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Zimbabwe

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 the 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

1PL	First-party logistics
ACT	Artemisinin-based combination therapy
AL	Artemether-lumefantrine
ANC	Antenatal care
API	Annual parasite index
ASAQ	Artesunate-amodiaquine
BMGF	Bill & Melinda Gates Foundation
CAC	Community Action Cycle
CDC	U.S. Centers for Disease Control and Prevention
CHAI	Clinton Health Access Initiative
CM	Case management
CY	Calendar year
DHIS	District Health Information Software 2
DHS	Demographic and Health Survey
DPS	Directorate of Pharmaceutical Services
DQA	Data quality assessment
EHT	Environmental health technician
eLMIS	Electronic Logistics Management Information System
EPI	Expanded Program on Immunization
EUV	End-Use Verification Survey
FY	Fiscal year
Global Fund	Global Fund to Fight AIDS, Tuberculosis, and Malaria
GOZ	Government of Zimbabwe
HMIS	Health Management Information System
HSS	Health systems strengthening
IPTp	Intermittent preventive treatment for pregnant women
IRS	Indoor residual spraying
ITN	Insecticide-treated mosquito net
LSM	Larval source management
MCS	Malaria Communications Strategy
MICS	Multiple Indicator Cluster Survey
MIP	Malaria in pregnancy
MIS	Malaria Indicator Survey
MOHCC	Ministry of Health and Child Care
MOP	Malaria Operational Plan
NIHR	National Institute of Health Research
NMCESP	National Malaria Control and Elimination Strategic Plan
NMCP	National Malaria Control Program
OPD	Outpatient department
OR	Operational research
PE	Program evaluation

PPE	Personal protective equipment
PMI	U.S. President's Malaria Initiative
RAS	Rectal artesunate suppository
RDT	Rapid diagnostic test
SBC	Social and behavior change
SHC	School health coordinator
SM&E	Surveillance, monitoring, and evaluation
SMC	Seasonal malaria chemoprevention
SP	Sulfadoxine-pyrimethamine
SPAQ	Sulfadoxine-pyrimethamine + amodiaquine
TA	Technical assistance
TES	Therapeutic efficacy study
USAID	United States Agency for International Development
VHW	Village health worker
WHO	World Health Organization
ZAPIM	Zimbabwe Assistance Program in Malaria

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 Zimbabwe to end malaria. PMI has been a proud partner of Zimbabwe since 2011, helping to decrease child death rates by 13 percent and limiting malaria incidence to 32 per 1,000 cases in 2020 through investments totaling almost $146.5 million. The proposed PMI fiscal year (FY) 2022 budget for Zimbabwe is $14 million.

This Malaria Operational Plan (MOP) outlines planned PMI activities in Zimbabwe 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 Zimbabwe (GOZ) as well as other donors and partners.

Zimbabwe experiences seasonal and geographic variation in malaria transmission intensity, with the majority of transmission occurring during or just after the November to April rainy season. Malaria transmission is higher in the northern and eastern border regions, with more limited transmission in the central and south-western portions of the country. At the national level, annual incidence (cases per 1,000 population) has decreased substantially over the last 15 years, from 153 in 2004 to 32 in 2020. However, much of this progress occurred prior to 2011. In the subsequent years, a pattern of cyclical increases and decreases in malaria incidence has emerged (range 19 to 39). *Plasmodium falciparum* accounts for more than 98 percent of all reported malaria cases, with *Plasmodium ovale* and *Plasmodium malariae* accounting for the remainder. PMI-supported entomological monitoring has identified *Anopheles gambiae* s.l. and *Anopheles funestus* s.l. as the principal malaria vectors.

The vision of the Zimbabwe 2021–2025 *National Malaria Control and Elimination Strategic Plan* is to achieve a malaria-free Zimbabwe, with the primary goal of reducing malaria incidence to 17 cases per 1,000 population and malaria deaths by at least 90 percent by 2025. As one of two primary malaria donors in Zimbabwe, PMI coordinates closely with the NMCP and Global Fund to ensure complementarity of support for Zimbabwe's malaria prevention and control efforts.

PMI Zimbabwe has recently awarded a new service delivery project that will build upon the achievements and lessons learned from the past five years of implementation. This project will be responsible for insecticide-treated net (ITN) distribution, case management strengthening, drug-based prevention, social behavior change (SBC), and surveillance, monitoring, and evaluation (SM&E) under MOP 2022. The specific activities and geographic targeting within these programmatic areas will be determined in consultation with the incoming service delivery partner, the NMCP, and other stakeholders, taking into consideration Global Fund resources.

PMI will support investments in the following intervention areas with FY 2022 funds:

- Vector Control
  - Entomological monitoring: PMI will continue to invest in entomological monitoring to support NMCP's vector control program, with a focus on ensuring data is available to assess spray quality and

efficacy, insecticide selection for indoor residual spraying (IRS) and ITNs, and monitoring of vector bionomics. PMI will continue to support the operations of the molecular laboratory and insectary already established at Africa University and will target a portion of entomological monitoring support toward enhancing the capacity for entomological monitoring and foci investigations in elimination areas.

  - ITNs and IRS: PMI has historically supported the procurement and distribution of ITNs and the direct implementation of IRS in selected districts. In line with the NMCP's overarching vector control strategy and taking into consideration available resources under the Global Fund 2021–2023 grant, PMI will fully transition away from IRS support in favor of the procurement and distribution of additional ITNs (a total of 1.3 million under MOP 2022) and promotion of their use. PMI will also direct an additional portion of the historical IRS funding to improve the quality of malaria case management, and strengthen SBC and SM&E implementation (described in the following sections). This transition will begin with MOP 2021 and continue under MOP 2022.

- Human Health
  - Case management (CM): PMI intends to increase support for a comprehensive package of CM strengthening activities, which are designed to improve the quality and availability of services at both the facility and community levels. Particular emphasis will be placed on strengthening community CM, given the increasing proportion of cases being reported by village health workers (VHWs) in recent years. A portion of this funding will be targeted to enhancing CM in selected elimination areas. PMI will also support procurement of approximately 1,000,000 rapid diagnostic tests to cover the estimated need in 2023. The national quantification projects that Global Fund 2021–2023 grant resources will be adequate to cover the estimated need for other CM commodities.
  - Drug-based prevention: PMI also intends to expand support for activities designed to improve the availability and quality of IPTp services through the antenatal care system. PMI plans to procure and distribute approximately 800,000 sulphadoxine-pyrimethamine doses to cover the estimated need in 2023.

- Cross-cutting and Other Health Systems
  - Supply Chain: PMI will continue to support the national supply chain management system, including technical assistance for forecasting and supply planning, stock management, supply chain strategy, and rollout of the electronic Logistics Management Information System (eLMIS). PMI will also continue to provide operational support for the Zimbabwe Assisted Pull System and for the implementation of biannual end use verification exercises. Funding is expected to remain fairly consistent, with ongoing focus on ensuring data visibility and quality, as well as reducing the discrepancy between commodity consumption and cases.
  - Surveillance, monitoring, and evaluation (SM&E): PMI plans to expand support for malaria SM&E at the national level and in selected high-burden and elimination districts, to ensure that high-quality and timely data are available to inform programmatic decision-making. Particular areas of focus will include strengthening of Health Management Information System (HMIS) data collection and quality, strengthening routine surveillance in elimination areas, enhancing epidemic preparedness and response capacity, and improving capacity for data analysis and use at all levels of the health system.
  - Operational Research (OR): Given that no structured approach exists in Zimbabwe for identifying and prioritizing OR activities, PMI will support the development of a malaria research agenda using prior year funding. PMI does not intend to fund any OR activities using MOP 2022 funds.

- Social Behavior Change: PMI plans to substantially increase funding for SBC to ensure critical gaps can be addressed in this chronically under-funded area. PMI funds will support improvement in key prioritized behaviors, including early healthcare-seeking, consistent ITN use, and enhanced intermittent preventive treatment for pregnant women (IPTp) uptake. The majority of PMI's resources will be targeted to selected high-burden districts with a modest amount targeted for SBC activities in elimination areas. Specific activities will be determined based on the outcome of a rapid assessment to be conducted by the incoming service delivery bilateral partner.
- Health Systems Strengthening (HSS): PMI does not intend to fund any specific HSS activities not already included in the prior sections.

I. 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 Zimbabwe to end malaria. PMI has been a proud partner of Zimbabwe since 2011, helping to decrease child death rates by 13 percent and limiting malaria incidence to 32 per 1,000 cases in 2020 through investments totaling almost $146.5 million.

The proposed PMI fiscal year (FY) 2022 budget for Zimbabwe is $14 million. This Malaria Operational Plan (MOP) outlines planned PMI activities in Zimbabwe 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 Zimbabwe (GOZ) as well as other donors and partners.

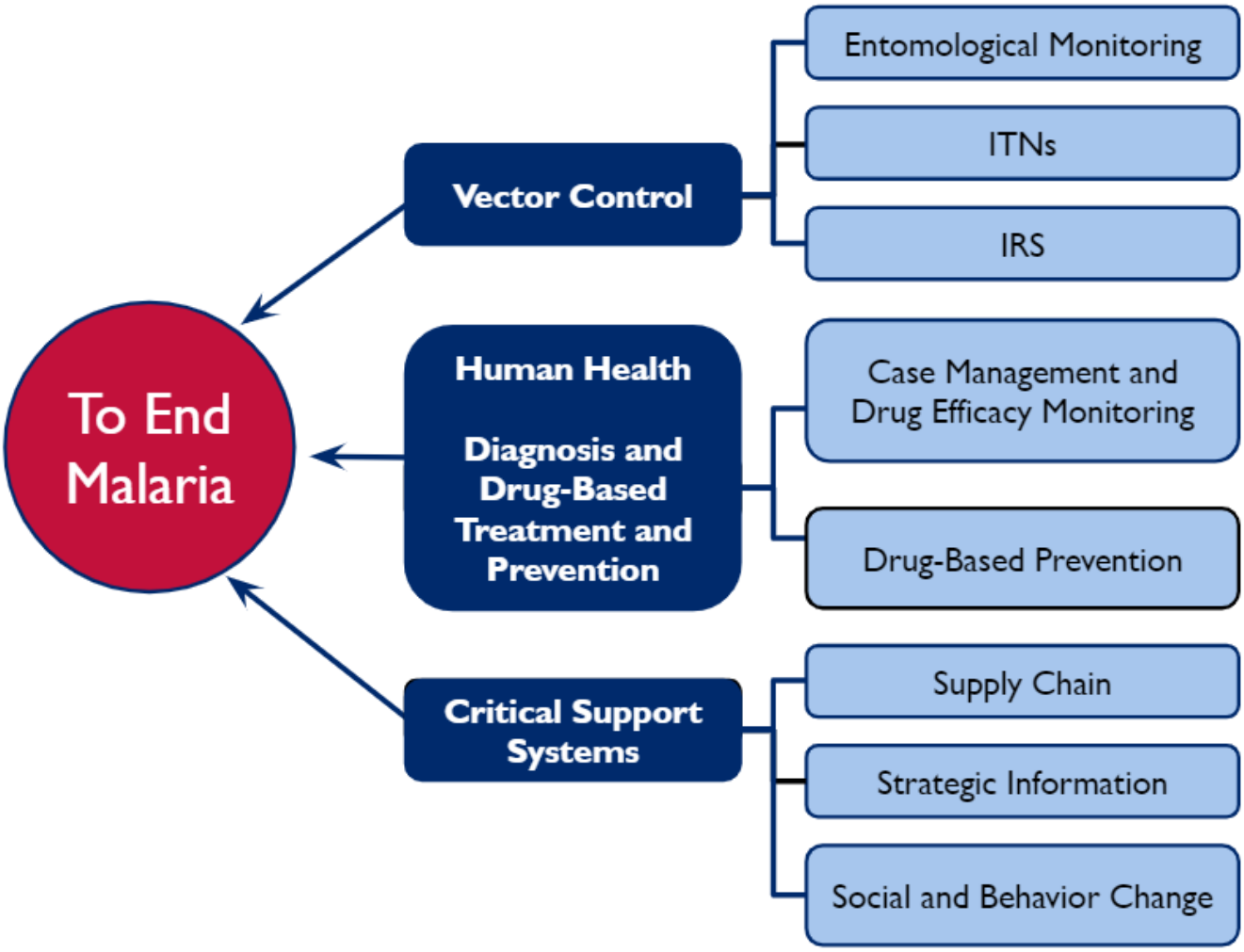
Zimbabwe at a Glance

- **Geography:** Zimbabwe is a landlocked country in southern Africa and is bordered by Zambia to the north, Mozambique to the north and east, South Africa to the south, and Botswana to the west. Zimbabwe is divided by a central watershed lying higher than 1200 meters above sea level, which is flanked to the north, east, and south by lower-lying areas.
- **Climate and Malaria Transmission Seasonality:** Zimbabwe's climate is predominantly subtropical but varies by altitude. The rainy season typically occurs during the summer months, between November and April. This is followed by a cooler, dry season from May through August, with warmer, dry weather in September and October. Annual rainfall varies significantly by agro-ecological zones, ranging from 450 mm to over 1,000 mm.
- **Population in 2021:** 14,293,639 (2012 Zimbabwe Census Projections)
- **Population at Risk of Malaria:** 9,648,206 (National Malaria Control and Elimination Strategic Plan [NMCESP] 2021–2025)
- **Principal Malaria Parasites:** *Plasmodium falciparum* (NMCESP 2021–2025)
- **Principal Malaria Vectors:** *Anopheles funestus* s.l. and *Anopheles gambiae* s.l. (PMI-funded entomological monitoring)
- **Malaria Case Incidence per 1,000 Population:** 32 (Zimbabwe District Health Information Software 2 [DHIS2], 2020)
- **Under-Five Mortality Rate:** 73 deaths per 1,000 live births (2019 Multiple Indicator Cluster Survey [MICS])
- **World Bank Income Classification and Gross Domestic Product (GDP):** Lower-middle income (World Bank 2021 classification) and $21.4 billion (World Bank 2018 data)
- **Government Health Budget for 2021:** $684 million, 13% of the national budget (2021 National Budget Statement, Ministry of Finance and Economic Development)
- **Trafficking in Persons Designations, 2018–2020:** Tier 2 (U.S. Department of State, 2018)

- **Malaria Funding and Program Support Partners Include:**
  - U.S. President's Malaria Initiative
  - Global Fund to Fight AIDS, Tuberculosis, and Malaria (Global Fund)
  - World Health Organization (WHO)
  - Malaria Elimination 8
  - Bill & Melinda Gates Foundation (BMGF)
  - Clinton Health Access Initiative (CHAI)
  - Isdell:Flowers Cross Border Malaria Initiative
  - United Methodist Church
  - Wild4Life
- **PMI Support of National Malaria Control Strategy:** As one of two primary malaria donors in Zimbabwe, PMI coordinates closely with the NMCP and the Global Fund to ensure complementarity of support for implementation of the *National Malaria Control and Elimination Strategic Plan* (NMCESP) 2021–2025. PMI provides financial and technical support for the full range of PMI priority intervention areas. PMI's provincial and district-level support has historically targeted higher-burdened areas located in the northern and eastern parts of the country. However, Zimbabwe experiences the full spectrum of malaria transmission, including areas with very limited transmission in the central plateau and south-western portions of the country. Beginning in FY 2018, PMI initiated limited support for NMCP-driven elimination activities in these areas. (See III. Overview of PMI's support of Zimbabwe's Malaria Control Strategy for additional details.)
- **PMI Investments:** Zimbabwe began implementation as a PMI-focus country in FY 2011. The proposed FY 2022 PMI budget for Zimbabwe is $14 million; this brings the total PMI investment to nearly $174.5 million.

PMI organizes its investments around the activities below, in line with the Zimbabwe NMCESP 2021–2025.

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



Building and strengthening the capacity of Zimbabwe'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 will continue to rely on and engage with local partners, such as Africa University, encourage existing implementing partners to expand their work with local partners, and attempt to directly expand PMI's local partner base with future procurement actions. Finally, PMI will explore opportunities for private sector partnerships. Historically, these opportunities have been limited, given the country's focus on government leadership and implementation within the health sector, as well as the substantial economic roadblocks that have

[1]A number of actions are cross-cutting in nature. For example, social and behavioral change (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.

limited the development and sustainability of the private healthcare system. However, this is an area of interest within Zimbabwe and PMI will continue to work with the NMCP and malaria stakeholders to increase the level of public–private partnership.

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, as PMI understands it will take time for Zimbabwe to fully finance its development priorities, PMI will work with other partners (e.g., Global Fund) to jointly track Zimbabwe's funding commitments across the malaria portfolio.

In Zimbabwe, social, political, and economic hardships have increased over recent years and continue to persist. The operating environment is extremely challenging for PMI, NMCP, and implementing partners due to continued economic deterioration and frequent political changes and uncertainties. This already difficult situation was complicated by the COVID-19 pandemic and associated mitigation measures including long-term restrictions imposed to curtail virus spread. The pandemic worsened an already deteriorating human resources situation within the health sector, with repeated and prolonged healthcare worker strikes over remuneration issues and lack of provision of personal protective equipment (PPE). These human resource issues resulted in substantial and widespread declines in access to care in Zimbabwe. Despite all of these challenges, NMCP remains dedicated to its goals and optimistic that the situation will improve and that the malaria burden in Zimbabwe will continue to shrink.

II. MALARIA SITUATION AND PROGRESS

Zimbabwe experiences a wide spectrum of malaria transmission intensity, with seasonal and geographic variation that corresponds closely with the country's rainfall patterns and topography. Although transmission is perennial in malarious areas, seasonal increases occur annually, with the majority of transmission occurring during or just after the November to April rainy season. Geographically, Zimbabwe is divided by a central watershed lying higher than 1,200 meters above sea level, which is flanked to the north and south by low-lying areas. This variability in elevation (and therefore temperature), combined with geographic variability in average annual rainfall, results in higher malaria transmission in the northern and eastern border regions, with more limited transmission in the central and south-western portions of the country. This pattern has remained consistent over recent years, with the three northern and eastern provinces of Mashonaland Central, Mashonaland North, and Manicaland accounting for approximately 80 percent of the reported annual malaria case load. At the national level, annual incidence (cases per 1,000 population) has decreased substantially over the last 15 years, from 153 in 2004 to 32 in 2020. However, much of this progress occurred prior to 2011. In the subsequent years, a pattern of cyclical increases and decreases in malaria incidence has emerged (range: 19 to 39), which appears to be primarily associated with annual variation in rainfall intensity (Zimbabwe DHIS2). According to the 2016 Malaria Indicator Survey

(MIS), parasite prevalence by microscopy was 0.2 percent for children under five years of age, 0.2 percent for children 5 to 14 years of age, and 0.3 percent for individuals over 14 years of age. From 2012 to 2020, the percentage of total reported malaria cases that occurred among children under five years of age ranged from approximately 9 percent to 16 percent (Zimbabwe DHIS2). *Plasmodium falciparum* accounts for more than 98 percent of all reported malaria cases, with *Plasmodium ovale* and *Plasmodium malariae* accounting for the remainder. PMI-supported entomological monitoring has identified *Anopheles gambiae* s.l. and *Anopheles*

funestus s.l. as the principal malaria vectors, with one or the other predominating, depending on the site monitored. *An. gambiae* s.l. remains susceptible to most insecticides at most sites but resistance to DDT and alpha-cypermethrin has been noted at selected sites in recent years. *An. gambiae* s.l. was also susceptible to clothianidin. It has proven difficult to collect sufficient *An. funestus* larvae to conduct insecticide resistance assays. However, testing of offspring of adult females has revealed full susceptibility to DDT, the insecticide currently being used for indoor residual spraying (IRS) by the NMCP in the province where *An. funestus* appears to be the predominant vector.

Figure 2. Trends in malaria prevalence

Children 6 to 59 months of age who tested positive for malaria by microscopy/RDT [MIS/2012 and MIS/2016]

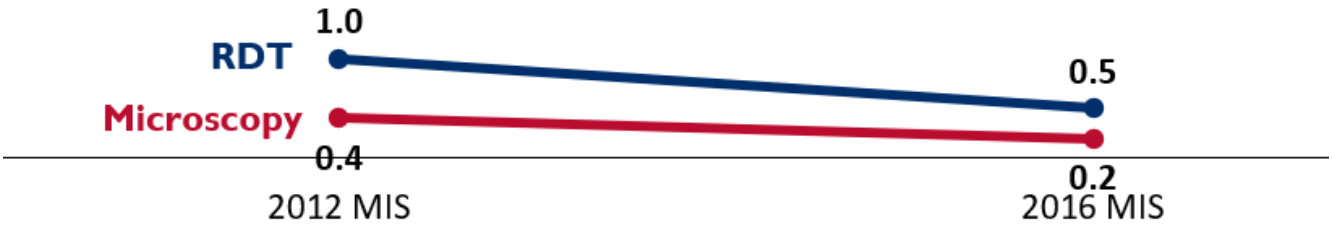


Figure 3. Trends in malaria case incidence (Zimbabwe HMIS/DHIS2)

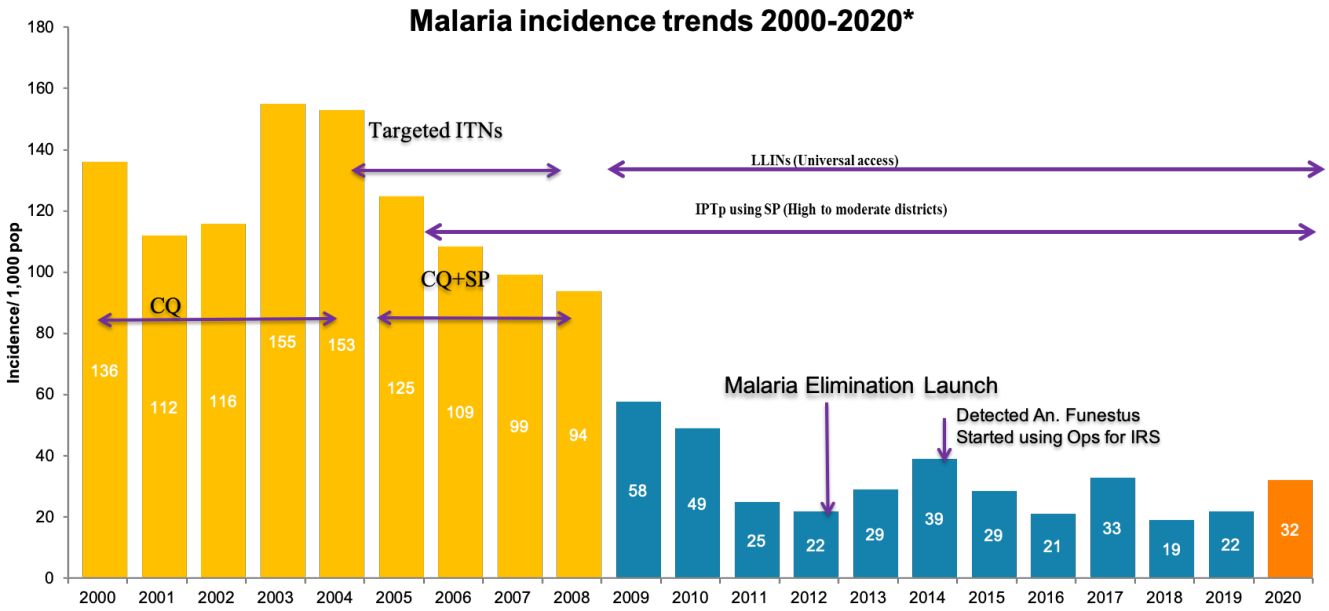
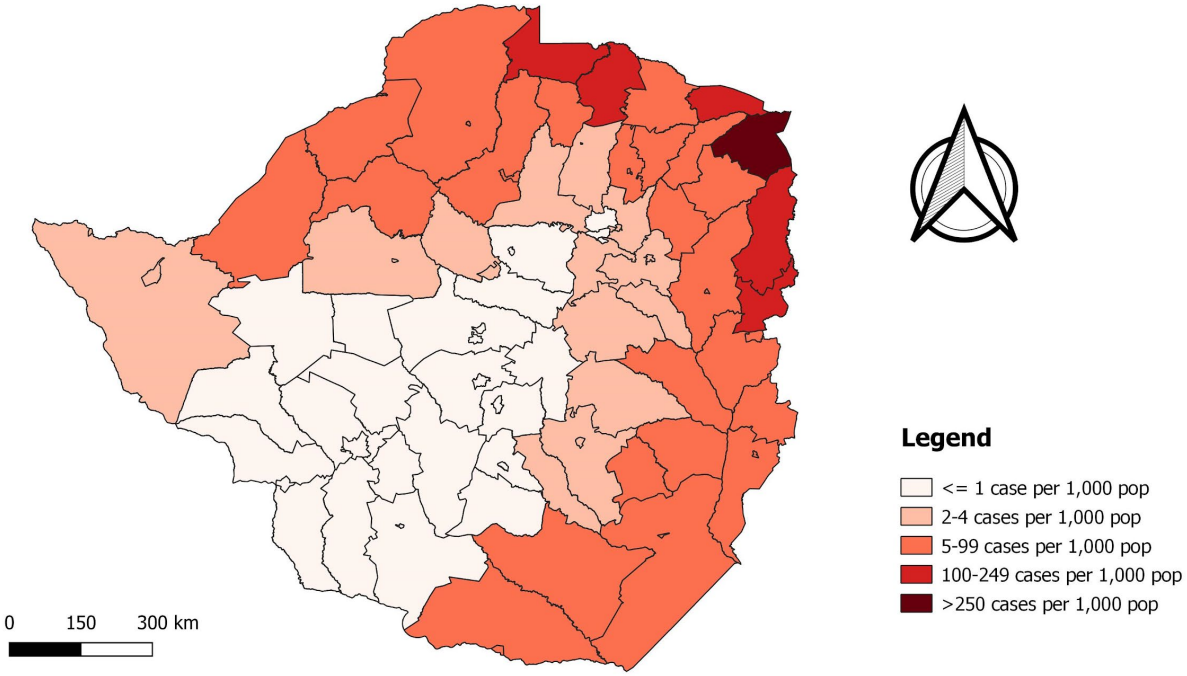


Figure 4 and Figure 5. Malaria case incidence by geographic area, 2019 and 2020 (Zimbabwe DHIS2)



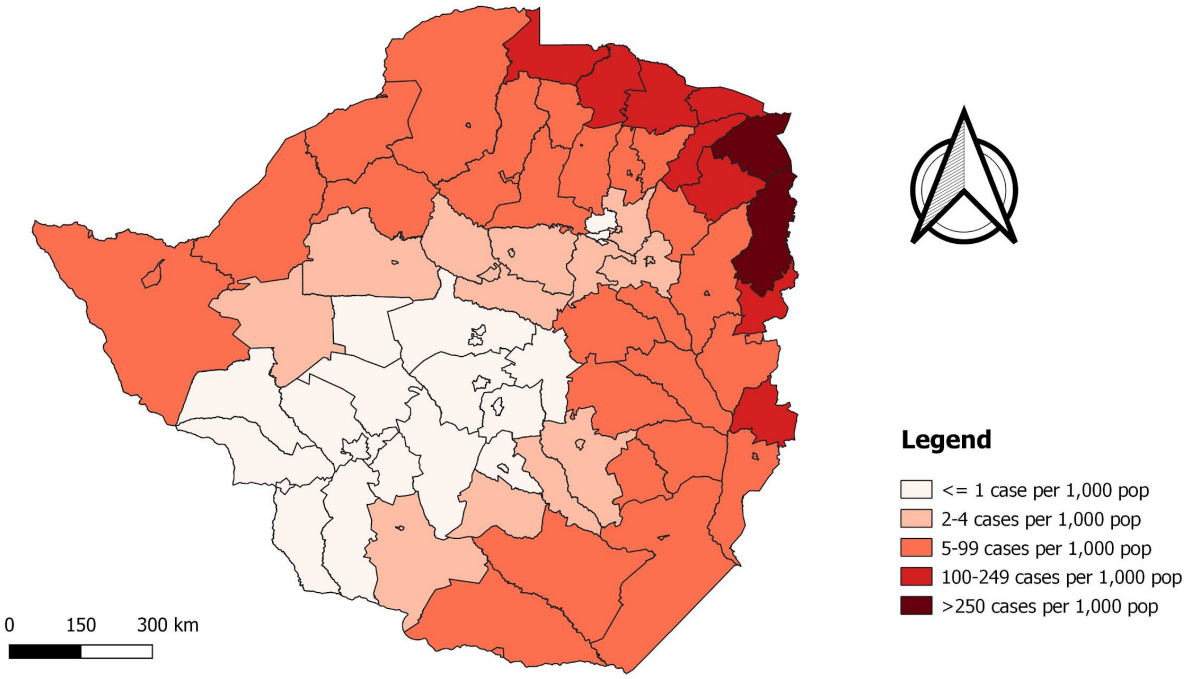


Table 1. Key indicators from demographic health surveys (DHS), malaria indicator surveys (MIS), and multiple indicator cluster surveys (MICS)*

Indicator	2010–2011 DHS	2012 MIS	2014 MICS	2015 DHS	2016 MIS	2019 MICS
% Households with at least one ITN	29	46	42	48	58	37
% Households with at least one ITN for every two people	12	n/a	21	26	51	18
% Population with access to an ITN[1]	22	n/a	10	43	42	27
% Population that slept under an ITN the previous night[1]	9	49	23	10	26	12
% Children under five years of age who slept under an ITN the previous night	10	58	27	9	33	15
% Pregnant women who slept under an ITN the previous night	10	n/a	26	6	25	n/a
% Children under five years of age with a fever in the last two weeks for whom advice or treatment was sought[2]	43	n/a	47	51	65	35
% Children under five years of age with a fever in the last two weeks who had a finger or heel stick	7	n/a	14	13	n/a	12
% Children receiving an artemisinin-based combination therapy (ACT) among children under five years of age with a fever in the last two weeks who received any antimalarial drug	49	n/a	79	n/a	n/a	n/a
% Women who received two or more doses of IPTp during their last pregnancy in the last two years[3]	8	35	13	n/a	36	26
% Women who received three or more doses of IPTp during their last pregnancy in the last two years	n/a	n/a	6	n/a	20	13
Under-five years mortality rate per 1,000 live births	84	n/a	75	69	n/a	73
% Children under five years of age with parasitemia by microscopy	n/a	0.4	n/a	n/a	0.2	n/a
% Children under five years of age with parasitemia by RDT	n/a	1.0	n/a	n/a	0.5	n/a
% Children under five years of age with severe anemia (Hb<8gm/dl)	4	3	n/a	2	n/a	n/a

*DHS/MICS surveys are generally fielded during the dry season, whereas MIS surveys are deliberately fielded during the high-transmission season, which should be taken into consideration when interpreting these indicators. The sampling frames and data analysis methodologies for the 2012 and 2016 MIS differed substantially and comparisons should be made with caution. IPTp is targeted to only 26 of 62 districts and ITNs are distributed in only selected wards within selected districts. The sampling methodology of the DHS and MICS surveys (and in some instances the MIS) are not always adapted to these circumstances, likely resulting in underestimation of the coverage for these interventions.

[1]Data presented from the 2010 DHS, 2015 DHS, and 2016 MIS for these two ITN indicators reflect the recalculated figures presented in the unpublished report *A Secondary Analysis of the Zimbabwe Malaria Indicator Survey 2016 with Respect to ITN Ownership and Use* completed with PMI support in coordination with the Zimbabwe NMCP. As a result, these figures may differ from those in the original publications.
[2]Note that this indicator has been recalculated according to the newest definition, care or treatment from any source excluding traditional practitioners, wherever possible.
[3]Note that this indicator has been recalculated according to the newest definition, at least the specified number of doses of sulfadoxine-pyrimethamine (SP)/Fansidar from any source, wherever possible.

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

Indicator	2016	2017	2018	2019	2020
# Suspect malaria cases[1]	1,245,217	1,583,047	1,325,711	1,323,284	1,389,065
# Patients receiving diagnostic test for malaria[2]	1,227,131	1,536,353	1,291,530	1,291,368	1,356,433
Total # malaria cases[3]	280,842	468,759	264,752	308,016	447,381
# Confirmed cases[4]	280,842	468,759	264,752	308,016	447,381
# Presumed cases[5]	N/A	N/A	N/A	N/A	N/A
% Malaria cases confirmed[6]	N/A	N/A	N/A	N/A	N/A
Test positivity rate (TPR)[7]	23%	31%	21%	24%	32%
Total # under five years of age malaria cases[8]	25,969	57,243	23,814	42,506	53,686
% Cases in children under five years of age [9]	9.2	12.2	8.9	13.8	12.0
Total # severe cases[10]	N/A	N/A	N/A	N/A	N/A
Total # malaria deaths[11]	235	420	236	266	400
# Facilities reporting[12]	1,758	1,758	1,758	1,754	1,776
% Data completeness[13]	94.9	95.6	97.2	98.3	97.5

1. Number of patients presenting with signs or symptoms possibly due to malaria (e.g., fever). 2. Rapid diagnostic test (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; this figure is not available through the Zimbabwe DHIS2 because the Ministry of Health and Child Care (MOHCC) does not collect data on clinically-diagnosed patients. 6. # confirmed cases divided by total # cases; this figure is not available through the Zimbabwe DHIS2. 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. At this time, Zimbabwe is still unable to report severe malaria cases due to continued issues with the Inpatient Morbidity and Mortality Information System. 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 ZIMBABWE'S MALARIA STRATEGY

The vision of the Zimbabwe 2021–2025 NMCESP is to achieve a malaria-free Zimbabwe, with the primary goal of reducing malaria incidence to 17 cases per 1,000 population and malaria deaths by at least 90 percent by 2025. To achieve this, the NMCP supports the following major intervention areas: vector control; malaria CM; malaria

in pregnancy (MIP), including intermittent preventive treatment in pregnancy (IPTp); social and behavior change (SBC); surveillance, monitoring, and evaluation (SM&E); malaria elimination; and malaria program management. These strategies and interventions are closely aligned with those prioritized by PMI. Notable exceptions include the NMCP's promotion and implementation of larval source management and personal protection measures against malaria vectors outside of the malaria elimination context and the national policy recommending pre-referral rectal artesunate for all age groups.

