A-5. *An. gambiae* s.l. susceptibility against chlorfenapyr 200µg/bottle

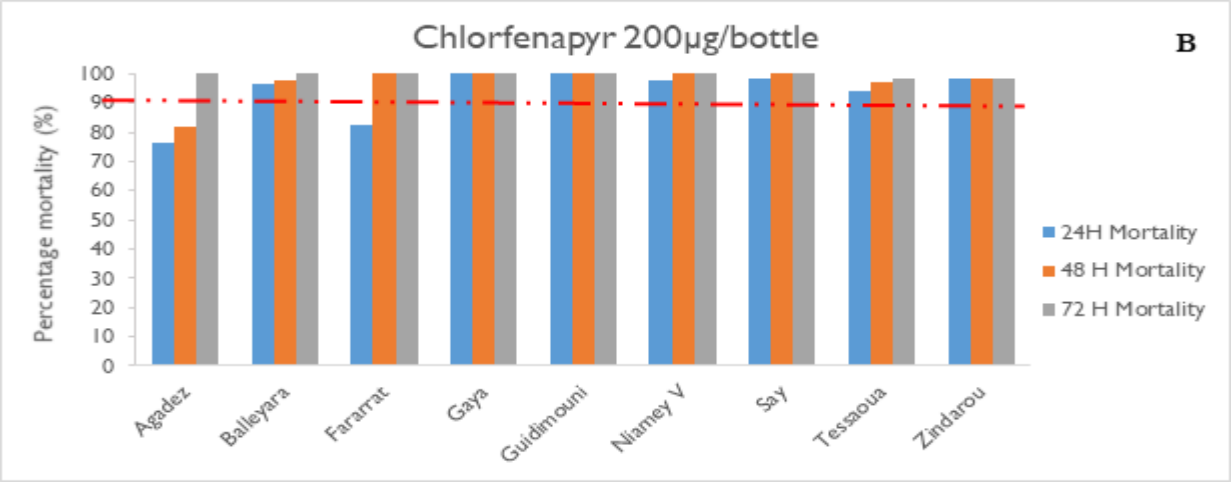
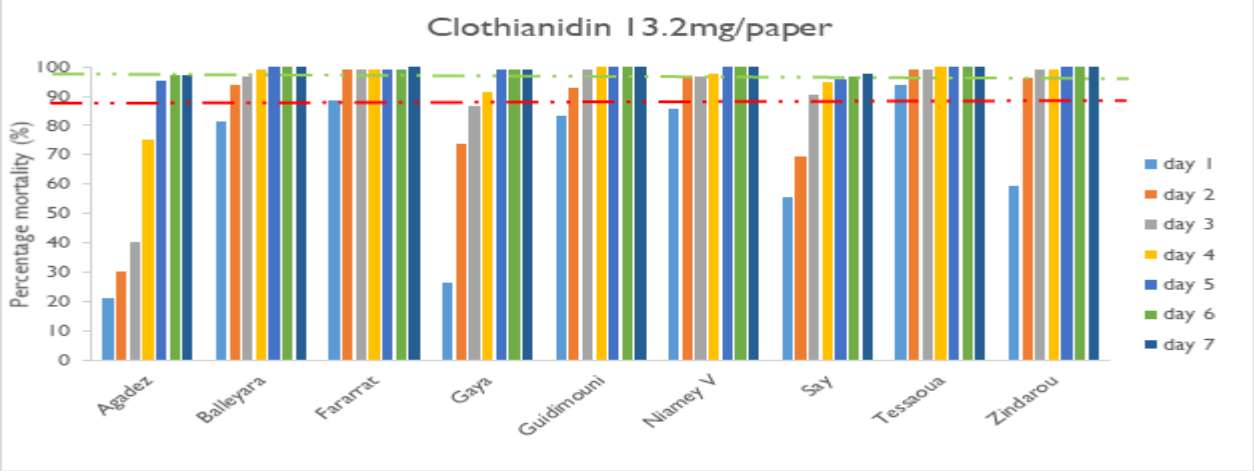


Figure A-6. *An. gambiae* s.l. susceptibility to clothianidin



The laboratory analyses of samples collected in 2019–2020 showed the presence of the *kdr* west mutation already in Niger in addition to the *Ace-1* mutation detected at multiple sites.

Conclusions for Entomologic Monitoring Investments

Resistance to the three main pyrethroids tested (deltamethrin, permethrin, and alpha-cypermethrin) was observed in all sites. Because the level of *kdr* mutation is still low in most sites, the traditional (pyrethroid-only) ITNs can continue to be distributed in Niger but the distribution should be stratified to enable the most appropriate deployment of next -generation ITNs in areas with intense pyrethroid resistance. Pre-exposure of mosquitoes to PBO before exposure to deltamethrin, permethrin, or alpha-cypermethrin showed increased mortality but did not completely reverse the resistance status of the *An. gambiae* s.l. populations in any of the sites surveyed, suggesting partial involvement of metabolic resistance in the resistance observed. Mosquitoes at all the sites, however, were susceptible to chlorfenapyr (one of the active ingredients in Interceptor G2 nets). The data would aid the NMCP in selecting areas that could further be considered for distribution of next generation

ITNs, particularly Interceptor G2 for use instead of pyrethroid only ITN in areas with high transmission and intense pyrethroid resistance in Niger. Routine entomological surveillance and resistance testing were conducted in 10 sites. Five additional sites were added in FY 2020 (Table A-1).

The results showed that the vector density and transmission in Niger are concentrated in a short period of the year and particularly in the southern and endemic part of the country. This suggests that the NMCP should continue intensifying the ongoing national SMC campaigns during the peak density and transmission period.

Please see FY 2022 PMI budget tables for a detailed list of proposed activities with FY 2022 funding.

1.2. INSECTICIDE-TREATED NETS (ITNs)

Key Goal

Achieve high ITN coverage and usage of effective nets, based on insecticide resistance data, in endemic PMI-supported areas and maintain high coverage and use with consistent ITN distribution (via campaigns and/or continuous channels in a combination that is most effective given country context). Determine the geographic distributions, bionomics, and insecticide-resistance profiles of the main malaria vectors in the country to inform vector control decision-making.

Key Question 1

How has net ownership evolved since the start of PMI in the country?

There is limited new data available on ITN coverage since the start of PMI, although it is expected that the coverage increased significantly due to ITN campaigns supported by the Global Fund. The 2012 DHS found that 61 percent of households reported having at least one ITN. At this point, households are not fully covered. A 2018 assessment[9] of continuous distribution in Niger identified several weaknesses that created inefficiencies and thus contributed to poor population access to nets. Although several points were addressed, these still have not been resolved:

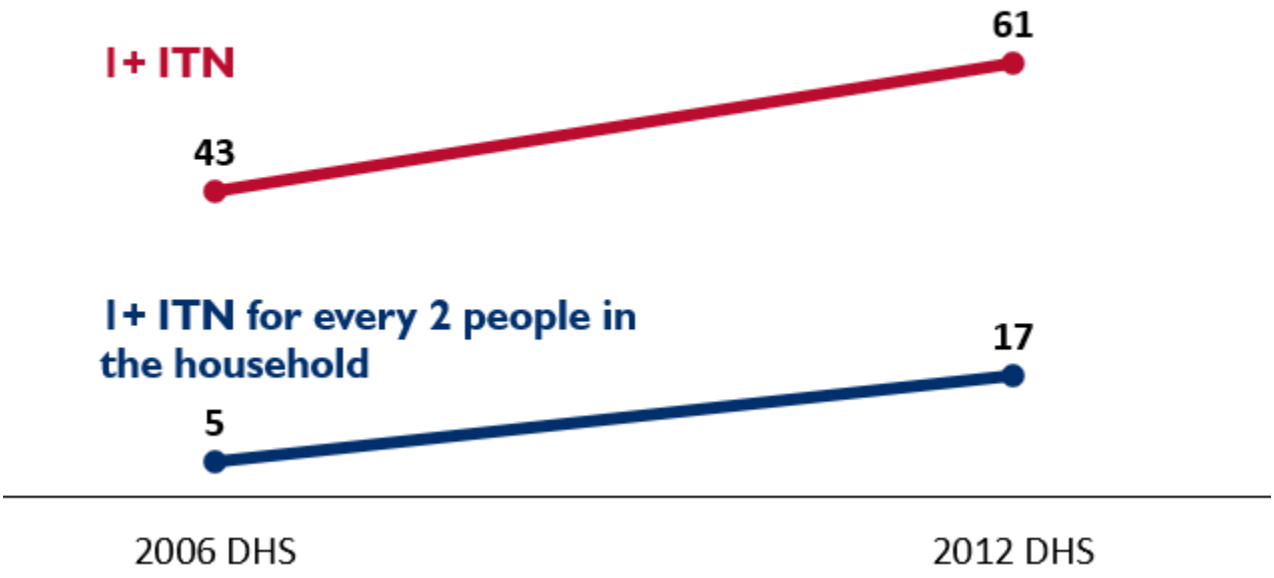
- There is poor coordination among MOH and partners at the central and regional level. This includes lack of ITN indicators included in rapid results indicators and lack of financed micro-plans for distribution.
- Stockouts are mainly due to limited distribution and storage capacity at districts and health facilities but also insufficiency in stock management. There is no quantification issue with ITNs.
- There are staffing issues at the health center level including lack of training on net distribution, poor mobility of trained staff, overwhelming workload, and lack of supervision leads.
- Local authorities have poor involvement in the distribution activities.
- The targeted population is limited: routine distribution system only reaches pregnant women and children under one year of age.
- There is a lack of messaging to inform populations of availability of nets at distribution sites and how to use the nets.

[9] The PMI VectorLink Project. September 2018. *Process Evaluation of Continuous LLIN Distribution - Niger*. Washington, DC. The PMI VectorLink Project, Population Services International (PSI).

Supporting Data

Figure A-7. Trends in ITN ownership

Percentage of households that own ITNs



Key Question 2a

What proportion of the population has access to an ITN? Of those who have access, what proportion of the population reports using an ITN?

Supporting Data

Limited recent data are available on ITN coverage. The 2012 DHS found that while 61 percent of households reported having at least one ITN, only 37 percent of people surveyed could have slept under an ITN if each ITN was used by no more than two persons. Reported net use was low, even in households with at least one net. Among the population of households surveyed, only 14 percent had slept under an ITN, and only 21 percent of households with at least one ITN had used the net. A secondary analysis of the 2012 DHS demonstrated that the ratio of ITN use to access (measuring population-level use in relation to population-level access to an ITN) is also very low—with variations from 0.23 in Tahoua to 0.66 in Niamey. With the exception of Niamey, this ratio is well below the 0.60 threshold for a "poor" rating, indicating that further exploration of non-use of available nets is needed. A survey[10] supported by PMI in the district of Gazaoua (Maradi region) and the district of Madaoua

[10] The PMI VectorLink Project. September 2018. *Process Evaluation of Continuous LLIN Distribution - Niger.* Washington, DC. The PMI VectorLink Project, Population Services International (PSI).

(Tahoua region) indicated that 456 (34.1 percent) of the 1,337 nets in 240 visited houses were hanging above a sleeping space; 337 (25.2 percent) were stored and the remainder were not hanging or stored.

Figure A-8. Trends in ITN access and use

Percentage of household population with access to an ITN and percentage of those who slept under an ITN the night before the survey

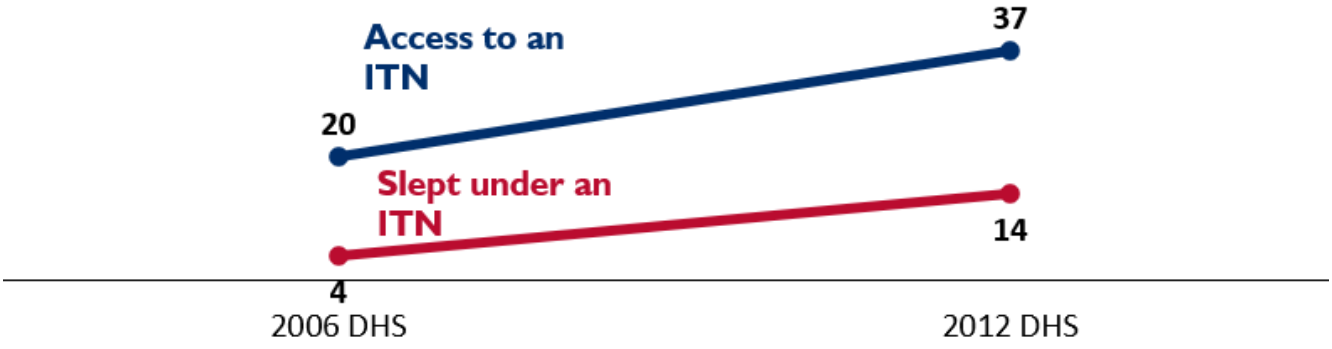
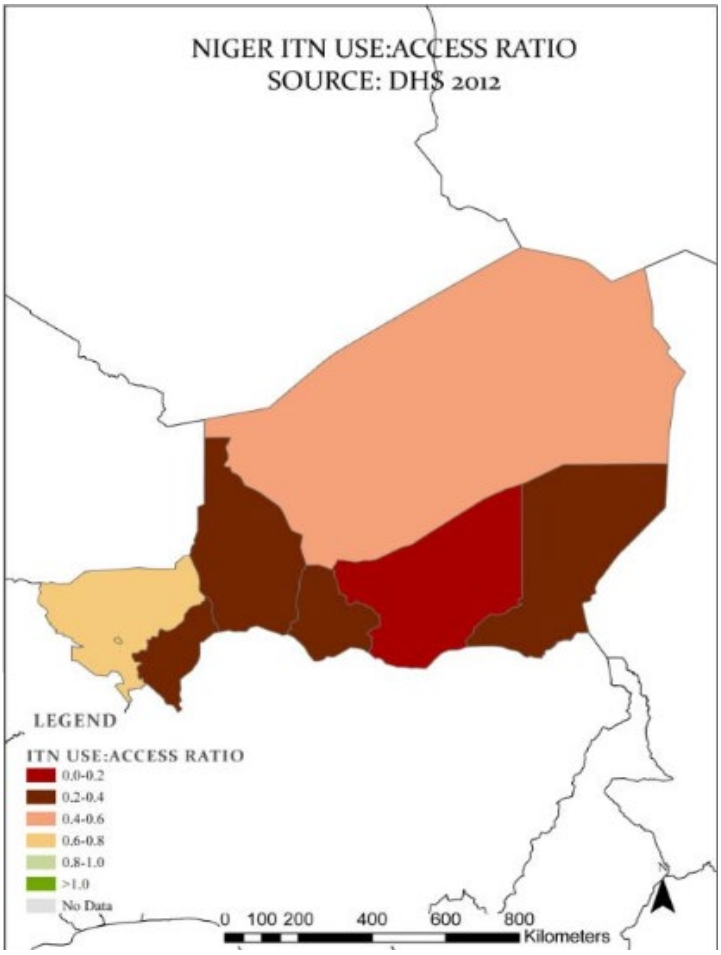


Figure A-9. ITN use:access ratio in Niger, DHS 2012



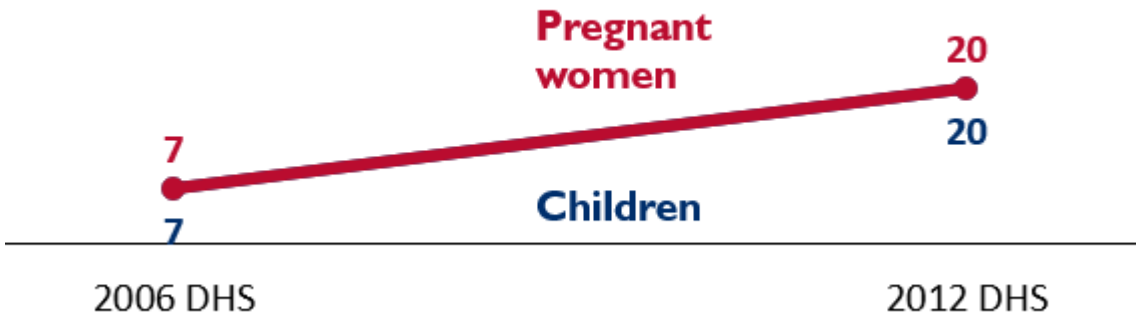
Key Question 2b

What percent of pregnant women and children under five years of age report sleeping under an ITN?

Supporting Data

Figure A-10. Trends in ITN use among children and pregnant women

Children under age five years of age and pregnant women 15 to 49 years of age who slept under an ITN the night before the survey



Key Question 3

If ITN access is high but use is low, what significant structural and/or behavioral challenges affect the adoption and maintenance of ITN use and care behaviors?