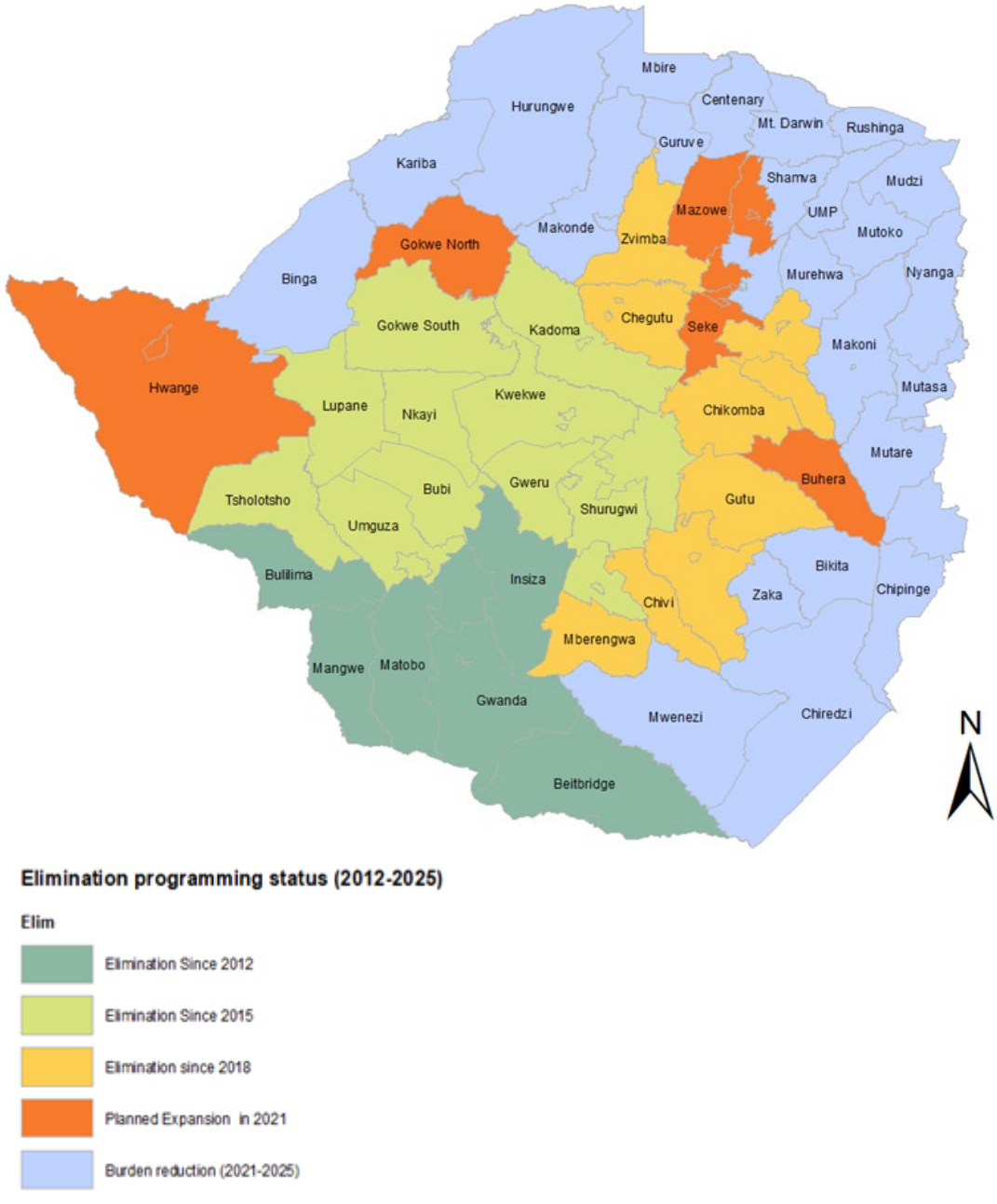
As one of two primary malaria donors in Zimbabwe, PMI coordinates closely with the NMCP and Global Fund to ensure complementarity of support for implementation of the 2021–2025 NMCESP. PMI provides financial and technical support for the full range of PMI priority intervention areas outlined in Figure 1 above. Portions of this support are directed to the central and national levels (e.g., technical assistance [TA] to central-level Ministry of Health and Child Care [MOHCC] staff, laboratory capacity-building, and procurement of malaria commodities for nationwide distribution), while other components are targeted directly to the provincial, district, and community levels (e.g., aspects of malaria CM, SBC, and SM&E). The NMCP, while historically relying on the community to play an important role in malaria, has increased its focus on fortifying community-level capacity in malaria prevention and treatment in recent years. In a briefing to the MOP 2022 team, NMCP highlighted that village health workers (VHWs) continue to make a substantial contribution to the diagnosis and treatment of malaria cases, amounting to 44 percent of malaria cases nationally in 2020. Although there is substantial overlap between the general intervention areas funded by PMI and Global Fund, the targeting of specific activities is usually divided either geographically or by more detailed content areas. For instance, PMI and Global Fund both support insecticide-treated net (ITN) distribution but in different geographical areas, though there can be overlap depending on the ITN needs and procurement pipeline. PMI's support for service delivery strengthening is targeted to only a limited number of high-burden districts, with the remainder receiving support through Global Fund. One notable exception is that both PMI and Global Fund procure and distribute malaria CM commodities through Zimbabwe's national pooled supply chain management and distribution system.

Historically, PMI's provincial and district-level support has targeted higher-burdened areas located in the northern and eastern parts of the country. PMI has just finalized the award for a new bilateral service delivery partner. Through this partner, PMI intends to continue to target support to high-burden districts in northern and eastern portions of the country, potentially including districts from Mashonaland West, Mashonaland East, and Manicaland Province. However, the exact geographic scope for the interventions to be implemented under this award will be negotiated with the partner, NMCP, Global Fund, and other stakeholders, using epidemiologic evidence and taking into consideration the scope and location of the Global Fund-funded activities.

Under the leadership of NMCP, PMI support has contributed greatly to the overall reduction in malaria burden. As a result, PMI will continue to primarily direct resources to high-burdened areas. However, Zimbabwe experiences the full spectrum of malaria epidemiology, including areas with very limited transmission in the central plateau and south-western portions of the country. In 2012, NMCP initiated elimination activities for seven low-burden districts, which was subsequently expanded to a total of 20 districts by 2015. Under the 2016–2020 Zimbabwe *Malaria Strategic Plan*, the NMCP set an objective of implementing a package of elimination activities in 29 districts and achieving malaria elimination in nine of these districts by 2020. The first goal was achieved by 2019 and 29 districts currently are implementing a package of elimination interventions, which includes the addition of low-dose primaquine for malaria CM, malaria case investigation and classification, and foci investigation and classification. A case-based surveillance system was operationalized with support from Clinton

Health Access Initiative (CHAI) in these districts. Under The 2021–2025 NMCESP, NMCP intends to expand the number of districts implementing elimination activities to 36 and achieve zero local malaria transmission in 20 of those districts. Specific strategies to progress toward elimination include expanding the capacity for malaria elimination, implementing malaria elimination activities, assessing readiness and building capacity in new districts targeted for malaria elimination, preventing reintroduction of malaria in cleared foci, and exploring innovative mechanisms to accelerate malaria elimination.

Figure 6. Zimbabwe districts implementing elimination activities over time and districts targeted for elimination according to the 2021–2025 NMCESP



In FY 2018, PMI provided initial funding to support NMCP's malaria elimination efforts in Zimbabwe and additional support was included in subsequent MOPs. PMI has worked closely with the NMCP and CHAI to identify areas of synergy and avoid duplication of effort. Currently, PMI is supporting Lupane District in Matabeleland North Province to enhance capacity of MOHCC staff to implement enhanced surveillance, foci response, foci mapping using geographic information system, and entomological investigation and response. Based on review of these efforts, PMI plans to expand the scope of support for malaria elimination activities. The geographic targeting and specific interventions to be implemented will be negotiated with PMI's incoming service delivery partner, NMCP, Global Fund, and other stakeholders, using epidemiologic evidence and taking into consideration the scope and location of the Global Fund-funded activities.

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 our 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 (FY). 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 in some countries. 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	Vector Control	Case Management	Drug-Based Prevention[1]	Supply Chain[2]	Monitoring, Evaluation & Research	Cross-cutting and HSS[3]	Total Per Funder
PMI	$6.8M	$2.9M	$0.0M	$1.3M	$1.9M	$2.1M	$15.0M
Global Fund	$10.5M	$1.6M	$0.0M	$1.1M	$0.3M	$2.5M	$16.0M
Total Per Category	$17.3M	$4.5M	$0.0M	$2.3M	$2.2M	$4.7M	$31.0M

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

Funder	Vector Control	Case Management	Drug-Based Prevention[1]	Supply Chain[2]	Monitoring, Evaluation & Research	Cross-cutting and HSS[3]	Total Per Funder
PMI	$7.0M	$3.2M	$0.1M	$1.2M	$0.8M	$2.7M	$15.0M
Global Fund	$6.8M	$1.8M	$0.0M		$0.7M	$7.7M	$17.0M
Total Per Category	$13.8M	$5.0M	$0.1M	$1.2M	$1.5M	$10.4M	$32.0M

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

Funder	Vector Control	Case Management	Drug-Based Prevention[1]	Supply Chain[2]	Monitoring, Evaluation & Research	Cross-cutting and HSS[3]	Total Per Funder
PMI	$6.6M	$2.3M		$1.3M	$0.7M	$3.1M	$14.0M
Global Fund	$12.1M	$2.9M	$0.0M		$2.2M	$6.7M	$23.9M
Total Per Category	$18.7M	$5.2M	$0.0M	$1.3M	$2.9M	$9.8M	$37.9M

1. Drug-based prevention, including seasonal malaria chemoprevention (SMC) and malaria in pregnancy (MIP) where applicable. 2. Covers management of in-country warehousing and distribution of malaria commodities, except for ITNs, which are separately captured under Vector Control. 3. HSS = health systems strengthening.

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

Funder	ITNs *Continuous Distribution*	ITNs *Mass Distribution*	IRS[1] *Insecticide*	ACTs	RDTs	Severe Malaria	SMC-Related	IPTp-Related	Total
PMI[2]	$1.8M		$3.8M	$0.7M	$0.5M	$0.1M			$6.8M
Global Fund[3]		$1.8M	$2.3M	$0.4M	$0.3M	$0.0M			$4.8M
Total	$1.8M	$1.8M	$6.1M	$1.1M	$0.8M	$0.1M	$0.0M	$0	$11.6M

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[2]	$2.0M	$1.3M	$2.2M	$0.6M	$0.5M				$6.5M
Global Fund[3]			$3.3M	$0.5M	$0.1M				$3.9M
Total	$2.0M	$1.3M	$5.5M	$1.0M	$0.6M	$0.0M	$0.0M	$0	$10.4M

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

Funder	ITNs *Continuous Distribu-tion*	ITNs *Mass Distribu-tion*	IRS[1] *Insecticide*	ACTs	RDTs	Severe Malaria	SMC-Related	IPTp-Related	Total
PMI[2]	$2.0M	$0.5M	$2.6M		$0.6M				$5.7M
Global Fund[3]			$2.7M	$0.7M	$0.5M				$3.9M
Total	$2.0M	$0.5M	$5.3M	$0.7M	$1.1M	$0.0M	$0.0M	$0	$9.6M

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. 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. 2. PMI commodity costs are fully loaded, including costs for the ex-works price of the commodity, quality control, freight, insurance, and customs. 3. Global Fund commodity costs in the table above only include ex-works commodity value; additional costs, including quality control, freight, insurance, and customs totaled 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 Zimbabwe 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

Ensuring protection of at least 85 percent of the population at risk for malaria with an appropriate malaria prevention intervention is a major objective under the 2021–2025 NMCESP. Specific strategies related to vector control include:

1. Targeted indoor residual house spraying.
2. ITN distribution to achieve universal coverage in targeted areas.
3. Treatment of identified, active breeding sites with an appropriate larvicide .
4. Promotion of personal protective measures.
5. Implementation of vector surveillance.

NMCP Approach

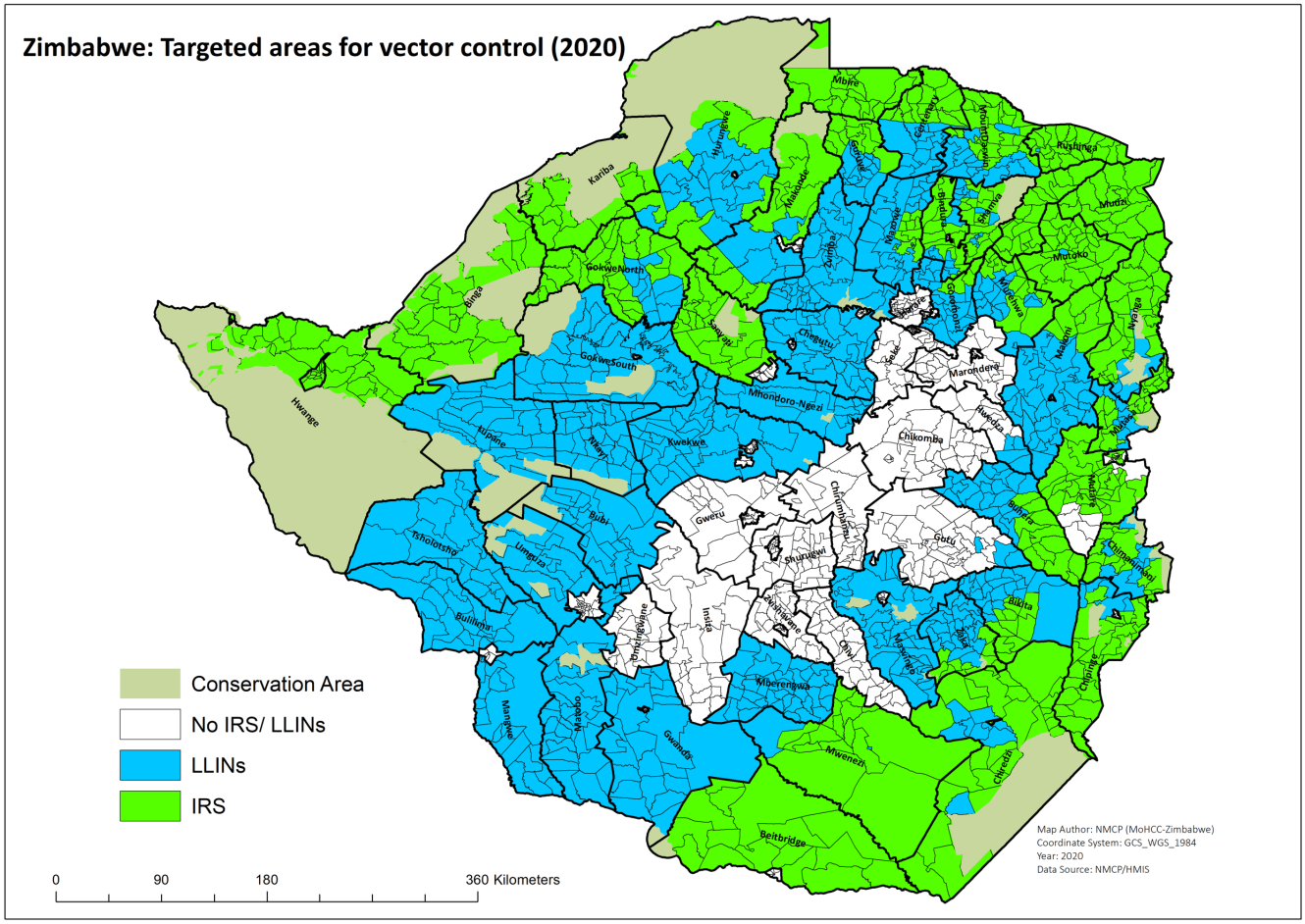
According to the 2021–2025 NMCESP, NMCP designates IRS and ITN distribution as the priority, core vector control interventions, with larval source management (LSM) and promotion of personal protective measures playing a complementary role.

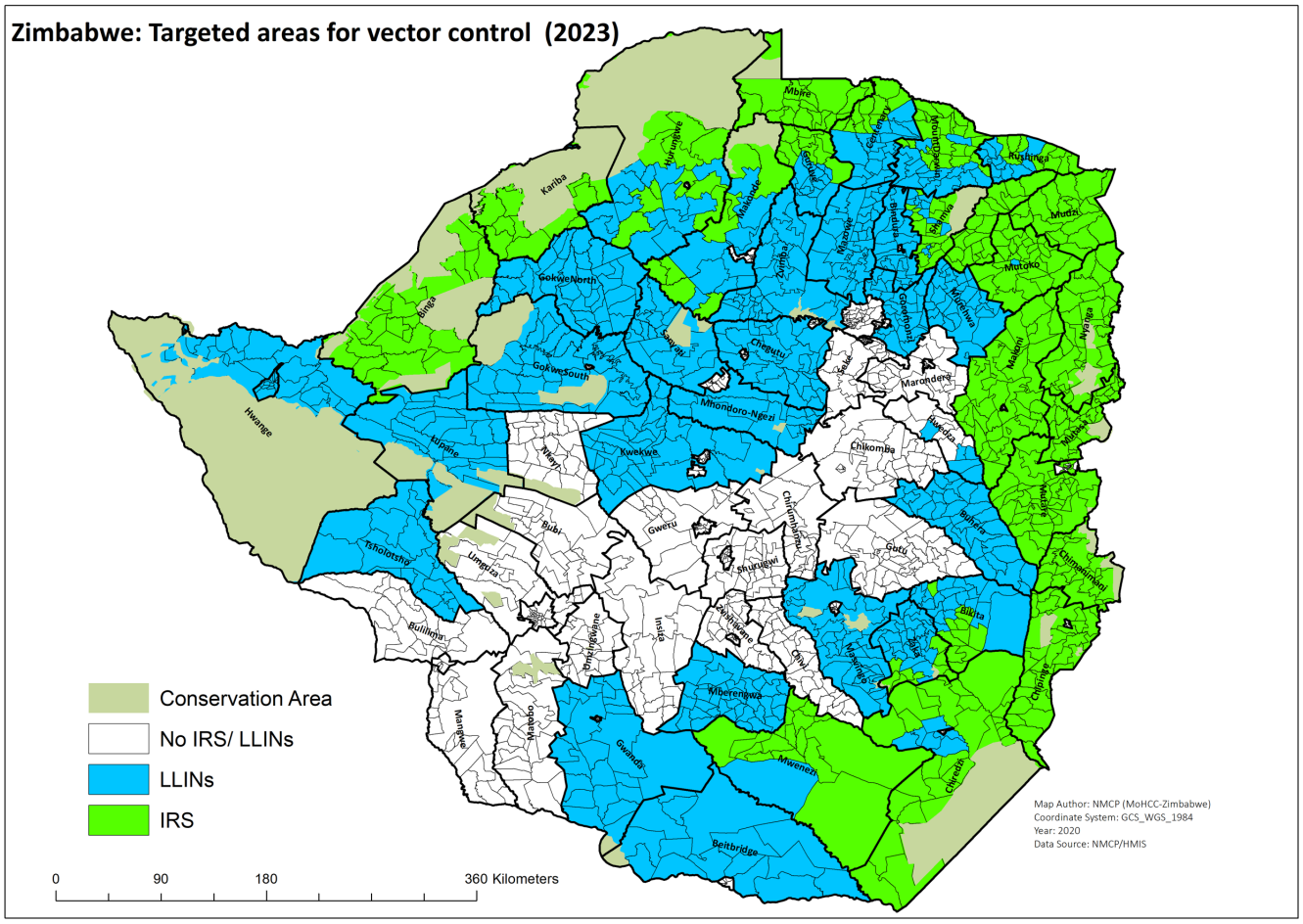
Zimbabwe currently deploys IRS in wards (a subdistrict administrative level) with an annual parasite index (API) of 5 per 1,000 population or greater. In keeping with the most recent *Insecticide Resistance Monitoring and Management Plan for Malaria Vectors in Zimbabwe*, rotation of insecticides is indicated after two years of use and insecticides with different modes of action should be alternated, taking into consideration the available vector resistance data and global guidelines. Over the course of the current Global Fund grant cycle, NMCP plans to incrementally reduce (on an annual basis) the number of districts with wards receiving IRS from the 31 districts sprayed in 2020 to 23 districts in 2023. Districts no longer receiving IRS will be transitioned to ITN distribution. This decision was driven by declining incidence, as well as a recognition of the increasing costs of IRS implementation and a growing appreciation of the value of ITNs as a vector control intervention in the Zimbabwe context.

ITNs are deployed in areas with an API of less than 5 per 1,000 population. Theoretically, IRS is scaled back and ITN distribution is introduced as the API reaches this ITN target range in areas of decreasing transmission. Zimbabwe also recognizes the existence of specific communities that reside in areas for which IRS may be indicated according to API, but where community members reside in un-sprayable structures or predominantly work or sleep outside at night. In such locations, both IRS and ITNs may be implemented within the same district or ward.

The two maps below depict the proposed shift from IRS to ITNs under the 2021–2025 NMCESP.

Figure A-1 and Figure A-2. IRS and ITN deployment for the 2020 (completed) and 2023 (proposed) IRS seasons





NMCP employs a mixed model of ITN distribution, including mass campaigns (every three years) and occasional mini-mass campaigns, both of which cover the wards targeted for ITNs. Routine distribution through public health facilities (antenatal care [ANC] and Expanded Program on Immunization [EPI]) and community channels is also conducted. Historically, community channels are the routine distribution outlet recording the highest number of ITN recipients. ITNs are also used in emergency situations (for example, to protect survivors of recent cyclones that have affected several districts on the eastern border), to control outbreaks and as part of foci response in elimination areas. According to the current distribution policy, ITNs should not be distributed in areas with known pyrethroid resistance, as defined using the WHO standard (mortality of less than 90 percent).

The NMCP recommends targeted LSM in districts or wards with an API of less than 1 per 1,000 population, large irrigation schemes, and/or urban areas. LSM is recommended only for situations in which few, fixed and findable breeding sites can be identified. In practice, LSM implementation is relatively limited.

The NMCP and partners have started to develop an integrated vector management strategy for the period 2020–2025. Finalization of this document has been delayed by the COVID-19 pandemic. However, it is anticipated that, under this document, policies and guidance for all vector control interventions applicable in Zimbabwe will be well aligned and clearly articulated.

PMI Objective in Support of NMCP

PMI/Zimbabwe currently supports nearly all aspects of the NMCP's vector control strategy, including entomologic surveillance, IRS, and mass and continuous distribution of ITNs. In past years, PMI has directly supported IRS implementation in a limited number of high-burden districts and provided national-level technical support for IRS planning and specialty areas, such as environmental compliance. Under MOP FY 2020, PMI has shifted to a broader TA model, with a concomitant increase in geographic scope to the provincial level, as well as renewed emphasis on ensuring environmental compliance, program monitoring, and enhanced national-level planning and implementation. PMI support for ITN distribution includes ITN procurement, distribution and promotion of ITN use. PMI-funded distribution activities are primarily conducted in selected districts covered by PMI implementing partners, with the remaining districts receiving Global Fund support.

PMI/Zimbabwe does not support LSM implementation or personal protective measures. PMI-supported entomological surveillance results inform the NMCP's choice of IRS insecticides and also help to inform where to distribute ITNs, taking into account pyrethroid resistance.

PMI-Supported Recent Progress (FY 2020)

PMI-supported vector control strengthening activities were impacted by the COVID-19 pandemic and the associated restrictions and mitigation measures implemented by the GOZ, the persistent and substantial human resource issues that continue to impact the Zimbabwe healthcare system, and the continued economic/monetary issues within Zimbabwe. However, PMI worked with the NMCP and partners to adjust to these difficult circumstances and tailor activities to allow for safe and effective implementation, including maximizing virtual approaches and implementing strict COVID-19 mitigation measures for in-person activities.

PMI supported implementation and strengthening of IRS activities during FY 2020, including the following:

- Providing continued transitional support to Manicaland Province following the withdrawal of PMI IRS support from four districts there in 2018, including TA and logistical support to fill critical gaps.
- Planning, implementing, and monitoring a comprehensive IRS campaign in two high-burden malaria districts in Mashonaland East Province. Through PMI's support, 133,078 structures were sprayed, achieving 97.3 percent coverage and protecting 324,685 people.
- Designing and implementing COVID-19 mitigation measures to ensure safe and effective implementation of IRS, in partnership with the NMCP. No COVID-19 cases were identified among IRS staff during the 2020 spray season.
- Employing, training, and supervising more than 400 spray personnel.
- Conducting sensitization meetings (provincial, district, and ward-based) to enhance uptake of IRS by communities.
- Conducting an assessment to evaluate the environmental compliance and management of the PMI-funded IRS program in the two PMI-supported districts.

PMI supported implementation and strengthening of ITN distribution activities from October 2019 to December 2020, including the following:

- Distribution of approximately 25,000 ITNs through a mass distribution campaign in Binga District, covering 9,513 households. Both indoor and outdoor sleeping spaces were targeted.

- Designing and implementing approaches for safe and effective door-to-door distribution of ITNs in the COVID-19 context, in collaboration with NMCP and other stakeholders.
- Training of 12 Environmental Health Technicians (EHTs) to conduct this mass distribution.
- Distributing over 102,000 rectangular ITNs through continuous distribution channels (EPI, ANC, and community) in 116 health facilities in 12 districts.
- Training 19 health facility workers and 89 VHWs in ITN routine distribution.
- Supporting the rollout of the ITN electronic reporting system using DHIS2 Tracker by conducting training of 43 persons from 12 districts representing the Community Nursing, Environmental Health, and Health Information Units.

PMI provided support for implementation and strengthening of entomological monitoring during FY 2020, including the following:

- Providing technical and financial support for monthly, routine entomological surveillance activities at two sites in Manicaland Province and three sites in Mashonaland East Province. This included collecting data on malaria vector species composition and abundance, behavior, and insecticide susceptibility.
- Supporting the finalization of an insectary at Africa University to increase the country's capacity to provide mosquitoes for cone bioassays and as control specimens for insecticide susceptibility tests.
- Continuing operational support for a molecular and immuno-diagnostic laboratory for analysis of entomological specimens at Africa University.

PMI also provided technical support for the vector control (and other) aspects of the national malaria midterm review, the production of the 2021–2025 NMCESP and the 2021–2023 Global Fund grant proposal.

PMI-Supported Planned Activities (FY 2021 with currently available funds)

Through FY 2021, PMI/Zimbabwe will continue to support IRS implementation, and mass and continuous distribution of ITNs and entomological surveillance activities, including the following:

- Supporting IRS implementation under a broader TA model, with a concomitant increase in geographic scope to the provincial level (Mashonaland East), as well as renewed emphasis on ensuring environmental compliance, program monitoring, and enhanced national-level planning and implementation.
- Supporting an ITN quantification exercise through the newly awarded service delivery partner, taking into account the needs of special populations.
- Procuring approximately 1.4 million pyrethroid-only ITNs using MOP FY 2021 funds.
- Distributing ITNs through mass and continuous channels. The specific geographic target areas will be determined now that the new service delivery mechanism is awarded, in consultation with the NMCP to ensure complementarity with Global Fund-supported efforts.
- In addition to providing support for ITN distribution in PMI-targeted areas, the newly awarded service delivery partner with ITN distribution expertise will provide ongoing, onsite TA to Global Fund-supported partners in both campaign and continuous channels.
- Implementing routine entomological surveillance in at least four sites in two provinces.
- Building capacity for entomological surveillance by enhancing laboratory and insectary capacity through Africa University.

- Supporting a Vector Control Technical Subcommittee meeting.

Of note, the shift in PMI support away from direct implementation of IRS toward a TA model, with subsequent increases in funding for the procurement and distribution of ITNs, is in line with the NMCP's overall strategic direction and PMI's commitment to maximizing the cost-effectiveness of PMI-funded interventions.

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?

Between March 2020 and February 2021, PMI longitudinal monitoring and insecticide resistance activities were conducted in three districts in Mashonaland East Province (Mudzi, Mutoko, and Wedza) and one district in Manicaland Province (Mutare). (See Figure A-3.) PMI supported IRS operations in November and December for Mudzi and Mutoko using a clothianidin-deltamethrin combination product and Wedza was a non-IRS district that received ITNs. The NMCP conducted IRS in Mutare using DDT for the majority of wards, with either a clothianidin-deltamethrin combination product or pirimiphos-methyl used in the remainder.

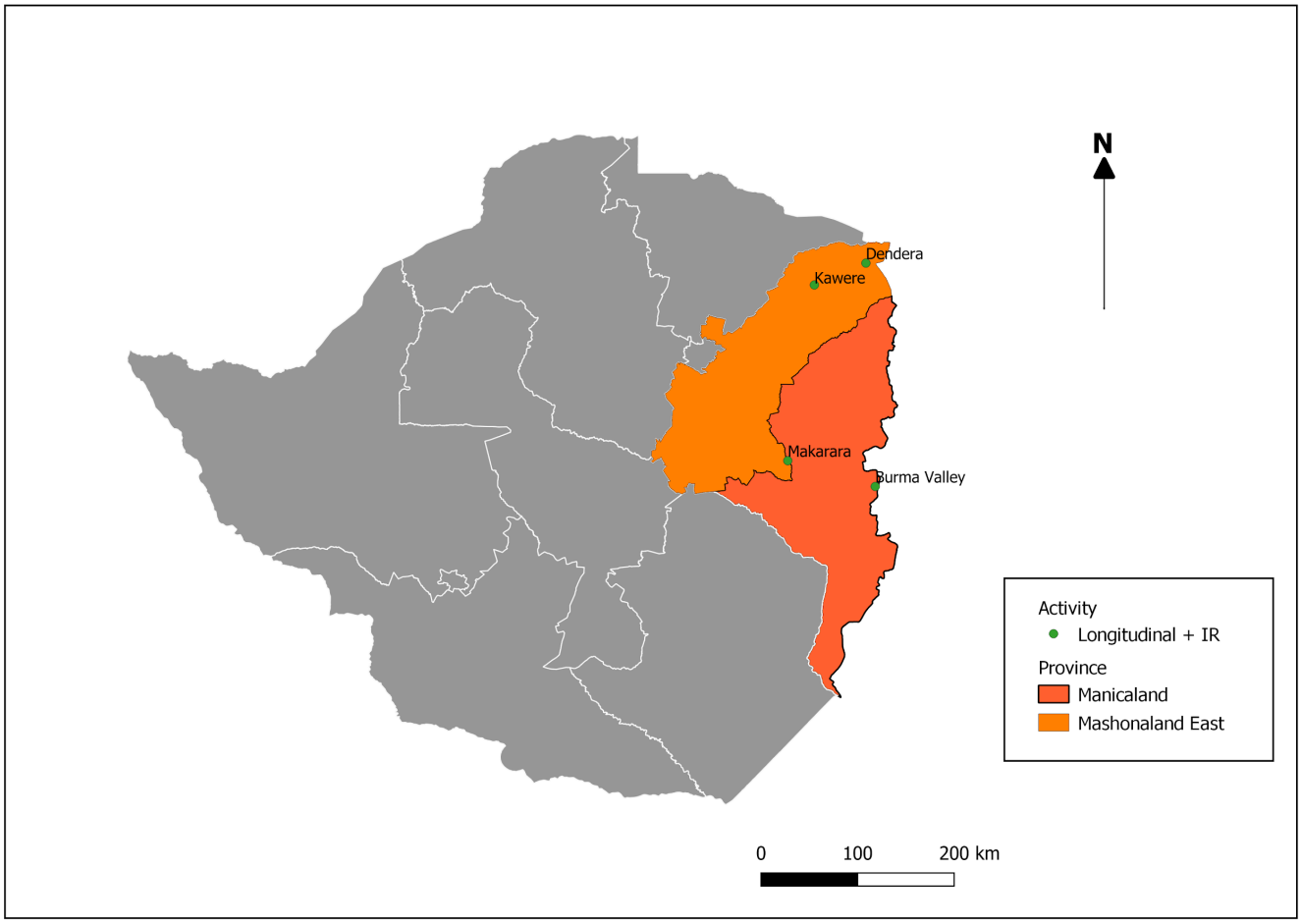
Mosquitoes were collected monthly using pyrethrum spray collections, pit shelters, and CDC light traps as proxies to human collections. In 2012, the NMCP established 16 national entomological sentinel sites (two per province) for longitudinal surveillance with funding from Global Fund. PMI has supported this expansion of the capacity of the national surveillance program with entomology training and equipment. However, the national entomological surveillance at these sites have been limited by financial and implementation challenges.

Supporting Data

Field entomological monitoring activities were conducted in March 2020 but suspended from April to July 2020 due to the COVID-19 pandemic and associated travel restrictions. COVID-19 restrictions also delayed laboratory processing of the mosquito samples and, in turn, delayed data analysis. As a result, the distribution and bionomics of malaria vectors for this time period cannot be accurately assessed (Table A-2). In general, mosquito densities were low in both Mashonaland East and Manicaland sites. Morphological identification showed that *An. funestus* s.l. was the most abundant vector in the Burma Valley IRS site. In the Mashonaland IRS sites, *An. gambiae* s.l. was the most abundant vector species in Kawere, while in Dendera almost equal numbers of *An. gambiae* s.l. and *An. funestus* s.l. were collected. Other *Anopheles* collected included *An. coustani*, *An. pretoriensis,* and *An. rufipes*. Molecular analysis of the samples indicates that a high percentage of the *An. funestus* s.l. collected were *An. funestus* s.s. and *An. leesoni*. About equal numbers of *An. gambiae* s.s. and *An. arabiensis* were collected. Light trap collections indicated higher numbers of *An. gambiae* s.l. and *An. funestus* s.l.

were collected outdoors than indoors. Female mosquitoes visually identified as blood fed were tested by molecular analysis for human, bovine, dog, goat, and pig blood meals.

Figure A-3. Longitudinal entomological surveillance and insecticide resistance test sites at Mashonaland East and Manicaland provinces for March 2020–February 2021



IR: Insecticide resistance testing sites; Longitudinal: Longitudinal entomology monitoring sites.

Table A-1. PMI-supported vector entomological monitoring activities for March 2020–February 2021

Province	District	Site	Activities	Supported by
Mashonaland East	Mudzi	Dendera (IRS)	Entomological Monitoring Insecticide Resistance	PMI
	Mutoko	Kawere (IRS)	Entomological Monitoring Insecticide Resistance	PMI
	Wedza	Makarara (Non-IRS)	Entomological Monitoring Insecticide Resistance	PMI
Manicaland	Mutare	Burma Valley (IRS)	Entomological Monitoring Insecticide Resistance	PMI

Table A-2. Distribution and bionomics of malaria vectors

Site/ District	Vector*	Season (month)	Preferred Biting Location	Peak Biting Time	Preferred Resting Location**	Preferred Host	Sporozoite Rate
Dendera/ Mudzi	***An. funestus* s.l.**	***An. funestus* s.l. (Undetermined)**	***An. funestus* s.l. (Undetermined)**	***An. funestus* s.l. (I=3 a.m.–4 a.m.)**	***An. funestus* s.l. (I)**	***An. funestus* s.l. (Undetermined)**	***An. funestus* s.l. (40%)**
	An. gambiae s.l.	*An. gambiae* s.l. (Undetermined)	*An. gambiae* s.l. (Undetermined)	*An. gambiae* s.l. (Undetermined)	*An. gambiae* s.l. (O)	*An. gambiae* s.l. (Unknown)	*An. gambiae* s.l. (0%)
Kaware/ Mutoko	***An. gambiae* s.l.**	***An. gambiae* s.l. (Undetermined)**	***An. gambiae* s.l. (I)**	***An. gambiae* s.l. (I=3 a.m.–4 a.m.)**	***An. gambiae* s.l.** (O)	***An. gambiae* s.l. (Unknown)**	***An. gambiae* s.l. (0%)**
	An. funestus s.l.	*An. funestus* s.l. (Undetermined)	*An. funestus* s.l. (O)	*An. funestus* s.l. (O=mid-night–1 a.m.)	*An. funestus* s.l. (Undetermined)	*An. funestus* s.l. (Unknown)	*An. funestus* s.l. (0%
Makarara/ Wedza	***An. gambiae* s.l.**	***An. gambiae* s.l.** (Dec)	***An. gambiae* s.l.** (I+O)	***An. gambiae* s.l.** (I=3 a.m.–4 a.m.)	***An. gambiae* s.l. (I+O)**	***An. gambiae* s.l. (Bovine)**	***An. gambiae* s.l. (0%)**
	An. funestus s.l.	*An. funestus* s.l. (Sept, Oct)	*An. funestus* s.l. (O)	*An. funestus* s.l. (O=mid-night–1 a.m.)	*An. funestus* s.l. (O)	*An. funestus* s.l. (Bovine)	*An. funestus* s.l. (0%)
Burma Valley/ Mutare	***An. funestus* s.l.**	***An. funestus* s.l.** (Oct–Dec)	***An. funestus* s.l.** (Oct–Dec)	***An. funestus* s.l.** (I=5 a.m.–6 a.m.) (O=7–8 p.m.,10–11 p.m., 3–4 a.m.)	***An. funestus* s.l. (O)**	***An. funestus* s.l. (Bovine)**	***An. funestus* s.l. (%)**

Site/ District	Vector*	Season (month)	Preferred Biting Location	Peak Biting Time	Preferred Resting Location**	Preferred Host	Sporozoite Rate
	An. gambiae s.l.	*An. gambiae* s.l. (Undeter-mined)	*An. gambiae* s.l. (Undeter-mined)	*An. gambiae* s.l. (I=9 p.m.–10 p.m., 5 a.m.–6 a.m.) (O=9 p.m. –10 p.m., 11 p.m.–midnight)	*An. gambiae* s.l. (Undeter-mined)	*An. gambiae* s.l. (Unknown)	*An. gambiae* s.l. (0%)

*Primary vector listed first, in bold, followed by secondary vectors.
** Marked as N/A if simultaneous indoor and outdoor collections are not conducted.
Note: Annual entomological inoculation rate (EIR) was not calculated because a sub-sample of randomly selected mosquitoes from all collection methods were tested.
Undetermined: Mosquito collection too low to reach any conclusions.
Unknown: Blood type not human, bovine, dog, goat, and pig.
Mixed: Blood meal composed of human/animal or animal/animal blood.
I = Indoor, O = Outdoor

Key Question 2

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

Supporting Data

Between February and June 2020, *An. gambiae* s.l. adults raised from larval collections from three districts (Mudzi, Mutoko, and Hwedzi) in Mashonaland East were tested for insecticide resistance (Table A-3). The CDC bottle assay was used to test pyrethroids deltamethrin and alpha-cypermethrin. The WHO insecticide resistance assay was used for testing clothianidin. Alpha-cypermethrin was selected for resistance testing at Wedza (non-IRS district) because this is the insecticide on the ITNs distributed here. DDT was used in the NMCP IRS program in Manicaland. Because *An. funestus* s.l. is the main vector in Manicaland, *An. funestes* s.l. used in the CDC bottle assay were on F1-generation females raised from eggs collected by forced-oviposition of field-collected adult female *An. funestus* s.l. following WHO guidelines for both the CDC bottle and WHO resistance assay, mortalities between 98 percent and 100 percent indicate that mosquitoes are susceptible, mortalities between 90 percent and 97 percent indicate possible resistance, while anything below 90 percent mortality indicates resistance.

Insecticide resistance testing at both provinces was challenging due to the difficulty in collecting larvae and adults in sufficient numbers for the testing. There does not appear to be *An. gambiae* s.l. resistance to clothianidin, but a possible resistance to deltamethrin in Mutoko was identified. Insecticide resistance was detected in *An. gambiae* s.l. collected in Wedza. No DDT resistance in *An. funestus* s.l. was detected in Mutare District.

Table A-3. Insecticide resistance from WHO insecticide resistance and CDC bottle assays of adult *An. gambiae* s.l. and *An. funestus* s.l. to a range of insecticides at respective diagnostic concentrations (February –June 2020)

Province	District	Vector	Insecticide	Type of Insecticide Resistance Assay	Resistance (% Mortality)
Mashonaland East	Mudzi	*An. gambiae* s.l.	Clothianidin	WHO	100
	Mudzi	*An. gambiae* s.l.	Deltamethrin	CDC	98.9
	Mutoko	*An. gambiae* s.l.	Clothianidin	WHO	Undetermined
	Mutoko	*An. gambiae* s.l.	Deltamethrin	CDC	97.9
	Wedza	*An. gambiae* s.l.	Alpha-cypermethrin	CDC	70
Manicaland	Mutare	*An .funestus* s.l.	DDT	CDC	100

Undetermined: number of mosquitoes tested too low to reach any conclusions.

Conclusions for Entomologic Monitoring Investments

Insecticide resistance data from PMI-supported sites has been shared with the NMCP and relevant provinces and districts, who have used these data and the guidelines outlined in the national insecticide resistance management strategy to inform decision-making regarding insecticide selection for the 2021 spray season (see Table A-14). Based on these data, PMI plans to continue to procure pyrethroid ITNs but will monitor pyrethroid resistance data closely and consider approaches for determining the appropriateness of next generation ITNs in the Zimbabwe context.

Although data are limited, outdoor biting in the evening hours may be a driver of residual transmission in areas where IRS and/or ITN scale-up has already occurred. PMI will continue to monitor this indicator and, if additional evidence is available, consider evaluating approaches for addressing outdoor biting in the Zimbabwean context.

PMI will continue to invest in entomological monitoring in support of NMCP's vector control program, with a focus on ensuring data is available to assess spray quality and efficacy, insecticide selection for IRS and ITNs, and monitoring of vector bionomics. As detailed in the IRS section below, PMI does not plan to support direct IRS implementation beyond FY 2020 but will increase support for the procurement and distribution of ITNs and the promotion of their routine use. PMI is currently establishing a new bilateral mechanism for routine entomological monitoring and supporting NMCP efforts to develop a clearly articulated, evidence-based national malaria entomological surveillance and monitoring strategy. Given these changes, PMI, the NMCP, the incoming bilateral partner, and other stakeholders will discuss and agree upon the appropriate geographic targeting and mix of PMI-supported entomological monitoring activities, taking into consideration Global Fund resources, the national entomological monitoring plan, and the capacity and contributions of other institutions involved.

PMI will target a portion of entomological monitoring support toward enhancing the capacity for entomological monitoring as an integral part of foci investigations in elimination areas. The geographic targeting and scope of the activities supported will be determined in consultation with the NMCP and the incoming PMI entomological monitoring and service delivery partners.

PMI will continue to support the operations of the molecular laboratory and insectary already established at Africa University with PMI support.

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 use targets with effective nets, based on insecticide resistance data, in PMI-supported areas; and maintain high coverage and use with consistent ITN distribution (via campaigns and/or continuous channels).

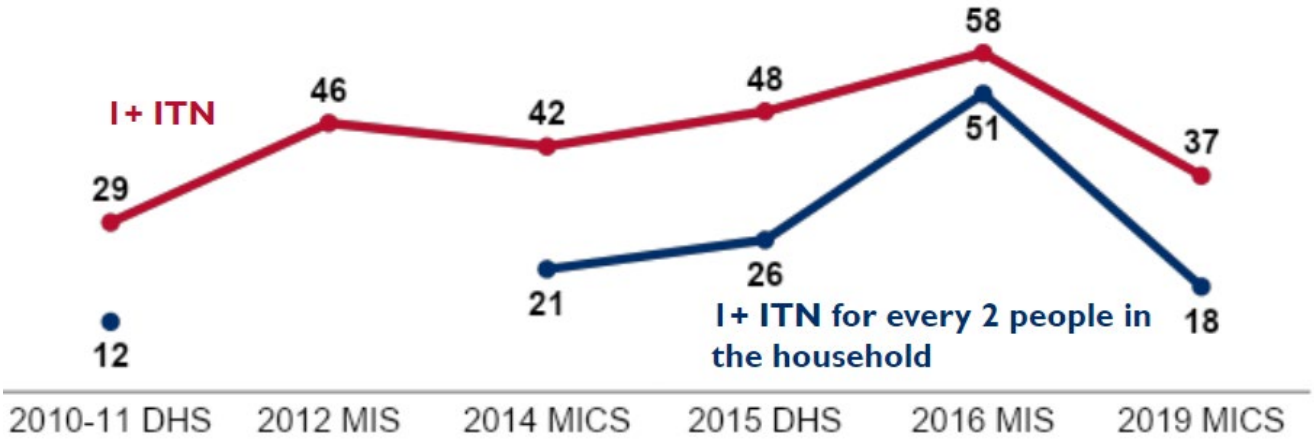
Key Question 1

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

Historically, Zimbabwe NMCP vector control has depended primarily on IRS, since circa 1948. Only in the past decade has the country added ITNs as an equally valued and widely distributed vector control mechanism. Within the last two strategic plans, NMCP explicitly embraced both IRS and ITN coverage as equally important for malaria prevention. In 2005, ITN ownership was almost nonexistent with 8 percent of households in the moderate- and high-transmission areas owning any ITN and 5 percent of the population with access to an ITN. As shown in the figure and table below, ITN ownership increased dramatically in the following years due to the targeted distributions during 2008–2010 and universal coverage mass campaigns of 2014–2015, peaking at 55 percent of households with any ITN, 43 percent population access and 31 percent of households with enough ITN for all members (i.e., at least one ITN for two people) in 2016. The MIS 2016 results are similar to the DHS 2015 even though the data collection methodologies differ (in timing and geography). The MIS 2016 was done in April 2016, prior to a mass campaign done later in 2016. Finally, there was an MICS in December 2019 that indicates a decline in net ownership to 37 percent of households that have at least one net. However, interpretation of this result should take into account the MICS data collection outside of peak malaria season and that areas sampled included locations not targeted for net distribution.

Mass campaigns and the introduction of routine distribution have continued in recent years but ownership and use has not been measured in a national-level survey with a malaria-oriented methodology (i.e., with sampling and data analysis appropriate for estimating ITN coverage in target areas) since 2016. A national-level DHS/MIS survey was scheduled for 2020 but has been delayed due to COVID-19. PMI/Zimbabwe has already committed financial support to this combined DHS/MIS, which will include an expanded malaria module with appropriate sampling and data analysis to estimate ITN coverage in target areas. The DHS/MIS is now scheduled for 2022 (or, if not possible, 2023) and the targeted and more in-depth ITN analysis will help PMI/Zimbabwe and NMCP to understand recent progress and the determine the programmatic focus for ITN ownership, access, and consistent use.

Figure A-4. Trends in ITN ownership: Percentage of households that own ITNs



1+ ITN for every 2 people in the household

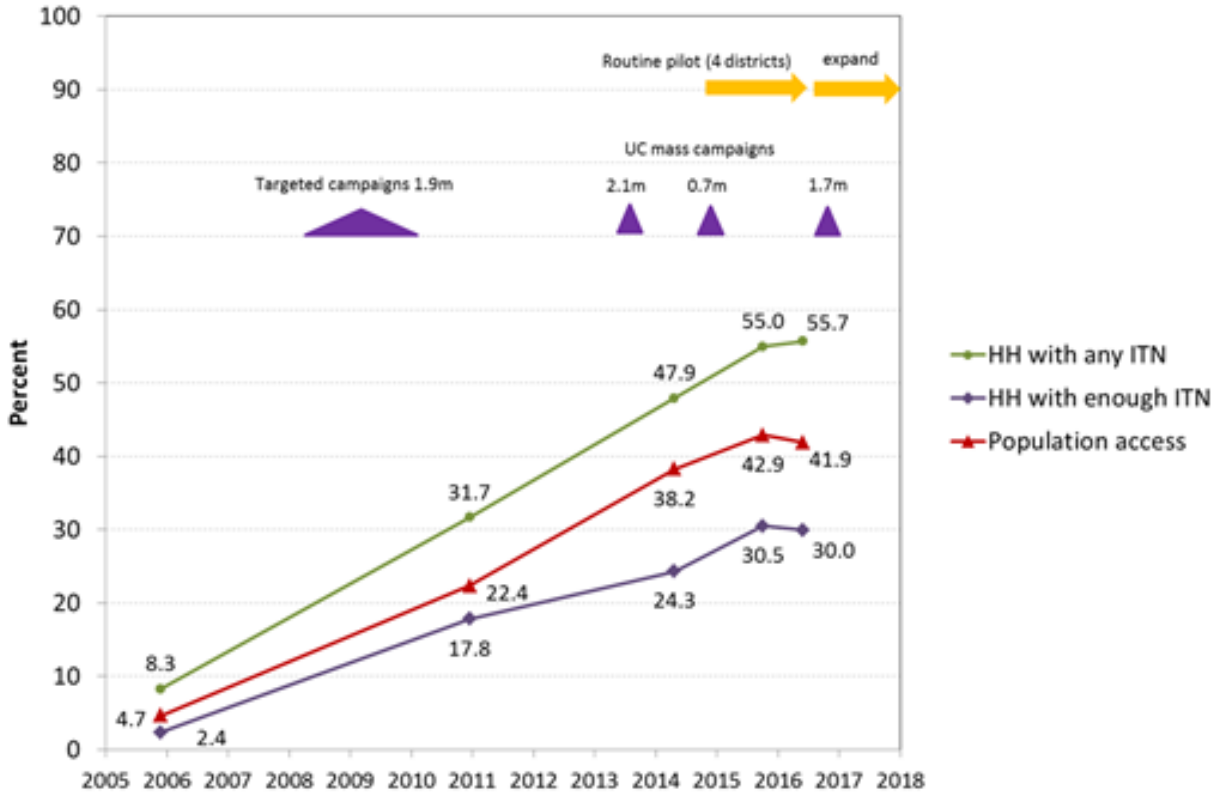
Table A-4. Secondary analysis of trends in ITN ownership in Zimbabwe[1]

Survey	HH with any ITN	HH with one ITN/ 2 people
DHS 2005	8.3% (6.9–9.9)	2.4% (1.9–3.0)
DHS 2010/11	31.7% (28.2–35.3)	17.8% (15.6–20.3)
MICS 2014/15	47.9% (45.2–50.6)	24.3% (22.4–26.4)
DHS 2015	55.0% (51.9–58.0)	30.5% (28.2–33.0)
MIS 2016	55.7% (51.1–60.2)	30.0% (26.0–34.3)

Source: Secondary Analysis of the Zimbabwe Malaria Indicator Survey 2016 with Respect to ITN Ownership and Use, Johns Hopkins Center for Communication Programs, Tropical Health, November 2017.

[1]Denominators for calculated percentages in this secondary analysis include only areas targeted for ITN distribution.

Figure A-5. Trends in Zimbabwe ITN ownership indicators 2005 to 2016 with public sector distributions



"Enough" ITN refers to "at least 1 ITN for 2 people." HH = household.
Source: Secondary Analysis of the Zimbabwe Malaria Indicator Survey 2016 with Respect to ITN Ownership and Use, Johns Hopkins Center for Communication Programs, Tropical Health, November 2017.

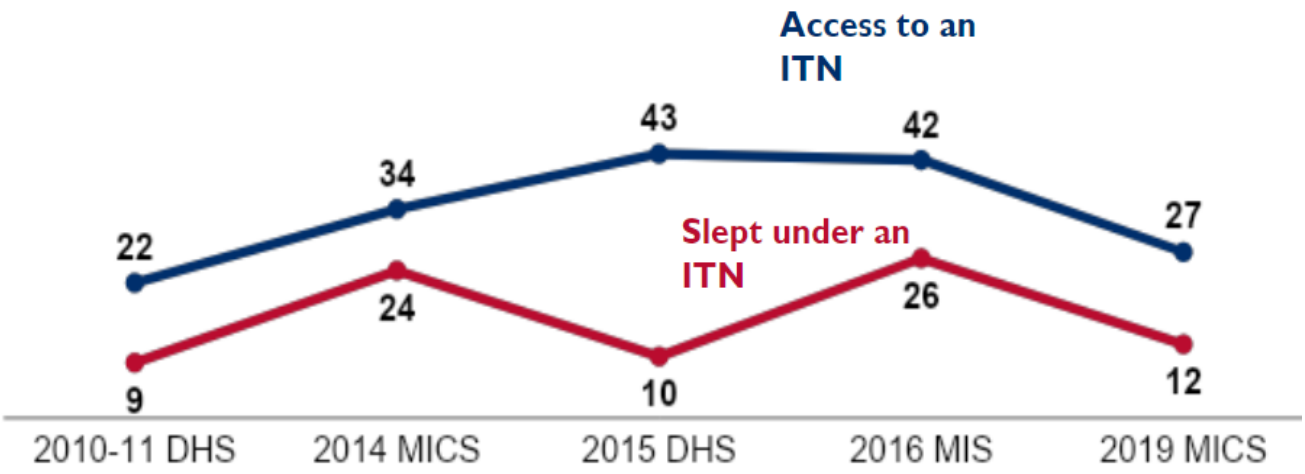
Key Question 2a

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

An analysis of population use to access ratio of ITNs by province (Figure A-7) demonstrates considerable geographic variation in this indicator across the national-level surveys. Even though the indicator "Population using ITN last night" has been low historically in Zimbabwe's national-level surveys, "Population using ITN if Access" indicates relatively high ITN use among those the previous night who had an ITN available (Table A-6). ITN use if access was much higher than ITN use overall but still varied between 22.2 percent in the DHS 2015 and a maximum of 65.4 percent in the MICS 2014. Results for the MIS 2016 were 54.8 percent and the second highest observed for Zimbabwe in a national survey so far. (Note: Variation between surveys is most likely driven by the timing of the survey data collection and the rainy season and the geographic sampling including non-malarious and non-ITN designated areas.)

Figure A-6. 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



DHS and MICS surveys are generally fielded during the dry season, as opposed to MIS surveys, which are deliberately fielded during the high transmission season, which should be taken into consideration when interpreting the ITN use indicator.

Figure A-7. Zimbabwe ITN use:access ratio based on DHS 2015 data

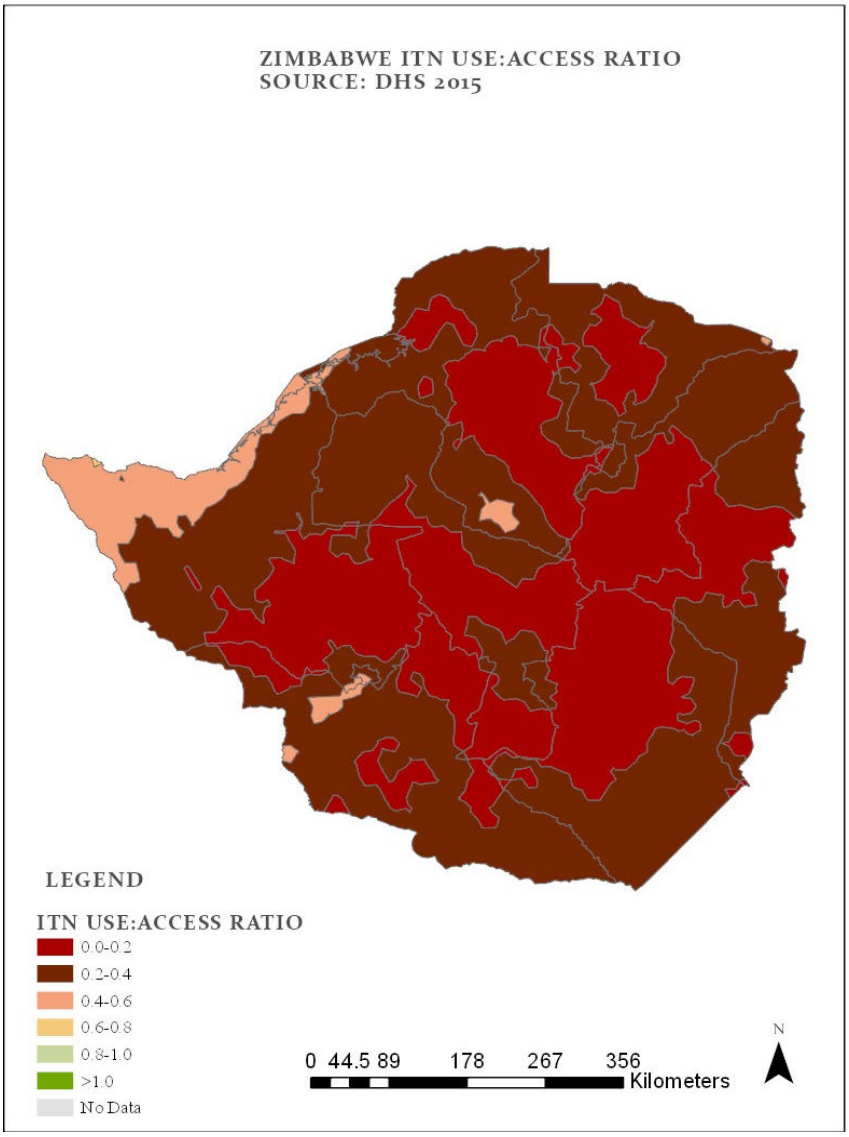


Table A-5. Trends in Zimbabwe population access to ITNs by survey by province[1]

Province	DHS 2005	DHS 2010	MICS 2014	DHS 2015	MIS 2016
Manicaland	5.1%	35.1%	51.4%	45.9%	36.1%
Mashonaland Central	6.8%	24.6%	41.2%	34.5%	33.9%
Mashonaland East*	3.1%	18.0%	34.8%	43.1%	54.1%
Mashonaland West	5.7%	15.0%	38.5%	52.5%	37.1%
Matabeleland North	4.1%	29.2%	62.2%	57.7%	52.8%
Matabeleland South*	3.0%	3.5%	5.9%	32.2%	74.0%
Midlands*	6.6%	23.1%	28.1%	37.6%	25.0%
Masvingo*	1.6%	21.8%	40.2%	40.0%	29.7%

Source: Secondary Analysis of the Zimbabwe Malaria Indicator Survey 2016 with Respect to ITN Ownership and Use, Johns Hopkins Center for Communication Programs, Tropical Health, November 2017.

[1]Denominators for calculated percentages in this secondary analysis include only areas targeted for ITN distribution.

Table A-6: Secondary analysis of trends in Zimbabwe population use of ITN the previous night[1]

Survey	Population using ITN last night	Population using ITN if access
DHS 2005	2.2% (1.7–2.8)	44.6% (39.9–50.4)
DHS 2010	9.4% (7.9–11.0)	40.6% (37.2–44.1)
MICS 2014	26.6% (24.6–28.6)	65.4% (63.5–67.2)
DHS 2015	9.7% (8.5–11.0)	22.2% (19.9–24.7)
MIS 2016	25.9% (23.3–28.7)	54.8% (51.2–58.4)

Source: Secondary Analysis of the Zimbabwe Malaria Indicator Survey 2016 with Respect to ITN Ownership and Use, Johns Hopkins Center for Communication Programs, Tropical Health, November 2017.

[1]Denominators for calculated percentages in this secondary analysis include only areas targeted for ITN distribution.

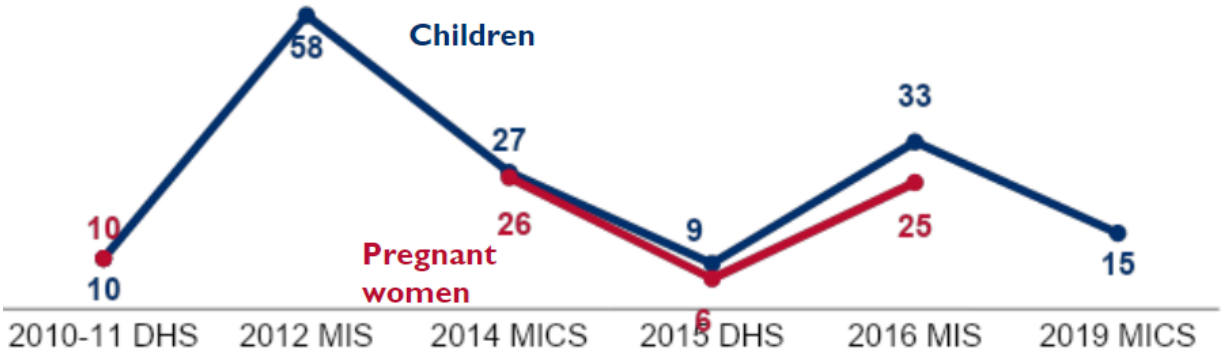
Key Question 2b

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

In Figure A-8 below, ITN use is presented by age groups disaggregated by gender and by households with enough ITNs for all members (at least one ITN for two people) and those with any, but not enough, ITNs. Results demonstrate that there was some preference for prioritizing ITN use among children under five years of age and lower ITN use in older children and adolescents. There was also a preference for prioritizing ITN use for women of reproductive age over men, especially if there are not enough ITNs in the household. Clearly, the patterns in ITN use in Zimbabwe are not optimal, with some reluctance of older children and adolescents to use ITNs and maximum use levels not exceeding 70 percent in the late rains, and much less in the dry season.

Figure A-8. Trends in ITN use among children and pregnant women

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



DHS and MICS surveys are generally fielded during the dry season, as opposed to MIS surveys, which are deliberately fielded during the high transmission season, which should be taken into consideration when interpreting these indicators.

Figure A-9. Trends in ITN use by age, gender, and household ITN supply, 2010 to 2016

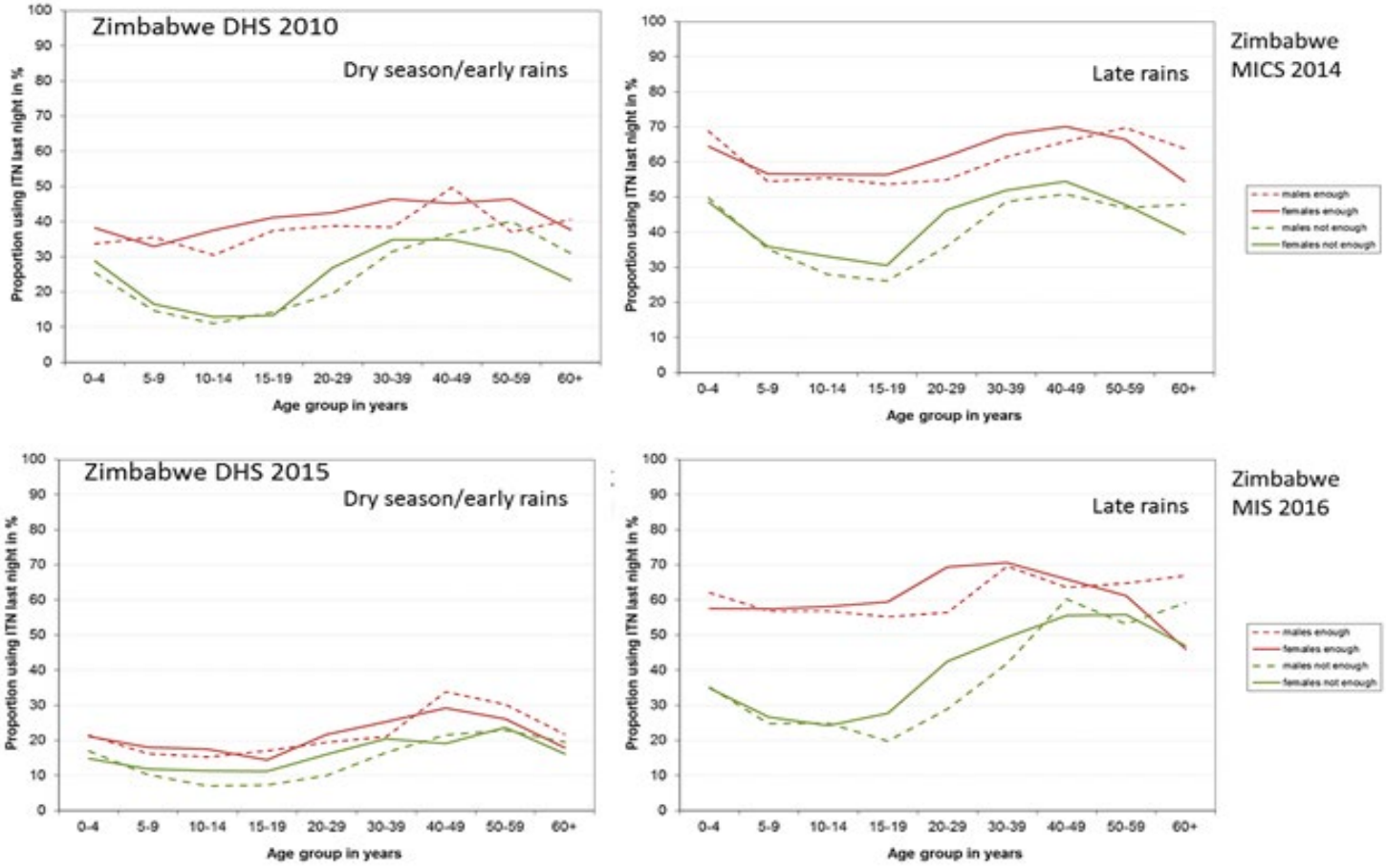


Figure A-9 Key:

------ males enough

_____ females enough

------ males not enough

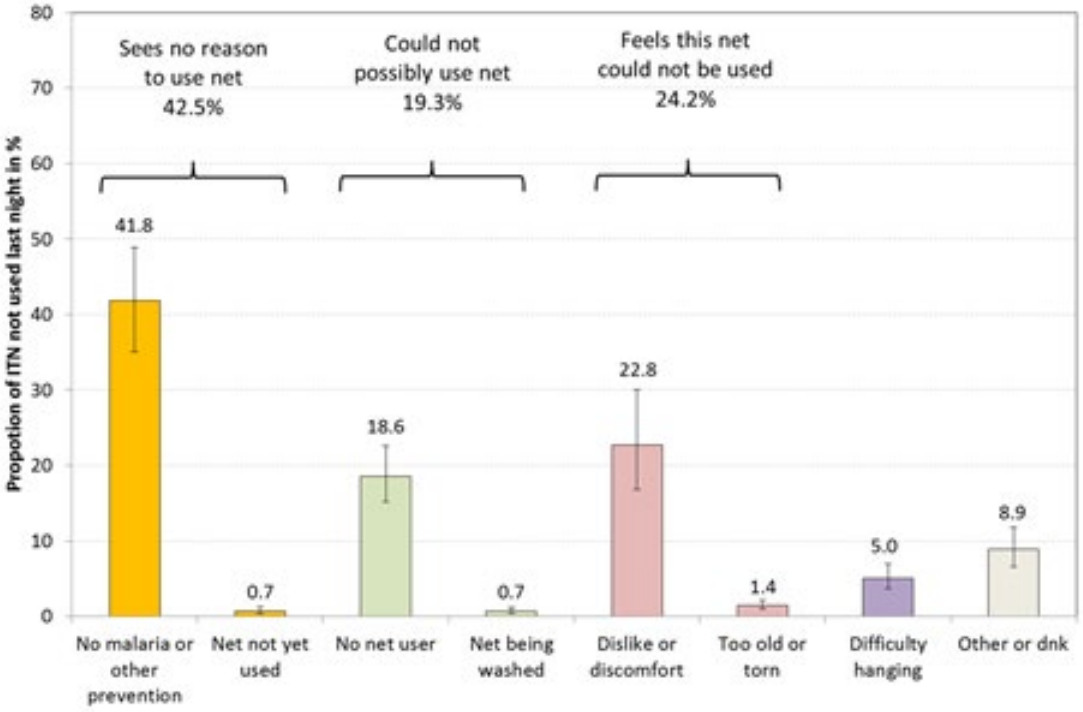
_____ females not enough

Source: Secondary Analysis of the Zimbabwe Malaria Indicator Survey 2016 with Respect to ITN Ownership and Use, Johns Hopkins Center for Communication Programs, Tropical Health, November 2017.

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?

Figure A-10. Why ITN was not used the previous night, Zimbabwe MIS 2016



Source: Secondary Analysis of the Zimbabwe Malaria Indicator Survey 2016 with Respect to ITN Ownership and Use, Johns Hopkins Center for Communication Programs, Tropical Health, November 2017.