Supporting Data

Although limited data is available, PMI does not think that the access to ITN is high in any area of Niger. Several barriers explaining the low utilization rate for ITNs are known through an evaluation[11] conducted in 2018 by PMI and via several meetings with NMCP. There is no data that describe ITN use during the high-transmission season, but they will be collected during the MIS planned for August 2021.

Previously identified challenges regarding community use of nets are summarized below:[12]

- Poor translation: In one of the local languages, the word for "bed net" is "house for mosquitoes."
- Discomfort: People find that sleeping under a net is unpleasant due to lack of air.
- Perceived ineffectiveness: People find mosquitoes inside their nets and think this is because the nets don't work and not because they did not use the net properly.
- The population doesn't understand that infected mosquitoes spread malaria, so the utility for the use of nets is not appreciated.
- Community members do not know that free campaign or routine nets are available due to poor communication.

[11] The PMI VectorLink Project. September 2018. Process Evaluation of Continuous LLIN Distribution – Niger. Washington, DC. The PMI VectorLink Project, Population Services International (PSI).
[12] The PMI VectorLink Project. September 2018. Process Evaluation of Continuous LLIN Distribution – Niger. Washington, DC. The PMI VectorLink Project, Population Services International (PSI).

Please refer to Section 3.4 for information on how SBC interventions will be directed to address the challenges identified above.

Key Question 4

What type of nets are being distributed via which channels?

Supporting Data

Table A-5. ITN distribution (2020)

Level Region	Mass Campaign [June 2020]	ANC	EPI	School	Community	Other
National	Standard	Standard	Standard		Standard	

Key Question 5

What is the estimated need for ITNs during calendar years 2021–2023? How many, and what types, of ITNs will be procured, and by what partners? Through what channels will ITNs be distributed? Are there any projected ITN gaps?

Global Fund will purchase all the ITN needed for rolling mass campaign distributions in 2021–2022; Global Fund, GON, and PMI will cover all ITNs for routine distribution in 2021, 2022, and 2023. There is no mass campaign distribution planned for 2023.

In 2021 and 2022, the country will implement a rolling ITN mass campaign covering all the regions. Global Fund will support this activity (procurement of ITNs and the implementation cost). While in 2021 only pyrethroid ITNs will be procured because of budget and lead time constraints, in 2022 the country will procure three types of ITNs for mass campaigns: pyrethroid, PBO, and dual active ingredient ITNs will be distributed based on the results of the insecticide resistance study. In 2023, no mass campaign is planned but the country plans to organize a national mass campaign in 2024 covering all eight regions. For continuous distribution (through ANC and EPI), the country will distribute pyrethroid ITNs in 2021 but will use the three types of ITN (pyrethroid, PBO, and dual active ingredient) in 2022 and 2023. Because of budget constraints, the PBO and dual active ingredient ITNs will be distributed only in some districts following the results of the insecticide-resistance study.

Supporting Data

Table A-6. ITN Gap Analysis Table

Calendar Year	2021	2022	2023
Total country population	23,591,989	24,465,615	25,363,503
Total population at risk for malaria	23,591,989	24,465,615	25,363,503
PMI-targeted at-risk population	7,443,572	7,723,210	8,009,925
Population targeted for ITNs	23,591,989	24,465,615	25,363,503
Continuous Distribution Needs			
Channel 1: ANC	632,219	678,678	694,739
Channel 2: EPI	502,452	522,843	544,162
Channel 3: School	0	0	0
Channel 4:			
Additional ITNs required to avoid ITN stockouts			
Estimated Total Need for Continuous Channels	1,134,671	1,201,521	1,238,901
Mass Campaign Distribution Needs			
Mass distribution campaigns	4,411,138	9,424,728	
Estimated Total Need for Campaigns	4,411,138	9,424,728	0
Total ITN Need: Continuous and Campaign	***5,545,809***	***10,626,249***	***1,238,901***
Partner Contributions			
ITNs carried over from previous year	1,145,173	60,502	0
ITNs from Government	*50,000*	*60,000*	*60,000*
ITNs from Global Fund	4,411,138	10,228,054	1,121,082
ITNs from other donors	0	0	0
ITNs planned with PMI funding	0	100,000	100,000
Total ITNs Contribution Per Calendar Year	***5,606,311***	***10,448,556***	***1,281,082***
Total ITN Surplus (Gap)	***60,502***	***-177,693***	***42,181***

Key Question 6

What is the current status of durability monitoring?

Supporting Data

PMI awaits the final durability monitoring report. Conclusions will be presented at the end of the monitoring activity. The last data are to be collected in July 2021.

Table A-7. Timing of durability monitoring

Campaign Date	Site	Brand	Baseline	12-month	24-month	36-month
June 2018	Gazaoua	Olyset	October 2018	July 2019	August 2020	(July 2021)
June 2018	Madaoua	Olyset	October 2018	July 2019	August 2020	(July 2021)

Conclusions for ITN Investments

PMI Niger will continue to support NMCP's objective of at least 80 percent coverage of ITNs through routine distribution. Given the high level of insecticide resistance to pyrethroids in Niger, PMI support is shifting from procuring standard pyrethroid ITNs and supporting the introduction of PBO and Interceptor G2 ITN, according to the prioritization made by the NMCP. With FY 2022 funds PMI will procure 100,000 PBO ITNs for the routine distribution. SBC activities will be focused on reinforcing messaging on net use.

Please see FY 2022 PMI budget tables for a detailed list of proposed activities with FY 2022 funding.

1.3. INDOOR RESIDUAL SPRAYING (IRS)

PMI does not engage in IRS in Niger and there are no other donors to do it.

2. HUMAN HEALTH

2.1. CASE MANAGEMENT

NMCP Objective

The NMCP's case management objectives as outlined in the updated 2017–2023 NMSP are as follows:

- Ensure chemoprevention coverage of at least 80 percent of pregnant women and children under five years of age by 2023.
- Ensure the correct management (diagnosis and treatment) of at least 90 percent of malaria cases by 2023.

NMCP Approach

Niger's Malaria Diagnostic and Treatment Guidelines, updated in December 2017, state that any suspected case of malaria must be confirmed by a diagnostic test (either RDT or microscopy) followed by treatment with an artemisinin-based combination therapy (ACT). Microscopy is performed in district hospitals and in the private sector, while RDTs are used in health centers and at the community level. In 2020, the NMCP reported 5,899,494 suspected malaria cases, of which 5,688,554 were tested (96.4 percent). Of the 4,266,225 confirmed

malaria cases (75 percent of those tested), 97.5 percent were confirmed by RDTs and 2.5 percent by microscopy.[13]

The results from the 2019 Service Availability and Readiness Assessment (SARA) survey showed that the availability of malaria diagnostics in public and private health facilities stayed stable compared with the 2015 survey results: 91 percent of the health facilities offered RDTs (88 percent in 2015) and 24 percent microscopy (20 percent in 2015). The SARA survey showed an increase from 52 percent (2015) to 61 percent of the facilities having a health worker trained in malaria diagnostics and treatment. The 2020 end-use verification survey (EUV) survey in four regions (Dosso, Tahoua, Tillaberi, and Niamey) and supported by Procurement and Supply Management (PSM) showed an increase in the malaria diagnosis by RDT (from 82 percent in 2019 to 87 percent in 2020) while the microscopy rate decreased (from 9 percent in 2019 to 1 percent in 2020).[14]

The NMSP outlines the quality assurance system for diagnostic testing by setting up a strong laboratory network by building the capacity of laboratory technicians through an annual four-day training, ensuring the availability of equipment and consumables, supervision of technicians, and quality control of slides and RDTs. At present, neither supervision nor quality control of slides or RDTs happens on a regular basis. The approach to health worker supervision is to prioritize proximity supervision (region toward health districts, health districts toward integrated health centers [*centres de santé intégré*, CSIs], and CSIs toward health posts and CHWs). The broad integrated supervision includes malaria, HIV, tuberculosis as well as other conditions.

In an effort to increase access to care for children under five years of age, the MOH promotes community health activities through nationwide expansion of iCCM by CHWs known as *relais communautaires* in villages further than five kilometers from a health facility. In July 2016, a new community health policy[15] that details its implementation and management was adopted. The iCCM program includes the diagnosis with RDT and treatment with ACTs for malaria as well as diagnosis and treatment of pneumonia and diarrhea, and malnutrition screening in addition to referral for all illnesses. An estimated 16,000 CHWs are needed to assure national iCCM coverage. The program is being scaled up progressively throughout the hyper- and mesoendemic malaria zones. CHWs participate in a 10-day training using national guidelines adopted from UNICEF training materials and receive a kit containing the necessary supplies (including ACTs and RDTs) provided in the Tahoua and Dosso regions by PMI and UNICEF. The MOH has determined that CHWs should receive an incentive of 10,000 CFA ($17 USD) a month, of which half should be provided by donors. PMI will support the scale-up of iCCM, and because PMI cannot support the payment of incentives, PMI is selecting the districts for iCCM implementation among those where UNICEF and the Global Fund are providing the incentive to CHWs.

Niger's Monitoring and Evaluation Plan for Malaria Control, 2017–2023 describes the supervision structure of the NMCP. The supervision is integrated, looking at all aspects of the health facility. However, the MOH supervision grid is more administrative than technical and the time devoted to the activity is not always sufficient. Depending on the teams, not all items on the guide are informed and supervision timing is often irregular due to workload and shortness of staff. This is why several programs, including the NMCP, conduct disease-specific supervision visits. The NMCP, with the participation of technical and financial partners, conducts field supervision visits at the central level down to the community level to evaluate the implementation of malaria activities. These supervision

[13] NMCP report, 2020.

[14] PSM-supported EUV report, 2020.

[15] Directives Nationales de Mise en Oeuvre des Interventions Intégrées à Assise Communautaire en Matière de Santé.

visits are intended to provide information on the performance of healthcare providers by observing them in the field and to verify the quality of the data collected. MOH would like to improve the quality of the supervision and make it more efficient, but there has been no strategic change for the moment.

PMI supports the NMCP-led supervision by implementing the formative supervision in Dosso and Tahoua, with the hope that this type of supervision will be adopted by other donors and the MOH.

The MOH, with funding and technical support from WHO, Global Fund, and PMI, conducts therapeutic efficacy studies (TES), which take place every two years in line with WHO guidance. The analysis for the 2020 TES is underway and a preliminary report will be available soon.

PMI Objective in Support of NMCP

PMI contributes to malaria case management through numerous interventions that aim to improve the quality of diagnosis and treatment. PMI, in collaboration with the Global Fund, covers the RDT and medication needs throughout the country by contributing to the common basket. PMI supported updating the laboratory training manual and provided lab technician training to the two PMI-focus regions of Dosso and Tahou with FY 2018 and FY 2019 funds. PMI focused on the correct use of RDTs by healthcare workers and CHWs with FY 2020 funds.

PMI also supports the refresher training of health staff and supervisors, and provides job aids in the two PMI target regions, in addition to supporting supervision to hospitals and CSIs. PMI assists the districts in organizing one-week quarterly CSI service delivery coordination meetings as well as the one-week biannual district service delivery coordination meetings at the regional level. PMI also supports the implementation of iCCM in nine districts through training, refresher training, supervision, purchasing of CHW kits, and support for SBC activities. Other activities include providing training for the private sector and adapting training materials for medical and nursing schools to ensure NMCP guidelines are followed. To achieve all the objectives, PMI will continue to provide TA at the central level to NMCP and DSME (e.g., revision of training manuals and supervision guide).

The security is deteriorating in several parts of the country with an increase in attacks by terrorist groups and kidnappings (northern Tahoua, Tillaberi, and Diffa).[16] This situation translated into a shift in activity implementation, with the preference given to in-situ training instead of having the trainees travel to another location.

PMI-Supported Recent Progress (CY 2020)

- Supported the development of a plan and training curriculum for hands-on training for severe malaria.
- Supported the review and digitization of the national malaria supervision checklist to integrate elements of the Impact Malaria global Outreach, Training, and Supportive Supervision Plus (OTSS+) tools and launched supportive supervision in Tahou and Dosso regions.
- Trained 98 members of the Quality Improvement Teams of Dosso and Tahoua Health districts on OTSS+.
- Implemented an enhanced approach to OTSS+ in 108 priority CSIs.
- Supported the development of quality assurance guidance for malaria diagnostics.

[16] Reports from the Office of Transition Initiatives (OTI).

- Supported the NMCP to develop protocols to implement TES in three sites: Agadez (CSI Dagamanet), Gaya (CSI Centre), and Tessaoua (CSI Guindaoua).
- Increased access to malaria diagnostics and treatment at the community level through scaling up iCCM activities.

PMI-Supported Planned Activities (CY 2021

- Offer one-week integrated case management training of district supervisors (two people per district).
- Provide TA and refresher training and support integrated supervision for hospitals and targeted CSI (with 80 percent of malaria burden) in Dosso and Tahoua regions.
- Support coordination meetings in Dosso and Tahoua regions.
- Support monthly CHW district coordination meetings: one-week quarterly CSI service delivery coordination meeting at district level (one person per CSI) and one-week biannual district service delivery coordination meetings at regional level (three persons/district).
- Provide job aids to health facilities in Dosso and Tahoua regions.
- Implement iCCM in nine districts, supporting approximately 1,200 CHWs in Dosso and Tahoua regions and in the "zero malaria village," including iCCM refresher training in seven districts and purchase of CHW kits and two-week iCCM trainings of approximately 500 CHWs in two new districts.
- Support quarterly supervision visits of CHWs.

Key Goal

Improve access to and use of timely, quality, and well-documented malaria testing and treatment by providing facility- and community-based health workers with training, supervision, and malaria commodities to provide quality, effective care.

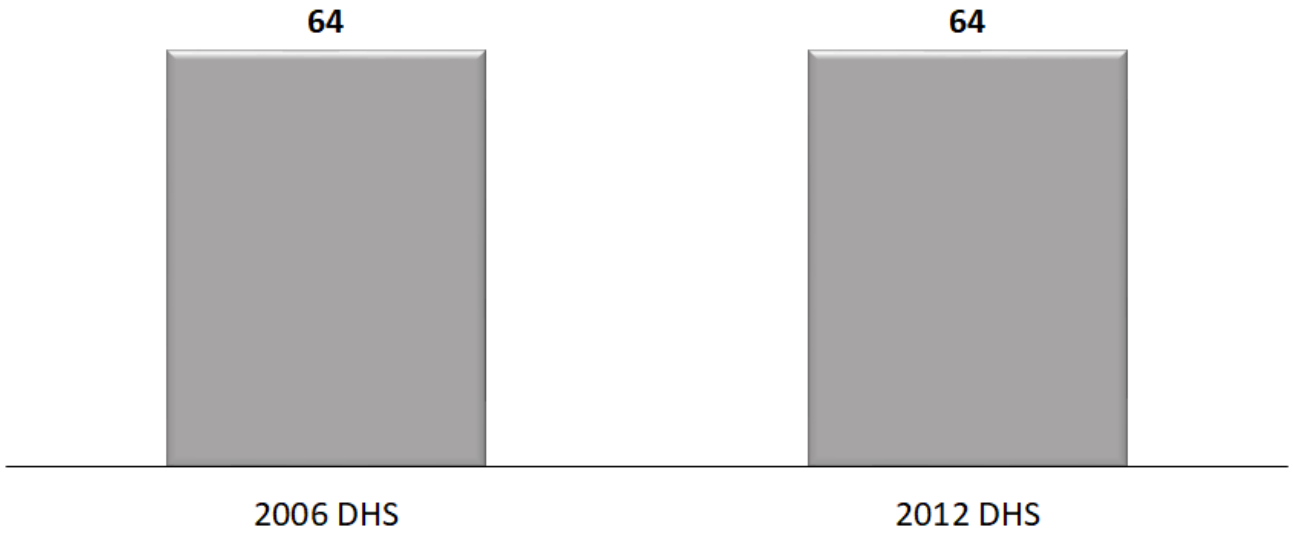
Key Question 1a

What is the status of care-seeking and/or access to care for children under five years of age with fever?

Supporting Data

Figure A-11. Trends in care-seeking for fever

Among children under five years of age with fever in the two weeks before the survey, percentage for whom advice or treatment was sought



*Note that this indicator has been recalculated according to the newest definition, care or treatment from any source, excluding traditional practitioners.

Key Question 1b

What significant structural and/or behavioral challenges affect prompt care-seeking?