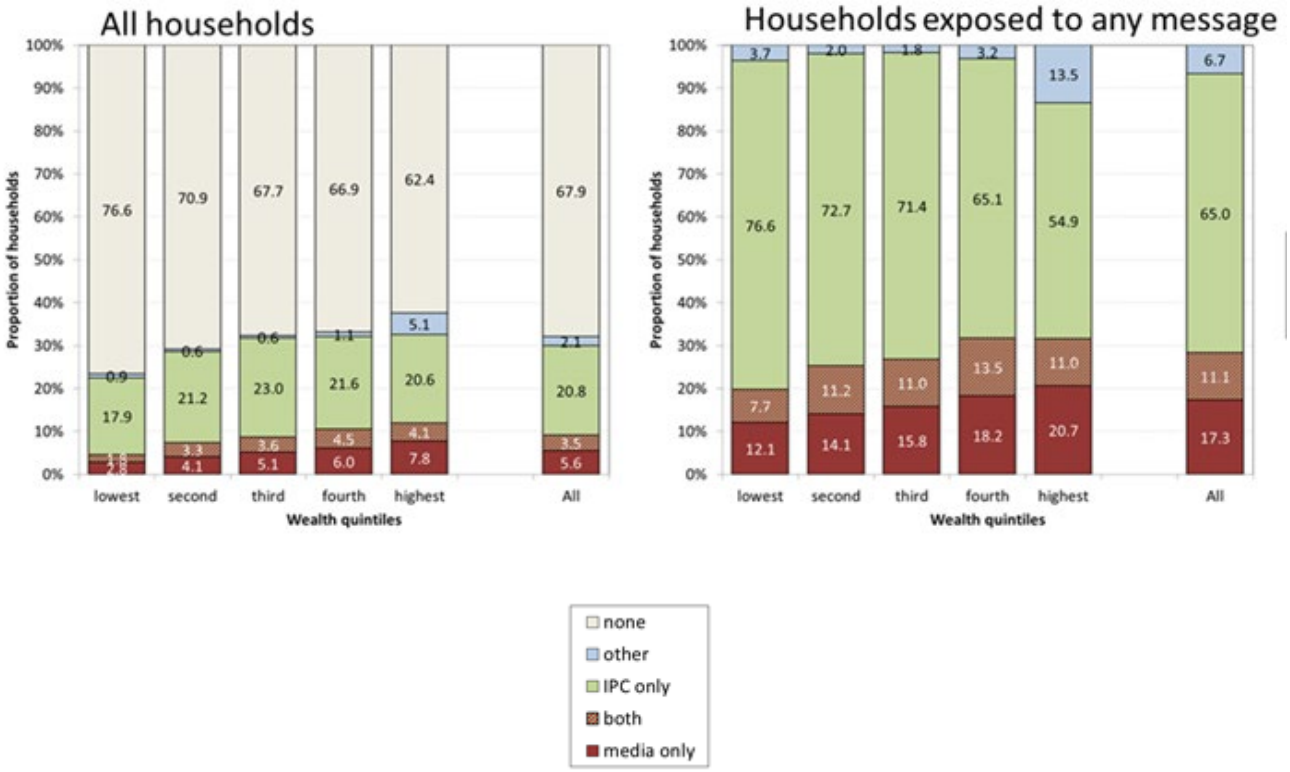
The MIS 2016 ITN secondary analysis highlights the most common reason (42.5 percent of all nets not used) for not using an ITN was that *households did not feel there was a reason to use a net mainly because they thought there was no malaria* and to a small degree that they were already using other, alternative, preventive measures (mainly coils). The NMCP follow-up ITN Knowledge, Attitudes, and Practices (KAP) Study, which collected extensive qualitative data, corroborates this important barrier on risk perception. The NMCP KAP study found that most respondents in all districts perceived that malaria was seasonal and, therefore, risk was not always present. High risk was perceived during the rainy season only. Furthermore, the existence of mosquitoes, as evidenced by their sounds in the evening or at night, was also perceived to be associated with high risk of malaria. Therefore, if no mosquitoes were perceived to be present based on their sounds, then ITN usage would not be necessary. The twin, dominant ITN use barriers of low perceived risk outside of the rainy season and/or when mosquito sounds are absent is something NMCP has acknowledged that it must address. (Source: *Understanding Long-Lasting Insecticidal Net Utilization Among Households in Malaria Transmission Districts of Zimbabwe, NMCP*, December 2017.)

The second most common reason for not using a net in the MIS 2016 (24.2 percent) was that people felt that the net could not be used for reasons of discomfort or dislike (mainly "too hot" and "itching") or that it was too old and torn. Almost one in five nets (19.3 percent) were not used because the net user was not around, the net was extra or it was being washed, i.e., it could objectively not have been used. Reported difficulty in hanging the net was a minor problem, applying to 5.0 percent of the unused nets. Among the 8.9 percent of nets not used for other reasons, explanations included "forgot," "was too lazy," or occasionally "was drunk."

Another potential barrier to ITN use is that overall exposure to messages about malaria was low, as shown in the graphic below from the ITN secondary analysis, only 32.1 percent (95 percent confidence interval [CI] 30.5–33.7) of household respondents had been exposed in the last six months. Further, recall of malaria messages and knowledge of malaria transmission increased with increasing exposure to messages and this had a moderate but statistically significant positive effect on ITN use. These findings came as a great concern to NMCP and they have been working to correct it for subsequent years and consistently advocating for more SBC funds from all donors.

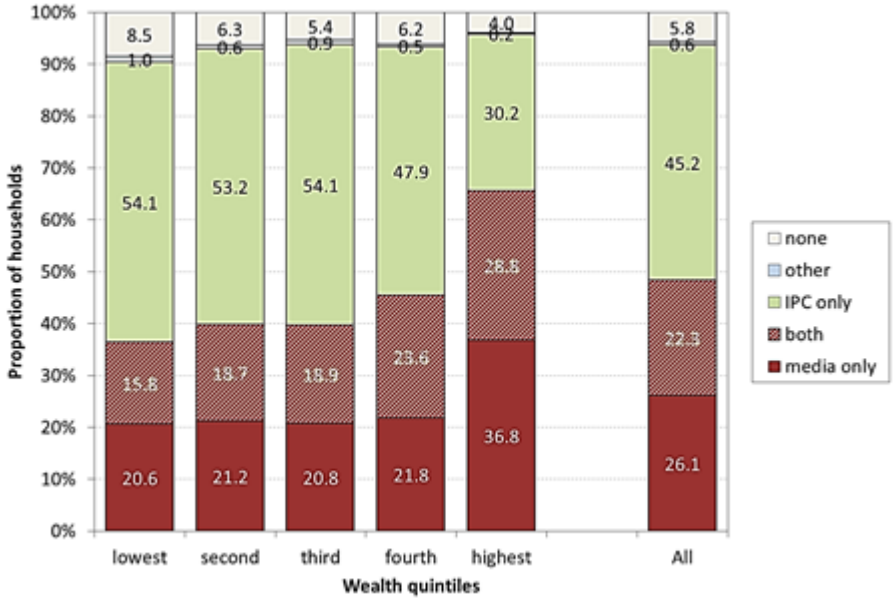
Exposure to messages increased significantly with increasing wealth ($p < 0.0001$) as shown in the left panel (Figure A-11), but also the type of SBC channel differed by wealth quintile (right panel) with media (mainly radio and pamphlets) being more common in the higher quintiles and interpersonal communication (mainly facility and community health workers) more common among the poorer quintiles. This pattern matched the preference in SBC channels expressed by the households with the only difference that media preference was higher than the actual exposure.

Figure A-11. Exposure to malaria-related SBC messages by communication channel



Correct knowledge of malaria transmission was higher among those exposed to any messages [78.7 percent vs. 72.8 percent ($p = 0.0002$)], and increased with increasing number of information sources, reaching 83.0 percent for those with four or more information sources ($p = 0.01$), but did not vary with the type of BCC channel (media vs. IPC).

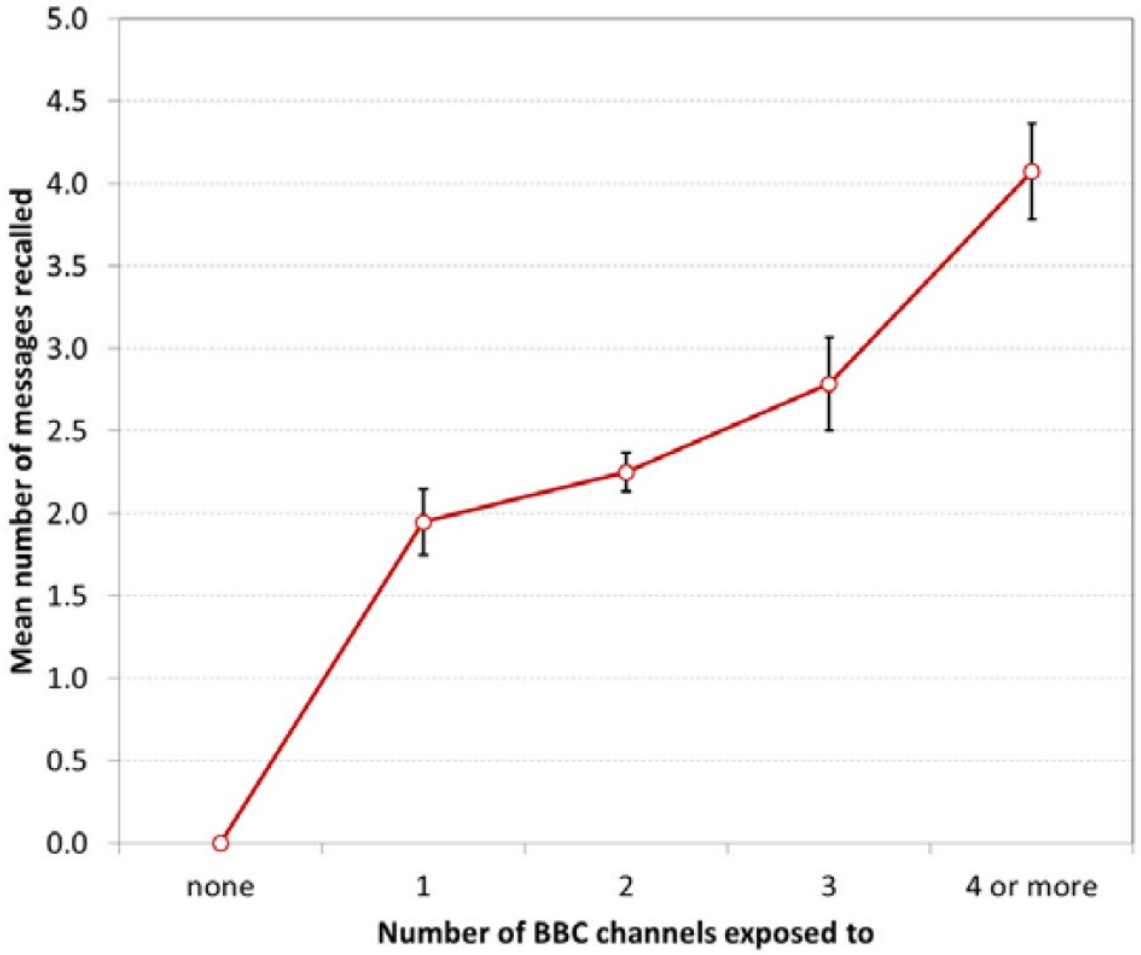
Figure A-12. Household preferred communication channels for malaria information by wealth quintiles, Zimbabwe, MIS 2016



Source: Secondary Analysis of the Zimbabwe Malaria Indicator Survey 2016 with Respect to ITN Ownership and Use, Johns Hopkins Center for Communication Programs, Tropical Health, November 2017.

Recall of messages also significantly ($p < 0.0001$) increased with the number of SBC channels to which individuals were exposed, as shown below. Among those recalling any messages, general messages on malaria and its dangers were most frequently recalled (65.1 percent), followed by messages on malaria prevention (57.1 percent). Recall of specific messages on mosquito nets was reported by 37.9 percent of those with any recall in ITN-targeted areas and IRS-related messages were mentioned by 14.7 percent in IRS-targeted areas.

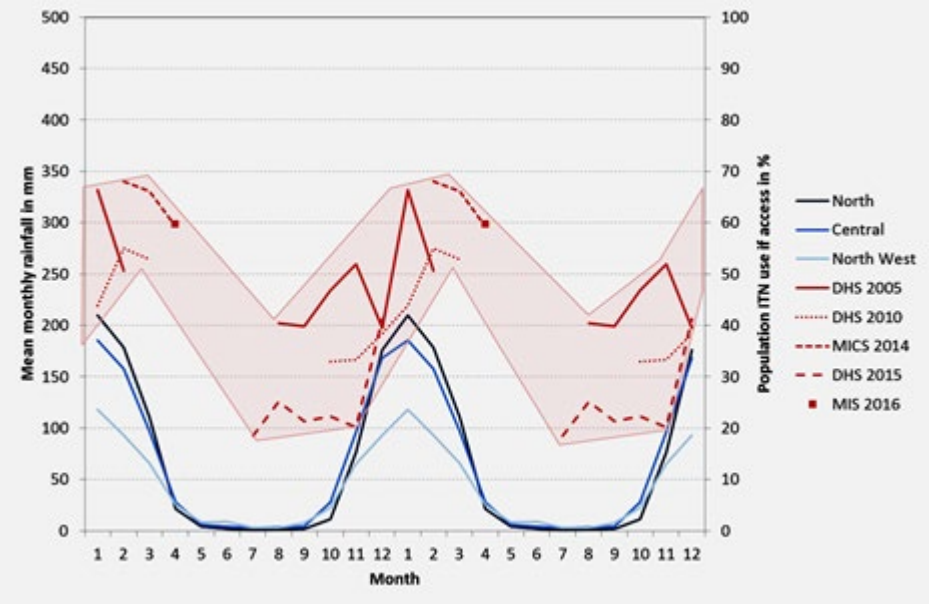
Figure A-13. Relationship of mean number of malaria messages recalled by responded as a function of number of SBC channel exposures, Zimbabwe MIS 2016



Source: Secondary Analysis of the Zimbabwe Malaria Indicator Survey 2016 with Respect to ITN Ownership and Use, Johns Hopkins Center for Communication Programs, Tropical Health, November 2017.

Using logistic regression models on ITN use given access for the SBC exposure variables and adjusting for other potential confounders such as Province, wealth quintile, urban residence and intra-household ITN supply showed a moderate effect: any exposure to SBC messages on malaria increased ITN use— all other things being equal— about 1.3-fold (OR 1.29, 95 percent CI 1.13–1.48, $p < 0.0001$), and there was an increasing effect with exposure to increasing numbers of BCC channels (OR 1.13 per each additional channel up to four, $p = 0.01$). The increasing effect of SBC message exposure on ITN use was slightly better for IPC (OR 1.35 compared to no exposure at all) than for media (OR 1.12), but this difference was not statistically significant. Correct knowledge of malaria only had a marginal effect on ITN use (OR 1.16, 95 percent, CI 0.85–1.40, $p = 0.1$).

Figure A-14. Zimbabwe rain pattern and monthly ITN use given access from surveys 2005 to 2016 (highlighted area marks range of data points for percent population using ITNs, given access)



Source: Rainfall data obtained from: Willmott, C.J., Matsuura, K., & Legates, D.R. Terrestrial Precipitation: 1900–2014 Gridded Monthly Time Series v2.01. Delaware: University of Delaware.

Previous analysis suggested that, in Zimbabwe, ITN use varies significantly with the seasons. This was further explored by analysis of ITN use given access by the month of data collection from all five available national survey data sets and plotting it against 10-year average monthly rainfall at different latitudes of the country. To allow a better visualization of any seasonal pattern, the figure above presents the results over a period of 24 months. In addition, the data range is highlighted, showing some variation from year to year, possibly due to variations in the actual rains, but also a significant pattern of higher ITN use as the rains start and a peak of ITN use right after the peak of the rains.

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?

Standard pyrethroid-impregnated ITNs are distributed in Zimbabwe via large and medium-size rolling campaigns and continuous distributions through EPI, ANC, and community channels. There was one school distribution (3rd and 6th graders) in 2015 in association with the net durability study. ITNs are also distributed in small campaigns in response to a natural disaster (cyclone) or sudden influx of refugees.

Supporting Data

In FY 2020, PMI supported the distribution of approximately 25,000 pyrethroid ITNs in Binga District through a door-to-door mass campaign. By comparison, PMI supported the distribution of nearly 625,000 ITNs in PMI-

targeted districts in FY 2019. The lower output in FY 2020 is primarily a reflection of the normal planning cycle of ITN mass campaign distribution in these districts, with many PMI-targeted districts receiving ITNs in FY 2019 and FY 2018. NMCP, with Global Fund support, distributed an additional 320,250 pyrethroid ITNs in six other districts in FY 2020.

In the same FY 2020 period, PMI supported the distribution of over 78,000 ITNs through continuous distribution channels in PMI-targeted districts, with the majority (54 percent) distributed through ANC. This was an approximately 23 percent reduction in the number of ITNs distributed through continuous channels from FY 2019, with the decrease likely attributable to the impacts of COVID-19. Additional ITNs were distributed through continuous distribution channels by NMCP in Global Fund-supported districts. The exact figure for the number of ITNs distributed in these districts is not known. However, logistics data from the PMI Malaria Data Integration and Visualization (M-DIVE) quarterly reports for FY 2020 show that nearly 225,000 ITNs were consumed through continuous distribution channels, suggesting that nearly twice as many ITNs were distributed in Global Fund-supported districts than those supported by PMI.

Table A-7. Continuous distribution of pyrethroid ITNs, October 2019–September 2020 by district and channel

District	EPI	Community	ANC	Total
Bindura	538	691	1,335	2,564
Centenary	510	4,723	1,004	6,237
Guruve	1,557	5,731	2,654	9,942
Mazowe	3,812	5,509	5,813	15,134
Mbire	765	3,087	765	4,617
Mt Darwin	2,562	5,152	3,513	11,227
Rushinga	664	1,731	1,174	3,569
Shamva	1,574	5,446	1,745	8,765
Goromonzi	1,883	3,914	1,467	7,264
Hwedza	80	2,319	311	2,710
Murewa	648	4,140	1,228	6,016
Total	**14,593**	**42,443**	**21,009**	**78,045**

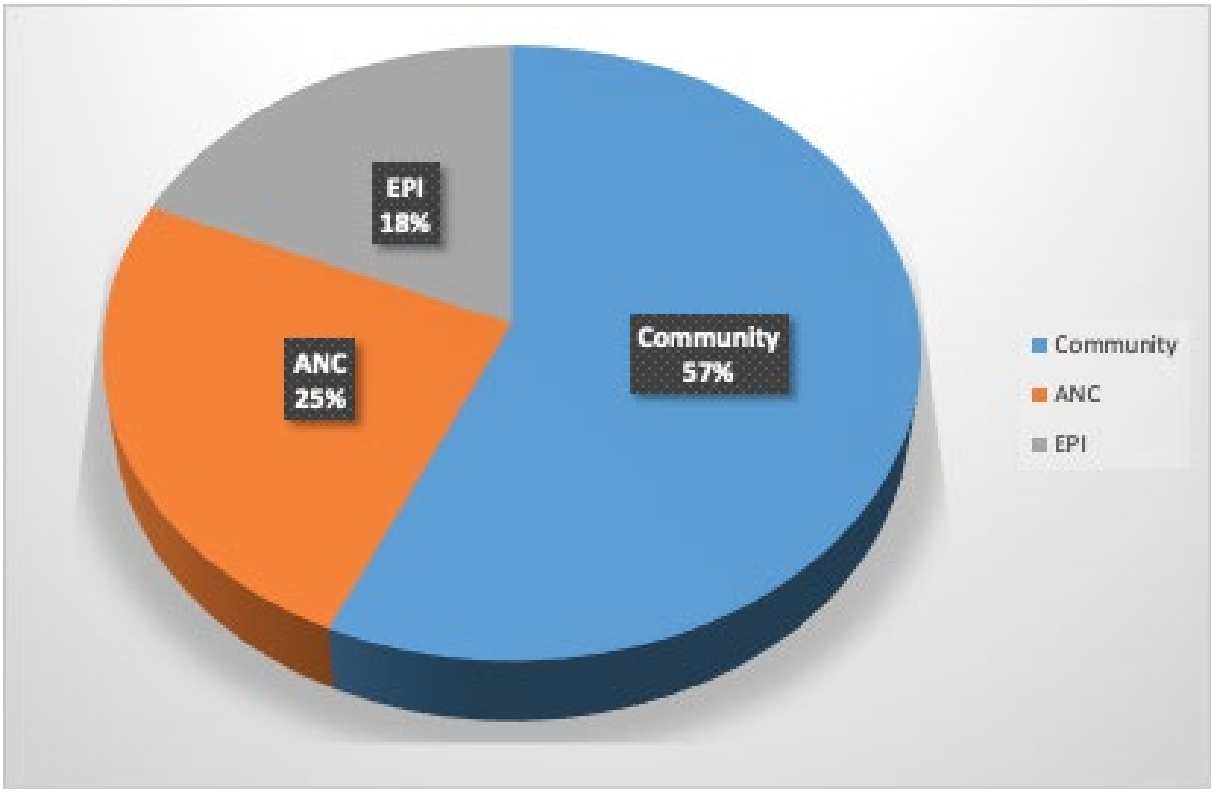
Table A-8 below outlines the number of ITNs delivered to PMI-supported districts in November 2020. This supply is expected to be sufficient through approximately May 2021 and gives an indication of the expected scale of distribution within these districts.

Table A-8. PMI-supported insecticide treated net (ITN) distribution, November 2020

District	ITNs Delivered from National Warehouse to District Holding Points	ITNs Delivered to Health Facilities	# of Health Facilities Supported	ITNs Available (in stock) by Department					
				ANC Unit	EPI Unit	EHT Office	HF Store-room	Total ITNs Available	Grand Total
Bindura	2,500	2,500	7	341	196	206	1,103	1,846	4,346
Centenary	7,500	5,250	7	0	56	203	7,100	7,359	12,609
Guruve	10,000	10,000	12	140	108	104	10,635	10,987	20,987
Mazowe	10,000	7,889	23	0	54	40	4,059	4,153	12,042
Moire	5,000	1,500	5	5	5	9	556	575	2,075
Mt. Darwin	10,000	10,000	9	n/a	n/a	n/a	n/a	7,631	17,631
Rushinga	5,000	2,500	8	14	22	385	753	1,174	3,674
Shamva	10,000	4,500	8	0	0	1,195	808	2,003	6,503
Goromonzi	10,000	8,000	16	25	0	0	3,023	3,048	11,048
Hwedza	2,500	2,250	6	62	32	648	287	1,029	3,279
Murewa	10,000	10,000	13	2	1	5,165	855	6,023	16,023
Binga	2,500		2	0	0	0	0	0	0
Grand Total	**85,000**	**64,389**	**116**	**589**	**474**	**7,955**	**29,179**	**38,197**	**102,586**

Of the three continuous distribution channels used in Zimbabwe, the community continues to be the main distribution channel. As indicated in Figure A-15, from a total of 31,433 ITNs in October–December 2020, 17,829 (56.7 percent) were distributed through the community channel, followed by 7,780 (24.8 percent) through ANC and 5,824 (18.5 percent) through EPI. In any quarter examined, the community channel tends to be, by far, the most preferred channel.

Figure A-15. ITN distribution by channel, October–December 2020



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?

Beginning with MOP 2020, PMI/Zimbabwe responded to an NMCP request to fill an ITN gap that could not be met by the current Global Fund grant. In addition to filling the calculated gap through 2023, PMI will take the opportunity within the next six months to revisit the national ITN quantification using the Net Calc tool and taking into account newly projected ITN needs among special populations in high-burdened areas that cannot be covered with IRS, as well as districts transitioning to elimination status that will require ITN coverage (no longer being covered by IRS). The updated quantification exercise will confirm or refine Zimbabwe's ITN needs between now and 2023. NMCP and partners will also discuss the advantage of considering any additional fixed point outlets at this time, depending on the COVID-19 pandemic status. NMCP has been successful with the community outlet, ANC, and EPI. However, NMCP and partners should consider other outlets such as schools and faith-based gatherings (indoor and outdoor church meetings), which may broaden opportunities to allocate ITNs at these influential, institutional settings and events.

In addition, PMI/Zimbabwe will ask its new malaria flagship partner to perform a rapid assessment to better understand ITN ownership, access and use. An interim assessment is necessary while the malaria program awaits the next national level malaria survey, a postponed 2020 DHS/MIS now scheduled for 2022 or 2023. NMCP is concerned about ITN targeted areas covering every sleeping space with an ITN to provide full household access

with malaria protection. The assessment will look at ITN access within households and determine whether ITN needs have been underestimated.

Given the current information available on ITN needs, PMI plans to support the purchase of 1.3 million pyrethroid-only ITNs under MOP 2022, unless future insecticide resistance data indicates another type would be more effective. This figure includes approximately 1 million ITNs for continuous distribution and ~300,000 campaign ITNs to support a small, rolling campaign planned for 2022–2023. PMI will continue to support ITN distribution using trained community representatives who know how to encourage ITN ownership for every sleeping space, manage ITN configuration and hanging (changing a rectangular ITN to a conical ITN), and relay the messages on consistent ITN use under the *My Net My Life* familiar rubric.

Supporting Data

Table A-9. ITN Gap Analysis Table

Calendar Year	2021	2022	2023
Total country population	14,293,639	14,456,320	14,615,340
Total population at risk for malaria	9,648,206	9,758,016	9,865,355
PMI-targeted at-risk population	9,648,206	9,758,016	9,865,355
Population targeted for ITNs	5,427,988	5,833,844	6,096,848
Continuous Distribution Needs			
Channel 1: ANC	207,621	223,145	233,204
Channel 2: EPI	184,552	198,351	207,293
Channel 3: Community	564,628	467,250	627,957
Channel 4:	0	0	0
Additional ITNs required to avoid ITN stockouts	95,680	88,875	106,845
Estimated Total Need for Continuous Channels	1,052,480	977,620	1,175,300
Mass Campaign Distribution Needs			
Mass distribution campaigns	928,629	1,769,258	281,686
Estimated Total Need for Campaigns	928,629	1,769,258	281,686
Total ITN Need: Continuous and Campaign	***1,981,109***	***2,746,878***	***1,456,986***
Partner Contributions			
ITNs carried over from previous year	424,335	301,878	153,558
ITNs from Government	0	0	0
ITNs from Global Fund	663,652	1,146,558	281,150
ITNs from other donors	0	0	0
ITNs planned with PMI funding	1,195,000	1,452,000	1,300,000
Total ITNs Contribution Per Calendar Year	***2,282,987***	***2,900,436***	***1,734,708***
Total ITN Surplus (Gap)	***301,878***	***153,558***	***277,722***

Key Question 6

What is the current status of durability monitoring?

Supporting Data

PMI/Zimbabwe implemented durability monitoring of DawaPlus 2.0 and DuraNet ITNs beginning in 2015. This activity was completed and the results disseminated in 2019. A summary of the timing and key findings is presented below. For the full report, please visit [Link to be inserted]

Table A-10. Timing of durability monitoring

Campaign Date	Site	Brand[1]	Baseline[2]	12-month[3]	24-month	36-month
September 2015	Kariba, Hurungwe, Makonde, Mbire, Guruve, Zvimba, Mazowe, Centenary, Mt. Darwin, Rushinga, Shamva, Bindura	DawaPlus 2.0 & DuraNet	X	X	X	X

[1]The original cohort of 2,000 ITNs (1,000 DawaPlus 2.0 and 1,000 DuraNet) was distributed across the 12 districts, with each district receiving both brands.

[2]Baseline assessment was conducted six months after distribution.

[3]According to the protocol, assessments were scheduled for months 6, 12, 24, and 26. However, the month 12 assessment was postponed until month 18 due to significant logistical issues and implementing partner turnover.

Table A-11. Results of durability monitoring

Brand	Survey and Time Since Distribution (months)	All Cause Attrition (%)[1]	Nets in Serviceable Condition (%)	Campaign Nets Hanging Over Sleeping Space (%)[2]	Optimal Insecticidal Effective-ness in Bioassay (%)[3]	Optimal Chemical Content (%)[4]
DawaPlus 2.0	18	19.5	83.0	69.2	51.0	12.0
	24	29.3	76.3	62.2	42.2	6.4
	36	42.9	68.3	60.9	4.0	10.0
DuraNet	18	23.7	78.6	69.2	98.1	37.5
	24	33.7	73.4	62.2	88.5	33.3
	36	46.8	60.7	60.9	85.1	12.8

[1]All-cause attrition was defined as the proportion of ITNs destroyed, discarded, or repurposed, as well as those lost for any reason including those given away, used elsewhere, or stolen. Attrition specifically due to wear and tear was not presented by brand. For all study nets, attrition due to wear and tear was 3.1% at month 18, 5.1% at month 24, and 10.0% at month 36.
[2]The percentage of remaining campaign ITNs hanging was not disaggregated by brand. The cumulative figures are reported for both brands. This proportion includes nets hanging over both indoor and outdoor sleeping spaces, folded or loose.
[3]Optimal effectiveness was defined as mortality greater than or equal to 80% using WHO cone bioassay methodology.
[4]Optimal chemical content was defined as meeting the minimum value for the WHO-specified target dose range: DawaPlus 2.0 (active ingredient: deltamethrin 2.0g/kg), range 1.5–2.5g/kg; DuraNet (active ingredient: alpha-cypermethrin 5.8g/kg), range 4.4–7.3g/kg.

The proportion of nets in serviceable condition remained above 60 percent for both DawaPlus 2.0 and DuraNet at month 36. This is above the recommended "normal" threshold of 50 percent at month 36. The estimated median survival (a calculated estimate of the length of time to reach 50 percent survivorship) at the end of the three-year study was 4.7 years for DawaPlus 2.0 and 3.8 years for DuraNet. The optimal effectiveness (proportion of ITNs with bioassay mortality rates ≥80 percent at 24 hours) decreased for both net brands, with DawaPlus 2.0 showing a greater loss of effectiveness than DuraNet. DawaPlus 2.0 also showed earlier reductions in chemical content than DuraNet. The proportion of DawaPlus 2.0 with the required minimum target dose was 46 percent at month 6 and decreased to 10 percent at month 36, compared with 78 percent and 13 percent for DuraNet, respectively. The investigators concluded that reassessment of the distribution-replacement cycle in Zimbabwe should consider these results, and proper net handling, care, and consistent use should be encouraged through routine malaria SBC messaging.

Conclusions for ITN Investments

- The PMI/Zimbabwe team proposes expanding ITN procurement and distribution in Zimbabwe and has made a strategic shift to do so since MOP 2020 in response to NMCP's request.
- After collecting new data on ITN ownership in a rapid assessment and then a larger, national- level survey, PMI/Zimbabwe will make relevant adjustments to the ITN procurement and distribution strategy.
- Similarly, with new data, PMI will refine its approach to increase ITN access and use. In the meantime, PMI will use information regarding its primary barriers to ITN use gleaned from previous surveys—community members misunderstanding about malaria risk based on personal identification of malaria season versus not malaria season and not seeing or hearing any evidence of mosquitoes.
- PMI will continue to support quality ITN distribution by trained cadres either door-to-door or fixed point, depending on the COVID-19 pandemic status in Zimbabwe. They will continue to encourage ITN ownership for every sleeping space, advocate for ITN continuous use, and demonstrate how to hang ITNs and easily transition a rectangular ITN to a conical ITN.
- Based on the previous net durability study, PMI and partners will encourage continued use of ITNs as long as they can be repaired and ITN replacement at least every three years.
- There is currently no information in Zimbabwe that signals the need for PBO or alternative ITNs. For the immediate future PMI and the Global Fund grant will continue to support regular, single pyrethroid ITNs.

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

1.3. INDOOR RESIDUAL SPRAYING (IRS)

Key Goal

Ensure high spray quality and coverage, with an appropriate insecticide, in targeted endemic PMI-supported areas, in alignment with the national insecticide resistance management strategy.

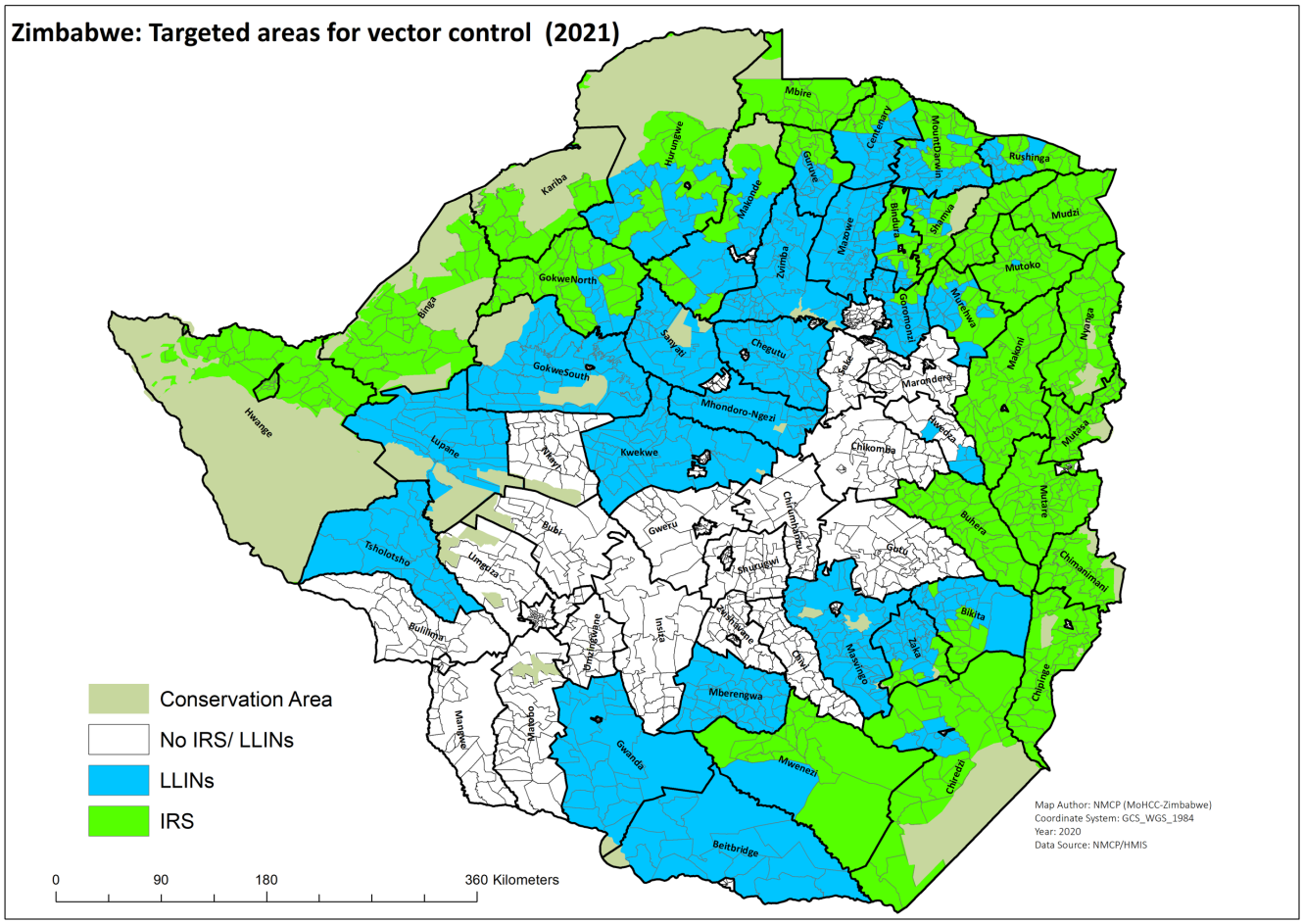
Key Question 1

What areas are targeted for IRS and why?

As detailed earlier, Zimbabwe currently deploys IRS in wards (a subdistrict administrative level) with an annual parasite index (API) of 5 per 1,000 population or greater. In keeping with the most recent *Insecticide Resistance Monitoring and Management Plan for Malaria Vectors in Zimbabwe*, rotation of insecticides is indicated after two years of use and insecticides with different modes of action should be alternated, taking into consideration the available vector resistance data and global guidelines. Over the course of the current Global Fund grant cycle, NMCP plans to incrementally reduce (on an annual basis) the number of districts with wards receiving IRS from the 31 districts sprayed in 2020 to 23 districts in 2023 (see Figures A-1 and A-2 above). In 2021, NMCP intends to spray 29 districts, as depicted in Figure A-16 below.

Supporting Data

Figure A-16. Proposed IRS and ITN deployment for the 2021 IRS season



Key Question 2

In PMI-supported areas, what spray coverage rates have been achieved in the past three years and what are the plans for 2021?

As Table A-12 demonstrates, PMI has directly supported IRS implementation in two high-burden districts in Mashonaland East Province from 2018 to 2020. Beginning with the 2019 season, data from PMI-supported household geo-mapping conducted in 2018 were applied to the planning process, resulting in an increase in the number of targeted and sprayed structures. Coverage rates also improved in both districts during this period of PMI support.

For the 2021 spray season, PMI will shift away from direct support for IRS logistics to a broader TA model, with a concomitant increase in geographic scope to five districts in Mashonaland East. Under this support package, PMI will assist the province's efforts to maintain effective environmental compliance and IRS program monitoring as the Province implements IRS using Global Fund resources. PMI will also support enhanced national-level planning and implementation. Of note, PMI, NMCP, Global Fund, and other stakeholders discussed this transition in the

PMI support model during the Global Fund 2021–2023 grant writing process and efforts were made to ensure adequate Global Fund resources will be available for IRS implementation in Mudzi and Mutoko during the grant cycle.

As part of the transition from direct support for IRS implementation in Mudzi and Mutoko districts, PMI will work with NMCP and PMI's IRS and service delivery TA partners to monitor for increases in malaria transmission and provide technical and logistical support for any necessary response. Monitoring will include routine analysis of weekly and monthly HMIS data by the NMCP, PMI team, and partners.

In addition, PMI has worked with the NMCP to develop guidelines and routine systems for malaria epidemic detection and response at the facility, district, and provincial levels. PMI will help to ensure that, as per current protocols, weekly malaria incidence data will be plotted against multi-year historical data and compared to alert and action thresholds at the facility, district, and provincial levels. Action thresholds will be calculated as the mean plus 1.5 standard deviations of weekly case counts over three to five prior years, taking into consideration potential outlier years. PMI and partners will support MOHCC central, provincial, and district-level staff to assess these data and investigate any sustained increases in transmission. The epidemic preparedness and response guidelines also include recommendations for the implementation of control measures should action thresholds be surpassed. Depending on the findings of the investigation, as well as the scale and geographic scope of the increase, responses could include additional IRS implementation (e.g., if initial coverage was low), long-lasting insecticide-treated net distribution (e.g., as a more rapid response for households that did not receive IRS), SBC for vector control uptake and care-seeking, and ensuring the availability of malaria diagnosis and treatment commodities. PMI will endeavor to provide technical and logistical support for appropriate MOHCC-led responses.

It should be noted that, despite PMI's IRS implementation efforts, Mudzi and Mutoko remained two of the three highest-burden districts in Zimbabwe in 2020, with annual incidence rates of 314 and 220 cases per 1,000 population, respectively. The district-level annual incidence rates for 2021 (following PMI-supported IRS with clothianidin-deltamethrin in October 2020) are not yet known. However, data through April 2021 suggest that incidence is dramatically lower in both districts than in 2020. This is consistent with the overall national trend across the two years. In addition to these epidemiological monitoring efforts, PMI will continue to support routine entomological monitoring in selected sites in Mudzi and Mutoko during the transition period.

Supporting Data

Table A-12. IRS coverage in PMI-supported districts, 2018–2021

Calendar Year	Districts Sprayed (#)	Districts	Structures Sprayed (#)	Coverage Rate (%)	Population Protected (#)
2018	2	Mudzi, Mutoko	112,805	90.1	276,343
2019	2	Mudzi, Mutoko	131,191	93.9	307,209
2020	2	Mudzi, Mutoko	133,087	97.3	315,403
2021*	5	Mudzi, Mutoko, Goromonzi, Murewa, Uzumba-Maramba-Pfungwe (UMP)	N/A[1]	N/A	N/A

*Denotes targets for current year.

[1]PMI will shift to a broader technical assistance model in support of IRS implementation in these districts using Global Fund resources.

Key Question 3

What is the residual efficacy of the insecticides used for IRS in PMI-supported areas?

For the 2019 IRS season, residual efficacy testing to monitor IRS effectiveness was within 24 hours post-IRS application of clothianidin/deltamethrin combination, and thereafter on a monthly basis until the effectiveness was <80 percent. The monitoring was carried out in the two PMI-supported IRS districts of Mutoko and Mudzi. Clothianidin is a slow-acting insecticide formulation, therefore the WHO protocol for cone bioassays was modified so that mortality was recorded every 24 hours for six consecutive days after insecticide exposure, with the exposure time remaining at 30 minutes. Susceptible colonies of *An. arabiensis* (KGB strain) from the insectaries at the National Institute of Health Research (NIHR)-Harare and Africa University were used for monitoring the insecticide.

For the majority of sites and years, IRS insecticide residual efficacy was tested on mud, brick, cement, and painted surfaces. Some month-to-month variability in mortality was observed among these surfaces in 2018, with mud surfaces generally demonstrating the least variability and longest residual efficacy. However, in nearly all instances, all surfaces dropped below the 80 percent mortality threshold at the same time.

For the 2019 campaign, the entomology field teams were unable to monitor the sites for a period of months due to the COVID-19 pandemic and associated travel restrictions. For the Dendara/Mudzi site, mortality was above 80 percent for pirimiphos-methyl on all surfaces at month four. When monitoring resumed in month nine, mortality had dropped below 80 percent. As a result, the exact duration of efficacy cannot be precisely determined. For the Kawere/Mutoko site, IRS was completed using clothianidin-deltamethrin and at month four, mortality remained above 80 percent for all surfaces. However, Mashonaland East Province resprayed this area in May 2020 using pirimiphos-methyl, in response to an increase in cases. Further assessment of clothianidin-deltamethrin residual efficacy was not possible. For the Burma Valley/Mutare site, the residual efficacy of DDT was still above 90 percent when monitoring resumed in month 9, but dropped below 80 percent in month 10.

Supporting Data

Table A-13. IRS insecticide residual efficacy

Site/District	Year[1]	Insecticide	Average Residual Efficacy (months)
Dendara/Mudzi	2018	pirimiphos-methyl	5
Kawere/Mutoko	2018	pirimiphos-methyl	4
Burma Valley/Mutare	2018	DDT	8
Dendara/Mudzi	2019	pirimiphos-methyl	>4 and <9
Kawere/Mutoko	2019	clothianidin-deltamethrin	>4
Burma Valley/Mutare	2019	DDT	9

[1]Denotes the year in which spraying was implemented in calendar Q4.

Key Question 4

What is the insecticide rotation plan in PMI-supported areas?

Table A-14 outlines the insecticide rotation plan for districts that PMI has recently supported or plans to support for the 2021 spray season.

Supporting Data

Table A-14. Insecticide rotation plan

Target Spray Area	2020	2021	2022*	2023*
Mudzi	clothianidin-deltamethrin	DDT	DDT	OP
Mutoko	clothianidin-deltamethrin	clothianidin-deltamethrin	DDT	DDT
Goromonzi	DDT	clothianidin-deltamethrin	Transition to ITNs	Transition to ITNs
Murewa	pirimiphos-methyl	pyrethroid	pyrethroid	Transition to ITNs
UMP	pirimiphos-methyl/DDT	DDT	pirimiphos-methyl	pyrethroid

*Denotes planned insecticide classes. PMI does not plan to provide support for IRS for the 2022 and 2023 seasons.

Conclusions for IRS Investments

From 2011 to 2013, PMI provided a limited package of support (environmental compliance, training, monitoring and evaluation, operational logistics, and procurement of insecticides and equipment) for the NMCP's implementation of IRS in districts using pyrethroid insecticides. The decision to provide this limited package rather than comprehensive support for IRS operations in selected districts was predicated on the fact that Zimbabwe had a long-standing history of implementing a successful IRS program. However, after a request from the NMCP for PMI/Zimbabwe to directly demonstrate the most current IRS best practices and to address increasing incidence in Manicaland Province, PMI/Zimbabwe shifted to providing a full package of direct support for IRS operations in 2014. This support was implemented in four high-burden districts in Manicaland Province through the 2017 spray season. In 2018, in response to a desire by NMCP to rotate insecticides from organophosphates to DDT in those four Manicaland Districts (according to the established insecticide rotation plan), PMI/Zimbabwe shifted its package of comprehensive IRS support to two high-burden districts in Mashonaland East Province. Although PMI would like to have covered the equivalent number of districts (four) in Mashonaland East, increasing costs for IRS operations limited the number of structures, and hence districts, that could be sprayed with the available funding envelope. This comprehensive support for IRS operations in Mashonaland East was maintained through the 2020 spray season. With MOP FY 2020 funds (2021 spray season), PMI continues to provide technical and limited logistical assistance to previously-supported districts to ensure high-quality implementation and ensure a successful transition to Global Fund-supported IRS implementation.

In total, PMI rendered comprehensive IRS support and demonstration of IRS best practices for seven spray seasons, from 2014 to 2020. However, the level of incorporation of PMI-supported best practices by the NMCP in Global Fund-supported districts has been limited by planning, financial, and implementation challenges. In addition, the economic challenges in Zimbabwe have resulted in increased costs for PMI-funded IRS operations, which have limited the number of households that PMI can cover with the existing IRS envelope. Although these economic challenges also affect campaigns in NMCP-led districts, the GOZ is still able to cover more structures than PMI using an equivalent amount of donor resources.

Taking these factors into consideration, PMI plans to fully transition away from IRS support in favor of the procurement/distribution of additional ITNs and the promotion of their use, in line with the overall direction of the NMCP's vector control strategy. PMI will also direct an additional portion of the historical IRS funding to improve the quality of malaria CM, and strengthen SBC and SM&E implementation. This will begin with MOP FY 2021 and continue under MOP FY 2022.

This shift in PMI support has been discussed with NMCP and in-country partners during the FY 2022 MOP development process and the NMCP supports the change. In preparation for this transition away from comprehensive IRS support, NMCP, PMI, and other stakeholders had included IRS funding for the two districts most recently supported by PMI (Mudzi and Mutoko) in the 2021–2023 Global Fund grant request. These districts will continue IRS implementation using those resources.

PMI remains supportive of the NMCP's overall vector control strategy, including high-quality IRS implementation when and where it is appropriate.

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

2. HUMAN HEALTH

2.1. CASE MANAGEMENT (CM)

NMCP Objective

Ensuring access to prompt and quality assured diagnosis for all malaria suspected cases and treatment to all confirmed cases is a key NMCP objective under the 2021–2025 NMCESP. To achieve this objective, the NMCP will focus its effort on the following areas:

1. Strengthening quality assurance of diagnostics, including rapid diagnostic tests (RDTs) and microscopy.
2. Maintaining quality-assured treatment of all confirmed malaria cases.
3. Strengthening severe malaria management to reduce mortality.
4. Maintaining quality-assured supply chain management of malaria CM commodities.
5. Strengthening CM for special groups (mobile population, artisanal miners, refugees, agriculture workers, gatherings etc.).
6. Strengthening community CM.

NMCP Approach

Case management guidelines

The NMCP implements CM interventions in alignment with the most recent version (2015) of the *Guidelines for the Management of Malaria in Zimbabwe*, as well as subsequent amendments published in August 2018. These amendments were disseminated as a circular from the MOHCC Permanent Secretary for Health and included (1) a recommendation and dosing schedule for the use of artemether-lumefantrine (AL) for uncomplicated malaria in children weighing less than 5 kilograms, with children weighing less than 2 kilograms treated as severe malaria, (2)

a recommendation and dosing schedule for the use of parenteral artesunate for severe malaria in children weighing less than five kilograms, and (3) a recommendation for the use of parenteral artesunate for severe malaria during the first trimester of pregnancy.

The NMCP and partners intended to review and update Zimbabwe's CM guidelines in 2020. However, this process was postponed due to the COVID-19 pandemic and is still pending. Current CM guidelines and practices are described in the following sections.

Diagnostic testing

Parasitological diagnosis of all suspected malaria cases is recommended prior to treatment. The 2015 *Guidelines for the Management of Malaria in Zimbabwe* outline the signs and symptoms of uncomplicated and severe malaria but do not provide a standard definition of a suspected malaria case. In practice, health workers at the facility and community levels are trained to consider all febrile patients to be suspected malaria cases and conduct parasitological testing. While microscopy is recognized as the gold standard for parasitological confirmation, its recommended use is reserved for: follow-up of admitted malaria patients, confirmation of suspected treatment failure, and confirmation of coinfections or infections with non-*falciparum* malaria species. RDTs are endorsed for VHWs, rural clinics, district hospitals, provincial hospitals, emergency departments in central hospitals, and private health institutions. Monospecies (*P. falciparum*) RDTs are used in higher-transmission regions, with multispecies RDTs used in pre-elimination areas to determine if other species are present as districts move toward malaria-free certification. Multispecies RDTs are procured by the Global Fund and, in limited instances, the GOZ.

Treatment of uncomplicated malaria

Oral AL is recommended as the first-line treatment and artesunate-amodiaquine (ASAQ) as the second-line treatment for uncomplicated malaria. Oral quinine was recommended as the first-line treatment in children weighing less than 5 kilograms in the 2015 *Guidelines for the Management of Malaria in Zimbabwe*. However, to be consistent with updated WHO guidance, this recommendation was amended August 2018 and AL is now recommended as the first-line agent in children weighing between 2 and 5 kilograms, with children weighing less than 2 kilograms treated as severe malaria cases. Oral quinine with either doxycycline or clindamycin is listed as an alternative second-line treatment to ASAQ or as the first-line regimen for pregnant women in the first trimester. Of note, oral quinine plus doxycycline is not currently recommended by WHO for treatment in the first trimester.

Treatment of uncomplicated malaria in elimination areas

In low-transmission areas implementing elimination interventions, the 2015 *Guidelines for the Management of Malaria in Zimbabwe* recommend the addition of low-dose primaquine (for its gametocytocidal effect) to the usual treatment course for uncomplicated malaria. To date, the Global Fund has supported the procurement of this medication.

Treatment of severe malaria

Parenteral artesunate is recommended as the first-line treatment for severe malaria and as a pre-referral treatment at the health facility level. Parenteral quinine was recommended as the first-line treatment for severe malaria for women in the first trimester of pregnancy and for children weighing less than 5 kilograms. However, to be consistent with updated WHO guidance, the recommendation for these groups was shifted to parenteral

artesunate in the August 2018 amendment. Parenteral quinine is now recommended only as an alternative treatment when parenteral artesunate is unavailable or contraindicated.

Pre-referral treatment with rectal artesunate suppositories

Rectal artesunate suppositories (RAS) are recommended for pre-referral treatment of severe malaria at the community level for all age groups, a difference from the WHO recommendation that RAS be used only for children under six years of age. Of note, RAS uptake has been slower than predicted since introduction, with relatively low and inconsistent consumption patterns noted.

Quality assurance of diagnostic testing

Zimbabwe implements a quality control and quality assurance system for both laboratory and pharmaceutical supplies. RDTs are procured by the Government of Zimbabwe and donors, which are then pooled and distributed by the National Pharmaceutical Company. The RDTs procured by PMI are lot-tested before arrival in Zimbabwe. In-country, the National Medical Reference Laboratory periodically lot-tests RDTs before they are distributed to public sector facilities and the Medical Control Authority of Zimbabwe conducts routine post-marketing surveillance for multiple malaria commodities, including RDTs and ACTs.

External quality assurance (EQA) for malaria microscopy has been offered since 2011 by Zimbabwe National Quality Assurance Program Trust (ZINQAP). However, the program has historically been underfunded and the number of participating sites has been limited. ZINQAP is currently a sub-recipient under the 2021–2023 Zimbabwe Global Fund grant and currently provides EQA for both microscopy and RDTs.

The MOHCC has also initiated a results-based financing system that has created an incentive system for quality CM implementation among health workers.

Community-based health worker role

Two community-based cadres are routinely engaged in malaria activities, VHWs and School Health Coordinators (SHCs). According to the Directorate of Nursing Services, there are approximately 19,400 VHWs, each serving approximately 100 households. By MOHCC policy, VHWs and SHCs working in malaria control areas are mandated to conduct malaria community CM, including administering RDTs, treating positive cases with artemisinin-based combination therapies (ACTs), and administering RAS as pre-referral treatment of severe malaria at the community level. However, VHWs and SHCs working in lower-transmission, elimination settings are trained only to administer RDTs and refer to the nearest health facility, given the stock management issues in low-transmission settings (limited use of malaria ACTs and primaquine due to the very low case burden, resulting in the need to redistribute stocks to avoid expiries) and the need for active case investigation. In 2020, approximately 44 percent of all malaria cases in Zimbabwe were reported by VHWs and SHCs. This is a substantial increase from approximately 30 percent in 2018 and 39 percent in 2019.

VHWs receive a quarterly stipend of US$52, which is paid using other donor resources. In Zimbabwe's current economic climate, this is not a substantial sum. Other incentives provided primarily with donor funding include uniforms (though these are not always available); promotional materials and clothing; and, in limited cases, bicycles, medicine cabinets, and smartphones. As part of the Zimbabwe Results- Based Financing Program, some VHWs receive a small payment for cases that they refer to the clinic.

Private sector

According to the 2019 Zimbabwe MICS, among those children with fever for whom advice or treatment was sought, only 6 percent sought care in the private sector. National policy recommends malaria treatment and testing in the private sector consistent with the national guidelines, including the use of AL as the first-line agent, as well as the use of RDTs. The NMCP has attempted to engage with the private sector to ensure appropriate malaria CM, including conducting training of private sector professionals, either through inclusion in public sector trainings or by outreach through existing channels, such as continuing education sessions. However, the available resources for such activities are limited, given the substantial gaps remaining within the public sector. PMI is not aware of a recent formal assessment of malaria treatments available in the private sector. Anecdotal evidence suggests that AL and ASAQ are available as are quinine and clindamycin tablets.

Health worker training and supervision

Facility and community-level health workers receive specific training in malaria CM and community CM, respectively, which included an emphasis on SBC to promote uptake of malaria prevention and care-seeking behaviors. Traditional supportive supervision is conducted at both levels, as resources allow, as well as peer-to-peer supervision among VHWs. Malaria CM mentoring was introduced in 2019 with PMI funding in six districts, with the intention of continued scale-up in the coming years. This program is intended as a supplement to traditional supportive supervision and serves as an additional channel for assessing and improving the CM capacity of individual facility-based health workers in a collegial, consequence-free setting. Training, supportive supervision and mentoring activities were curtailed in 2020 and early 2021 due to the COVID-19 pandemic.

To achieve national-level scale, Zimbabwe would need to train and supervise all of the approximately 18,000 facility-based health workers and the majority of the estimated 19,400 community-based health workers. Historically, the tracking of CM training has been a decentralized process and it has been difficult for PMI/Zimbabwe to estimate the complete, national training need. In response, PMI/Zimbabwe has supported the implementation of the TrainSMART system to track trainings conducted in PMI-supported provinces, including trainings funded by other donors. This system, combined with detailed discussions with provincial and district leadership regarding training gaps and resources, has enabled PMI to more completely estimate the training need and coverage. Further clarity is needed regarding the training needs within non-PMI supported areas.

PMI Objective in Support of NMCP

PMI/Zimbabwe and Global Fund procure nearly all of the malaria commodities (e.g., ACTs, RDTs, SP, parenteral artesunate, and RAS), with limited inputs from the GOZ. PMI works with the NMCP, the Directorate of Pharmacy Services (DPS), and Global Fund staff to ensure timely product availability, according to current needs. As a result, PMI does not necessarily procure all commodity types each year. By policy, PMI does not currently procure rectal RAS, as the Zimbabwe policy includes provision of RAS to all age groups, in contrast with WHO recommendations. PMI commodities are contributed to a pooled commodity management system and distributed nationwide.

PMI currently provides support for CM service delivery strengthening in selected districts within four of Zimbabwe's highest malaria burden provinces. This includes provision of TA, as well as support for training, supportive supervision, mentoring, death audits, policy and guideline revision, and other activities (more details provided in the following sections). PMI's support is targeted to all levels of the health system and emphasizes

both facility and community-based service provision. As outlined earlier, PMI is currently finalizing the award for a new bilateral service delivery partner. The exact geographic scope for the interventions to be implemented under this new mechanism will be negotiated with the partner, NMCP, Global Fund, and other stakeholders, using epidemiologic evidence and taking into consideration the scope and location of Global Fund-funded activities.

PMI-Supported Recent Progress (FY 2020)

PMI-supported CM strengthening activities were impacted by the COVID-19 pandemic and the associated restrictions and mitigation measures implemented by the GOZ, the persistent and substantial human resource issues that continue to impact the Zimbabwe healthcare system, and the continued economic/monetary issues within Zimbabwe. However, PMI worked with the NMCP and partners to adjust to these difficult circumstances and tailor activities to allow for safe and effective implementation, including maximizing virtual approaches and implementing strict COVID-19 mitigation measures for in-person activities. Examples of PMI-supported progress from October 2019 to December 2020 include the following:

- PMI worked with Global Fund and in-country partners to coordinate procurement and delivery schedules to ensure appropriate central-level stocks of malaria commodities were available. In the past year, PMI procured approximately 425,000 ACTs and 1,000,000 RDTs.
- PMI initiated planning for a potential PMI-supported therapeutic efficacy study using existing FY 2020 funds. Stakeholder discussions are still ongoing.
- In the four high-burden provinces, PMI/Zimbabwe supported:
    - Implementation of a now fully-functional training database (TrainSMART).
    - Two Malaria Case Management Subcommittee meetings.
    - Orientation of 2,232 health workers, including 1,631 VHWs, on malaria and COVID-19 CM in the context of the pandemic.
    - Procurement and distribution of COVID-19 PPE for 1,600 VHWs.
    - Training 369 health workers in malaria CM and MIP, including 182 VHWs and 69 SHCs.
    - Four rounds of supportive supervision visits to facility-based health workers.
    - Printing and distribution of 500 malaria CM job aids.
    - Implementation of a CM mentorship program in five districts, including a successful shift to a virtual platform.
    - Three provincial or district-level death audit meetings.
    - Procurement of medicine boxes for 101 VHWs in hard-to-reach, high-burden districts.
    - Peer-to-peer supervision to enhance community CM, including the training of 78 peer supervisors.
    - Two malaria elimination planning and review meetings, one specifically for Lupane District and one covering all malaria elimination districts.

PMI-Supported Planned Activities (FY 2021 with currently available funds)

Through FY 2021, PMI will continue to support the procurement and distribution of malaria commodities and CM service delivery strengthening, including the following:

- Procurement and distribution of approximately 1.2 million RDTs using MOP FY 2021 funds.
- Planning and implementation of a therapeutic efficacy study (TES), if stakeholder agreement on a way forward can be achieved.

- Continued support for malaria CM strengthening in selected high-burden and elimination districts. The PMI planned activities for the next 12 months will be negotiated with NMCP and a new partner under a new agreement just awarded April 2021, but will likely include continued support for the activities similar to those listed in the preceding section. The exact geographic scope for the interventions to be implemented under this new mechanism will be negotiated with the partner, NMCP, Global Fund, and other stakeholders, using epidemiologic evidence and taking into consideration the scope and location of Global Fund-funded activities.
    - Given the recent increase in the percentage of malaria cases reported by VHWs and the geographical, economic and pandemic-related barriers to accessing care at facilities, PMI/ Zimbabwe will focus additional resources toward community CM strengthening.
    - Though still relatively limited compared to control areas, PMI will target additional resources to CM strengthening in elimination areas.

Key Goal

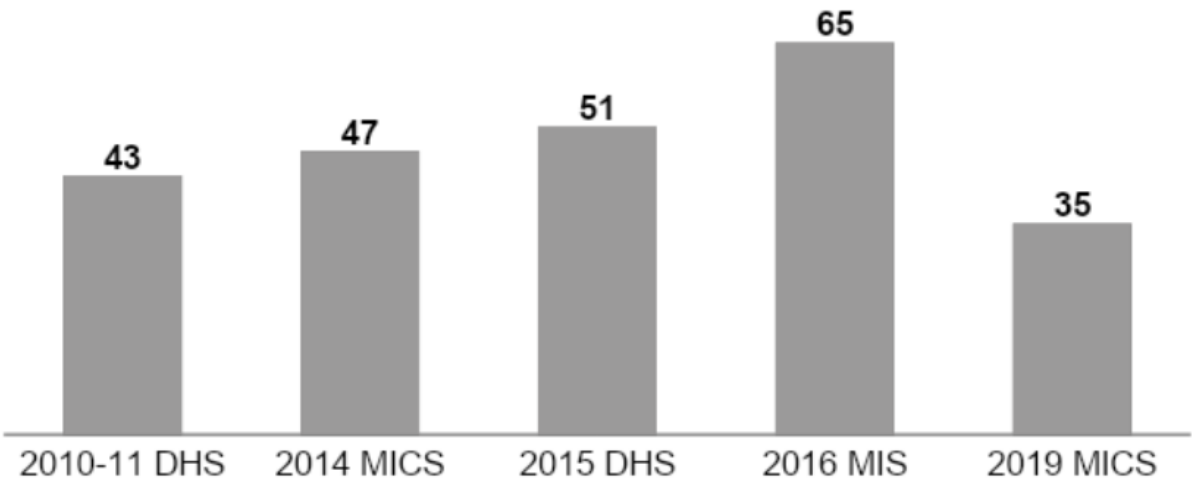
Improve access to and use of timely, quality, and well-documented malaria testing and treatment by providing facility- and community-based health workers with training, supervision, and malaria commodities to provide quality, effective care.

Key Question 1a

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

Figure A-17. Trends in care-seeking for fever

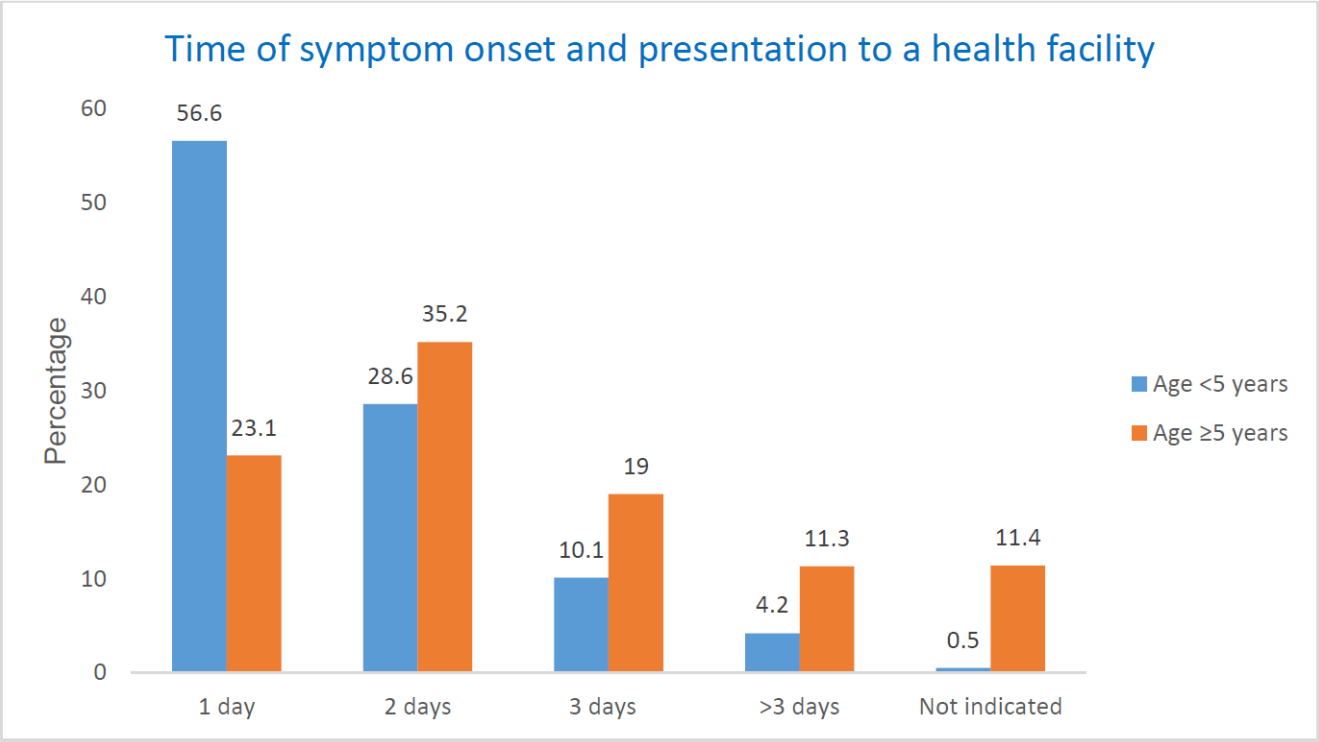
Among children under five years of age with fever in the two weeks before the survey, percentage for whom advice or treatment was sought



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

According to record reviews conducted during the 2019 Zimbabwe Malaria Case Management Audit (Figure A-18), 37 percent of all uncomplicated malaria cases assessed (n = 1,308) presented to a health facility within 24 hours of symptom onset. Among children under five years of age (n = 546), 57 percent of caretakers sought care within 24 hours of symptom onset, compared with 23 percent among individuals five years of age or older (n = 762). The sampling methodology did not appear to take into consideration care-seeking to VHWs, suggesting that the overall percentage seeking some form of care within 24 hours could be even higher. Though not depicted in the figure, care-seeking among severe malaria cases (n = 1,105) was comparable. Among children less than five years of age (n = 324), 55 percent of caretakers sought care within 24 hours of symptom onset, compared with 19 percent among individuals 5 years of age or older (n = 791). These data indicate that care-seeking within 24 hours among children under five years of age may be more common than reported in the recent 2019 MICS (Figure A-17).

Figure A-18. Time taken from onset of symptoms of uncomplicated malaria to presentation at a health facility by age group (Source: 2019 Zimbabwe Malaria Case Management Audit Report)



Key Question 1b

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

Supporting Data

Key facilitators that affect prompt care-seeking at the facility and community levels include:

- VHWs recognized as an important source of care: According to the 2018 *Assessment of Drivers of Continuing Malaria Transmission in Angwa Ward, Mbire District*, VHWs are heavily relied upon for the diagnosis and treatment of fever. This appears to reflect the national situation in which a growing percentage of cases are being reported by (and presumably attended by) VHWs, with 44 percent of all cases reported from the community level in 2020.
- Malaria recognized as a major health problem: From the 2016 MIS, approximately 67 percent of household heads surveyed listed malaria as the primary health problem in their area.

Key barriers that affect prompt care-seeking at the facility and community levels include:

- Decreased access to facility-level care: Media reports and direct observation suggest that the ongoing economic issues in Zimbabwe have led to restricted ability and willingness of patients to access care. Patients struggle to afford transport costs and, when they do travel for care, services are limited. Healthcare workers' hours have been curtailed in lieu of pay increases, and strikes and health facility closures are common, which has an impact on the quality of care provided and community perceptions

of care. This situation was dramatically worsened by the COVID-19 pandemic, with healthcare worker attendance reduced further due to the lack of appropriate PPE and fears of contracting the virus, as well as lockdown measures and travel restrictions further limiting both patient and healthcare worker movement and access.

- Service limitations at the community level: Respondents from the Angwa assessment suggested that VHWs were not always available to provide care when needed and supply chain evaluations show continued problems ensuring commodity availability at the community level. This may limit care-seeking and/or result in referrals to facilities, which are then not completed due to the issues just described.
- Limited patient and care-giver knowledge regarding malaria signs and symptoms: Only 36 percent of household heads surveyed identified fever as a sign of malaria. In the Angawa assessment, 59 percent of respondents knew at least two signs and symptoms of malaria, but only 8 percent recognized fever as a sign of malaria in adults, and only 20 percent knew two danger signs of malaria in children.
- Long distances to nearest health facility: Nearly 47 percent of 2016 MIS respondents reported that the distance to the nearest health facility was greater than five kilometers, with over 19 percent reporting a distance greater than 10 kilometers.
- Family and religious barriers: In the 2016 MIS, approximately 12 percent of women 15 to 49 years of age reported the need to ask permission to seek care for a child under five years of age with fever. Members of a particular Apostolic sect, which makes up approximately 3 percent of the population surveyed in the 2016 MIS, were substantially less likely to seek care in the public or private sector than other religious groups (8 percent for members of this sect vs. 58 percent for all care-seekers).