Negative perceptions of health posts. Caregivers think the health post is understaffed and do not feel that they will receive the help they need. Other contributing factors to the unfavorable perception of posts include restricted operating times, long wait times, lack of equipment and diagnostic capabilities, and lack of medicines.[17]

Please refer to Section 3.4 for information on how SBC interventions will be directed to address the challenges identified above.

Key Question 2a

What proportion of patients are being tested and appropriately treated for malaria?

[17] Bedford, J.K., & Sharkey, A.B. Local barriers and solutions to improve care-seeking for childhood pneumonia, diarrhoea and malaria in Kenya, Nigeria and Niger: A qualitative study. PLoS One. 2014;9:e100038. doi: 10.1371/journal.pone.0100038

Figure A-12. Trends in diagnosis and treatment of children with fever

Among children under five years of age with fever in the two weeks before the survey and with fever in the two weeks before the survey who received any antimalarial, percentage who had blood taken from a finger or heel for testing and percentage who received an ACT

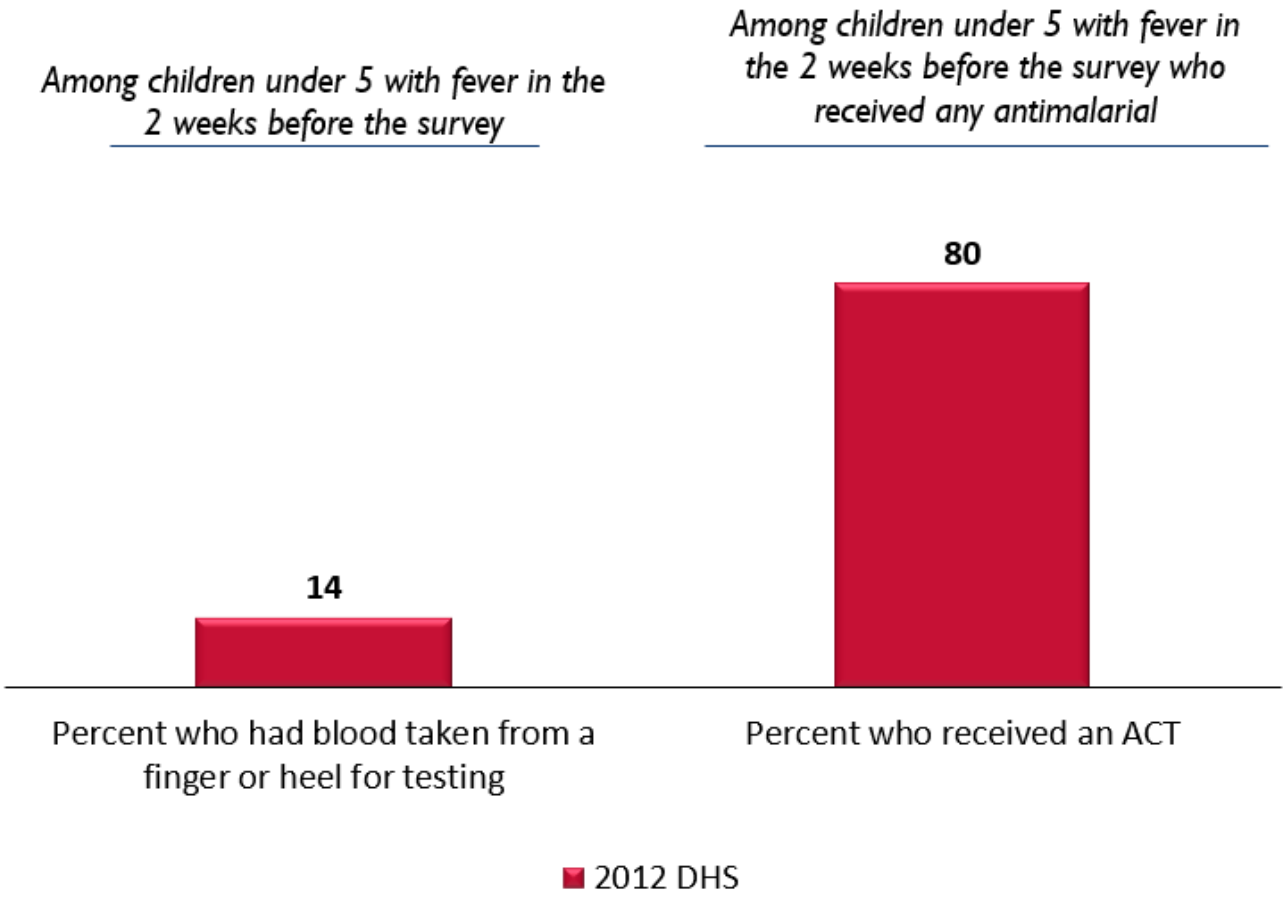


Table A-8. Diagnosis and treatment of suspected malaria cases[18]

Indicator	%
Suspected malaria cases receiving appropriate management among suspected cases with known malaria	64
Patients with a negative blood test who were prescribed or provided antimalarial drugs	26
Suspected malaria cases for which ACT were prescribed or provided according to national guidelines among confirmed cases	62
Suspected cases with documented thick blood or blood smear	14
Suspected cases with documented RDTs	66
Suspected cases with documented prescribed or completed malaria blood test	82

Key Question 2b

What significant structural and behavioral challenges affect testing and treatment practices among providers?

There is limited information available about provider behavior. According to the SARA survey (2019), 64 percent of suspected malaria cases were treated appropriately (positive cases with ACTs prescribed/provided according to national guidelines or negative cases without antimalarials prescribed/provided), and 86 percent of confirmed cases were treated according to the national directives.

Supporting Data

According to the results of the SARA 2019 assessment, both the rate of malaria testing and correct treatment with ACT seems to have increased in comparison with the DHS 2012 data. PMI's continuous support will assure that both indicators improve. Below is the summary of the challenges affecting provider behavior.

Financial incentives

The existing strategies for staff retention in rural areas are not effective, resulting in high staff mobility and recurrent need for training and refresher training.[19]

- The quantitative insufficiency of human resources for health, whose density does not meet the WHO's basic standard.
- The inequitable distribution of personnel with 76 percent in urban areas and 24 percent in rural areas.
- Inadequate application of job descriptions and profiles.
- Availability of commodities.

[18] SARA 2019

[19] ESDP (Economic and Social Development Plan) 2017–2021.

Although the national quantification ensures that all needs are covered at the health facility level, the distribution of commodities stops at the district. The staff have to travel to the district to get their allocations or the district may bring them if it coincides with a supervision visit. It is not unusual that the CSI lacks anti malaria commodities while they are available at the district or the central level.

Training

- There is inadequate basic and in-service training.
- Continuous training is marked by a fragmentation induced by the specific needs of vertical programs and continuing education is not integrated to meet the needs of comprehensive patient care.
- The completion of lengthy data collection forms at the peripheral level is time-consuming to otherwise overworked health providers.
- The training in the use of these tools is insufficient and stockouts of collection tools are quite frequent, with negative repercussions on the rates of promptness, completeness, and reliability of the data.
- The DHIS2 platform has been implemented since 2018 but is not yet totally functional throughout the country. The November–December Impact Malaria formative supervision data show that 68 percent of the supervised CSIs have quality data (62 percent in Dosso and 74 percent in Tahoua).

Key Question 3

What is the current and planned support for case management at health facilities and in the communities by CHWs?

Supporting Data

Table A-9. CHW Intervention per donor and activity for FY 2021 and 2022

Donor	PMI	Global Fund	UNICEF
Geographic area	Dosso and Tahoua regions, and other USAID-supported regions	Whole country	Whole country
Training of healthcare workers on malaria case management	Yes	Yes	No
iCCM Training/orientation of CHWs	Yes	Yes	Yes
iCCM coordination and supervision	Yes	Yes	Yes
Information, education, and communication/SBC (reproduction and dissemination of materials)	Yes	Yes	Yes

Key Question 4

What is the estimated need for RDTs during calendar years 2021–2023? Are there any projected RDT gaps based on anticipated partner contributions compared to estimated needs?

From 2021 to 2023, the estimated needs of 19,639,870 RDTs for public health facilities and communities (for children under five years of age) will be covered by the Global Fund, PMI, and the GON. Including the available stock at the end of December 2020, approximately 21,519,950 RDTS will be procured by PMI, Global Fund, and the GON during these three years. Unfortunately, this quantity will allow the country to have only a three-month buffer stock instead of six months at the end of 2023 because of budget constraints. However, discussions with all partners are ongoing to mobilize additional resources and look for possible cost savings to enable procurement of more RDTs and keep the buffer stock at six months. To improve the use of RDTs by the CHWs, the country will procure single RDT kits in 2022 and 2023.

Supporting Data

Table A-10. RDT Gap Analysis Table

Calendar Year	2021	2022	2023
Total country population	23,591,989	24,465,615	25,363,503
Population at risk for malaria	23,591,989	24,465,615	25,363,503
PMI-targeted at-risk population	7,443,572	7,723,210	8,009,925
RDT Needs			
Total number of projected fever cases	8,639,561	10,939,383	13,402,323
Percent of fever cases tested with an RDT	90%	90%	90%
RDT Needs (tests)	**5,512,313**	**6,521,299**	**7,606,258**
Select Data Source			
Partner Contributions (tests)			
RDTs from Government	*200,000*	*200,000*	*200,000*
RDTs from Global Fund	5,194,550	2,838,775	1,857,625
RDTs from other donors	0	0	0
RDTs planned with PMI funding	2,800,000	2,920,250	3,443,000
Total RDT Contributions per Calendar Year	***8,194,550***	***5,959,025***	***5,500,625***
Stock Balance (tests)			
Beginning Balance	1,865,750	4,547,987	3,985,714
- Product Need	5,512,313	6,521,299	7,606,258
+ Total Contributions (received/expected)	8,194,550	5,959,025	5,500,625
Ending Balance	4,547,987	3,985,714	1,880,081
Desired End of Year Stock (months of stock)	6	6	6
Desired End of Year Stock (quantities)	2,756,156	3,260,649	3,803,129
Total Surplus (Gap)	***1,791,831***	***725,064***	***(1,923,048)***

Key Question 5

What is the estimated need for ACTs during calendar years 2021–2023? Are there any projected ACT gaps?

From 2021 to 2023, the estimated needs of 13,801,505 ACTs for public health facilities and communities (for children under five years of age) will be covered by the Global Fund, PMI, and the GON. Including the end-of-year stock at the end of December 2020, around 15,464,404 ACTs will be available in the country. Unfortunately, this quantity will allow the country to have a four-month buffer stock at the end of 2023 instead of a six-month stock because of budget constraints. However, discussions with partners are ongoing in the country to mobilize additional resources and look for cost savings to procure ACTs and maintain a buffer stock of six months at the end of 2023.

Supporting Data

Table A-11. ACT Gap Analysis Table

Calendar Year	2021	2022	2023
Total country population	23,591,989	24,465,615	25,363,503
Population at risk for malaria	23,591,989	24,465,615	25,363,503
PMI-targeted at-risk population	7,443,572	7,723,210	8,009,925
ACT Needs			
Total projected number of malaria cases	4,807,527	5,522,539	6,308,743
Total ACT Needs (treatments)	***3,924,975***	***4,567,787***	***5,308,743***
Select Data Source			
Partner Contributions (treatments)			
ACTs from Government	*652,653*	*735,671*	*630,056*
ACTs from Global Fund	2,860,860	1,512,330	544,890
ACTs from other donors *[specify donor]*	0	0	0
ACTs planned with PMI funding	1,936,000	1,992,910	2,157,000
Total ACTs Contributions per Calendar Year	***5,449,513***	***4,240,911***	***3,331,946***
Stock Balance (treatments)			
Beginning Balance	2,442,034	3,966,572	3,639,696
- Product Need	3,924,975	4,567,787	5,308,743
+ Total Contributions (received/expected)	5,449,513	4,240,911	3,331,946
Ending Balance	3,966,572	3,639,696	1,662,899
Desired End of Year Stock (months of stock)	6	6	6
Desired End of Year Stock (quantities)	1,962,488	2,283,894	2,654,372
Total Surplus (Gap)	***2,004,085***	***1,355,803***	***(991,473)***

Key Question 6

What is the estimated need for definitive treatment and pre-referral treatment for severe malaria during calendar years 2021–2023? Are there any anticipated gaps?

The total estimated need of artesunate injectable for the treatment of severe malaria is not covered by Global Fund and PMI contribution in 2022 and 2023, so an important gap is anticipated as a main reason for lack of funding. To this date, the GON is not committed to procure this product. This gap in artesunate procurement is a major concern for malaria treatment. The NMCP and its partners will look for savings in future procurement and will continue to advocate for additional resources.

For the pre-referral treatment, PMI is the unique contributor and all the needs will be covered from 2021 to 2023. The country will maintain a six-month desired stock at the end of each year.

Supporting Data

Table A-12. Inj. Artesunate Gap Analysis Table

Calendar Year	2021	2022	2023
Injectable Artesunate Needs			
Projected number of severe cases	257,627	302,212	350,480
Projected number of severe cases among children	199,546	239,930	282,865
Projected number of severe cases among children < 5 yo	146,111	182,630	220,659
Projected number of severe cases among children 6-14 yo	53,435	57,300	62,206
Average number of vials required for severe cases among children < 5 yo	3	3	3
Average number of vials required for severe cases among children 6-14 yo	6	6	6
Projected number of severe cases among adults	58,081	62,282	67,615
Average number of vials required for severe cases among adults	9	9	9
Total Injectable Artesunate Needs (vials)	***1,193,605***	***1,349,952***	***1,526,324***
Select Data Source			
Partner Contributions (vials)			
Injectable artesunate from Government	0	0	0
Injectable artesunate from Global Fund	745,226	199,953	0
Injectable artesunate from other donors [specify donor]	0	0	0
Injectable artesunate planned with PMI funding	525,000	220,000	300,000
Total Injectable Artesunate Contributions per Calendar Year	***1,270,226***	***419,953***	***300,000***
Stock Balance (vials)			
Beginning Balance	401,966	478,587	0
- Product Need	1,193,605	1,349,952	1,526,324
+ Total Contributions (received/expected)	1,270,226	419,953	300,000
Ending Balance	478,587	-451,412	-1,226,324
Desired End of Year Stock (months of stock)	6	6	6
Desired End of Year Stock (quantities)	596,803	674,976	763,162
Total Surplus (Gap)	***(118,216)***	***(1,126,388)***	***(1,989,486)***

Table A-13. RAS Gap analysis Table

Calendar Year	2021	2022	2023
Artesunate Suppository Needs			
Number of severe cases expected to require pre-referral dose	25,302	53,082	80,019
Total Artesunate Suppository Needs (suppositories)	***25,302***	***53,082***	***80,019***
Select Data Source			
Partner Contributions (suppositories)			
Artesunate suppositories from Government	0	0	0
Artesunate suppositories from Global Fund	0	0	0
Artesunate suppositories from other donors	0	0	0
Artesunate suppositories planned with PMI funding	45,000	77,000	20,416
Total Artesunate Suppositories Available	***45,000***	***77,000***	***20,416***
Stock Balance (suppositories)			
Beginning Balance	55,996	75,694	99,612
- Product Need	25,302	53,082	80,019
+ Total Contributions (received/expected)	45,000	77,000	20,416
Ending Balance	75,694	99,612	40,009
Desired End of Year Stock (months of stock)	6	6	6
Desired End of Year Stock (quantities)	12,651	26,541	40,010
Total Surplus (Gap)	***63,043***	***73,071***	***(1)***

Key Question 7

What is the estimated need for any other standard antimalarial drug used in the country (e.g., primaquine for *P. vivax*) during calendar years 2021–2023? Are there any anticipated gaps?

Supporting Data

In Niger, PMI and Global Fund are not supporting the procurement of primaquine or other antimalarial drugs.

Key Question 8

Are first-line ACTs effective and monitored regularly?

Supporting Data

Table A-14. Recently completed and ongoing antimalarial therapeutic efficacy studies

Year	Sites	PMI Funded Y/N	Treatment Arms	PCR-Corrected ACPR*>90%	Location Molecular Resistance Work Completed or Planned
2020[20]	Gaya, Tessaoua, Agadez	Y	AL		Results pending

*Adequate clinical and parasitological response

PMI recently funded the 2020 TES in Niger. PMI looks forward to funding future studies in Niger.

Key Question 9

Are there other areas (e.g., lab strengthening, private sector support, etc.) that should be considered for PMI support?

Supporting Data

Other areas to be considered for PMI support pertain to health system strengthening such as the following:

- Procurement of some basic instruments (stethoscopes, thermometers, scales, etc.)[21] to improve case management in CSIs (supervision has shown that these instruments are either malfunctioning or missing) because they are normally procured by the health facility based on its revenues.
- Training of providers in the private sector to ensure compliance with the national guidelines.
- Support to update medical and nursing school curriculums.

Conclusions for Case Management Investments

PMI will support the NMCP strategy to address malaria given the challenges of both the security situation and the COVID-19 pandemic by investing in on-site training in case management for health workers in the two PMI focus regions. Given the high turnover of health staff and the yearly creation of new health facilities, the shortage of staff leads to a high use of interns and newly graduated personnel. The resulting proportion of staff trained on malaria case management is variable. According to SARA 2019, 61 percent of health facilities have staff trained on malaria case management. Global Fund and PMI use the same training modules ensure that the training needs for the whole country are covered.

Please see FY 2022 PMI budget tables for a detailed list of proposed activities with FY 2022 funding.

[20] PARMA: PMI-supported Antimalarial Resistance Monitoring in Africa.

[21] Impact Malaria formative supervision.

2.2. DRUG-BASED PREVENTION

NMCP Objective

The following are NMCP's case management objectives as outlined in the NMSP:

- At least 80 percent of pregnant women will receive at least three doses of sulfadoxine-pyrimethamine (SP).
- At least 80 percent of pregnant women will sleep under an ITN.
- At least 80 percent of children 3 to 59 months of age in areas targeted by SMC receive four times preventive treatment during high malaria transmission season.

NMCP Approach

The NMCP supports the WHO malaria in pregnancy (MIP) approach by providing an ITN during prenatal consultation, intermittent preventive treatment (IPTp) with SP, and effective case management of malaria and anemia.

According to Niger's Malaria Diagnostic and Treatment Guidelines, updated in December 2017, IPTp dosing begins in the fourth month of pregnancy (after quickening) until delivery with an interval of one month between doses; SP is to be administered as directly observed treatment by qualified health personnel. All uncomplicated malaria cases during the first trimester should receive oral quinine in three doses for seven days because ACTs are contraindicated during this period; and during the second and third trimesters, all uncomplicated cases are to be treated orally with ACTs (or with oral quinine for seven days if no ACTs are available). For severe malaria, pregnant women should receive injectable artesunate or injectable quinine if artesunate is unavailable or not tolerated.

The reality of the current ANC-seeking behavior of women in Niger makes it difficult for the MOH to adopt the new WHO ANC guidelines for eight ANC contacts during a pregnancy because pregnant women customarily wait until their last trimester of pregnancy before seeking care. Despite the continuous training of health workers and the update of the registers to capture three doses of IPTp, the guidelines are not fully implemented. Although 80 percent of facilities offer IPTp services, only 47 percent have health providers trained in IPTp (SARA, 2019). Data from DHS 2012 indicate that 35 percent of the pregnant women received two or more doses of IPTp during their last pregnancy and 24 percent were sleeping under an ITN. The MOH decided to prioritize increasing the number of women attending ANC before increasing the number of visits per pregnancy. According to the NMCP, few providers have been trained on the use of severe malaria drugs and procedures, which limits the capability to treat severe malaria in pregnant women in peripheral health facilities.

Due to the low health facility coverage in Niger and low utilization of health structures, the NMCP recognizes the need to expand the delivery of ANC, including IPTp, and considers including this in the CHW task list, although this is not a WHO policy and will not be supported by PMI. Other than the fee for the healthcard (200 FCFA or US 40 cents), all ANC and IPTp services are free. The NMCP treatment guidelines do not mention WHO guidance related to daily folic acid administration with SPs.

Niger initiated SMC with sulfadoxine-pyrimethamine + amodiaquine (SPAQ) in the southern part of the country in 2013 targeting 205,959 children between three months and five years of age during the SMC campaign. Since 2018, the SMC campaign has been extended to the 61 eligible districts in seven regions targeting all children between three months and five years of age. For the 2020 campaign, the target was 4,279,777 children for the four rounds. The NMCP organized the campaign with support from UNICEF, World Bank, Global Fund, and PMI. The treatment was delivered through door-to-door campaigns due to the COVID-19 pandemic restrictions that prohibit large gatherings. Since 2016, malnutrition screening has been added to the SMC campaign with children identified as being severely or moderately malnourished being referred to a CSI with a nutrition treatment center. An NMCP SMC working group consisting of NMCP staff, MOH Nutrition Division, implementing partners, and donors meets regularly to prepare the national campaign and to ensure standardization of activities.

With the new stratification exercise conducted in 2020 with support from WHO, and the inclusion of all eight regions, the total number of SMC-eligible districts increased from 61 to 67 and the numbers of rounds varies between three and five rounds depending on the malaria prevalence in the district.

PMI Objective in Support of NMCP

PMI contributes to drug-based prevention through numerous interventions that aim to improve the quality of service and the availability of commodities. PMI, in collaboration with the Global Fund, covers the medication needs for MIP throughout the country by contributing to the common basket. PMI will continue to support the biannual national MOH coordination meeting and the DSME to train national trainers on the guidelines. In the two PMI focus regions, PMI will assist NMCP in the implementation of the national MIP guidelines at public (and selected private) facilities through in-service refresher training, production of job aids, and supportive supervision.

For SMC, PMI will support the implementation of the campaign in the two PMI target regions targeting 600,000 children. Support includes purchasing the medication and planning, training, social mobilization, implementation, supervision, and monitoring. The decrease in children targeted is due to budget constraints. PMI is discussing with NMCP and partners to find a solution for the 800,000 children eligible for whom SMC implementation costs are not covered. PMI will purchase SPAQ to protect all the 1.3 million targeted children in these two PMI regions.

Please see FY 2022 MOP budget tables for a detailed list of proposed activities with FY 2022 funding.

PMI-Supported Recent Progress (CY 2020)

- Established the Malaria in Pregnancy Technical Working Group (MIP TWG), created by ministerial decree in January 2020 and installed in August 2020, but not yet functional.
- Procured 1,000,000 SP treatments for MIP in 2020
- Procured 375,238 ITNs for routine distribution to pregnant women and children under 12 months of age.
- Procured 5,500,000 SPAQ treatments for the 2020 SMC campaign.
- Implemented the 2020 SMC campaign with four visits during the period of high malaria transmission each year targeting 1.3 million children (3 to 59 months of age) in 17 districts in the two PMI target regions with an overall coverage of 102 percent.
- Supported the revision of ANC training material and integration with MIP modules.

- Trained 54 midwives on the ANC package, integrated with up-to-date MIP modules in the two PMI target regions.
- Provided integrated training on malaria case management and MIP to 188 health workers in the two PMI target regions.

PMI-Supported Planned Activities (CY 2021)

- Strengthen MIP training and supervision in health facilities in the two PMI target regions.
- Disseminate case management guidelines.
- Procure SP commodities for IPTp.
- Support the MIP TWG.
- Support biannual coordination meetings related to MIP activities at the national level.
- Plan and implement the 2021 SMC campaign in the two PMI target regions (10 districts out of the 21 eligible districts with a target of 600,000 children).

2.2.1. MALARIA IN PREGNANCY (MIP)

Key Goal

Support the national strategy for MIP, which includes provision of ITNs at the first ANC visit, a minimum of three doses of IPTp in malaria endemic areas starting at 13 weeks gestational age, and effective case management of malaria per WHO guidelines.

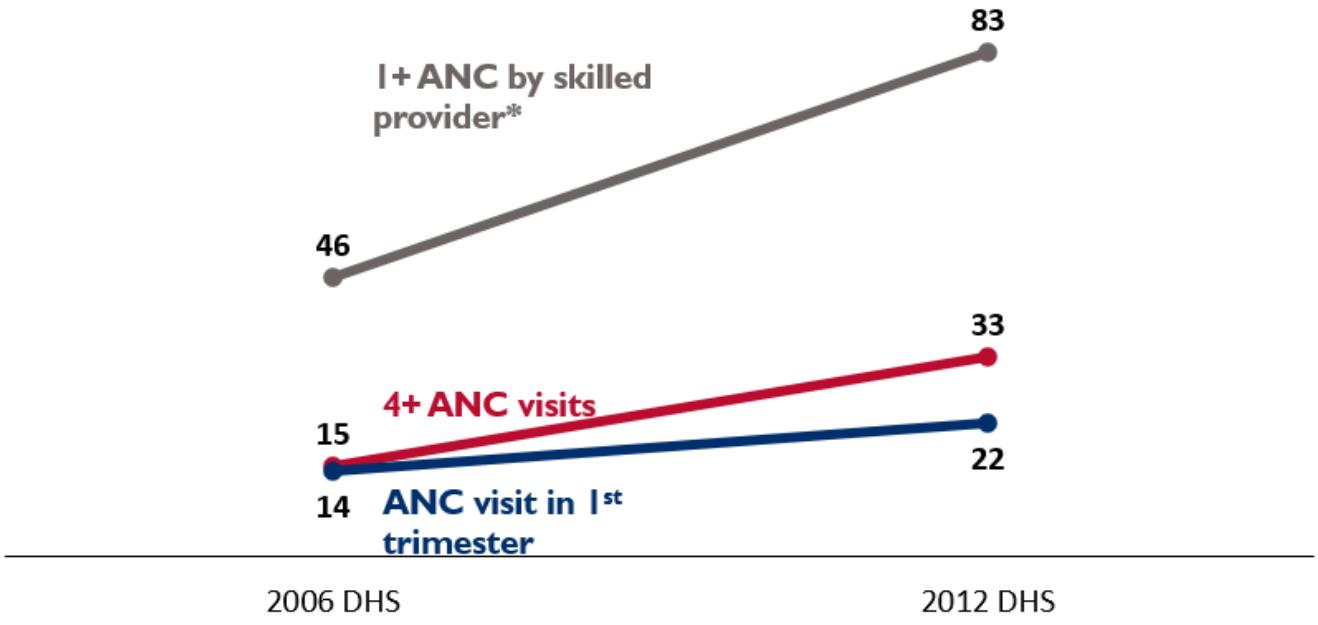
Key Question 1a

What proportion of pregnant women are accessing ANC early and frequently (as recommended by national and/or WHO strategies) during their pregnancy?

Supporting Data

Figure A-13. Trends in ANC coverage

Among women 15 to 49 years of age with a live birth in the five years before the survey (most recent birth)



**Skilled provider includes doctor, nurse, midwife, or trained birthing attendant.*

Key Question 1b

Are there important health systems and/or behavioral barriers to ANC attendance at health facilities?

Supporting Data

In Niger, pregnant women are offered a free full package of healthcare during the ANC visits, including IPTp. Pregnant women, however, customarily wait until their last trimester of pregnancy before seeking care. Women don't attend ANC because they think the health post is understaffed and the women do not feel that they will receive the help needed. Other contributing factors to the unfavorable perception of posts include restricted operating times, long wait times, lack of equipment and diagnostic capabilities, lack of medicines, and women's preference for having female providers.[22] ANC attendance is influenced by the gender relationship within the couple, given Niger's sociocultural and economic context, which places women at a disadvantage, particularly in decision-making.[23]

[22] Bedford, J.K., & Sharkey, A.B. Local barriers and solutions to improve care-seeking for childhood pneumonia, diarrhoea and malaria in Kenya, Nigeria and Niger: A qualitative study. PLoS One. 2014;9:e100038. doi: 10.1371/journal.pone.0100038

[23] Rapport genre et recours aux CPN au Niger: Etude de Nassirou Ibrahim sur l'influence du rapport genre au CPN (June 18, 2014).

Please refer to Section 3.4 for information on how SBC interventions will be directed to address the challenges identified above.

Key Question 2

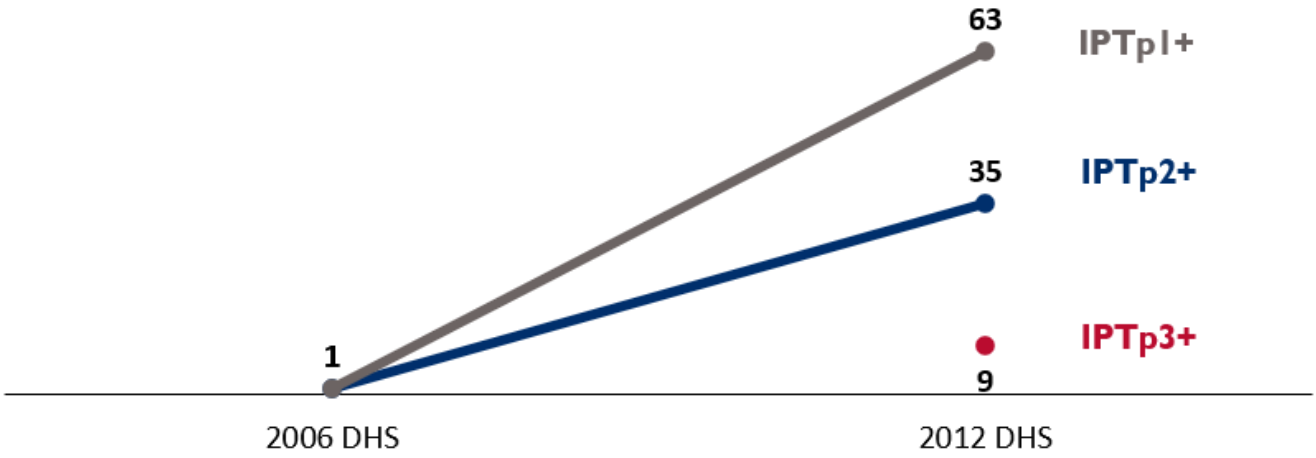
What proportion of pregnant women are receiving the recommended doses of IPTp?

Supporting Data

Figure A-14. Trends in IPTp

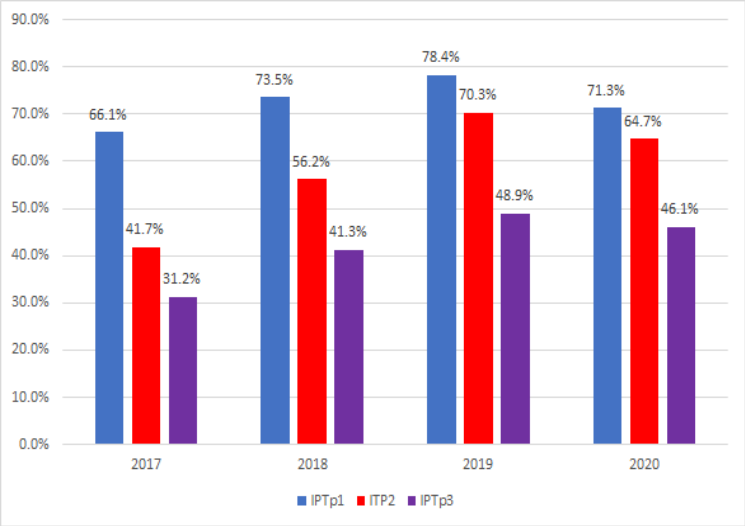
Women 15 to 49 years of age with a live birth in the two years before the survey who received the specified number of doses of SP/Fansidar during their last pregnancy

Note: IPTp3 baseline uses the first survey available after the recommendation was updated to three or more doses.



Note that these indicators have been recalculated according to the newest definition (the specified number of doses of SP/Fansidar from any source) wherever possible.

Figure A-15. IPTp coverage, Niger 2017–2020[24]



Although the percent of women receiving IPTp increased between 2017 and 2020, there is a decrease in the proportion of women getting subsequent doses after the first.