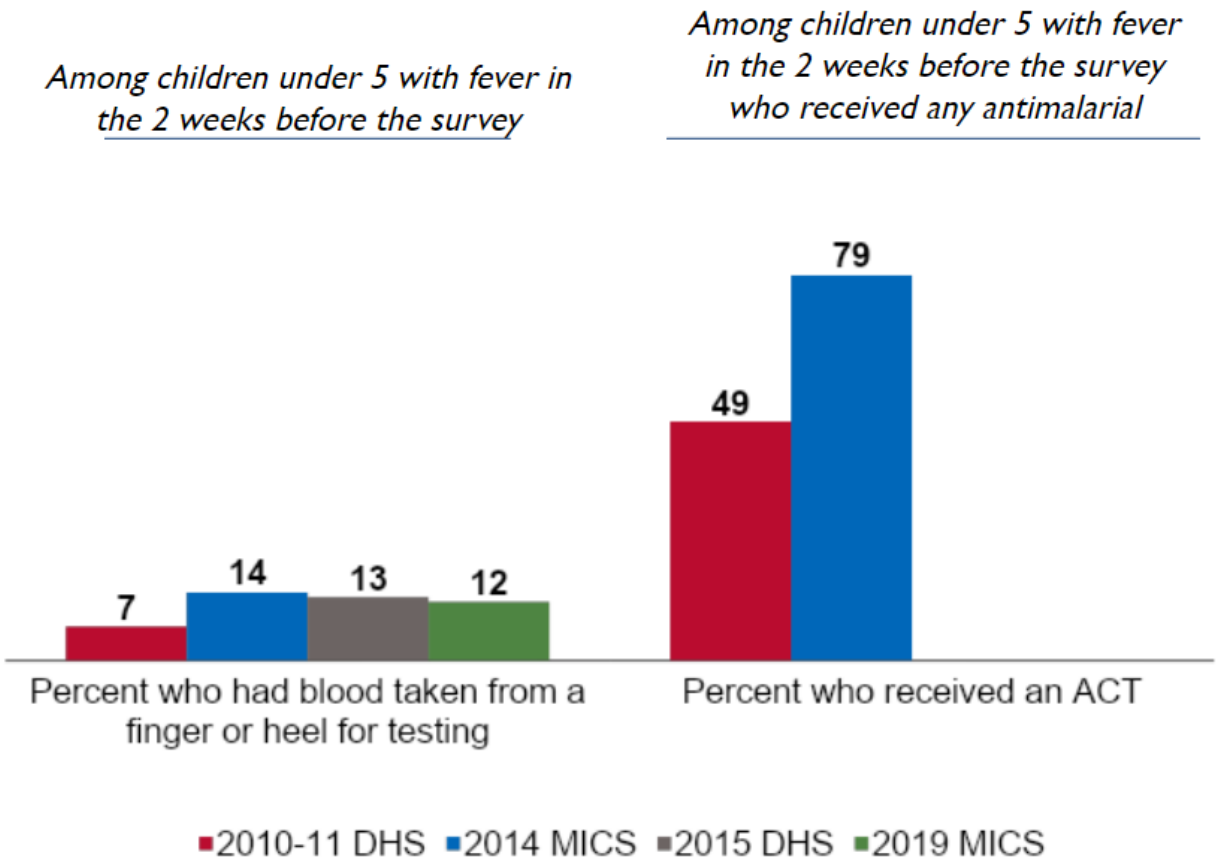
Please refer to Section 3.4 for information on how SBC interventions will be directed to address the challenges identified above.

Key Question 2a

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

Figure A-19. 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

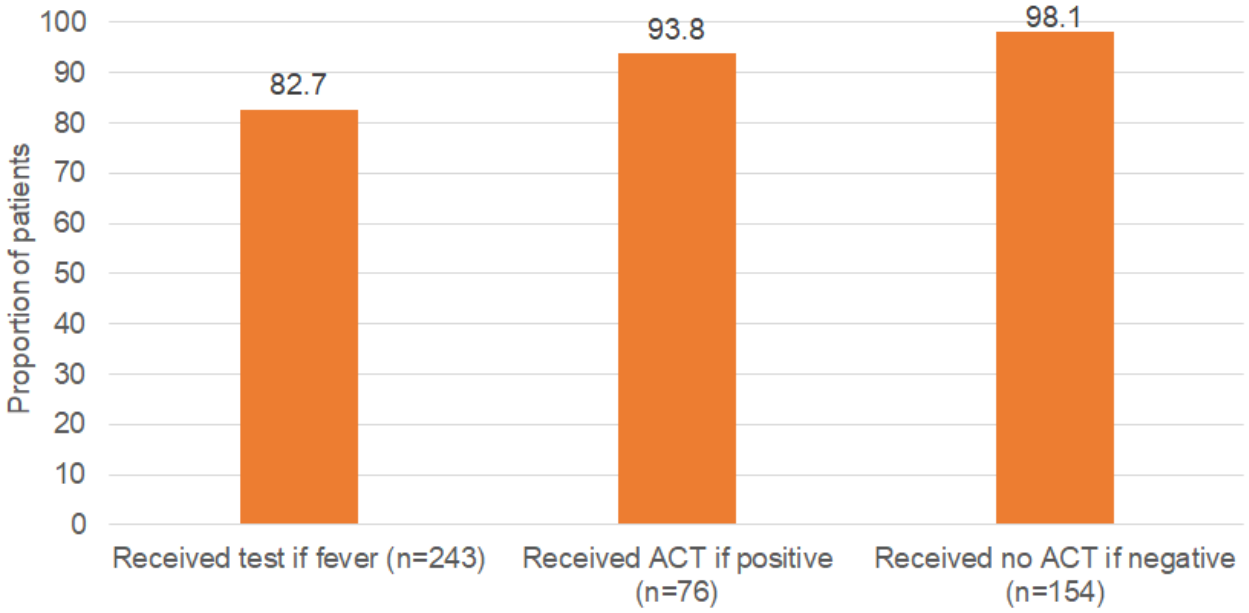


The data presented in Figure A-19 above suggest that use of parasitological diagnosis is quite limited in Zimbabwe. However, data from other assessments suggest that rates of parasitological diagnosis and appropriate treatment are higher than those estimated by the national-level household surveys. It should be noted that Zimbabwe began implementation of universal parasitological diagnosis with RDTs in 2009 but the rollout was not immediately completed at the facility level and use of RDTs to the community level did not begin in earnest until 2014. As a result, the early household-level surveys shown do not reflect the current situation of nearly universal RDT availability. Additionally, malaria transmission is quite heterogeneous in Zimbabwe, with substantial portions of the country experiencing little to no transmission. As a result, provider suspicion for malaria may be quite low in some areas, potentially diluting the results in a nationwide survey.

Preliminary results from the 2019 independent assessment of a PMI partner project found that adherence to malaria CM practices in high-burden areas is substantially better than what is suggested by the DHS and MICS data. As illustrated in Figure A-20 below, review of patient records at 70 health facilities in three high-burden provinces revealed that 83 percent (n = 243) of patients with fever received a parasitological test, 94 percent of

those patients who tested positive received an ACT, and 98 percent of those patients that tested negative did not receive an ACT.

Figure A-20. Proportion of patients who received correct malaria case management



Source: 2019 Zimbabwe Assistance Program in Malaria (ZAPIM) End-of-Project Evaluation.

According to record reviews of 1,308 uncomplicated malaria cases conducted during the 2019 *Zimbabwe Case Management Audit,* 99.5 percent of patients had received a parasitological test (RDT and/or microscopy). Approximately 96 percent of these patients were treated with either the recommended first-line ACT (AL = 94 percent) or second-line ACT (ASAQ = 1.5 percent)). Less than 1 percent were treated with oral quinine. Among children under five years of age with uncomplicated malaria, 99 percent received a parasitological test and 97 percent were treated with either the first- or second-line ACT.

A 2017 PMI-funded assessment of the discrepancy between reported cases and ACT consumption also assessed limited aspects of VHW adherence to CM guidelines. Record review of CM practices among 209 VHWs across 72 districts revealed that ACTs were administered to 87 percent of confirmed cases seen at the community level.

Key Question 2b

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

Supporting Data

Key facilitators that affect testing and treatment practices among providers include:

- Substantial proportions of staff are trained in malaria CM in PMI-supported areas: In the three high-burden provinces supported by PMI through the ZAPIM project, 72 percent of facility-based staff and 73 percent of VHWs have received CM training between 2016 and 2018. Additional, though more limited,

training was conducted in 2019 and 2020, and 97 percent of facilities surveyed in the 2019 ZAPIM end-of-project evaluation reported having at least one health worker trained in malaria CM.

- Availability of malaria diagnostic and treatment commodities at service delivery points: In general, stockout rates for RDTs and ACTs remain relatively low according to LMIS data, particularly for at least one AL presentation at the facility level (see Section 3.1). According to the most recent End-Use Verification Survey (EUV, October 2020), over 99 percent of facilities had at least one AL formulation available on the day of the visit.
- Availability of and adherence to malaria diagnosis and treatment guidelines: According to the 2019 ZAPIM end-of-project evaluation, 97 percent of facilities surveyed had malaria treatment guidelines available. In 70 facilities in PMI-supported areas, 83 percent (n = 243) of patients with fever received a parasitological test, 94 percent of those patients who tested positive received an ACT, and 98 percent of those patients who tested negative did not receive an ACT. Among 209 VHWs in 72 districts, 87 percent of confirmed malaria cases received an ACT.

Key barriers that affect testing and treatment practices among providers include:

- Continued health system and economic issues: Media reports and direct observation suggest that the ongoing economic issues in Zimbabwe have created substantial human resources issues. Facility-based healthcare workers' hours have been curtailed in lieu of pay increases, and strikes and health facility closures are common. This situation was dramatically worsened by the COVID-19 pandemic, with healthcare worker attendance reduced further due to the lack of appropriate PPE and fears of contracting the virus, as well as lockdown measures and travel restrictions further limiting healthcare worker movement.

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

Key Question 3

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

Supporting Data

Currently, financial contributions to the malaria program by the GOZ are limited. PMI and Global fund both support the full range of malaria CM strengthening efforts being implemented by NMCP, including training, supportive supervision, mentoring, CM review meetings, death audits, and other activities. The division of support between the two major donors is primarily geographical. Through March 2021, PMI was primarily targeting 15 high-burden districts in Mashonaland East, Mashonaland Central, and Matabeleland North provinces, with limited support for community CM activities in two districts in Manicaland Province. CM strengthening in the remaining districts were implemented by NMCP with Global Fund support.

PMI is currently finalizing the award for a new bilateral service delivery partner that will implement CM strengthening interventions for the facility and community level in a selected number of high-burden districts. The exact geographic scope for the interventions to be implemented under this new mechanism will be negotiated with the partner, NMCP, Global Fund, and other stakeholders, using epidemiologic evidence. The NMCP has the

ability and willingness to adjust the scope and location of Global Fund-funded activities to ensure that all areas are covered through either PMI or Global Fund support.

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?

Supporting Data

Table A-15. RDT Gap Analysis Table

Calendar Year	2021	2022	2023
Total country population	14,293,639	14,456,320	14,620,853
Population at risk for malaria	9,662,500	9,772,472	9,883,697
PMI-targeted at-risk population	9,662,500	9,772,472	9,883,697
RDT Needs			
Total number of projected fever cases	1,677,683	1,333,975	1,248,967
Percent of fever cases tested with an RDT	98%	98%	98%
RDT Needs (tests)	2,824,254	2,824,254	2,824,254
Needs Estimated based on Consumption Data			
Partner Contributions (tests)			
RDTs from Government	*0*	*0*	*0*
RDTs from Global Fund	366,350	2,122,150	2,241,775
RDTs from other donors	0	0	0
RDTs planned with PMI funding	1,408,000	1,200,000	1,000,000
Total RDT Contributions per Calendar Year	***1,774,350***	***3,322,150***	***3,241,775***
Stock Balance (tests)			
Beginning Balance	1,889,225	839,321	1,337,217
- Product Need	2,824,254	2,824,254	2,824,254
+ Total Contributions (received/expected)	1,774,350	3,322,150	3,241,775
Ending Balance	839,321	1,337,217	1,754,738
Desired End of Year Stock (months of stock)	8	8	8
Desired End of Year Stock (quantities)	1,882,836	1,882,836	1,882,836
Total Surplus (Gap)	***(1,043,515)***	***(545,619)***	***(128,098)***

Biannual national quantification exercises are conducted by DPS, in coordination with the NMCP and malaria stakeholders. The RDT gap analysis table presented here, and the ACT and parenteral artesunate tables that follow, were developed in collaboration with the NMCP using information from the most recent quantification exercise, conducted in February 2021. Zimbabwe used a consumption-based model to estimate the projected RDT needs through 2023. This method has been used for several years in Zimbabwe and appears to provide

reasonable estimates for procurement planning purposes, despite the discrepancy between the actual/projected RDT consumption and the actual/ projected fever cases.

Taking into consideration the RDT contribution planned in the Global Fund 2021–2023 grant, PMI intends to procure approximately 1 million RDTs with MOP FY 2022 funds. If these projections prove accurate, this will cover the annual need for 2023, with sufficient supplies remaining to keep the supply system close to the national minimum months of stock. PMI will continue to monitor the RDT supply status and work with Global Fund, the NMCP, and DPS to ensure that Zimbabwe's commodity needs are fully covered for 2023.

Key Question 5

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

Supporting Data

Table A-16. ACT Gap Analysis Table

Calendar Year	2021	2022	2023
Total country population	14,293,639	14,456,320	14,615,340
Population at risk for malaria	9,648,206	9,758,016	9,865,355
PMI-targeted at-risk population	9,648,206	9,758,016	9,865,355
ACT Needs			
Total projected number of malaria cases	402,644	320,154	299,751
Total ACT Needs (treatments)	***1,579,289***	***794,194***	***720,668***
Needs Estimated based on a Combination of HMIS and Consumption Data			
Partner Contributions (treatments)			
ACTs from Government	*0*	*0*	*0*
ACTs from Global Fund	701,200	682,645	706,055
ACTs from other donors *[specify donor]*	0	0	0
ACTs planned with PMI funding	503,770	124,120	0
Total ACTs Contributions per Calendar Year	***1,204,970***	***806,765***	***706,055***
Stock Balance (treatments)			
Beginning Balance	1,121,362	747,043	759,614
- Product Need	1,579,289	794,194	720,668
+ Total Contributions (received/expected)	1,204,970	806,765	706,055
Ending Balance	747,043	759,614	745,001
Desired End of Year Stock (months of stock)	8	8	8
Desired End of Year Stock (quantities)	1,052,859	529,463	480,445
Total Surplus (Gap)	***(305,816)***	***230,151***	***264,556***

Zimbabwe used a mixed consumption and morbidity-based model to estimate the projected ACT needs through 2023. Given the substantial increase in reported malaria cases and ACT consumption in 2020, the team conducting the February 2021 quantification chose to use the actual 2020 ACT consumption figure as the

projected need for 2021, followed by a return to a mixed consumption and morbidity estimate for the 2022 and 2023 needs, based upon the trends seen prior to 2020. This was done to ensure adequate supplies over the coming years but likely leads to an overestimation of the ACT needs for the 2021–2023 period.

Taking into consideration this likely overestimation and the substantial ACT contributions planned in the Global Fund 2021–2023 grant, PMI does not intend to procure ACTs with MOP FY 2022 funds. If these projections prove accurate, the Global Fund contributions will cover the annual need for 2023, with sufficient supplies remaining to maintain the supply system above the national minimum months of stock. PMI will continue to monitor the ACT supply status and work with Global Fund, the NMCP, and DPS to ensure that Zimbabwe's commodity needs are fully covered for 2023.

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?

Supporting Data

Table A-17. Inj. Artesunate Gap Analysis Table

Calendar Year	2021	2022	2023
Injectable Artesunate Needs			
Projected number of severe cases	12,079	9,605	8,993
Projected number of severe cases among children	4,832	3,842	3,597
Average number of vials required for severe cases among children	5	5	5
Projected number of severe cases among adults	7,248	5,763	5,396
Average number of vials required for severe cases among adults	16	16	16
Total Injectable Artesunate Needs (vials)	***140,120***	***111,414***	***104,313***
Needs Estimated based on HMIS Data			
Partner Contributions (vials)			
Injectable artesunate from Government	0	0	0
Injectable artesunate from Global Fund	133,702	116,202	77,706
Injectable artesunate from other donors [specify donor]	0	0	0
Injectable artesunate planned with PMI funding	0	0	0
Total Injectable Artesunate Contributions per Calendar Year	***133,702***	***116,202***	***77,706***
Stock Balance (vials)			
Beginning Balance	120,846	114,428	119,216
- Product Need	140,120	111,414	104,313
+ Total Contributions (received/expected)	133,702	116,202	77,706
Ending Balance	114,428	119,216	92,609
Desired End of Year Stock (months of stock)	8	8	8
Desired End of Year Stock (quantities)	93,413	74,276	69,542
Total Surplus (Gap)	***21,014***	***44,941***	***23,067***

PMI does not procure RAS in Zimbabwe given the current NMCP policy recommending administration of suppositories to all age groups for pre-referral treatment at the facility (RAS or parenteral artesunate recommended) or community levels (only RAS recommended). This policy contrasts with current WHO guidance, which recommends administering suppositories only to children under six years of age. In past years, the Global Fund and the Government of Zimbabwe have supported RAS procurement.

PMI does procure parenteral artesunate for both definitive and pre-referral treatment, if needed. In the February 2021 national quantification exercise, Zimbabwe used a morbidity-based forecasting approach to estimate the need for parenteral artesunate through 2023. This forecast assumed five vials were needed for the average child and 16 vials for the average adult, the latter being higher than the normal 12 vials used by PMI for parenteral artesunate quantification. As a result, the need may be overestimated. Even with this potential overestimation, the procurements planned under the Global Fund 2021–2023 grant will cover the projected 2023 need, with sufficient remaining supplies to keep the supply chain stocked at the national minimum months of stock level. As a result, PMI does not plan to procure parenteral artesunate using MOP FY 2022 funds. PMI will continue to monitor the parenteral artesunate supply status and work with Global Fund, the NMCP, and DPS to ensure that Zimbabwe's commodity needs are fully covered for 2023.

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

PMI does not support the procurement of any other standard antimalarial medications in Zimbabwe. Primaquine is procured using Global Fund and/or GOZ resources for use in elimination settings.

Key Question 8

Are first-line ACTs effective and monitored regularly?

Supporting Data

Two TESs performed over the last decade suggest no evidence of substantial resistance to the first-line ACT treatment (AL) in Zimbabwe. However, PMI has considerable concerns regarding the methodologies and quality of implementation for these studies. As a result, PMI has actively engaged with the new leadership of NIHR (normally, the responsible institution for TES in Zimbabwe), the NMCP, WHO, and other partners to explore implementation arrangements that will increase the quality and ensure that reliable and accurate ACT resistance data is collected in Zimbabwe. Per the agreement between PMI, Global Fund, and the MOHCC, PMI/Zimbabwe is now the sole donor providing TES funding, which was included in MOP FY 2020.

Key Question 9

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

Supporting Data

As highlighted earlier, 6 percent of all caregivers of children under five years of age seek care in the private sector (2019 MICS). However, there is limited data regarding the adherence of private sector providers to the recommended CM practices and efforts to engage with the private sector have been limited to date.

PMI and the NMCP have a mutual interest in providing outreach and educational opportunities to the private sector and have agreed that initial steps should be taken. As a result, PMI targeted limited FY 2020 funds toward efforts to engage the private sector. Discussions regarding the best use of these resources are still ongoing in-country. However, the most likely first step will be to conduct an assessment of the private sector provider practices to identify and quantify programmatic needs using existing funds. Future funding may be targeted toward further engagement with the private sector if the outcome of any initial assessment warrants.

Conclusions for Case Management Investments

Although the data presented above suggest that some progress has been made, additional investment is required to ensure the availability of high-quality CM services. In MOP FY 2022, PMI intends to substantially increase support for CM strengthening at both the facility and community levels, using a portion of the funding targeted for IRS support in previous years. Particular emphasis will be placed on community CM strengthening given the increasing proportion of cases being reported by VHWs in 2019 and 2020 and the identified gaps in support. PMI support will include:

- Procurement of approximately 1 million RDTs to cover the estimated need in 2023, as projected in the February 2022 national quantification exercise.
- Support for a comprehensive package of facility and community-level CM interventions in selected high-burden districts. The specific activities will be determined in consultation with the incoming service delivery partner, the NMCP and other stakeholders but will, at a minimum, include training, post-training follow-ups, supportive supervision and mentoring for facility-based health workers and VHWs; support for Case Management Subcommittee meetings at the national level; and increased support for CM activities in elimination areas. The specific geographic targeting of PMI CM support in FY 2022 will be determined based on discussions with the NMCP and other stakeholders, taking into consideration Global Fund resources and priorities. Given the increase in funding, PMI hopes to be able to expand the geographic scope for this programmatic area.

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

2.2. DRUG-BASED PREVENTION

NMCP Objective

Ensuring prompt and appropriate malaria in pregnancy services, including CM and the provision of IPTp and ITNs to pregnant women is a key objective of the 2021–2025 Zimbabwe NMCESP. Zimbabwe's policy specifically supports the following:

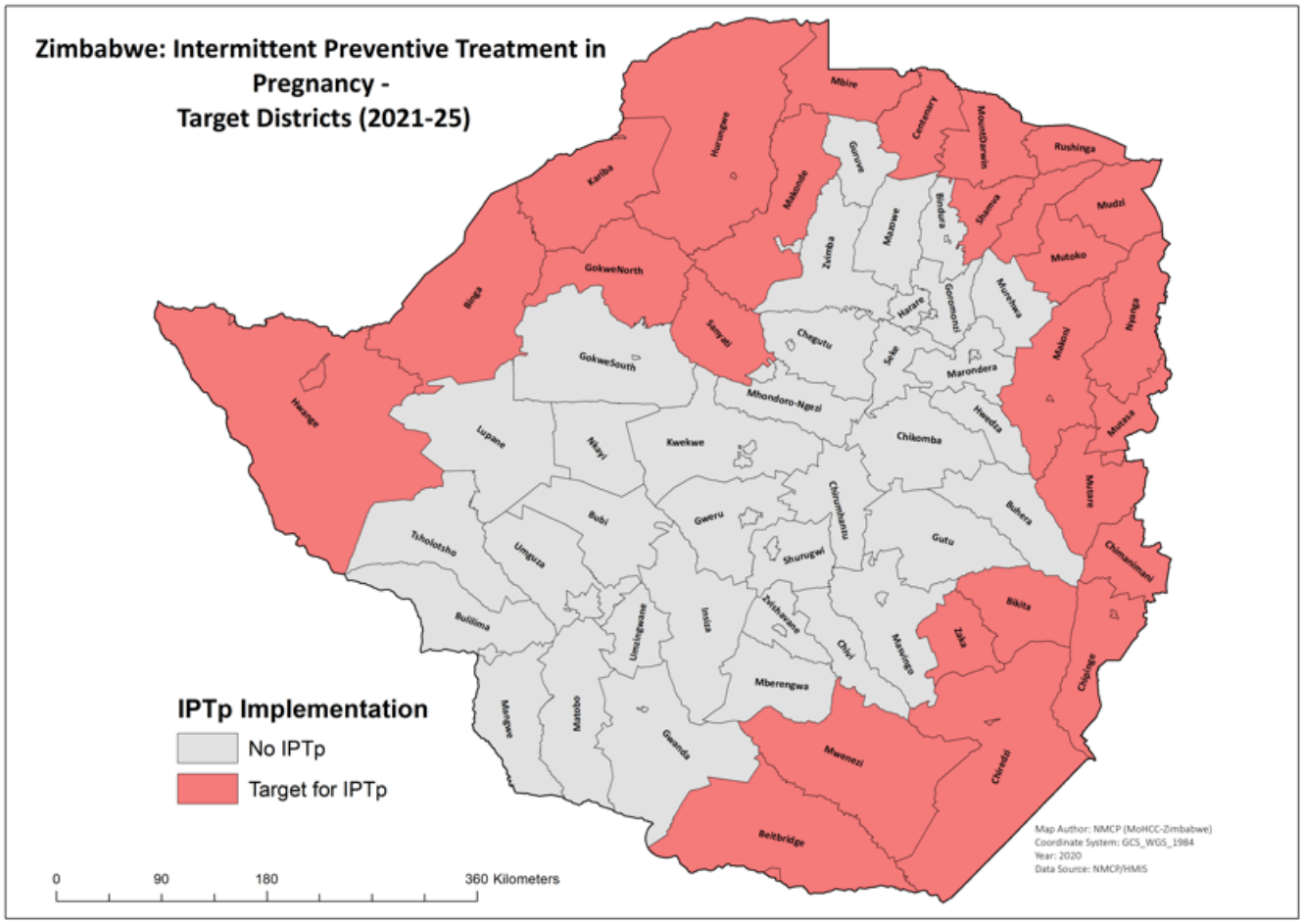
1. Implementation of IPTp in 26 high-burden districts, with a target of 85 percent of pregnant women receiving at least three doses of SP during pregnancy by 2025.

2. Distribution of ITNs to pregnant women as early as possible in pregnancy and promotion of their use, with a target of 85 percent of pregnant women sleeping under ITNs by 2025.
3. Early and effective diagnosis and treatment of malaria with the appropriate medications for gestational age, as laid out in the 2015 *Guidelines for the Management of Malaria* and subsequent amendments.

NMCP Approach

Zimbabwe implements drug-based prevention (IPTp with SP) in 26 targeted high-burden districts, as shown in Figure A-21 below.

Figure A- 21. Districts targeted for IPTp



ANC policy, guidelines, and program coordination

In keeping with the 2016 WHO recommendations on antenatal care (ANC), Zimbabwe has officially updated the national ANC policy to include the recommended eight ANC contacts for pregnant women. Training and job aids have been rolled out nationwide in support of this policy change but the Zimbabwe ANC guidelines have yet to be formally revised. The NMCP coordinated closely with the MOHCC Family Health Department and Provincial and District MOHCC staff for the planning and implementation of interventions to strengthen ANC service delivery, including integrated supportive supervision approaches.

Health facility-based MIP care and IPTp

Zimbabwe has updated the IPTp policy to follow the most current WHO guidelines for IPTp administration. Administration of IPTp is by directly-observed therapy, starting in the second trimester as early as 13 weeks and at every subsequent ANC visit, providing the doses are given at least four weeks apart, with the goal of achieving a minimum of three IPTp doses during pregnancy. SP is not recommended for pregnant women on co-trimoxazole prophylaxis or to those with allergy to sulfa medications. Iron and folate should be routinely given to all pregnant women at ANC starting with their first visit or at 12 weeks gestation, whichever is earlier.

Community-based MIP care and IPTp

Given the revised ANC attendance schedule recommended in the 2016 WHO ANC guidelines, and in an effort to ensure administration of SP as early in the second trimester as possible, the NMCP has explored approaches for the provision of the first dose of IPTp by VHWs in the second trimester as early as 13 weeks for those women whose first ANC contact occurs before their 13th week of pregnancy. Currently, NMCP is conducting a pilot/rollout is underway in selected districts in Manicaland Province with other donor funding. At this time, it is unclear whether a larger scale rollout will be undertaken.

Malaria in pregnancy

Recommendations for management of MIP are outlined in the most recent version (2015) of the *Guidelines for the Management of Malaria in Zimbabwe*, as well as subsequent amendments published in August 2018. Please refer to Section 2.1 for a full description. Of note, parenteral artesunate is now recommended for the treatment of severe malaria in the first trimester of pregnancy. Oral quinine with either doxycycline or clindamycin is still recommended as the first-line regimen for pregnant women in the first trimester.

PMI Objective in Support of NMCP

PMI supports NMCP's drug-based prevention (IPTp) efforts through the following activities:

1. Procurement and distribution of SP through the pooled commodity warehousing and distribution system. PMI commodities are targeted to all 26 IPTp implementation districts.
2. Provision of TA at all levels of the health system and support for training, supervision, and mentoring to improve IPTp service delivery by facility- and community-based health workers in PMI-supported provinces and districts. PMI's current geographic area of focus covers the majority of districts targeted for IPTp by the NMCP.
3. Provision of SBC to improve uptake of IPTp.

PMI-Supported Recent Progress (FY 2020)

PMI-supported MIP activities were impacted by the COVID-19 pandemic and the associated restrictions and mitigation measures implemented by the GOZ, the persistent and substantial human resource issues that continue to impact the Zimbabwe healthcare system, and the continued economic/monetary issues within Zimbabwe. However, PMI worked with the NMCP and partners to adjust to these difficult circumstances and tailor activities to allow for safe and effective implementation, including maximizing virtual approaches and implementing strict COVID-19 mitigation measures for in-person activities. Examples of PMI/Zimbabwe progress from October 2019 to December 2020 include the following:

- PMI/Zimbabwe worked with Global Fund and in-country partners to coordinate procurement and delivery schedules to ensure appropriate stock levels of SP at service delivery points.
- In four high-burden provinces, PMI/Zimbabwe supported:
  - Implementation of a now fully-functional training database (TrainSMART).
  - Two Malaria Technical Working Group Case Management Subcommittee meetings.
  - Training of 369 health workers in malaria CM and MIP, including 182 VHWs and 69 SHCs.
  - Four rounds of supportive supervision visits to facility-based health workers.

PMI-Supported Planned Activities (FY 2021 with currently available funds)

Through FY 2021, PMI/Zimbabwe will support the following:

- Continued collaboration with Global Fund and in-country partners to coordinate procurement and delivery schedules to ensure appropriate stock levels of SP at service delivery points.
- Continued support for malaria CM strengthening and IPTp administration in selected districts. The PMI planned activities for the next 12 months will be negotiated with NMCP and a new partner under a new agreement just awarded April 2021 but will likely include continued support for the activities similar to those listed in the preceding section. The exact geographic scope for the interventions to be implemented under this new mechanism will be negotiated with the partner, NMCP, Global Fund, and other stakeholders, using epidemiologic evidence and taking into consideration the scope and location of Global Fund-funded activities.

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

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 CM of malaria per WHO guidelines.

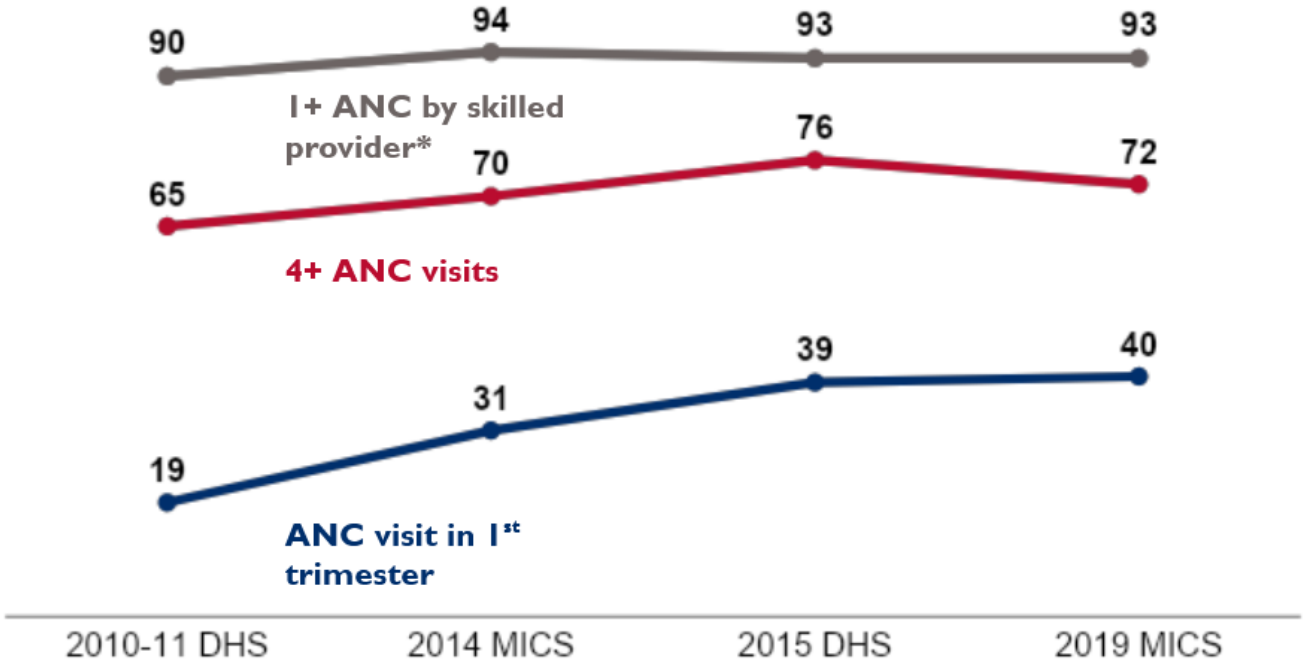
Key Question 1a

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-22. Trends in ANC coverage

Women 5 to 49 years of age with a live birth in the five years before the survey (most recent birth)



**Skilled provider includes doctor, nurse, or nurse-midwife.*

The percentage of pregnant women attending four or more ANC visits is relatively high, suggesting that the majority of women have opportunities to receive the recommended minimum of three IPTp doses. However, there is still a need to increase the number of ANC visits by each pregnant woman and, importantly, to improve early antenatal care-seeking to minimize missed opportunities for IPTp administration. According to the 2015 DHS, the average gestational age at first ANC was 4.4. months, with 35 percent of pregnant women making the first visit at four to five months and 17 percent delaying until the sixth or seventh month. There are several possible drivers for this behavior, including the cultural norms regarding concealment of pregnancy described above. PMI will focus SBC efforts to help address these issues.

To help ensure early and regular ANC attendance, the MOHCC has adopted the revised 2016 ANC schedule and has rolled this approach out to facilities. However, there are concerns in-country regarding the administration of IPTp early in the second trimester for those women who attend the first ANC visit in the first trimester (approximately 39 percent and 40 percent of pregnant women, according to the 2015 DHS and 2019 MICS, respectively). In an effort to address this, the NMCP is piloting community distribution of the first dose of IPTp at the community level using Global Fund resources. Findings from that assessment have yet to be disseminated.

Key Question 1b

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

Supporting Data

Key facilitators of ANC attendance at health facilities include:

- Positive perceptions of ANC staff attitudes among beneficiaries: According to a PMI-funded 2017 assessment in two high-burden districts (Chipinge and Mutare, Manicaland), the vast majority of mothers surveyed expressed positive comments in reference to the attitudes of ANC staff at the nearest health facility.
- High ANC beneficiary satisfaction levels: According to this same survey, 72 percent of ANC beneficiaries surveyed reported their service delivery experience was "very satisfactory," with an additional 25 percent reporting a "satisfactory" experience.

Key barriers of ANC attendance at health facilities include:

- Restricted ANC service availability at health facilities: According to a PMI-funded 2017 assessment in two high-burden districts (Chipinge and Mutare, Manicaland), over 40 percent of mothers surveyed reported that ANC services at their nearest health facility were only offered on specific days of the week; 92 percent reported that regularity of service influenced their decision to attend ANC visits as scheduled.
- Cultural practices that encourage concealment of pregnancies: According to this same assessment, focus group discussion members reported fear of being bewitched and shyness as substantial barriers to early ANC care-seeking.
- Decreased access to facility-level care: Media reports and direct observation suggest that the ongoing economic issues in Zimbabwe have led to restricted ability and willingness of patients to access care. Patients struggle to afford transport costs and, when they do travel for care, services are limited. Healthcare workers hours have been curtailed in lieu of pay increases, and strikes and health facility closures are common. This situation was dramatically worsened by the COVID-19 pandemic, with healthcare worker attendance reduced further due to the lack of appropriate PPE and fears of contracting the virus, as well as lockdown measures and travel restrictions further limiting both patient and healthcare worker movement and access.
- Long distances to nearest health facility: Nearly 47 percent of 2016 MIS respondents reported the distance to the nearest health facility was greater than 5 kilometers, with over 19 percent reporting a distance greater than 10 kilometers.