Key Question 3a

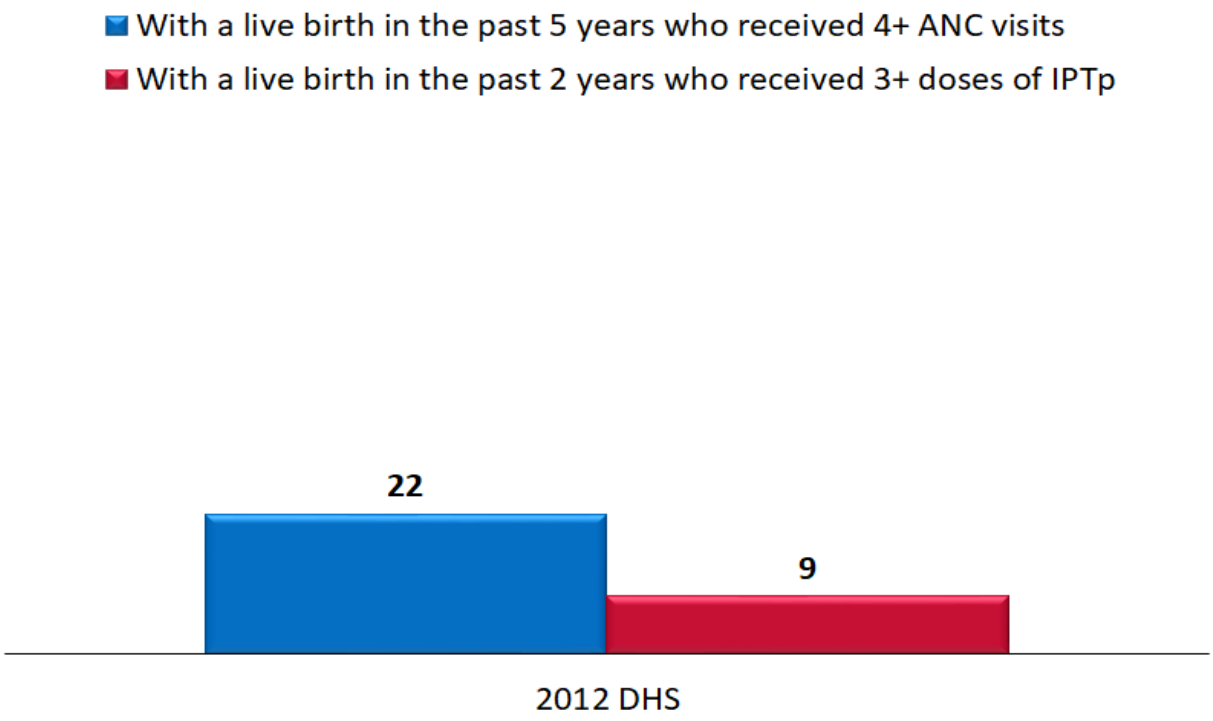
What is the gap between ANC attendance and IPTp uptake (i.e., missed opportunities for giving IPTp at ANC)?

[24] NMCP Quarterly Reports, 2017–2020.

Supporting Data

Figure A-16. Trends in missed opportunities for IPTp

Percentage of women 15 to 49 years of age



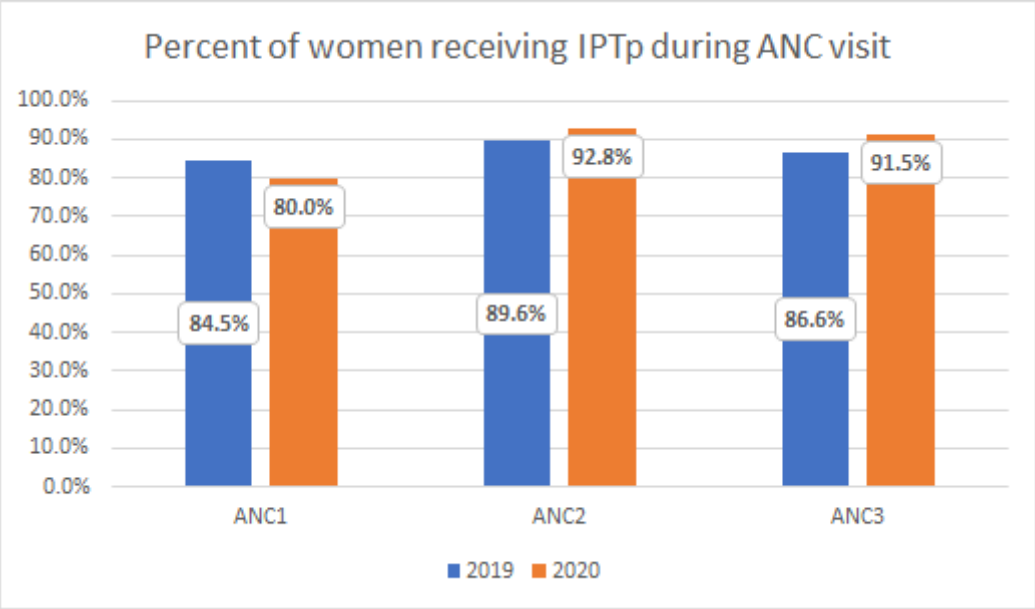
Key Question 3b

What significant health system and/or behavioral challenges affect provider delivery of MIP services (e.g., IPTp and ITN distribution at ANC)?

Supporting Data

In Niger, pregnant women are offered the full package of healthcare during the ANC visits, including IPTp. According to the 2019 SARA, 80 percent of surveyed facilities offered IPTp but only 47 percent have health providers trained in IPTp. The limiting factor for IPTp is the lack of ANC visits in general and especially during the first term. In addition to provider nonadherence to national guidelines and lack of provider knowledge, there is no other information available about barriers for women to adhere at IPTp.

Figure A-17. Evolution of provider compliance for IPTp[25]



According to NMCP quarterly reports, although provider performance in IPTp1 decreases in 2020 it increases for IPTp2 and IPTp3, denoting that efforts are being made to provide pregnant women the IPT they need. The 2019 SARA found that 86 percent of health facilities have IPT commodities available while 71 percent have ITN available; only 47 percent of providers were trained on IPTp and national guidelines for IPTp were available in 54 percent of health facilities.[26]

Please refer to Section 3.4 for information on how SBC interventions will be directed to address the challenges identified above.

Key Question 4

Does the national ANC program or health information system collect data and track the proportion of pregnant women with fever, those tested for malaria, those found to have malaria infection, and those who are treated?

[25] NMCP Quarterly Reports, 2019–2020.
[26] SARA, 2019.

Supporting Data

Table A-15. Malaria testing and treatment during pregnancy

	At integrated health centers (N = 79)	At district hospitals (N = 3)	At centers for mother and child (N = 4)	Overall
% Women who received RDT during ANC1	18	100	50	19
% Women who received RDT during ANC1 and tested positive (N =1,403	51	6	29	51
% Women who received RDT during ANC1, tested positive and were treated for malaria (N = 259)	4	100	100	99

An evaluation conducted by LSTM in 2018[27] in 110 health facilities representative of Niger's eight regions found that 19 percent of the 115,805 pregnant women attending ANC consultations in March 2018 were screened for malaria during their first ANC visit with 51percent testing positive; 99 percent of those women received treatment.

Key Question 5

What is the estimated need for SP during 2021–2023? Are there any anticipated SP gaps? Are there gaps in other IPTp commodities?

From 2021 to 2023, the estimated needs of 8,067,741 SP treatments will be covered by the Global Fund and PMI. Including the end-of-year stock at the end of December 2020, around 9,489,120 SP treatments will be available in the country for these three years. The available stock at the beginning of 2021 and the planned purchased quantity will cover all the needs and will allow the country to have a six-month buffer stock at the end of 2023. There is no expected gap during the three-year period.

[27] Évaluer la qualité des soins néonatals, maternels et infantiles au Niger, Décembre 2018.

Supporting Data

Table A-16. SP Gap Analysis Table

Calendar Year	2021	2022	2023
Total Country Population	23,591,989	24,465,615	25,363,503
Total Population at Risk for Malaria	23,591,989	24,465,615	25,363,503
PMI Targeted at Risk Population	7,443,572	7,723,210	8,009,925
SP Needs			
Total Number of Pregnant Women	1062551	1077266	1102760
Proportion of women expected to attend ANC1 at 13 weeks or greater	85%	90%	90%
Proportion of women expected to attend ANC2	83%	88%	88%
Proportion of women expected to attend ANC3	68%	74%	80%
Proportion of women expected to attend ANC4	0%	0%	0%
Total SP Needs (treatments)	***2,508,684***	***2,714,818***	***2,844,239***
Select Data Source			
Partner Contributions (treatments)			
SP from Government	0	0	0
SP from Global Fund	111,010	1,443,340	1,059,820
SP from Other Donors	0	0	0
SP planned with PMI funding	1,424,700	1,900,000	1,360,000
Total SP Contributions per Calendar Year	***1,535,710***	***3,343,340***	***2,419,820***
Stock Balance (treatments)			
Beginning balance	2,190,250	1,217,276	1,845,798
- Product Need	2,508,684	2,714,818	2,844,239
+ Total Contributions (Received/expected)	1,535,710	3,343,340	2,419,820
Ending Balance	1,217,276	1,845,798	1,421,379
Desired End of Year Stock (months of stock)	6	6	6
Desired End of Year Stock (quantities)	1,254,342	1,357,409	1,422,120
Total Surplus (Gap)	***(37,066)***	***488,390***	***(740)***

Conclusions for MIP Investments

PMI will continue its support to improve care of malaria in pregnancy by providing training to health workers, implementing a coordination mechanism among partners and ensuring availability of SP drugs in close collaboration with the Global Fund. PMI will also continue to support the MIP TWG.

Please see FY 2022 MOP budget tables for a detailed list of proposed activities with FY 2022 funding.

2.2.2. SEASONAL MALARIA CHEMOPREVENTION (SMC)

Key Goal

Support the national strategy for SMC targeting relevant geographic areas and age groups, with three, four or five rounds of malaria prophylaxis, for children 3 to 59 months of age, in accordance with WHO recommendations and the revised malaria stratification.

Key Question 1

What is the estimated need for SMC drug (SPAQ) during calendar years 2021–2023? Are there any projected SPAQ gaps?

The need for SMC drugs for four rounds will be covered by the Global Fund and PMI. In discussions with Global Fund, it was decided that PMI will cover the medication for the 21 eligible health districts of Tahoua and Dosso. With the new risk mapping developed in 2020, the number of districts eligible for SMC increased from 61 in 2020 to 67 in 2021. In addition, the country would like to implement a fifth round of SMC in 37 selected districts. Because of budget constraints, the commodities cost and implementation cost of this fifth round are not covered by the Global fund and PMI and no other funds are available.

With the implementation and expansion of SMC, the country changed its procurement of artesunate-amodiaquine (ASAQ); the pediatric formulation is not procured anymore. AL and artesunate-pyronaridine are formulations that will be procured for children.

Supporting Data

Table A-17. SMC Gap Analysis Table

Calendar Year	2021	2022	2023
Total population in the SMC targeted age range	4,637,732	4,779,810	4,924,703
SMC Drug (SP+AQ) Needs			
National population 3-11 months targeted for SMC	779,177	808,092	838,008
National population 12-59 months targeted for SMC	3,559,269	3,668,238	3,778,738
Total national population targeted for SMC	*4,338,446*	*4,476,330*	*4,616,746*
PMI population 3-11 months targeted for SMC	251,506	260,954	270,642
PMI population 12-59 months targeted for SMC	1,149,071	1,184,503	1,219,996
Total PMI population targeted for SMC	*1,400,577*	*1,445,457*	*1,490,638*
Total SP+AQ Needs (co-blisters)	***21,234,944***	***21,910,785***	***22,599,748***
Partner Contributions (co-blisters, national)			
SP+AQ carried over from previous year	1,547,850	0	0
SP+AQ from Government	0	0	0
SP+AQ from Global Fund	9,912,750	12,729,700	13,129,700
SP+AQ from other donors	0	0	0
SP+AQ planned with PMI funding	5,825,450	6,012,150	6,200,050
Total SP+AQ Contributions per Calendar Year	*17,286,050*	*18,741,850*	*19,329,750*
Total SP+AQ Surplus (Gap)	*-3,948,894*	*-3,168,935*	*-3,269,998*

Key Question 2

What are the estimated non-commodity resources needed to properly deliver SMC over the next three years (e.g., staffing, SBC, etc.)?

Supporting Data

The non-commodity cost associated with SMC campaigns implementation will cover the following:

- Participation in microplanning with the NMCP and other donors.
- Distribution of SPAQ and related commodities (e.g., cups and bowls) to districts and CSIs.
- Training for health staff from regional and district health centers, CSI staff, drug distributors and social mobilization staff.
- Payment of per diems for campaign personnel at central, district, and field levels.
- Rental of motorbikes and vehicles used for distribution and supervision.
- Procurement and distribution of communication tools and materials to the districts and CSIs.
- Communication campaign through media and social mobilization.

With FY 2022 funds, PMI will support implementation costs for 10 districts in Dosso and Tahoua (with a target of around 600,000 children). The gap to cover the remaining 11 districts will be sought by the GON and other partners. Of the 21 districts in Dosso and Tahoua, three districts will implement three rounds (all are new eligible districts), three others will implement four rounds, and 15 districts will do five rounds.

Key Question 3

If refusal or adherence to full dosing of SMC is a challenge, what behavioral challenges affect SMC acceptance and adherence?

Supporting Data

The refusal rate for SMC campaigns is very low and decreases with each round. For 2020, ~ 4.5 million children were treated during the four rounds and no children/caregivers refused treatment.

Conclusions for SMC Investments

SMC is well accepted. The main challenge is to ensure adherence to the three-day treatment, which is difficult to supervise and measure. PMI will support the development of improved SBC messages to address the need to take the three days of treatment. PMI will support SMC implementation for 600,000 children in 10 districts; however, PMI will purchase the commodities for 21 districts to protect ~1,400,000 children.

Please see FY 2022 PMI budget tables for a detailed list of proposed activities with FY 2022 funding.

2.2.3. ADDITIONAL DRUG-BASED PREVENTIVE STRATEGIES

This country is not a designated country for near-term pre-elimination or elimination and there is no PMI support planned for such work in Niger.

3. CROSS-CUTTING AND OTHER HEALTH SYSTEMS

3.1. SUPPLY CHAIN

NMCP Objective

According to the NMSP, the NMCP's objective for pharmaceutical management by 2023 is to ensure the continuous availability of all malaria-related commodities in all health facilities and at the community level. To strengthen the supply chain and pharmaceutical management, the plan calls for the following:

- Increasing the availability of products, including through improved quantification and procurement practices.
- Strengthening the distribution and stock management of malaria commodities.
- Strengthening the logistics management information system.
- Strengthening the human resources capacity of the supply chain team.
- Improving malaria stakeholder's coordination.
- Improving the quality control of malaria medicines.

NMCP Approach

In addition to the NMCP, there are four main MOH agencies involved in the national supply chain management system:

- The NMCP, as the unit in charge of the national malaria program, defines the list and type of product needed for malaria treatment and diagnosis. Moreover, they are in charge of coordinating malaria quantification exercises with other partners, organizing regular malaria supply chain committee meetings, and approving malaria commodities orders.
- The *Direction de la Pharmacie et de la Médecine Traditionnelle* (DPH/MT) is the national drug authority and is in charge of the formulation and monitoring of the pharmaceutical policy, which includes the administration of the pharmaceutical sector, regulation, pharmacovigilance, setting norms and standards, supervision, and promoting traditional medicine.
- The *Office National des Produits Pharmaceutiques et Chimique*s (ONPPC) is the GON central medical store and is responsible for the supply, storage, and distribution of essential medicines and supply.
- The *Société Nigérienne des Industries Pharmaceutiques* ensures the local production and distribution of some medicines.
- The *Laboratoire National de Santé Publique et d'Expertise* is responsible for the quality control of medicines. Niger's NMSP states that all antimalarial drugs delivered must have a Nigerian marketing authorization and must comply with WHO standards and will be tested for quality upon arrival in the country and six months afterwards.

In 2019, the MOH through the DPH/MT and with the support of partners (including PMI), developed its national supply chain strategic plan. The goal of the strategic plan is the establishment of an integrated health product supply chain mechanism called "*chaine unique d'approvisionnement*" focused on ONPPC and coordinated by DPH/MT that brings together the various stakeholders to ensure regular availability of quality health products at

all levels of the health pyramid. All health products will be progressively integrated into this integrated health product supply chain. Currently each health program has its own distribution plan and inventory system, and some partners deliver commodities directly to health districts or to the integrated health center without informing the MOH.

Through its vision of an integrated supply chain, the MOH aims to provide to all populations of Niger, wherever they are, access to quality health products for full coverage of health problems. For this reason, the MOH is committed to distributing health products until the last mile. The implementation of the strategic plan will be based on the following guiding principles:

- Equity in the distribution of medicines: The national supply system will be organized so that the distribution of health products can be done at all levels of the national territory.
- Traceability, transparency and accountability: An information system will be set up to track products until they are used. Management tools must be well maintained and available for any supervision and audit. The information collected will be shared with the various actors in the supply system. The visibility of supply chain information will be ensured for all stakeholders
- Coordination of actors and activities: Coordination will be ensured with all actors in the chain by establishing a supply chain committee.
- Clear definition of the roles and responsibilities of each actor: Each actor will evolve in the supply chain on the basis of a clear definition of their roles and responsibilities. The planned cartography will contribute to this visibility.
- Involvement of all supply chain stakeholders: All actors in the supply chain will be involved in activities and access to reliable and timely information.
- Integration of all health products: The single chain will work to gradually integrate all health products.

Currently, the ONPPC is in charge of procurement and distribution of medical supplies as well as curtailing the sale of illegal drugs. A parastatal, ONPPC operates on a charter from the GON. ONPPC has two drug distribution systems: one for donor-funded commodities for high-priority programs (e.g., tuberculosis, malaria, HIV/AIDS, family planning) and the second for other products donated to or purchased by the GON. Supplies are distributed through three ONPPC zonal warehouses to district depots and regional hospitals or directly to districts or regional depots utilizing a "pull" system based on requests by end users or a "push" system (currently the case for malaria products). For donor-funded commodities, ONPPC set up a unit called the Special Management Unit (*Unité Gestion Spécifique)* that is in charge of managing all high-priority program commodities from the reception at ONPPC to the delivery at the peripheral level.

At the district level, health facilities go to district warehouses to pick up their supplies by using any transport method they can find to get commodities, whether it is public transport, personal vehicle, motorbike, or facility ambulance. Due to their bulk, ITNs have their own distribution system outside ONPPC from central level to district and it is managed by the Global Fund Principal Recipient for the malaria grant.

All medical services and products, including malaria drugs and commodities, are to be provided free to children under five years of age and to pregnant women. Other adults and older children are charged fixed prices for medical services (outpatient or inpatient), but donated commodities for high- priority programs (e.g., tuberculosis, malaria, and HIV/AIDS commodities) remain free.

For malaria commodities, in line with the MOH supply chain strategy, a last mile distribution pilot has been implemented in Dosso and Tahoua regions since January 2021. Another pilot is ongoing in the region of Maradi for all health commodities with the support of UNICEF.

PMI Objective in Support of NMCP

- PMI, other donors, and the NMCP agree on the need for an integrated pharmaceutical management system and to support the implementation of the national strategic plan for the management of medical supplies. With FY 2021 and FY 2022 funding, PMI will prioritize its supply chain interventions to address the strategic objective of reducing malaria commodity stockouts.
- Support the MOH by providing 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 and to improve stock and logistics information for malaria commodities.
- Implement last mile distribution of malaria commodities from the regional level to district in the two PMI focus areas.
- Support at the national level ONPPC, DPH/MT and NMCP in the areas of coordination, quantification, warehousing and distribution planning efforts, in addition to periodically assessing the use of malaria commodities via EUV and data quality assessment.
- Provide targeted supply chain strengthening support to the NMCP, including the quantification of commodities, reviewing supply plans, and improving the quality of consumption data from the regions and districts.
- Support and coordinate the implementation of the stock reduction strategy plan that is being developed in CY 2021 with the collaboration with NMCP, DPH/MT, and partners. Through this stockout reduction strategy, PMI will prioritize activities to address the specific strategic objective of improving malaria commodity stockout performance at service delivery points.

PMI-Supported Recent Progress (CY 2020)

PMI provided support to the NMCP and the MOH for the following activities:

- Supported the quantification of malaria commodities and development of a supply plan. PSM support to the NMCP's quantification covering the period 2020–2023 resulted in the finalization of the quantification and successful submission of the Malaria application concept note to the Global Fund grants 2021–2023.
- Acquisition and delivery of PMI's commodities orders (ACT, RDT, ITNs, and injectable artesunate). These products, along with those supplied by the Global Fund, helped cover the country's forecasted need of antimalarial commodities at the central level. However, the COVID-19 pandemic crisis and the exceptional flooding situation in Niger during the period of September–October caused respectively delay in orders delivery and increase of malaria cases.
- Supported the ONPPC for the development of its National Strategic Plan 2021–2024.
- Conducted a data quality audit in September 2020 in 54 randomly selected sites in Dosso and Tahoua regions. This audit highlighted the weakness in the availability of logistic data because the LMIS was not yet in use and the completeness and accuracy of data was inadequate in the facilities visited. Reviewed stock cards were not always systematically filled in, such as options for stockout days, lapses, available months of stock, and minimum and maximum. This survey showed that the quality of logistics data is so

poor that it cannot be used to make decisions. Only 44 percent of the sites visited had at least three-quarters of the estimated input data.

- Conducted an EUV (July 2020) in 63 facilities in the regions of Niamey, Tillaberi, Dosso, and Tahoua. Key observations show the following:
  - 7.2 percent of CSI visited were experiencing a stockout of all ACT dosages and 8 percent of surveyed facilities (5 out of 63) were stocked out of mRDTs on the day of the visit.
  - 32 percent of health districts had faced stockouts during the period of the visit (main causes are late delivery from the central level and unexpected increase consumption during the flooding crisis).
  - 47 percent of CSI had stock cards that were kept far from commodities because of space constraints.
  - 84 percent of health facilities (CSIs and districts) had declared that there are not enough staff trained in commodities management.
  - 88 percent of facilities visited had a WHO prequalified ACT (AL) to treat children under five years of age with malaria. ACTs in the public health supply chain are sourced from the central level.
  - 95 percent of fever cases had been tested with RDT or microscopy.
  - 92 percent of children under five years of age who tested positive had been treated with ACTs.
  - 100 percent of health centers had the national malaria treatment directives available.
  - Low rates of up-to-date stock management records (around 50 percent for most commodities) and other stock management challenges (e.g., stock cards were kept away from products and staff have little incentive to update stock cards) were observed partly due to low levels of trained stock managers at the service delivery points.
- Supported the malaria commodities TWG, analyzed drug stocks, and revised the supply plan.
- PMI through USAID Global Health Supply Chain Procurement and Supply Management (GHSC-PSM) carried out the routine distribution of ITNs to the 72 districts of Niger using two third-party logistics providers (3PLs), previously identified through a competitive procurement process. This distribution covered all eight regions and took place over the course of 27 days. Successful deliveries were tracked on a daily basis with the GHSC-PSM web-based and Excel tracking tool.
- The GHSC-PSM team completed a routing optimization analysis using the geographic information system mapping completed in FY 2019 to facilitate the distribution of malaria commodities from the regional warehouses to the last mile. The GHSC-PSM project procured and installed two modified containers to improve storage of antimalarial pharmaceuticals and RDTs at the Pharmacie Populaire in Dosso. It executed 3PL subcontracts and developed its system for using trackers to track the distribution to health facilities. To ensure efficient last mile distribution management, GHSC-PSM also trained regional project staff in the use of the mSupply pharmaceutical supply chain management software. The first round of the last mile distribution was completed in January 2021 and the second round was completed in February 2021 to approximately 370 CSIs.
- Provided technical support through an embedded supply chain advisor at the NMCP office. The advisor was recruited by GHSC-PSM.

PMI-Supported Planned Activities (CY 2021)

- Implement the pilot phase of the last mile distribution strategy model for malaria products from regional level to CSIs in the two PMI focus regions in CY 2021. This pilot is part of the NMCP national strategy and will inform the decision regarding the most appropriate distribution method for the Niger context.
- Coordinate with the NMCP and other relevant stakeholders to further refine the outputs from the stockout reduction strategy exercise to create a comprehensive list of challenges and risks to be addressed over the next two years with the aim of achieving service delivery point stockout reduction. PMI will coordinate with partners to support the plan developed and will progress made through a monitoring and evaluation plan.
- Support five pharmacists from regional level, NMCP, and DPH/MT to attend remote international training on global health procurement and supply management. In addition to PMI's support to five pharmacists, Global Fund will also support 15 additional pharmacists for this same training.
- Support the quantification exercise and quarterly revision of malaria commodities supply plans.
- Conduct targeted formative supervision to monitor and coach the districts' technical management teams on the methodological approach for the distribution of commodities.
- Support the ONPPC to finalize the development of its national strategic plan, prioritize support to the ONPPC, and strengthen commodities management.
- Support the DPH/MT in the implementation of the LMIS and designing tools for logistics data analysis at regional and central level.
- To assess the logistics system performance, PMI will support two EUV survey exercises with a focus on the two PMI-focus regions and will include other regions.
- Track and report on the availability of malaria commodities through the procurement, planning and monitoring report for malaria.
- Support the quarterly meeting of the malaria commodities technical committee to review stock data and the revised supply plan. Support more frequent meetings of the committee to promote ownership of the quantification process, procurement planning, and monitoring of coverage by the MOH under the direction of the DPH/MT.
- Support the ONPPC for the development of an annual distribution plan with a defined timeline for all pharmaceutical products (malaria, HIV, tuberculosis, family planning, essential medicines, etc.).
- Continue support to an embedded supply chain specialist at NMCP to provide TA in the areas of distribution, quantification, and logistics data analysis.

Key Goal

Ensure continual availability of quality products needed for malaria control and elimination (ACTs, RDTs, SP, Art. Inj., and ITNs) at health facilities and community level.

Key Question 1

Has the central level, (or subcentral level, if appropriate) been stocked according to plan for ACTs, RDTs, SP, and Art. Inj. over the last year (2020)? If not, have they been under, over, or stocked out?

In 2020, malaria commodities (ACT, RDT, artesunate inj.) were available all the time at the central level (ONPPC warehouse) and no stockouts were reported even when the country reached the minimum during the last

quarter of FY 2020. Except for ACTs, malaria products were adequately stocked between the minimum of three months of stock and maximum of 12 months of stock. Regarding ACT, data reported showed that AL is the only drug used for malaria treatment. ASAQ was not available and not procured since 2018. Two pack sizes of AL were understocked with a period of stockout at the central level, and two were properly stocked between the minimum and the maximum. Because of the COVID-19 pandemic crisis, most PMI orders planned for delivery in June 2020 were delivered with delay in August and September. This situation, combined with the severe flood crisis that the country faced during FY 2020Q4 and FY 2021 Q1, has had an impact on the availability of these products at the central level and in some health facilities.

A stockout of SP at the central level was experienced during a short period in early FY 2020 due to a late delivery of orders but the situation did not impact the availability of this product at the health facilities because of a distribution done to the districts with the available central stock. Given that this product is now overstocked, deliveries have been rescheduled in 2021. PMI will continue to support monitoring of stock management and support a periodic review of supply plans in coordination with the NMCP and the Global Fund principal recipient to ensure commodities are stocked according to the national plan.

Key Question 2

What are the trends in service delivery point stockout rates for ACTs (including ability to treat), RDTs, Art. Inj., and SP over the last year (if tracked)? Is there a seasonal or geographic difference in stockout rates?

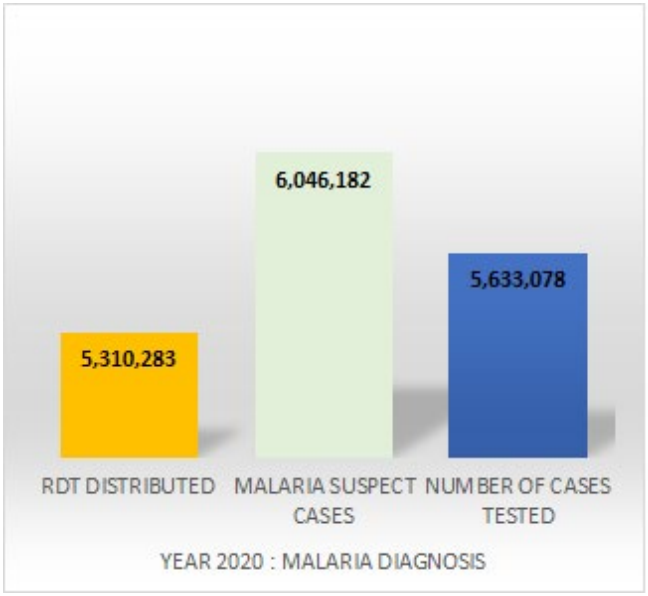
Data reported through the call center show a stockout of two AL pack sizes in CSI and district health facilities of Dosso and Tahoua during the year 2020. The stockout rate of the other two pack sizes also increased between the last quarter of FY 2020 and the first quarter of FY 2021.

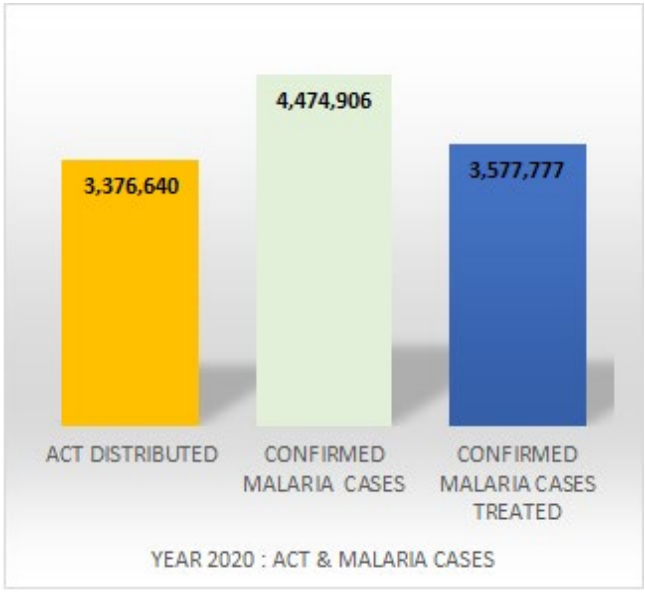
The country faced a severe flood crisis from September to October with an increased number of malaria cases during that period. This situation created an unexpected increase in consumption of malaria commodities (RDT and ACT) which can explain the stockout reported by some health facilities for ACT. However, RDT and SP have a low stockout rate during the same reporting period.

Key Question 3

What is the difference between quantities for ACTs consumed and malaria cases, and RDTs consumed and numbers tested? What is driving any differences seen?

Figure A-18. ACT and RDT discrepancies





Source: NMCP Niger Annual Data Report 2020.

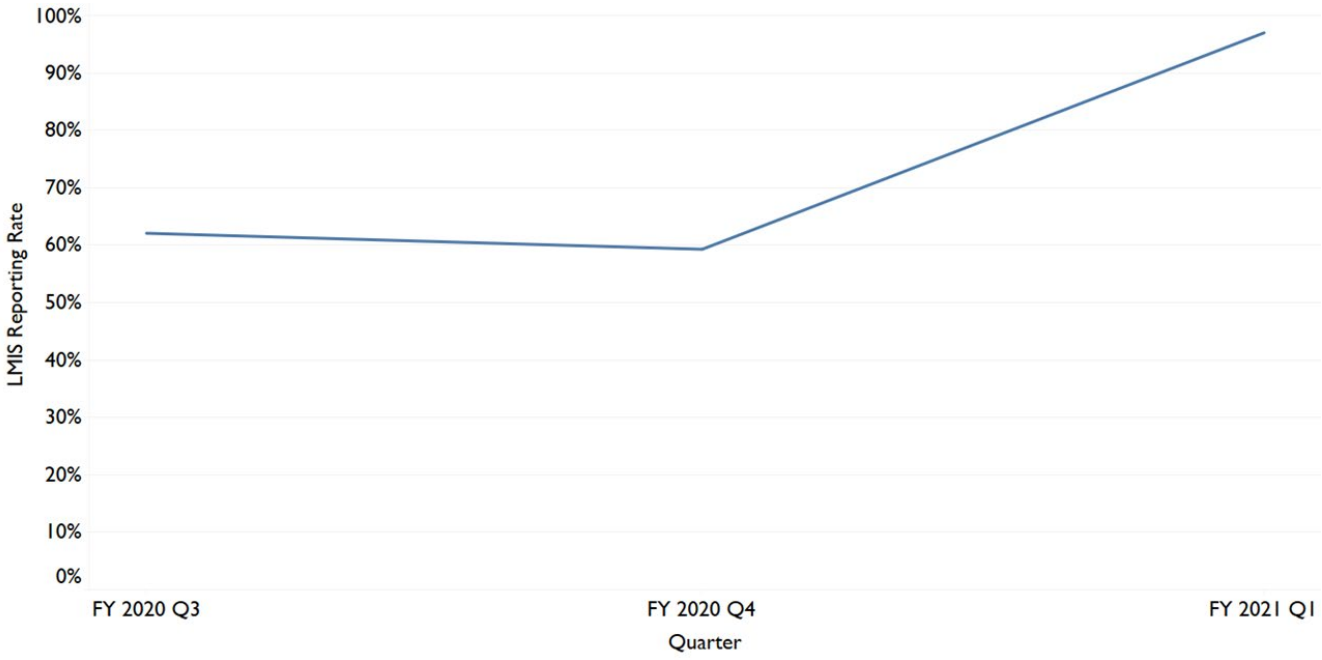
Data presented in charts above show small discrepancies between HMIS data and ACT or RDT distributed in 2020 from the central level to health facilities, and the cases tested and treated. When comparing RDT distribution data from central level to districts and number of malaria suspected cases, one notes that a high percentage of suspected cases were tested (with RDT or microscopy). The small gap could be explained by the fact that the quantity of RDTs distributed did not cover the country's needs. When comparing ACT data, it shows that only just over three-quarters of confirmed malaria cases received treatment. This situation also can also be explained by some stockouts that occurred during this year. With a lack of a strong reporting system of logistics data and a functional LMIS, consumption data reported by health facilities through districts are unfortunately not reliable and are inaccurate. This data gap does not allow the NMCP to take the necessary actions to anticipate or fix issues. Significant efforts are needed to improve the availability and quality of logistics data.