As outlined earlier, Zimbabwe has officially updated the national ANC policy to include the recommended eight ANC contacts for pregnant women, in line with the 2016 WHO guidance. Given the revised ANC attendance schedule recommended in the 2016 WHO ANC guidelines, and in an effort to ensure administration of SP as early in the second trimester as possible, the NMCP has explored approaches for the provision of the first dose of IPTp by VHWs for those women whose first contact occurs prior to the beginning of the 13th week of pregnancy. Currently, NMCP is conducting a pilot/rollout that is underway in selected districts in Manicaland Province with other donor funding. At this time, it is unclear whether a larger-scale rollout will be undertaken. It is hoped that this approach will partially address some of the barriers listed above.

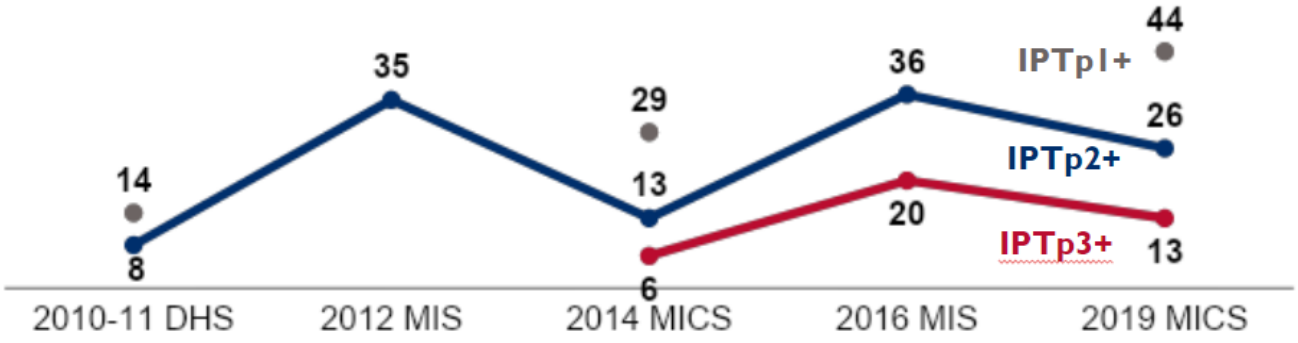
Key Question 2

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

Figure A-23. 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.

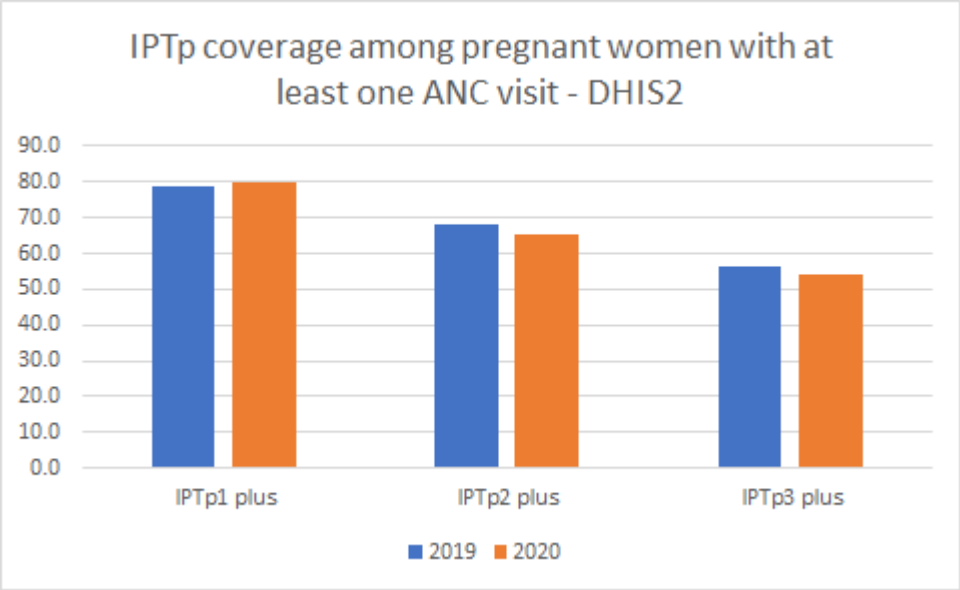


Note that, where possible, this indicator has been recalculated to coverage in subnational areas where the program is targeted.

As measured by national-level household surveys (Table A-19), IPTp coverage in Zimbabwe appears to be relatively low, with the highest coverage estimate for IPTp2+ at only 36 percent (2016 MIS). However, as described earlier, IPTp is a targeted intervention in Zimbabwe, with implementation in only 26 of 62 districts. Given the methodology of these surveys and potential denominator issues in the calculation of IPTp coverage, PMI/Zimbabwe believes that these national household-level surveys substantially underestimate the actual coverage in IPTp-targeted districts.

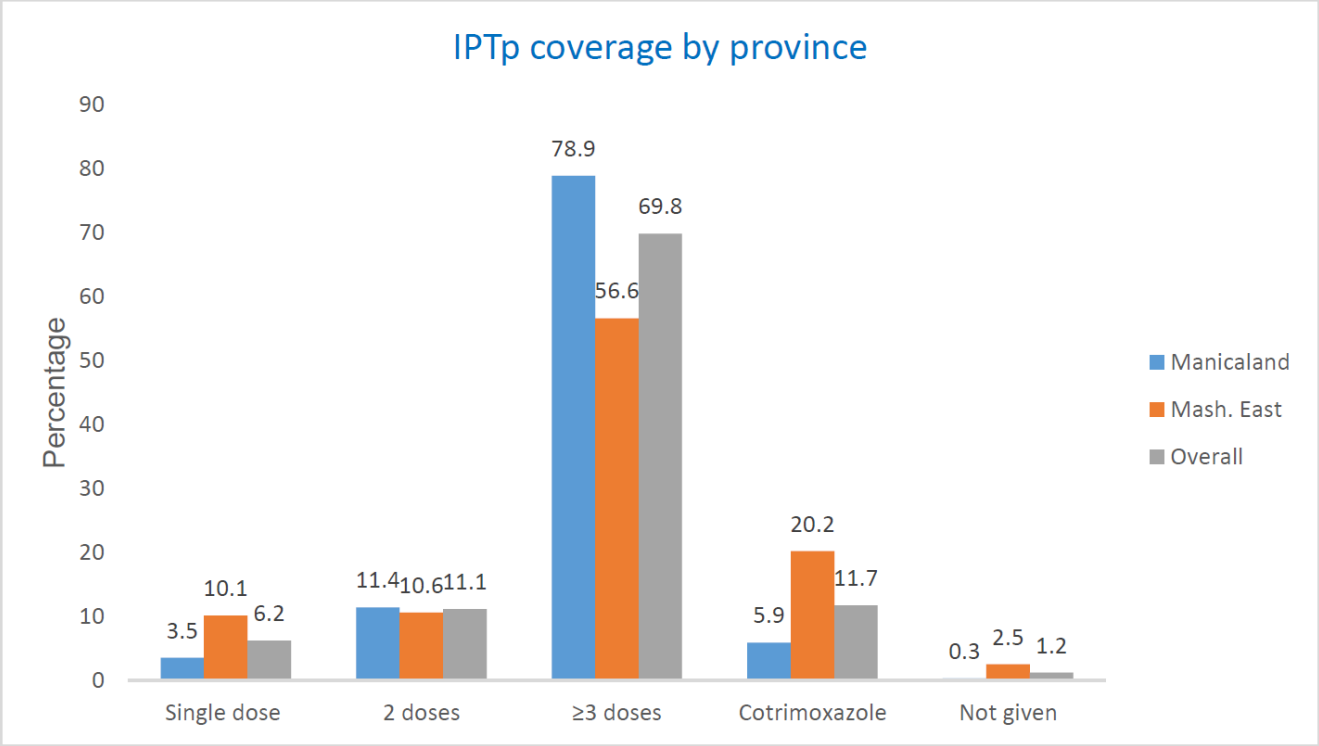
Recent surveillance data from DHIS2 for the 26 targeted districts and the *2019 Zimbabwe Case Management Audit* suggest that IPTp coverage is considerably higher than reported in national household-level surveys. As Figure A-24 illustrates, IPTp2+ coverage, calculated as the number of pregnant women receiving at least two doses of IPTp divided by the number of pregnant women attending at least one ANC visit in 2020, was 65 percent and IPTp3+ coverage was 54 percent. These coverage figures represent a slight decrease from 2019 levels. It should be noted that the HMIS data collection system does not allow for the capture of the specific number of additional doses beyond IPTp3+ but revisions are currently being made to the system.

Figure A-24. Calculated IPTp coverage from DHIS2 data, 2019 and 2020



The *2019 Zimbabwe Case Management Audit* included review of ANC records for 487 pregnant women from 22 health facilities in Manicaland and Mashonaland East provinces. As shown in Figure A-25, nearly 70 percent of pregnant women received three or more SP doses, with 11 percent receiving only two SP doses and 6 percent receiving only one SP dose. Although not shown in the figure, IPTp rates were higher after adjusting for co-trimoxazole administration, with 81.5 percent of pregnant women receiving three or more doses with either SP or co-trimoxazole. Some variability was noted among the two provinces, with substantially higher coverage rates in Manicaland Province.

Figure A-25. IPTp coverage by province



Source: 2019 Zimbabwe Case Management Audit

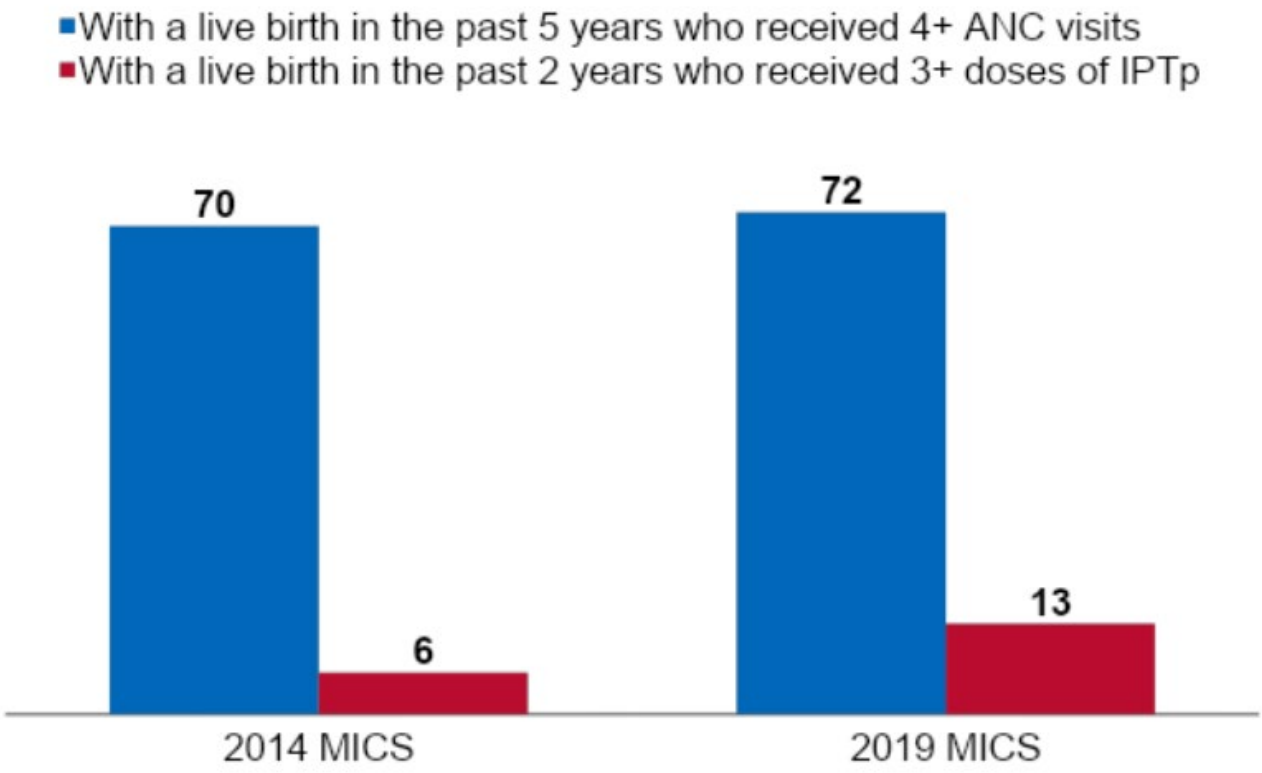
Key Question 3a

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

Supporting Data

Figure A-26. Trends in missed opportunities for IPTp

Percentage of women 15 to 49 years of age



Given the issue described above for estimation of IPTp coverage from national household-level surveys, the MICS data presented in Figure A-26 likely overestimate the missed opportunities for IPTp administration. DHIS2 data from 2020 suggest that, among pregnant women who make at least one ANC visit, nearly 89 percent will complete four or more ANC visits and approximately 54 percent of pregnant women who make at least one ANC visit will receive three or more IPTp doses. Among pregnant women who make four or more ANC visits, this figure rose to 61 percent. These DHIS2 data do not account for antenatal care-seeking issues and there are still missed opportunities for IPTp administration within the ANC system. However, they do suggest that, among women who seek care, IPTp rates are higher (and missed opportunities lower) than suggested by the MICS data.

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

Key facilitators that affect provider delivery of MIP services (e.g., IPTp and ITN distribution at ANC) include:

- Substantial proportions of staff are trained in CM/MIP in PMI-supported areas: In the three high-burden provinces supported by PMI through the ZAPIM project, 72 percent of facility-based staff and 73 percent of VHWs received MIP training between 2016 and 2018. Additional, though more limited, training was conducted in 2019 and 2020, and 97 percent of facilities surveyed in the 2019 ZAPIM end-of-project evaluation reported having at least one health worker trained in MIP.
- Willingness among pregnant mothers to take SP: According to a PMI-funded 2017 assessment in two high-burden districts (Chipinge and Mutare, Manicaland), 99 percent of nearly 800 women offered SP during their last ANC visit reported that they had agreed to take the medication.
- Availability of commodities at service delivery points: Stockout rates for SP at service delivery points have remained below 10 percent over the past 18 months (see Section 3.1, Key Question 2). According to the most recent EUV (October 2020), only 5 percent of facilities were out of SP stock on the day of visit.
- Availability of and adherence to malaria diagnosis and treatment guidelines: According to the 2019 ZAPIM end-of-project evaluation, 97 percent of facilities surveyed had malaria treatment guidelines available. In 70 facilities in PMI-supported areas, 83 percent (n = 243) of patients with fever received a parasitological test, 94 percent of those patients who tested positive received an ACT, and 98 percent of those patients who tested negative did not receive an ACT. Among 209 VHWs in 72 districts, 87 percent of confirmed malaria cases received an ACT.

Key barriers that affect provider delivery of MIP services (e.g., IPTp and ITN distribution at ANC) include:

- Knowledge gaps of current IPTp guidelines among recently trained nurses and VHWs: According to a PMI-funded 2017 assessment in two high-burden districts (Chipinge and Mutare, Manicaland), these knowledge gaps were associated with nonadherence to SP directly observed therapy in a substantial proportion of consultations, resulting in a high proportion of invalid IPTp doses and missed opportunities.
- Limited IPTp content during ANC supportive supervision visits: According to this same assessment, resources were generally available for supportive supervision and the visits were taking place. However, the level of reinforcement of IPTp concepts was limited. It should be noted that, since this assessment was completed, NMCP has collaborated with the Family Health Unit to address this issue and MIP and IPTp concepts are also covered during malaria CM training.
- Continued health system and economic issues: Media reports and direct observation suggest that the ongoing economic issues in Zimbabwe have created substantial human resources issues. Healthcare workers hours have been curtailed in lieu of pay increases, and strikes and health facility closures are common. This situation was dramatically worsened by the COVID-19 pandemic, with healthcare worker attendance (including ANC) reduced further due to the lack of appropriate PPE and fears of contracting the virus, as well as lockdown measures and travel restrictions further limiting healthcare worker movement.

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?

The Zimbabwe HMIS does not currently have the capacity to collect and disaggregate these data by pregnancy status. This has been an area of continued discussion among stakeholders and efforts have been made to advocate for adapting the data collection tools and DHIS2 to allow for such disaggregation. To date, these adaptations have not been finalized.

Supporting Data

No data are currently available. However, PMI/Zimbabwe, NMCP, and other malaria stakeholders understand the utility of collecting and disaggregating key malaria data elements by pregnancy, and will continue to advocate with the broader health SM&E stakeholders for inclusion of these elements in the HMIS and DHIS2.

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?

Supporting Data

Table A-18. SP Gap Analysis Table

Calendar Year	2021	2022	2023
Total Country Population	14,293,639	14,456,320	14,615,340
Total Population at Risk for Malaria	9,648,206	9,758,016	9,865,355
PMI Targeted at Risk Population	9,648,206	9,758,016	9,865,355
SP Needs			
Total Number of Pregnant Women	434,169	439,111	443,941
Proportion of women expected to attend ANC1 at 13 weeks or greater	90%	90%	90%
Proportion of women expected to attend ANC2	0%	0%	0%
Proportion of women expected to attend ANC3	0%	0%	0%
Proportion of women expected to attend ANC4	0%	0%	0%
Total SP Needs (treatments)	683,135	683,135	683,135
Needs Estimated based on Consumption Data			
Partner Contributions (treatments)			
SP from Government	0	0	0
SP from Global Fund	269,967	393,467	85,200
SP from Other Donors	0	0	0
SP planned with PMI funding	300,000	0	800,000
Total SP Contributions per Calendar Year	***569,967***	***393,467***	***885,200***
Stock Balance (treatments)			
Beginning balance	584,169	471,000	181,332
- Product Need	683,135	683,135	683,135
+ Total Contributions (Received/expected)	569,967	393,467	885,200
Ending Balance	471,000	181,332	383,397

Calendar Year	2021	2022	2023
Desired End of Year Stock (months of stock)	6	6	6
Desired End of Year Stock (quantities)	341,568	341,568	341,568
Total Surplus (Gap)	*129,433*	*(160,236)*	*41,830*

Biannual national quantification exercises are conducted by DPS, in coordination with the NMCP and malaria stakeholders. The SP gap analysis table presented here was developed in collaboration with the NMCP using information from the most recent quantification exercise, conducted in February 2021. Zimbabwe used a consumption-based model to estimate the projected SP needs through 2023. This method has been used for several years in Zimbabwe and appears to provide reasonable estimates for procurement planning purposes.

Given the more limited SP contribution planned in the Global Fund 2021–2023 grant, PMI intends to procure approximately 800,000 SP doses with MOP FY 2022 funding. If these projections prove accurate, this will cover the annual need for 2023, with sufficient supplies remaining to maintain stock levels at the national minimum months of stock. PMI will continue to monitor the SP supply status and work with Global Fund, the NMCP, and DPS to ensure that Zimbabwe's commodity needs are fully covered for 2023.

Conclusions for MIP Investments

Although the data presented above suggest that some progress has been made, additional investment is required to ensure the availability of high-quality CM services for pregnant women and to reduce missed opportunities for IPTp administration. In MOP FY 2022, PMI intends to substantially increase support for MIP CM strengthening at both the facility and community levels, using a portion of the funding targeted for IRS support in previous years. Particular emphasis will be placed on community CM strengthening given the increasing proportion of cases being reported by VHWs in 2019 and 2020 and the identified gaps in support. PMI will also expand efforts to improve the availability and quality of IPTp services through the ANC system. PMI support will include:

- Procurement and distribution of approximately 800,000 SP doses to cover the estimated need in 2023, as projected in the February 2022 national quantification exercise.
- Support for a comprehensive package of facility and community-level MIP interventions in selected high-burden districts. The specific activities and geographic targeting will be determined in consultation with the incoming service delivery partner, the NMCP and other stakeholders but will, at a minimum, include training, post-training follow-ups, supportive supervision, and mentoring for facility-based health workers and VHWs.

The specific geographic targeting of PMI CM support in FY 2022 will be determined based on discussions with the NMCP and other stakeholders, taking into consideration Global Fund resources and priorities. Given the increase in funding, PMI hopes to be able to expand the geographic scope for this programmatic area.

Please see FY 2022 PMI budget tables for a detailed list of proposed activities with FY 2022 funding, noting that due to integrated programming, most MIP budget support is incorporated in the CM section of the budget table.

2.2.2. SEASONAL MALARIA CHEMOPREVENTION (SMC)

SMC is not a recommended intervention for this country.

2.2.3. ADDITIONAL DRUG-BASED PREVENTIVE STRATEGIES

Country Goal

As described in sections II and III, there is substantial geographic heterogeneity of malaria transmission in Zimbabwe and the NMCP is committed to developing and implementing strategies and interventions to achieve elimination in selected low-burden districts and move additional districts toward the goal of future elimination (see Figure 6). The currently recommended approaches and elimination activities are outlined in the 2017 *National Malaria Elimination: Foci Investigation and Response Guidelines,* which are based upon WHO malaria elimination recommendations. Substantial progress has been made, with 29 districts currently implementing a package of elimination activities in line with WHO guidance, including the use of primaquine, in addition to ACTs, for gametocyte reduction; timely case investigation, including active case finding and treatment among household and community members; foci investigation, classification, response, and follow-up, including entomological investigations and implementation of SBC and vector control interventions, as appropriate; and the implementation of enhanced surveillance using the DHIS2 tracker system. Of note, VHWs and SHCs working in lower-transmission, elimination settings are trained only to administer RDTs and refer to the nearest health facility, given the stock management issues in low-transmission settings (limited use of malaria ACTs and primaquine due to the very low case burden, resulting in the need to redistribute stocks to avoid expiries) and the need for facility-based staff to conduct active case investigations.

Under the 2021–2025 NMCESP, the NMCP has created a specific objective to achieve malaria elimination in 20 districts and increase the number of districts implementing a package of malaria elimination activities to 36 by 2025. (Currently, 29 districts are implementing elimination activities.) Specific strategies under this objective include:

1. Expanding the capacity for malaria elimination.
2. Implementing malaria elimination activities.
3. Assessing readiness and building capacity in new districts targeted for malaria elimination.
4. Preventing reintroduction of malaria in cleared foci.
5. Exploring innovative mechanisms to accelerate to malaria elimination.

Under Strategy 5, the NMCP is considering pilot introduction of mass drug administration in the elimination context, likely as operational research. However, no definitive plans or timelines have been laid out and NMCP continues to monitor lessons learned from other countries.

PMI Goal

Support the national strategy for elimination addressing relevant geographic areas in accordance with WHO recommendations.

PMI/Zimbabwe initiated limited financial support for elimination activities using FY 2018 MOP funds and has continued that support to date, with incremental funding increases through FY 2021. Global Fund provides more substantial support for MOHCC/NCMP elimination efforts and BMGF, through CHAI, has historically provided TA for SM&E strengthening in the elimination context. Following consultations with these stakeholders supporting malaria elimination efforts, PMI initial efforts targeted Lupane District in Matabeleland North Province, with the objective of strengthening CM and follow-up, including timely implementation of CM and foci investigations. PMI-supported activities are implemented in accordance with the Zimbabwe *National Malaria Elimination: Foci Investigation and Response Guidelines.*

PMI-Supported Recent Progress (FY 2020)

PMI-supported elimination activities were impacted by the COVID-19 pandemic and the associated restrictions and mitigation measures implemented by the GOZ, the persistent and substantial human resource issues that continue to impact the Zimbabwe healthcare system, and the continued economic/monetary issues within Zimbabwe. However, PMI worked with the NMCP and partners to adjust to these difficult circumstances and tailor activities to allow for safe and effective implementation, including maximizing virtual approaches and implementing strict COVID-19 mitigation measures for in-person activities. Examples of PMI-supported progress include:

- In 2019, PMI supported the following activities in Lupane District:
  - Training 24 health workers on enhanced surveillance and foci investigation/response.
  - Training of 25 EHTs on entomological monitoring in the elimination context, focusing on the skills required for routine monitoring and active foci investigation and response.
  - Training of 25 EHTs on geographic information system mapping of malaria cases, vectors, vector breeding sites and malaria transmission foci.
  - Development of a micro plan for supporting elimination activities in Lupane District.
- In 2020, PMI supported additional activities in Lupane District, including the following:
  - Development of a malaria elimination leaflet designed to sensitize community members on the elimination activities and to promote compliance with their roles and responsibilities in the process. This leaflet is intended for use in all areas implementing elimination activities and will be shared with the NCMP for printing and dissemination using Global Fund resources.
  - Logistical and technical support for a malaria elimination review meeting for Lupane District to review factors leading to an increase in cases in the district in 2020 and evaluate the effectiveness of the response.
  - Technical support for a malaria elimination review and planning meeting for all districts implementing malaria elimination activities.

PMI-Supported Planned Activities (FY 2021 with currently available funds)

After assessing progress over the last two years and taking into consideration a shift in other donor funding away from elimination support, PMI will slightly increase the level of financial support for elimination activities under the FY 2021 MOP. Specific activities and geographic scope will be determined once PMI's new service delivery mechanism is awarded, in close consultation with the NMCP and taking into consideration the gaps under the Global Fund 2021–2023 malaria grant.

Key Question 1

What specific drug-based preventive or proactive strategies are directed toward pre-elimination and/or elimination in the near term? Which of these merit PMI support for FY 2022 funding with consideration of existing or planned national or other partner funding?

Supporting Data

The MOHCC implements a package of elimination activities in selected low-burden districts that have been assessed as having the necessary administrative, human resource, and technical capacity. These activities are outlined in the current Zimbabwe *National Malaria Elimination: Foci Investigation and Response Guidelines* and include the use of primaquine for gametocyte reduction, timely case and foci investigation and response, and the implementation of enhanced surveillance using the DHIS2 tracker system. Although improvements can always be made in terms of both design and implementation, PMI considers these activities to be generally appropriate and technically sound. Under MOP FY 2022, PMI will, again, increase the level of support for elimination activities, with a focus on those aspects related to CM, SBCC, and enhanced surveillance.

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

Conclusions for Other Preventive Drug-Use Investments

Although the data presented above document that NMCP and partners have made some progress toward strengthening implementation of elimination activities in Zimbabwe, additional resources and effort will be required to ensure high-quality and effective implementation. Under MOP FY 2022, PMI will slightly increase the level of support for CM, SM&E, and SBC activities in elimination settings, using funding targeted to IRS implementation in previous years.

The PMI supported activities will be negotiated with NMCP and a new partner under a new agreement just awarded April 2021. The exact geographic scope for the interventions to be implemented under this new mechanism will be negotiated with the partner, NMCP, Global Fund, and other stakeholders, using available evidence and taking into consideration the scope and location of Global Fund-funded activities.

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

3. CROSS-CUTTING AND OTHER HEALTH SYSTEMS

3.1. SUPPLY CHAIN

NMCP Objective

A key strategy under the 2021–2025 NMCESP is to ensure that quality-assured malaria commodities are consistently available to contribute toward progress in malaria control and elimination.

NMCP Approach

Ensuring integration of distribution systems for streamlining the Zimbabwe supply chain, reducing stockout rates and improving reporting rates in order to increase end-to-end data visibility from the health facility to the national level.

PMI Objective in Support of NMCP

PMI supports strengthening of the Zimbabwe supply chain by supporting accurate quantification, timely procurement, proper storage and distribution, and ensuring that malaria commodities are available, including a focus on proper tracking of commodities at the community level to better ensure availability in the community as well as health facilities.

PMI-Supported Recent Progress (FY 2020)

In FY 2020, PMI focused a lot of support to follow-up actions identified in a 2018 PMI-funded assessment investigating the discrepancies between malaria commodity consumptions and cases, including the following:

- Redesigning and supporting the pilot implementation of the community commodity resupply system for VHWs in two districts. While the assessment of the pilot is currently underway, there is hope that it will eventually be expanded and that this improved system will address some of the data quality issues found in the previous assessment
- In addition, PMI supported factoring in seasonality into the national ordering system for the Zimbabwe Assisted Pull System, the supply chain system that delivers malaria commodities, in an effort to better address chronic overstock in certain facilities and understock in other facilities.
- Global Fund is supporting the roll out of an electronic logistics management information system (eLMIS) and PMI has provided technical support to the design and initial implementation.
- To also provide additional insights into commodities at facility level, PMI conducted two EUVs in the past year that include additional questions around VHW stock and commodity expiration.

In addition to the supply chain strengthening activities, PMI also supports many of the routine functions of ZAPs, including the management of a first-party logistics (1PL) model to ensure delivery of commodities to health facilities. There is limited private sector available to outsource; however, PMI does outsource the storage of ITNs to a private sector warehouse. Overall, PMI as well as other donors, provide consistent support to the overall functioning of the Zimbabwe supply chain.

PMI-Supported Planned Activities (FY 2021 with currently available funds)

Over FY 2021, PMI will continue to support supply chain strengthening at the central and national level with more focused support in high-burden districts including:

- Assuming a positive assessment of the VHW commodity resupply pilot, PMI plans to roll it out to two more districts in the next 12 months. Global Fund is also looking to take the model and roll it out in additional districts. PMI will also support any needed adjustments found after completion of the pilot assessment before rolling out further.

- The updated seasonality factor in the ordering system will be trialed and assessed to look toward full implementation in future years.
- PMI is also looking at options to best support the further rollout of the eLMIS and will continue implementing EUVs twice a year covering both elimination and control areas but with the majority of facilities sampled in control areas.
- PMI is initiating a stockout reduction strategy. This includes refining stockout root cause identification with an expanded evidence base and refining the solution set to build a longer- term investment portfolio aimed at continued and accelerated stockout reductions.
- In addition, PMI plans to continue the 1PL support and routine monitoring of the overall supply chain system to ensure commodities reach all health facilities in country.

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?

Supporting Data

Due to an unanticipated increase in malaria in 2020, ACTs have been understocked over the past year. This issue was addressed in the first quarter of FY 2021 with the arrival of PMI shipments. However, the PMI team is looking to be more responsive to these fluctuations in consumption to avoid these stock concerns in the future. SP, injectable artesunate and RDTs have shown the opposite trend from ACTs where they have been stocked according to plan most quarters until the first quarter of FY 2021, where stock levels have decreased as commodities have been pushed out to health facilities in preparation for the malaria season. Global Fund shipments for all three commodity types are expected before there is a central level stockout so the expectation is that the next quarter they will be back to being stocked according to 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?

Supporting Data

Correlated with the low central stock levels of ACTs, ACT formulations have suffered relatively high stockout rates, particularly for the dispersible formulations for 6x1s and 6x2s. This was particularly prevalent in areas suffering from malaria outbreaks and, hopefully, incorporating tools such as the seasonality index will limit the impact of these issues in the future. Overall, inability to treat has remained low other than in FY 2020 Q3, which corresponds to the peak timing of the increased malaria cases seen in 2020. With the increased availability at the central level, the expectation is that these stockouts will decrease going into the 2021 malaria season. SP stockouts have remained consistently low but RDTs have experienced a few stockout peaks, again during the high time for malaria in FY 2020 Q3, as well as in the latest quarter reported in FY 2021. PMI plans to ensure

distribution of RDTs expected to arrive in FY 2021 Q2 to health facilities as quickly as possible to minimize RDT stockouts during the 2021 malaria season.

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?

Supporting Data

PMI acknowledges that the discrepancy between reported consumption of commodities and corresponding HMIS/morbidity data is a major concern and therefore has been taken into account in prioritizing activities over the last several years of programming, including an assessment in 2018 to determine the underlying causes. While indicating some underreporting of cases in the HMIS, the major cause for the discrepancies, as found in the assessment, are data quality issues in commodity tracking and reporting. Follow-up activities have been piloted, including a redesign of the VHW commodity reporting and resupply system as well as integrating seasonality factors into the ordering system, but as mentioned above, these have not been implemented yet. PMI is focused in the next 12 months to roll out these tools but it will take a few years to reach nationwide implementation. In the meantime, PMI plans to do a more granular geographic analysis of the discrepancies to monitor if decreases are seen initially in the pilot areas to examine if these interventions do have the effect the assessment indicates they will.

In addition, the national forecasting team is also analyzing the confirmed malaria cases by age to better predict the specific ACT weight bands required. Cutting and combining the different ACT blister packs also causes discrepancies because it can show multiple ACT treatments being used to treat one malaria case if lower weight bands need to be doubled up to treat an adult. PMI also includes questions around upcoming expiries of products in the EUV to better understand how common expiries occur and whether they are being reported appropriately in the system. It has also been noted that in years with lower total malaria cases often show a higher discrepancy ratio. This association will also be monitored and continuously analyzed in case it indicates an additional data quality factor to consider.

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?