PMI will continue to support implementation of the call center in Dosso and Tahoua and the implementation of LMIS and support formative supervision, logistics data quality checks, and analysis at national and regional level.

Key Question 4

To what extent does a functional LMIS provide visibility into timely and quality logistics data from various levels of the system? To what extent is commodity data visibility dependent on surveys or supervisory data rather than routine data reported by an LMIS?

Figure A-19. Quarterly reporting rate (call center)

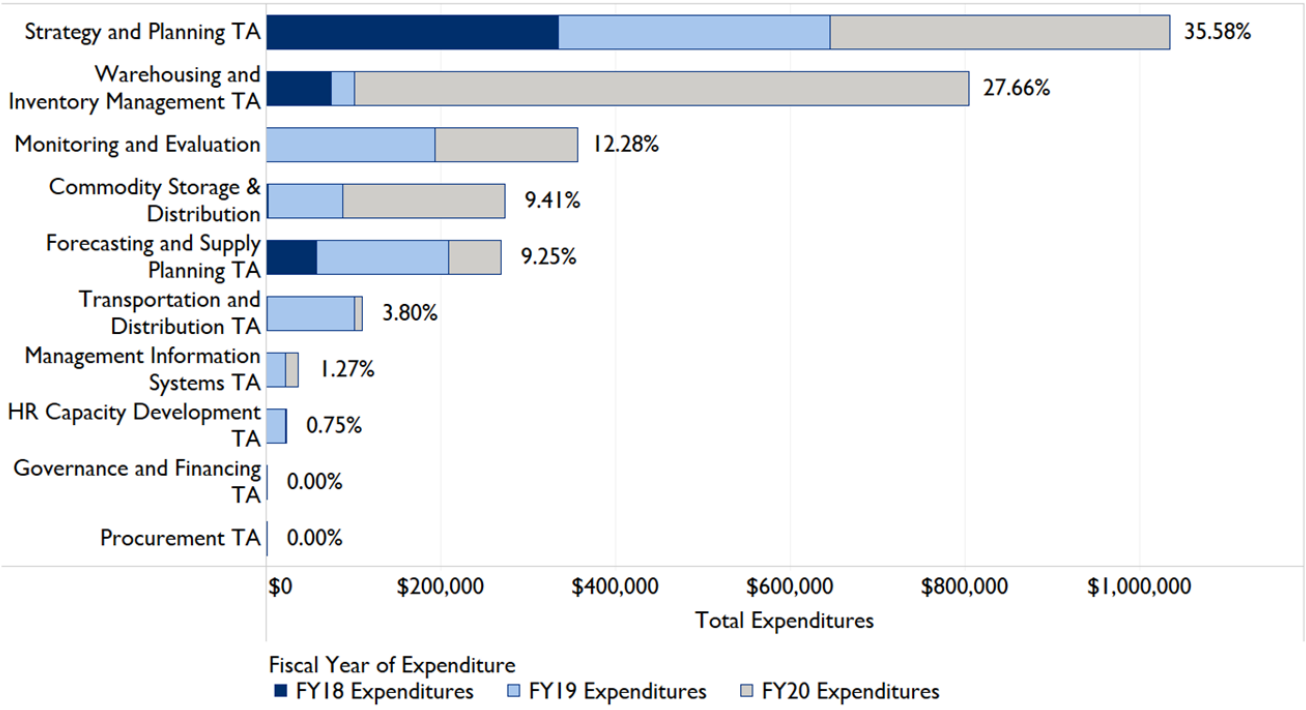


In absence of a functional LMIS, PMI is supporting a call center activity in Dosso and Tahoua. As shown by the graph above, at the start of the call center the reporting rates were around 60 percent, but these are now close to 95 percent at the end of the CY 2020. With the improvement of the reporting rate, data collected through the call center can be used for analysis and help to drive decisions.

Key Question 5

Supporting Data

Figure A-20. PMI supply chain investments by technical area



During the first quarter of 2021, with the support of PSM the NMCP conducted an analysis of the root causes of stockout of malaria commodities in health facilities. One of the first issues identified is the lack of reliable logistics data making it difficult to determine the stockout baseline. Using data collected during EUV and through the call center, a stockout baseline was determined for ACT (at 40 percent) and RDT (at 17 percent). In addition to data quality issues, including lack of functional LMIS, limited storage and distribution capacity from the central level to health facilities was identified as an issue. The Global Fund is renting a private warehouse where all malaria, HIV/AIDS, tuberculosis, and other commodities managed by ONPPC are stored. The limited resource for malaria commodities procurement doesn't allow the coverage of all the country's needs and this is also an important factor of stockout of products in Niger.

To address challenges related to stockout, NMCP and malaria partners included PMI will prioritize their interventions in the following areas:

- Forecasting and supply planning: Strengthen forecasting and supply planning process and exercise. More TA will be provided to ONPPC, NMCP, and DHMT on quantification and the use of appropriate forecasting and supply planning tools.
- LMIS: Support the implementation and functioning LMIS by setting up regional and central LMIS committees that will oversee the implementation of LMIS across the country. As a short-term solution,

PMI will support the development of an analysis tool (it could Excel-based) for compiling LMIS data at district, regional, and central levels. These proposed solutions will complete the existing call center activities.

- Support dissemination and refresher training on standard operating procedures for logistics data collection, reporting, and validation.
- M&E: Support formative supervision coordination meetings for data analysis and validation at the district and facility levels.
- Governance and financing: Advocate for more resource mobilization for the procurement of malaria commodities.
- Warehouse and distribution: Support rehabilitating and building a warehouse with sufficient capacity at the central level. Continue to support and strengthen the distribution capacity through the last mile distribution strategy.

Key Question 6

Are there any other considerations that impact funding allocation in this category? If there is a specific budget line item in Table 2 that is not covered by the above questions, address here.

All activities funded in Table 2 are addressed above.

Supporting Data

N/A

Conclusions for Supply Chain Investments

Current stockout data information shows a rate of more than 40 percent for ACT and 17 percent of RDT at the site level in 2020. Following discussions to reduce stockout rate, PMI will invest in capacity-building of staff at the peripheral level through formative supervision, training, and coordination meetings at the district level to discuss logistics and HMIS data. More support will be provided to the implementation of LMIS (develop compiling and analysis tools and support regional LMIS committee), which is critical because it will help improve stock management and will allow collecting logistics data for decision-making. PMI will also continue to support commodity procurement and distribution (including the last mile distribution in Dosso and Tahoua) and EUV surveys in different regions.

With FY 2020 and FY 2021 funds PMI will start implementing the stock reduction strategy investment plan that has been developed in CY 2021. An M&E plan will be developed to support the implementation of this plan and progress on stockout reduction rate will be evaluated each quarter/semester with data collected through the system (LMIS, call center, EUV, last mile distribution, etc.)

Funding for supply chain strengthening activities should be increased or maintained at this current level depending on availability of funds. PMI will work closely with the MOH, Global Fund, and other partners to advocate for more resources to provide a more affordable and sustainable response to the storage capacity issue enabling the country to move away from the currently costly rental of warehouses for ONPPC at the central level.

Please see FY 2022 PMI budget tables for a detailed list of proposed activities with FY 2022 funding.

3.2. SURVEILLANCE, MONITORING, AND EVALUATION (SM&E)

NMCP Objective

The overall objective of the NMCP's M&E Plan is to improve the malaria-related information system's ability to monitor outcomes and inform decisions. Specific objectives targeting all levels are to:

- Build M&E capacity of entities that implement malaria control and prevention activities.
- Establish high-quality, integrated tools for data collection and M&E of malaria control interventions.
- Establish a quality assurance system for malaria-related data.
- Create a sound framework for strategic information on malaria.
- Evaluate program performance at the end of the 2017–2023 NMSP.

NMCP Approach

PMI Objective in Support of NMCP

PMI seeks to improve the availability, quality, and use of malaria data at the national level by effectively managing information and strengthening the NMCP's capacity in the areas of data analysis and results dissemination. In the two focus regions of Dosso and Tahoua, PMI will continue its support of the implementation of the DHIS2 platform, data analyses, and use of data for decision-making on the regional and district levels through TA and the support of quarterly coordination meetings at each of the districts and biannual meetings on the regional level.

An M&E technical advisor is placed at the NMCP and in the two PMI-focus regions to provide TA in close collaboration with other technical partners. Depending on the needs, PMI will also support the update of guidelines, materials, and equipment at the national level and in the health facilities in the two PMI-focus regions.

PMI-Supported Recent Progress (CY 2020)

- Provided technical support through an embedded M&E resident advisor at the NMCP office.
- Supported the NMCP to conduct monthly analysis of malaria routine and surveillance data.
- Reviewed and updated the existing data quality review manuals.
- Supported the NMCP to develop and disseminate a quarterly malaria bulletin.
- Provided information technology equipment and solar panels to health centers in four regions to help expedite the reporting of malaria data.

PMI-Supported Planned Activities (CY 2021)

- Provide continued technical support to the NMCP and Division of statistics (DS).
- Support the NMCP to convene quarterly malaria SM&E TWG meetings.
- In collaboration with the DS, train and support the NMCP, regional, and district health staff to use DHIS2 for data analysis and to assess data quality using the routine data quality assessment tool.
- Assist the NMCP to conduct monthly analysis of malaria surveillance data for monitoring key indicators and data quality.

- Support the NMCP to develop and disseminate a quarterly malaria bulletin.
- Support monthly data review and quarterly coordination meetings at district and regional levels in Dosso and Tahoua regions.
- Implementation of MIS in collaboration with the Global Fund.
- Provide technical support to other relevant malaria SME activities, as needed.

Key Goal

To support the NMCP to build their capacity to conduct surveillance as a core malaria intervention using high-quality data from both surveys and routine health information systems.

Key Question 1

Which data sources are available to inform estimates of intervention coverage, service availability and readiness, and morbidity and mortality?

Supporting Data

Table A-18. Available malaria surveillance sources

Source	Data Collection Activity	2019	2020	2021	2022	2023	2024
Household Surveys	Demographic Health Survey (DHS)						
Household Surveys	Malaria Indicator Survey (MIS)			P			
Household Surveys	Multiple Indicator Cluster Survey (MICS)						
Household Surveys	EPI survey						
Health Facility Surveys	Service Provision Assessment (SPA)						
Health Facility Surveys	Service Availability Readiness Assessment (SARA) survey	*					
Malaria Surveillance and Routine System Support	Therapeutic Efficacy Studies (TES)		x		P		P
Malaria Surveillance and Routine System Support	Support to Parallel Malaria Surveillance System						
Malaria Surveillance and Routine System Support	Support to HMIS	x	x	x	P	P	P
Malaria Surveillance and Routine System Support	Support to Integrated Disease Surveillance and Response (IDSR)	x	x	x	P	P	P
Malaria Surveillance and Routine System Support	Call Center		x	x	P	P	
Malaria Surveillance and Routine System Support	(Electronic) Logistics Management Information System (LMIS & eLMIS)			P	P	P	P
Malaria Surveillance and Routine System Support	Malaria Rapid Reporting System						
Other	EUV	x	x	x	P	P	P

Source	Data Collection Activity	2019	2020	2021	2022	2023	2024
Other	School-based Malaria Survey						
Other	Knowledge, Attitudes, and Practices Survey, Malaria Behavior Survey						
Other	Malaria Impact Evaluation		*				
Other	Entomologic Monitoring Surveys						

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

Key Question 2

What HMIS activities have been supported? What current priorities will be supported with FY 2022 MOP funding?

PMI provided TA for the updating of the list of malaria data elements and indicators that need to be collected and integrated in DHIS2. PMI provided technical support and training to NMCP, regional and district level in Tahoua and Dosso regions to ensure accurate data entry and analyses. Since 2020, PMI is preparing the MIS, which will be implemented during August 2021

With FY 2022 funds, PMI will continue to support both the NMCP and the Health Statistics Directorate to improve data quality at all levels, particularly through support to regional coordination meetings for data quality and data quality assessments. PMI will support the use of data through the edition of quarterly bulletins. PMI will support the integration of commodities data with epidemiological data until the LMIS is fully functional.

Supporting Data

Key Question 3

Are there specific outcomes of past/current HMIS strengthening efforts that can be identified?

Supporting Data

Table A-19. Outcomes of HMIS strengthening efforts

	Indicator	2019[28]	2020[29]
Timeliness	% of health facility reports received on time	8.5%[30]	
Completeness	"Confirmed malaria cases for children under five years of age" was reported in X percent of facility[31]-months	97%	92%
Accuracy	Populate with most recent data quality assessment data:	N/A	N/A

PMI only started the HMIS strengthening efforts in 2019 and mainly in two regions, so the measurable outcomes are limited.

Key Question 4

Are there any other considerations that impact your funding allocation in this category (e.g., strategic information or capacity-building in-country)?

Supporting Data

Due to the low in-country capacity, funding needs are significant for M&E reinforcement activities, but the PMI funding is limited and there is support from Global Fund for DHIS2.

Conclusions for Surveillance, Monitoring, and Evaluation Investments

The rollout of DHIS2 was completed and data is being regularly entered by the health facilities. However, there is a need to improve the quality of the data entered as well as the timeliness. In addition, the commodities are not being entered in the system. PMI support will be needed to improve the system and allow for better decision-making. Timeliness of data entry for reports into the DHIS2 is weak because of transportation and internet connectivity issues. More needs to be done to improve the completeness and timeliness.

Please see FY 2022 PMI budget tables for a detailed list of proposed activities with FY 2022 funding.

[28] NMCP Quarterly Report, 2019.

[29] NMCP Quarterly Report, 2020.

[30] Health Statistics, 2019.

[31] Facility data not available, so replaced by district data.

3.3. OPERATIONAL RESEARCH

NMCP Objective

The Niger NMSP's goal for operational research is to support the documentation of good practices and successful experiences. The NMSP states strategic information on malaria will be obtained from the analysis of routine HMIS data, sentinel surveillance and/or annual or periodic assessments. Studies will be carried out in collaboration with INS and CERMES on general population or on specific groups on priority areas of research related to entomological and epidemiological aspects, case management, use of measures preventive measures (ITNs, IRS, IPTs, and SMC), population behavior and efficacy of insecticides and antimalarials.

NMCP Approach

The NMCP plans to start again sentinel sites. The sites, selected based on the updated malaria risk map, will be used to collect quality epidemiological, entomological, parasitological, and pharmacological data that are not collected by the routine surveillance system. The NMCP plans program evaluations such as the evaluation of the impact of the SMC campaign; increasing the eligibility age for SMC; Knowledge, Attitudes, and Practices survey for ITN; and the feasibility of IRS. The malaria risk map will also continuously be updated.

The NMCP is very engaged in "zero palu" and for this reason, wants to show proof of concept in one village through implementing all control and prevention measures in one village to showcase that "no death due to malaria" is possible in Niger. NMCP and DPH/MT also would like to implement quality control of the commodities at arrival in the country and after several months in the field.

PMI Objective in Support of NMCP

PMI will not support operational research with FY 2022 funding because there is not enough funding available to continue supporting research through the residents of the two-year FETP program as was supported in previous years.

PMI-Supported Recent Progress (CY 2020)

Assessment of the feasibility of last mile distribution in Dosso and Tahoua is ongoing. Results are pending and preliminary findings will be available at the end of CY 2021.

PMI-Supported Planned Activities (CY 2021)

There will be no operational research supported by PMI conducted in CY 2021.

PMI Goal

PMI will conduct PE/OR that helps to evaluate coverage of the population at risk, intervention quality, or delivery efficiency; study reducing malaria transmission and disease burden; test effectiveness of new or evolved priority interventions and strategies; or explore new metrics and mechanisms to assess intervention impact.

Key Question 1

In consultation with the NMCP, have technical challenges or operational bottlenecks in program interventions been identified that require PE/OR? How have they been prioritized?

Supporting Data

Table A-20. Ongoing program evaluation and operational research

Funding Source	Implementing Institution	Research Question/Topic	Status/Timeline
World Bank	WHO	Impact of SMC	Ongoing
PMI	PSM	Feasibility of last mile distribution in Dosso and Tahoua	Ongoing
UNICEF	UNICEF	Feasibility of last mile distribution in Maradi and Zinder	Ongoing

Key Question 2

Are there specific challenges in any intervention areas that merit further exploration or research with the potential of establishing strategies or interventions applicable in the near future?

Supporting Data

PMI identified multiple bottlenecks for making progress in the control of malaria in Niger, but most of them, such as availability of qualified human resources at all levels of the health structure and the availability of internet from CSI to NMCP national level, are institutional and will improve with the development of the country. PMI supported the capacity training of health workers at national, regional, and district levels through the FETP program, but due to lack of funding, this support had to be stopped and it is helping the MOH to identify other sources of support.

A PMI-supported NMCP evaluation[32] indicated the need for management training and TA at central level. PMI supported a consultant, but to improve this problem, more resources are needed together with engagement from MOH leadership.

A third bottleneck is the payment of staff. Low salaries push national and regional health staff to take on missions for the per diems. In addition, a high number of staff are contractors who suffer from irregular payments. A final obstacle is the payment of incentives to the CHWs for the iCCM program, which PMI does not support at this time.

Key Question 3

Are there any other considerations that impact your funding allocation in this category?

[32] Evaluation of malaria program in Niger, HRH2030, 2018.

N/A

Supporting Data

Conclusions for Program Evaluation and Operational Research Investments

Due to a lack of funding, no program evaluation or operational research will be supported with FY 2022 funding.

Please see FY 2022 PMI budget tables for a detailed list of proposed activities with FY 2022 funding.

3.4. SOCIAL AND BEHAVIOR CHANGE (SBC)

NMCP Objective

The NMCP's SBC and communication objectives as outlined in the NMSP include the following:

- At least 80 percent of the population is aware of the major signs and interventions to prevent malaria.
- At least 80 percent or the population is practicing correct malaria prevention and treatment measures.
- Harmonize and coordinate information, education, and communication and SBC communication activities at all levels.
- Develop and execute an integrated communication plan.

NMCP Approach

The implementation of activities related to the above objectives will be done taking into account Pillar 1 (increase political will to reduce malaria deaths) and Pillar 4 (a coordinated national approach to the high burden to high impact initiative). The NMCP wants to strengthen advocacy toward the private sector and public institutions such as the National Assembly, and social mobilization through the strengthening of community participation in the fight against malaria SBC communication.

NMCP wants to invest in formative research on the determinants of health behaviors, the profile of target groups, and the most important channels of communication. It will also take into account the specificities of the geographical regions and will be articulated with the current epidemiological realities. This will lead to the design of a communication strategy that integrates advocacy, institutional communication, and social mobilization, and sets the objectives, identifies the targets, determines the communication approaches, identifies the channels, and defines the positioning of the campaign. Thus, TV, radio, and printed materials for posters will be linked to community-based interventions.

NMCP wants to strengthen institutional communication to enhance the efforts of the NMCP and its partners and to raise the visibility of the NMCP's image by highlighting the progress made, the commitment of the actors and the challenges. To this end, emphasis will be placed on consolidating relations with the press. Crisis communication will be strengthened through the implementation of a crisis communication strategy, the development of an advocacy plan, and the readjustment of the communication plan to support the NMCP as part of the epidemic response plan.

To achieve this, NMCP wants to develop a capacity-building plan for the communication unit staff with emphasis on key areas mentioned above, integrate the monitoring of the SBC malaria control activities with the monitoring of the operational level, and conduct semiannual reviews of the SBC activities.

PMI Objective in Support of NMCP

Under the guidance of the NMCP and in coordination with the Global Fund and other donors, PMI provided TA at the central level for the national rollout of the new malaria SBC strategy. The design of SBC interventions and messages is informed by data to encourage uptake of IPTp, promote distribution of ITN during first ANC and EPI visits and use of ITNs, encourage communities to participate in SMC, promote early initiative of ANC through community-level activities, and promote care-seeking behavior.

However, priorities and approaches contained in the strategy are based on almost no behavioral data. The new strategy promotes the use of ITNs, prompt care-seeking for fevers, early and regular attendance by pregnant women of ANC services, and compliance with the second and third doses for all four rounds of SMC.

PMI-Supported Recent Progress (CY 2020)

PMI provided support to the NMCP for the following activities:

- Coordinated a national SBC stakeholder committee, to engage globally with the Roll Back Malaria SBC Working Group, and will support the celebration of World Malaria Day.
- Designed promotion TV and audio spots (in French and local languages) and billboards for all eight regional capitals for both the ITN and SMC campaigns.
- Produced and disseminated SBC materials in Dosso and Tahoua while the Global Fund supported dissemination in the rest of the country.
- Promoted malaria prevention behavior in the framework of the National Malaria Day activities, in collaboration with the Global Fund.
- Co-created the existing malaria SBC strategy, using content, structure, and standard indicators provided by the Roll Back Malaria Partnership to End Malaria and PMI.
- Kicked off pilot community engagement activities to accelerate the uptake of malaria prevention practices.

PMI-Supported Planned Activities (CY 2021)

- Support NMCP at central level to update and develop key messages including radio messages in local languages and other social mobilization tools on the use of ITNs.
- Support implementation of SBC activities, including for school children in the Dosso and Tahoua region.
- Support NMCP to update and implement key messages including rural radio messages in local languages and social mobilization tools on MIP and malaria case management.
- Assist with activities around “zero palu village” and national malaria day.
- Support sensitization, demand generation, and social mobilization for iCCM.

Key Goal

Through the use of SBC interventions and in alignment with a country's national malaria control communication strategy, PMI supports the uptake and correct and consistent use of malaria interventions, thereby improving the overall quality of malaria control efforts that will contribute to reductions in malaria.

Key Question 1

What behaviors is PMI proposing to prioritize through its SBC programming? What data support this prioritization? Will support be geographically targeted or national?

Given budget constraints, for FY 2022 PMI plans to focus on community-level work in Dosso and Tahoua. The priority will be on promoting care-seeking for fever, increased use of ITNs, and early and frequent ANC attendance so that women can receive IPTp and their nets.

Supporting Data

Table A-21. Prioritized behaviors with FY 2022 funds

Behavior	Target Population	Geographic Focus	Justification
Prompt care-seeking for fever	Caregivers of children under five years of age, religious leaders, health workers	Dosso and Tahoua, 1 district each	• **Mortality rate among children is still high and parents need to be encouraged to seek care at a health facility, where available.** • **Increasing prompt care-seeking for febrile children under five years of age is prioritized as the second most important malaria case management behavior in the NMCP SBC strategy.**[33]
Early and frequent ANC attendance	Women of reproductive age (with a focus on adolescents and women in their 1st and 2nd pregnancies)	Dosso and Tahoua, 1 district each	• **The percentage of women attending ANC during their first trimester is low.** • **Increased ANC attendance is prioritized as the most important malaria in pregnancy behavior in the NMCP SBC strategy.34** • **IPTp3 and 4 rates remain suboptimal, suggesting that while women in Niger are willing to attend ANC, they do not present early enough** to receive maximum coverage.
Increased ITN use	Pregnant women and caregivers of children under five years of age	Dosso and Tahoua	• **Increasing use of ITNs among pregnant women is prioritized as the most important vector control behavior in the NMCP SBC strategy.35** • **While recent** mass distribution of ITNs throughout Niger has greatly increased access to ITNs, use among those with access will not be available until measured with the 2021 MIS or the durability monitoring is complete.

[33] Stratégie National de Communication pour le changement social et de comportement en faveur de la lutte contre le paludisme 2020–2025: 1.2.6 Plan de communication de prise en charge 2 (p. 9).
[34] Stratégie nationale de communication pour le changement social et de comportement en faveur de la lutte contre le paludisme 2020–2025: 1.2.3.4. Plan de communication sur le paludisme pendant la grossesse 1 (p. 11).
[35] Stratégie nationale de communication pour le changement social et de comportement en faveur de la lutte contre le paludisme 2020–2025: 1.1.5 Plan de communication MILDA (p. 6).

Key Question 2a

For prompt care-seeking for fever, what gaps exist in understanding the barriers to the adoption and maintenance of malaria prevention and treatment behaviors?

Supporting Data

Currently, there is a lack of data to identify the behavioral determinants of low uptake. In collaboration with NMCP, it is decided to not use the FY 2022 funds for research on this topic, but to prioritize first the availability of services and commodities, including the distribution of SBC messages.

Table A-22. Facilitators and barriers to prompt care-seeking for fever

Behavior	Key Facilitators	Key Barriers	Knowledge Gaps
Prompt care-seeking for fever	Positive attitudes among community members and caregivers toward CHWs (relais communitaires): Two recent surveys that include data on community exposure to messages during the 2020 SMC campaign indicate that health workers and religious leaders are important sources of information.	• Poor access to care among febrile individuals due to lack of transportation. • Negative perceptions of CSIs. • Coincident timing of economic hardship, malnutrition, and high malaria transmission season in Niger.[36]	• What social norms exist around seeking care for young children? • No data measuring perceptions and anticipation of quality of care and availability of diagnostics and treatment (from health workers and/or at facilities). • No data measuring the contributions of environmental vs. behavioral issues driving delays in care-seeking.

Key Question 2b

For early and frequent antenatal attendance, what gaps exist in understanding the barriers to the adoption and maintenance of malaria prevention and treatment behaviors?

[36] Malaria and malnutrition: Niger's twin crisis. MSF report. 2013.

Supporting Data

Table A-23. Facilitators and barriers to early and frequent ANC attendance

Behavior	Key Facilitators	Key Barriers	Knowledge Gaps
Early and frequent antenatal attendance	Social support from husbands	• Availability of services. • Delayed first ANC visit, limiting the number of potential ANC visits (and doses of IPTp) from which pregnant women could benefit. • Environmental barriers pregnant women face reaching health facilities that are few and far from most rural residents.[37,38]	• Reasons for the gap between ANC attendance and IPTp. • How to encourage first trimester visits when cultural beliefs encourage keeping pregnancies secret. • Why women do not attend ANC more frequently.

Key Question 2c

For increased ITN use, what gaps exist in understanding the barriers to the adoption and maintenance of malaria prevention and treatment behaviors?

Supporting Data

Table A-24. Facilitators and barriers to increased ITN use

Behavior	Key Facilitators	Key Barriers	Knowledge Gaps
Increased ITN use	Acceptance of ITN	Improper care of ITN	• Why are only 55% of women receiving nets on their first ANC visit? • Behavioral determinants of ITN use, ITN care, and repurposing and disposal. • Data on ITN hanging and use.

[37] Bedford, J.K., & Sharkey, A.B. Local barriers and solutions to improve care-seeking for childhood pneumonia, diarrhoea and malaria in Kenya, Nigeria and Niger: A qualitative study. PLoS One. 2014;9:e100038. doi: 10.1371/journal.pone.0100038

[38] Blanford, J.I., Kumar, S., Luo, W., & MacEachren, A.M. It's a long, long walk: Accessibility to hospitals, maternity, and integrated health centers in Niger. Int J Health Geogr. 2012 Jun 27;11:24. doi: 10.1186/1476-072X-11-24.

Key Question 3

What is the country's capacity to design, implement, and monitor SBC interventions at the national and subnational level?

Supporting Data

At the national level, the NMCP's information, education, and communication unit would benefit from organizational capacity-building and at the subnational level; regional communicators should be more involved in the design, implementation, monitoring, and evaluation of SBC activities. To achieve this, establishing stronger links and mechanisms of support for subnational government and nongovernment partners working in malaria SBC will be necessary.

Conclusions for SBC Investments

PMI will continue to support SBC efforts to encourage the identified priority behaviors concerning prompt care-seeking for fever, prompt and frequent ANC visits, increased ITN use, and participation in the SMC campaign, in particular the adherence to the second and third dose of the medication. PMI will support the SBC TWG and the M&E for the SBC approach. PMI will look into new and innovative channels for material dissemination.

PMI is not planning to use the FY 2022 funds for implementing formative research or program evaluation. The 2021 MIS will address some of the identified knowledge gaps. Before the MIS results are available, the community networks will be leveraged to collect data on the uptake of malaria interventions. Due to overall budget constraints and the need to prioritize life-saving interventions, PMI proposes to streamline SBC activities with FY 2022 funds to focus on the highest priority behaviors with cost-effective approaches that leverage existing platforms. With the perspective of a new bilateral partner, it is hoped that FY 2023 funding could support needed formative research to address remaining knowledge gaps.

Please see FY 2022 PMI budget tables for a detailed list of proposed activities with FY 2022 funding.

3.5. OTHER HEALTH SYSTEMS STRENGTHENING

NMCP Objective

The MOH calls for the universal and equitable access of quality health services by the population, including an integrated community health system. The GON has endorsed a compact with development partners, which outlines a process for working collaboratively in the health sector. In addition, the MOH has designed a National Health Development Plan supported by a sector-wide approach to harmonize and align donor funds with national budget allocations.

NMCP Approach

The National Malaria Strategy calls for case management of malaria at the household level delivered by CHWs. Ideally, this approach would be part of an integrated iCCM intervention package focused on malaria, pneumonia, diarrhea, and malnutrition, and supported by SBC communication interventions. The community health approach is a key strategy to reach the 50 percent of the population without ready access to health facilities in the country.

PMI Objective in Support of NMCP

There is a clear need for HSS in Niger on all levels and aspects of the health system. This is a priority for PMI because it will not only help for the fight against malaria, but will also improve the general health of the population to increase access to healthcare and medication. In 2018, PMI assessed the organizational capacity of the NMCP to coordinate the implementation, oversight, and monitoring of their strategic plan to achieve set objectives and goals for malaria control. In the past years, PMI supported the commodity management strengthening system at the central level by strengthening the quantification methods and supply chains for essential malaria commodities and also developed the capacity for entomological monitoring. On the operational level, the availability of key health services was expanded in the two target districts of Dosso and Tahoua by building networks of trained CHWs to implement ICCM and by improving the quality of facility-based health services, including capacity for effective malaria diagnosis and treatment. In addition, through TA and the three-month FETP program, PMI supported strengthening the capacity of NMCP staff, a regional malaria focus person, and district level staff who collect the malaria data to collect quality data to use DHIS2, to use data for decision-making, and to make reports.

PMI-Supported Recent Progress (CY 2020)

In the progress reported in the sections above, PMI has also supported the development of the strategic plan for the frontline FETP program.

PMI-Supported Planned Activities (CY 2021)

In CY 2021, the frontline FETP program, implemented by the epidemiology and surveillance division (DSRE) of the MOH, will be operational. This division is currently engaged in the regional advanced FETP program. PMI will support the development of a work plan, adaptation of the training materials, training of trainers, and the implementation of the first cohorts of 25 from MOH, including staff from the NMCP and the two PMI focus regions (e.g., data managers and district medical doctors). The training materials developed by CDC will be adapted to the context and will include malaria examples. PMI is working with CDC Atlanta and Global Fund to support a long-term consultant who would support the FETP program, which is endorsed by WHO Niger.

Key Goal

Key Question 1

PMI/Niger works to reduce the burden of malaria while strengthening the MOH's health systems to sustain malaria control. The goal is to reduce malaria related outpatient visits and hospital admissions to allow overstretched health workers to concentrate on managing other important childhood illnesses, such as pneumonia and diarrhea.

In addition to providing support to malaria-specific activities, PMI/Niger helps build national capacity in a variety of cross-cutting areas to ensure that the MOH possess appropriately-skilled human resources and infrastructure to plan, implement, and monitor progress of their malaria control activities. PMI/Niger contributes to the strengthening of key health system building blocks, including the following:

- Service delivery: Improving service delivery by integrating malaria-prevention and treatment activities with other disease control and maternal and child health programs at all levels, including community.
- Health workforce: Building MOH's managerial and leadership capacity for malaria control at national, regional, and district levels, and supporting integrated training and supportive supervision for healthcare workers in sick child and ANC.
- Health information systems, including via DHIS2 implementation and the FETP program.
- Access to essential medicines and commodities: improving forecasting, procurement, quality control, storage, and distribution of malaria commodities such as insecticide-treated nets, artemisinin-based combination therapies and rapid diagnostic tests.
- Leadership/governance: Mentoring and coaching to strengthen management and oversight of malaria program implementation.

Supporting Data

No additional supporting data available beyond the information mentioned above.

Conclusions for Additional Health Systems Strengthening Investments

Although this is a priority for PMI, funding gaps will force PMI to stop its support to FETP in MOP 2022.

Please see FY 2022 PMI budget tables for a detailed list of proposed activities with FY 2022 funding.