Supporting Data

Historically, Zimbabwe has had relatively high reporting rates but those rates have dropped over the last couple of years due to both economic and leadership issues at higher levels, such as staff turnover at National Pharmaceutical Company, the central medical store, as well as due to COVID-19. Recently, the reporting rates are back up and it is hoped that this will be a continuing trend for 2021. While data is generally available, data collection is a manual process of visiting sites and inputting stock data. This method only allows the country to be on a quarterly reporting system, so that by the time the data is received, it is difficult to respond to stock shortages in a timely manner. This is the driver behind the Global Fund investment in the eLMIS, as well as PMI's technical support to the system. The country is striving to find a method for more real-time data, including at the

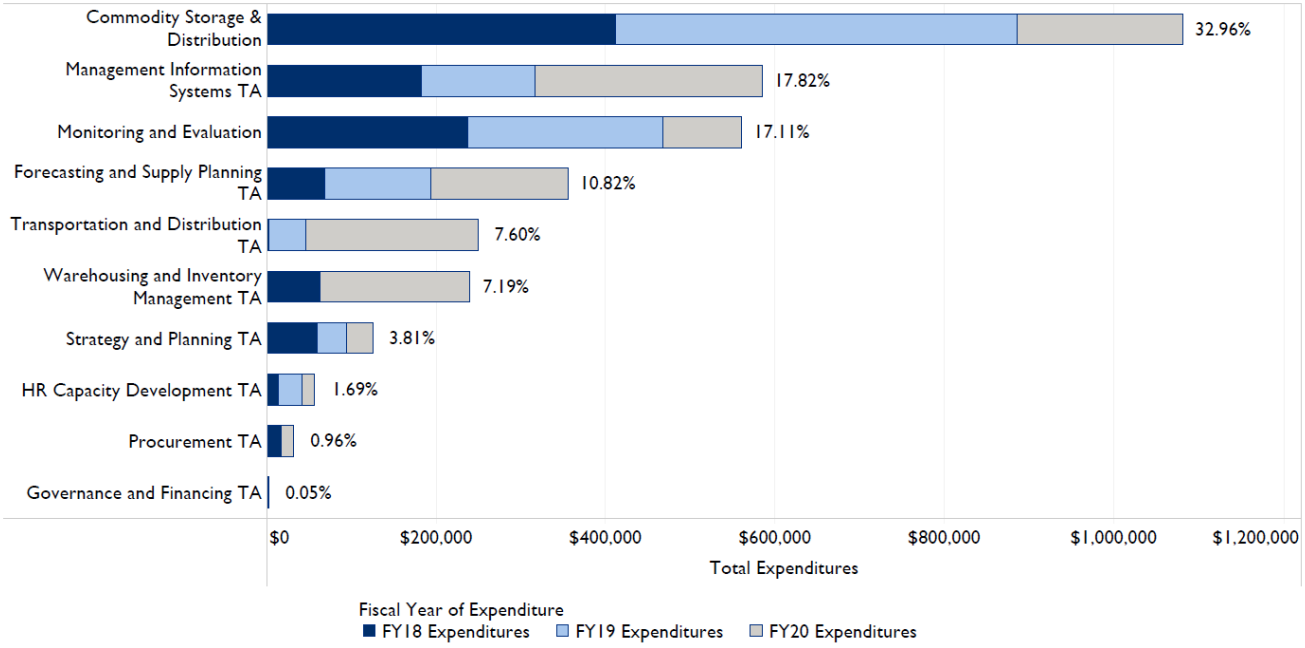
VHW level, because VHWs are a significant component of the malaria case detection and treatment system. While data is currently routinely available, although not as frequently as desired, the EUVs also still provide valuable information, both in providing an additional source of information to quality check the routine reporting system as well as to give a more in-depth view of stock issues faced, such as upcoming expiries of products.

Key Question 5

What are the main supply chain TA functions supported by PMI? Are there additional investments that PMI should make (e.g., increasing visibility of demand at health facilities) to ensure continual availability of quality products needed for malaria control and elimination at health facilities and the community level? In areas performing well, is it dependent on PMI/donor funding (e.g., PMI and Global Fund pay for warehousing and distribution)? Should more be done to foster self-reliance in domestic systems and, if so, what approaches should be considered?

Supporting Data

Figure A-27. PMI Supply chain investment by technical area



As mentioned in earlier sections, PMI does support a 1PL model, under which the highest percentage of funding goes toward the direct costs of storing and distributing malaria commodities in-country, including ITNs. Because it is unlikely that the economic situation in Zimbabwe is going to change in the near future, this will continue as a priority in the stockout reduction strategy. Also, as stated above, improving the quality and timeliness of data has also been a priority. This is captured in the next two highest investment categories (management information systems and monitoring and evaluation). The seasonality order system upgrade as well as the support to the eLMIS all fall under these categories, with a significant contribution under the Transportation and Distribution TA because of the VHW commodity supply redesign. All of these activities are considered important factors in the stockout strategy aimed to increase data visibility, so they will remain priorities moving forward.

Ensuring that the right amount of commodities are brought into the supply chain has also been a critical component of PMI's support under forecasting and supply planning TA. This has been cited as a challenge in the stockout reduction strategy, specifically predicting the correct amount of commodities required per year. The annual quantification also highlights the continuing discrepancy between consumption data and cases, which PMI is hoping to improve with additional data visibility/quality activities such as the VHW commodity resupply and incorporating the seasonality index into the national ordering system. Support for National Pharmaceutical Company to continue to ensure security and accountability for PMI and other donor procured commodities will also continue under warehousing and inventory management TA. More limited but routine support includes a focus on strategy and planning, human resource capacity development, and procurement, as many of these areas that are performing well are reliant on donor support. While PMI and other donors continue to work to ensure the technical capabilities of the government, the current economic and political climate makes it very unlikely that the country will be able to increase the level of self-reliance in the near future.

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.

Supporting Data

N/A – no additional considerations not already identified.

Conclusions for Supply Chain Investments

Funding is expected to remain fairly consistent as in previous years with much of the focus continuing on data visibility and quality. One of PMI's top concerns remains the discrepancy between commodity consumption and cases and PMI will continue to take actions based on the assessment from 2018. However, as previously stated, it is a slow process, involving piloting of the various interventions before rolling out nationwide. Following full implementation of these activities, hopefully there will be a decrease in the discrepancies. PMI is planning a small increase in budget in order to look toward rolling out some of the previously identified activities faster. There are no expected changes to the FY 2020–2021 approved activities.

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

Strengthening surveillance, monitoring, and evaluation is a key objective of the 2021–2025 NMCESP. To achieve this objective, the NMCP focuses its effort on the following areas:

1. Strengthening malaria surveillance systems (passive and active).
2. Strengthening programmatic and surveillance information management, storage, and dissemination (data availability and quality).
3. Conducting routine program monitoring, evaluation and review.
4. Improving malaria epidemic preparedness and response.

NMCP objectives are further outlined in the *Surveillance Monitoring and Evaluation Plan for the Zimbabwe Malaria Control Strategic Plan 2016-2020*, which is due for review and revision to be in line with the 2021–2025 NMCESP. Under this plan, the overall objective is to provide a comprehensive tracking system that enables transparent and effective management of information on malaria prevention and control activities. The following are the specific objectives of the SM&E plan:

1. Ensure collection, collation, processing, analysis, reporting, dissemination, and use of malaria data at all levels.
2. Harmonize data collection based on standardized reporting tools and indicators.
3. Facilitate and coordinate linkages between malaria control activities and information with other programs and partners to eliminate duplication.
4. Provide information for evidence-based decision-making at all levels.
5. Provide a platform for evaluation of the outcomes and impact of malaria interventions.

NMCP Approach

The Surveillance Monitoring and Evaluation Plan for the Zimbabwe Malaria Control Strategic Plan 2016–2020 outlines the following strategies to achieve the plan's objectives:

- Improve routine data collection.
- Strengthen surveillance at entomological sentinel sites.
- Implement continuous data quality improvement.
- Conduct and strengthen review meetings at all levels.
- Improve monitoring of malaria medicines and other commodities.
- Strengthen the reporting system for malaria elimination.
- Strengthen supportive supervision at all levels.
- Strengthen surveillance and M&E collaboration.

The NMCP works with PMI, Global Fund, CHAI, and other donors and partners to implement the activities falling under each of these strategic areas. Stakeholder coordination occurs through the malaria SM&E subcommittee, bilateral interactions and standing meetings between NMCP and partners, the Global Fund Country Coordinating Mechanism Malaria Committee, and through joint implementation of activities. There is no formal, widely distributed malaria bulletin but malaria data is included in the weekly malaria Rapid Disease Notification System reports.

The *Surveillance Monitoring and Evaluation Plan for the Zimbabwe Malaria Control Strategic Plan 2016–2020* also includes a performance indicator matrix, which the NMCP uses to track progress toward the achievement of the malaria prevention and control objectives outlined in the strategic plan.

For elimination areas, Zimbabwe has developed and adopted case investigation and foci management guidelines following the WHO recommendations. Routine malaria case and testing data are collected, aggregated, and reported through the weekly and monthly HMIS channels, as in other districts. However, an additional DHIS module (DHIS2 Tracker) is used to record and report data on case investigation and entomological indicators in districts implementing elimination activities. Smart tablets are used at the facility level to enable more real-time data capture into this module. In addition, separate foci registers are maintained at the district level (primarily

Excel databases), as well as geographic information on cases and foci. Recent efforts have been made to improve the capacity for geographic information system mapping to transition the geographic information from paper-based to electronic platforms. The NMCP is currently in the process of incorporating these foci registers and geographic information into an enhanced DHIS Tracker instance.

PMI Objective in Support of NMCP

In coordination with other donors and malaria partners, PMI supports multiple aspects of the NMCP's SM&E efforts. This support spans all levels of the health system and all malaria prevention and control intervention areas. Note: Some aspects of PMI monitoring and evaluation support (e.g., entomological monitoring and tracking of vector control interventions) are described in other sections of this document.

At the central level, PMI supports the NMCP and the broader MOHCC to review and adjust policies, as well as to plan, coordinate, and implement broader SM&E strengthening initiatives. This includes support for population-based surveys to measure progress on key malaria indicators.

At the provincial, district, and health facility levels, PMI-supported SM&E activities are focused on strengthening routine malaria surveillance and epidemic preparedness and response in four high-burden provinces Activities targeting the remaining provinces are implemented by NMCP with support from Global Fund, though PMI efforts at the central level help to improve SME systems and implementation nationwide.

PMI coordinates with the NMCP, Global Fund, and CHAI to support quality implementation of the SM&E elimination activities described above. To date, PMI investments in malaria SM&E in elimination areas have been modest and targeted to one district (Lupane) in Matabeleland North. Global Fund resources are available for systems improvements (e.g., procurement of devices and DHIS2 system refinements). As a result, PMI focuses the limited resources available to improve on-the-ground surveillance and monitoring of cases and foci (including entomological indicators).

PMI-Supported Recent Progress (FY 2020)

PMI-supported surveillance, monitoring, and evaluation activities were impacted by the COVID-19 pandemic and the associated restrictions and mitigation measures implemented by the GOZ, the persistent and substantial human resource issues that continue to impact the Zimbabwe healthcare system, and the continued economic/monetary issues within Zimbabwe. However, PMI worked with the NMCP and partners to adjust to these difficult circumstances and tailor activities to allow for safe and effective implementation, including maximizing virtual approaches and implementing strict COVID-19 mitigation measures for in-person activities. Examples of PMI/Zimbabwe progress from October 2019 to December 2020 include the following:

- Providing financial and technical support for the review and revision of Zimbabwe's malaria surveillance, monitoring, and evaluation training materials, including a facilitator manual and detailed presentation templates. These materials have been finalized and will be printed and disseminated for use for CY 2021 training. Similar support was provided for the revision of Zimbabwe's malaria epidemic preparedness and response training manuals, which are also finalized and ready for use. Both sets of training materials include information relevant to control and elimination areas.

- In the four targeted high-burden provinces, supporting weekly mobile phone reporting by VHWs to 13 health facilities in a remote, high-burden district, using the open data kit system. Reporting timeliness improved and data completeness was estimated to be 98 percent.
- Planning and assisting with protocol development for an assessment of the digital landscape at the community level in Zimbabwe, to be followed by a stakeholder-driven process for identifying appropriate technologies and approaches suitable for the Zimbabwe context.
- Supporting two malaria elimination planning and review meetings, one specifically for Lupane District and one covering all malaria elimination districts.

Of particular note, PMI intended to support the implementation of a combined Zimbabwe DHS/MIS, with an expanded malaria module, in 2020 using MOP FY 2019 MOP funds. The survey was postponed due to a combination of factors, including difficulty securing the necessary additional donor funds, timing conflicts with the Zimbabwe Census, and, most importantly, the COVID-19 pandemic. The current plan is to implement the combined DHS/MIS during the peak malaria season in 2022. PMI had also intended to support three provinces to conduct six biannual data quality assessments (DQAs) at selected health facilities; however, these assessments could not be implemented due to COVID-19 restrictions.

PMI-Supported Planned Activities (FY 2021 with currently available funds)

Through the end of FY 2021, PMI will continue to support malaria surveillance monitoring and evaluation strengthening at the national level and in selected high-burden and elimination districts. The PMI supported activities will be negotiated with NMCP and a new partner under a new agreement just awarded in April 2021. The exact geographic scope for the interventions to be implemented under this new mechanism will be negotiated with the partner, NMCP, Global Fund, and other stakeholders, using available evidence and taking into consideration the scope and location of Global Fund-funded activities. Focus areas for PMI support will likely include the following:

- Strengthening HMIS data collection and quality through training and supportive supervision, data quality audits, malaria data review meetings, and other activities. Given the recent increase in the percentage of malaria cases reported by VHWs and the geographical, economic, and pandemic-related barriers to accessing care at facilities, PMI will target additional efforts and resources toward strengthening VHW malaria reporting. Additional, though still relatively limited, resources will be targeted to surveillance, monitoring, and evaluation strengthening in elimination areas.
- Enhancing epidemic preparedness and response capacity through training and supportive supervision.
- Strengthening Zimbabwe's capacity for data analysis and use at all levels of the health system.
- Continuing efforts to assess the digital landscape at the community level and, if appropriate, supporting appropriate interventions identified during the stakeholder-driven discussions.

PMI resources for the DHS/MIS are still available and the MOHCC is currently planning to implement the survey in the first and second quarter of 2022. PMI will provide technical and financial support for survey implementation. In addition, PMI will advocate with DHS/MIS supporting partners to include the optional SBC module as an addition to the women's questionnaire.

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-19. Available malaria surveillance sources

Source	Data Collection Activity	2019	2020	2021	2022	2023	2024
Household Surveys	Demographic Health Survey (DHS)[1]				P		
Household Surveys	Malaria Indicator Survey (MIS)[1]				P		
Household Surveys	Multiple Indicator Cluster Survey (MICS)*	X					P
Household Surveys	EPI survey						
Health Facility Surveys	Service Provision Assessment (SPA)						
Health Facility Surveys	Service Availability Readiness Assessment (SARA) survey						
Health Facility Surveys	Case Management Audit*	X			P		
Malaria Surveillance and Routine System Support	Therapeutic Efficacy Studies (TES)				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	
Malaria Surveillance and Routine System Support	Support to Integrated Disease Surveillance and Response (IDSR)*	X	X	X	P	P	
Malaria Surveillance and Routine System Support	Electronic Logistics Management Information System (eLMIS)	X	X	X	P	P	
Malaria Surveillance and Routine System Support	Malaria Rapid Reporting System*	X	X	X	P	P	
Other	EUV	X	X	X	P	P	
Other	School-based Malaria Survey						
Other	Knowledge, Attitudes, and Practices Survey, Malaria Behavior Survey						

Source	Data Collection Activity	2019	2020	2021	2022	2023	2024
Other	Malaria Impact Evaluation						
Other	Entomologic Monitoring Surveys	X	X	X	P	P	

*Asterisk denotes non-PMI funded activities, X denotes completed activities, and P denotes planned activities.
[1]A combined Zimbabwe DHS/MIS, with an expanded malaria module, was planned for 2020 with partial funding (FY 2019 MOP) from PMI. The survey was postponed due to a combination of factors, including difficulty securing the necessary additional donor funds, timing conflicts with the Zimbabwe Census, and, most importantly, the COVID-19 pandemic. The current plan is to implement the combined DHS/MIS during the peak malaria season in 2022.

Key Question 2

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

Supporting Data

Over the past several years, PMI has supported a comprehensive range of activities designed to strengthen Zimbabwe's HMIS and improve data quality, data analysis, and use at all levels of the health system. Support at the central level has focused on coordinating with NMCP, other relevant units within the MOHCC, and other malaria stakeholders to ensure that appropriate policies, guidance documents, and training materials are in place, and that adequate financial and technical resources are available for SM&E strengthening and implementation. To that end, PMI provided financial and technical support for the revision, printing, and dissemination of the *Surveillance Monitoring and Evaluation Plan for the Zimbabwe Malaria Control Strategic Plan 2016–2020* and *Malaria Epidemic Preparedness and Response Guidelines* in 2018, followed by revision of the national malaria SM&E and malaria epidemic preparedness and response training materials in 2019 and 2020. PMI has supported malaria SM&E subcommittee meetings and other stakeholder engagement processes and provided substantial financial and technical input for key national household-level surveys.

PMI support to the provincial, district, facility, and community levels has included logistical and TA, training, supportive supervision, data quality audits, and malaria review meetings, among other activities. In recent years, this support has been targeted primarily to selected high-burden districts within Mashonaland East, Mashonaland West, Matabeleland North, and Manicaland provinces.

Using MOP FY 2022 funding, PMI will continue to provide a comprehensive package of support for HMIS strengthening. Specific activities will be determined once the new bilateral service delivery project is initiated. The exact geographic scope for the interventions to be implemented under this new mechanism will be negotiated with the incoming partner, NMCP, Global Fund, and other stakeholders, using available evidence and taking into consideration the scope and location of Global Fund-funded activities. See the Conclusions section below for more detail.

Key Question 3

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

Table A-20. Outcomes of HMIS strengthening efforts

	Indicator	2019	2020
Timeliness	% of reports received on time[1]	83.4%	64.4%
Completeness	"Confirmed malaria cases for children under five years of age" was reported in X [number or percent] of facility-months	N/A	N/A
Accuracy	Populate with most recent DQA data:	PMI-supported DQAs in four districts over a period of three months identified 5% over-reporting for confirmed malaria cases and 9% over-reporting for patients given ACTs, when comparing verified data to data recorded on the T5 outpatient department (OPD) reporting form.[2]	N/A[3]

[1]Source: Zimbabwe DHIS2.

[2]A national RDQA including limited malaria indicators was conducted in 2019 but the results have not yet been disseminated.

[3]PMI-supported DQAs were not implemented in 2020 due to COVID-19 travel restrictions.

Over 80 percent of the T5 HMIS OPD reports that include the key malaria disease surveillance indicators were received on time in 2019. In 2020, this figure dropped to 64 percent, possibly due to the impacts of the COVID-19 pandemic on healthcare worker attendance, workload, and priorities. As reported in Table 2, the overall submission rate for T5 reports was approximately 98 percent in both 2019 and 2020. Although there is still room for improvement with regard to timely reporting (and the 2020 figure is more concerning), these data suggest that relatively efficient submission is the norm.

Information regarding the completeness of individual data elements within the OPD reports is more limited. Currently, there is no templated reporting tool within DHIS2 for retrieving reporting rate information on individual lines included within the T5 report. PMI attempted to pull this information manually (i.e., for the "confirmed malaria cases for children under five years of age") but the system does not differentiate between non-reporting and zero reporting for individual line items. The team will work with partners to determine a way forward to retrieve this data in the future.

In 2019, PM-supported DQAs in targeted districts identified discrepancies in data reporting between the original registers, the T5 OPD form, and the final figures in DHIS2. Similar discrepancies were also noted in a PMI-funded 2018 assessment to determine the factors that contribute to the observed disparity between recorded malaria cases and first-line ACT consumption in Zimbabwe. Record reviews at 72 facilities identified considerable discordance between the data recorded in source register and the data in the T5 form and DHIS2 (the latter two

sources were generally comparable). The discordance was inconsistent in direction and magnitude across the two indicators of interest, confirmed cases and confirmed cases given an ACT. The overall tendency was to over-report the number of confirmed cases. These findings are not surprising given some of the systems issues identified through these assessments, which include a near total lack of formal adult OPD registers, inconsistent use of RDT registers, and unclear guidance regarding the official source documents for data collection at the facility level. PMI has been working with NMCP and other MOHCC SM&E colleagues to address these issues, but there is still considerable progress that needs to be made.

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)?

N/A

Supporting Data

N/A

Conclusions for Surveillance, Monitoring, and Evaluation Investments

Although the data presented above documents that NMCP and partners have made some progress toward strengthening malaria SM&E in Zimbabwe, substantial resources and effort will be required to ensure high-quality and timely data are available to inform programmatic decision-making. Under MOP FY 2022, PMI will expand support for malaria surveillance monitoring and evaluation strengthening at the national level and in selected high-burden and elimination districts, using funding targeted to IRS implementation in previous years. Specific activities will be determined once the new PMI bilateral service delivery project is initiated. The exact geographic scope for the interventions to be implemented under this new mechanism will be negotiated with the partner, NMCP, Global Fund, and other stakeholders, using available evidence and taking into consideration the scope and location of Global Fund-funded activities. Focus areas for PMI support will likely include the following:

- Further strengthening of HMIS data collection and quality through training and supportive supervision, data quality audits, malaria data review meetings, and other activities, with emphasis on enhancing data analysis and use. PMI will focus efforts toward all levels of the health system, with additional emphasis placed on strengthening community level reporting.
- Additional, though still relatively limited, resources will be targeted to strengthening surveillance, monitoring, and evaluation in elimination areas. Given the availability of Global Fund resources for system improvements (e.g., DHIS2 tracker and procurement of tablets), PMI will focus on operational support (training, supervision, data review meetings, and logistics) to ensure quality implementation of the elimination-specific SM&E activities in selected geographic areas.
- Enhancing epidemic preparedness and response capacity through training and supportive supervision.
- Strengthening Zimbabwe's capacity for data analysis and use at all levels of the health system.

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

3.3. OPERATIONAL RESEARCH

NMCP Objective

The 2021–2025 NMCESP highlights the importance of conducting operational research (OR) to generate and maintain evidence for informed malaria programming, as part of a broader objective to strengthen surveillance, monitoring, and evaluation.

NMCP Approach

Currently, no structured process exists for reviewing current studies and no prioritized malaria OR agenda has been established.

Within both the 2016–2020 Malaria Strategic Plan and the 2021–2025 NMCESP, the NMCP prioritized the development and dissemination of a malaria OR agenda in collaboration with potential research partners and malaria stakeholders. The 2018 *Surveillance Monitoring and Evaluation Plan* reiterated the importance of developing a structured review process and agenda. However, to date, no process has been defined and no agenda has been developed despite advocacy and interest within malaria stakeholders in-country.

It should be noted that NIHR is the primary agency responsible for the development and implementation of OR for the MOHCC, including the malaria program. However, in recent years, restricted resources and other challenges have hampered NIHR's ability to effectively drive the development of a research agenda and implement malaria-specific research. This has persisted despite a relatively recent change in NIHR leadership.

PMI Objective in Support of NMCP

Historically, PMI/Zimbabwe has not provided substantial support for PMI-funded OR activities. However, PMI/Zimbabwe has provided financial and technical support for multiple NMCP-led program evaluation activities to provide critical, targeted evidence for programmatic decision-making.

PMI has continued to engage with NMCP, NIHR, and other stakeholders to encourage the development of a structured process for the review and prioritization of malaria OR. The new leadership at NIHR has expressed an intention to develop a malaria OR agenda as part of a broader health research agenda. The NMCP and key malaria stakeholders are supportive and plan to engage in this effort. However, the process has not moved forward to date.

PMI-Supported Recent Progress (FY 2020)

In 2019 and early 2020, PMI provided technical and financial support for report finalization and dissemination for a program evaluation titled *Assessing the drivers of continuing malaria transmission in Angwa Ward, Mbire District, Mashonaland Central Province*.

PMI-Supported Planned Activities (FY 2021 with currently available funds)

Through FY 2021, PMI/Zimbabwe plans to provide technical and financial support for the development of a malaria OR agenda, in collaboration with the NIHR, NMCP, malaria researchers, and other relevant stakeholders.

No PE/OR activities are currently planned, pending the development of the OR agenda.

PMI Goal

PMI will conduct PE/OR that helps to evaluate coverage of 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?

As outlined above, PMI has historically strategized directly with the NMCP and malaria partners to identify areas of strategic interest for which information for programmatic decision-making was lacking. For example, PMI, Global Fund, NMCP and other malaria stakeholders were concerned about the substantial discrepancy between the number of malaria cases reported through the HMIS and the consumption of ACTs reported through the LMIS. This concern led to the development and implementation of a PMI-supported PE activity to assess the situation and identify possible solutions. The subsequent report *Assessment to determine the factors that contribute to the observed disparity between recorded malaria cases and first-line ACT consumption in Zimbabwe*, was completed and disseminated to programmatic decision-makers in December 2018. In this instance, the results of the program evaluation suggested several areas for improvement that are currently being addressed with support from both PMI and Global Fund (as discussed in the supply chain section). A similar, informal process drove the development of the other PMI-funded PE activities over the last several years, including an assessment of the drivers and barriers for achieving targeted IPTp coverage in selected districts and an assessment of the drivers of continuing transmission in Angwa Ward, Mbire District.

Although this process has resulted in the development of multiple activities that have provided valuable and actionable results, there is no formal mechanism in Zimbabwe for prioritizing malaria operational research, identifying interested and qualified researchers, and ensuring review and use of the results of OR/PE activities. As a result, PMI is prioritizing support for the development of a malaria OR agenda and will also advocate for the development of a governing body responsible for malaria OR/PE prioritization and review (or the incorporation of those responsibilities into an existing governing structure).

Supporting Data

As Table A-21 illustrates, the extent of current, non-PMI-funded OR/PE activities within Zimbabwe is somewhat limited, again suggesting the need for capacity-building in this area.

Table A-21. Ongoing program evaluation and operational research

Funding Source	Implementing Institution	Research Question/Topic	Status/Timeline
Global Environment Facility through the United Nations Environment Program	WHO	Evaluation of house screening and other non-insecticide-driven interventions	Implementation was originally planned for late 2019; however, delays occurred and, with COVID-19, study start is still pending. Some background work has been completed.
International Centers of Excellence for Malaria Research (ICEMR)	Johns Hopkins University, Zimbabwe Biomedical Research and Training Institute, Zimbabwe National Institute of Health Research, Africa University	• Malaria risk factors, transmission, and the impact of control efforts in Southern and Central Africa, Mutasa District, Manicaland Province • Cross-border malaria transmission • Entomological monitoring and evaluation	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 will coordinate with the NIHR, NMCP, and other malaria stakeholders during the development of the malaria OR agenda to review existing data and publications and prioritize areas meriting further exploration. Areas of particular interest for the PMI Zimbabwe team, and which have been discussed with NMCP, include further evaluation of interventions or approaches to address prevention of outdoor biting in areas where residual transmission still occurs despite scale-up of traditional indoor prevention measures such as IRS and ITNs, evaluation of the appropriateness of PBO and/or dual active ingredient ITNs in the Zimbabwean context, piloting or evaluation of cross-border and regional initiatives, and exploring nontraditional training methods that raise the quality of malaria treatment in facility and community settings.

Key Question 3

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

N/A

Supporting Data

N/A

Conclusions for Program Evaluation and Operational Research Investments

Given that no structured approach exists in Zimbabwe for identifying and prioritizing OR/PE activities, PMI will continue to support the development of a malaria OR agenda using prior year funding. PMI does not intend to fund any OR PE activities using MOP FY 2022 funds.

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 Objective relevant to social behavior change is embodied in Objective 4 of the NMCESP 2021–2025, which is to increase utilization of malaria interventions to at least 85 percent of the targeted population by 2025.

Under Objective 4, there are four strategies:

1. Enhance utilization and uptake of vector control interventions.
2. Promote IPTp uptake and early treatment-seeking behavior.
3. Promote participation and ownership of elimination activities by communities and other stakeholders.
4. Advocate to raise the malaria profile.

NMCP Approach

Zimbabwe has developed a *Malaria Communications Strategy* (MCS), which was designed to support the NMSP 2016–2020. Though it is a solid strategy, NMCP plans to update the MSC in 2021 to be more in line with the new NMCESP 2021–2025. The MCS supports the NMCP's dual strategy for control and elimination interventions and the key behaviors required in those respective areas. Specifically, the MCS recognizes the heterogeneous malaria transmission within the country and distinguishes between SBC needs for both malaria control (high and low) and elimination areas, which received different approaches and protocols to manage malaria. For example, the SBC messages, desired behaviors, and target groups/individuals in control areas are crafted differently, depending on whether they are targeted to receive IRS, ITNs, or a mixture of both. In contrast, elimination areas are implementing elimination protocols and SBC is used specifically to engage facility health workers and community members to be aware of, cooperate with, and conduct elimination activities. Another distinguishing factor of the MCS that is likely to be retained during the 2021 revision is NMCP's recognition of special groups at risk for malaria, such as families and workers who live and sleep outdoors for a substantial part of the year for their livelihoods or social practices. This special groups concept had just been introduced with the launch of the MCS in 2017. Since then, NMCP has worked more and more regularly with special groups and recognized their increasing importance in malaria transmission in different parts of the country.

There are five guiding principles of the current MCS:

1. **Evidence-based information gathering and dissemination:** Systematic inquiry and use of resulting data on the determinants of behavior is the basis for health communication interventions. In order to develop strategies that result in behavior change, the knowledge levels, beliefs, cultural values, and structures of

the target groups need to be identified. Formative research and rapid assessments will also assist in the segmentation of the target groups and development of specific and key messages.

2. **Epidemiological evidence:** Use of epidemiological data will greatly assist SBC efforts by ensuring malaria is defined in terms of place, time, and the population at risk.
3. **Multi-sectoral collaboration:** For malaria prevention and control to be successful, joint efforts are needed among all sectors, from the community to the national level. Collaboration and coordination of key partners and stakeholders will be crucial in mobilizing financial and human resources.
4. **Community ownership, empowerment, initiative, involvement, and participation**: Zimbabwean communities should be convinced that they remain at risk of contracting malaria all year round. Their ownership and participation in malaria control and prevention activities will make malaria elimination possible. Community participation will ensure that the approaches developed to address barriers to their health in their unique context are sustainable and effective.
5. **Use of multiple, reinforcing channels:** Use of multiple channels to reach target audiences has proved to be very effective in SBC. Due to the stratified nature of malaria risk in the country, this is an important component of this strategy. Some of the communication channels this strategy highlights include interpersonal communication, community mobilization, and mass media.

The MCS is guided by theory-based models of behavior change, the socio-ecological model and the Precede–Proceed model. During the next MCS revision process, NMCP and partners will review the relevance of these models for the program under the current context. The socio-ecological model highlights how behavior influences (and is influenced by) individual, social, and structural factors. Based on the Ecological Systems Theory, the socio-ecological model is the basis for decisions to focus on advocacy as an important part of this strategy. The Precede–Proceed Model is evidence based. Data derived from the MIS, HMIS, DHS, and MICS were used to identify epidemiological, behavioral, predisposing, reinforcing, and enabling factors. Thus, the SBC interventions in this MCS are focused on addressing problems highlighted in nationally representative household survey data.

Though most SBC interventions occur locally, the NMCP SBC Officer and SBC Technical Subcommittee play key roles at the national level in organizing events and initiatives, providing technical guidance and oversight and motivating MOHCC malaria staff and partners throughout the nation. The chair of the SBC technical subcommittee is from a PMI-supported partner organization and the NMCP SBC Officer plays the secretariat role. The SBC Officer and subcommittee are extremely active and act as a catalyst in moving malaria SBC goals and objectives forward. SBC subcommittee members include provincial and district members of the MOHCC (Health Information Officers) that are tasked to initiate, carry out, and monitor activities at the district, ward, and community levels.

As mentioned above, the NMCESP 2021–2025 has four strategies under the SBC Objective. These strategies weave together an effort to fully support the NMCP's malaria prevention and treatment in control and elimination areas.

Strategy 1: Enhance utilization and uptake of vector control interventions.

Strategy 1 includes actions that will encourage use and adoption of vector control interventions. NMCP favors community dialogues (to inform programming and enhance sustainability of vector control interventions), development, and distribution of SBC materials in local languages to increase consistent use of ITNs, personal protection for outdoor exposure, and maintaining the high acceptance of IRS achieved in Zimbabwe.

In line with a policy of inclusiveness, special attention is given to the most at-risk groups (artisanal miners, church groups, fishermen/women, cross-border traders, long-distance truck drivers, sex workers, irrigation and tobacco workers, and nomadic farmers) to raise awareness of their vulnerability to malaria and to promote use of appropriate malaria prevention interventions. NMCP seeks coordination with community leaders, community health workers and other ministries/sectors to understand and address the needs of special populations.

Strategy 2: Promote IPTp uptake and early treatment-seeking behavior.

Adequate IPTp uptake and seeking early diagnosis and treatment for malaria symptoms are critical NMCP goals, especially in high-burdened malaria districts in Zimbabwe. NMCP plans community outreach and sensitization to increase uptake of three or more IPTp doses and dissemination of information on the importance of early treatment-seeking behavior. Community-based health workers, school health coordinators, and community health committees are the main vehicles for getting the word out for IPTp and malaria CM. However, there will be some mass media used (radio) and audiobooks will be developed for communities in hard-to-reach areas to promote dissemination of accurate information.

Strategy 3: Promote participation and ownership of elimination activities by communities and other stakeholders.

Achievement of malaria elimination requires the participation of multiple sectors as well as private organizations that interface and influence clients and communities in different settings. The MOHCC will engage other ministries and private sector entities to attain and sustain the elimination agenda. In 2020, PMI supported the creation of the first malaria elimination materials for health workers and community health workers in Zimbabwe. The materials will be rolled out in 2021 to help reinforce key facts on malaria, malaria risk perception, and the community's role in elimination. In addition, NMCP plans to launch a program of malaria elimination champion villages/communities to facilitate peer-to-peer education and ownership of the program.

Strategy 4: Advocacy to raise the malaria profile.

Strategy 4 focuses on raising the visibility of the malaria program and creating a strong, lasting impression in the country leadership and emanating throughout the country. Malaria advocacy will highlight the country's stepwise transition from control to elimination, which is only possible with broad, active participation. NMCP branding will be revised based on survey data collected in 2020. Likewise, all malaria materials and media reproduced will be under the new, unified program brand, progressing toward elimination. Zimbabwe's political leadership will be engaged to launch the new brand as well as Zimbabwe's participation in "Zero Malaria Starts with Me," a global campaign to raise the profile of malaria.

PMI Objectives in Support of NMCP

PMI's SBC support is fully aligned with the NMCESP 2021–2025 and the MCS. PMI's objective is to support NMCP by extending SBC funds as far as possible, geographically prioritizing the highest burden provinces and currently one elimination district, covering all prioritized behaviors.

NMCP has agreed to designate PMI implementing partners specific districts in which to provide a comprehensive package of malaria prevention and treatment support including important cross-cutting areas such as SBC and SM&E. PMI partners cover the districts in the three highest-burdened provinces (Manicaland, Mashonaland East,

and Mashonaland Central) currently responsible for approximately 80 percent of malaria transmission in-country. PMI also is working with NMCP and partners to define and refine the SBC elimination approach and tools, which are primarily deployed in two provinces (Matabeleland South and Matabeleland North). PMI has one partner that is working in Matabeleland North in Lupane District.

At the national level, PMI supports NMCP to articulate SBC policies and themes, produce guiding documents, etc. PMI plays a leading technical role in support of NMCP to coordinate, plan, and engage in technical dialogue, mainly through the NMCP SBC Technical Subcommittee, as mentioned above. One of PMI's partners plays the role of chair on the subcommittee and also frequently supports logistics for the meetings. PMI also supports SBC at the national level by engaging consistently with NMCP and partners, contributing to policy, innovative ideas, and participating on the SBC Technical Subcommittee. PMI supports the NMCP rebranding initiative and will support the review and revision of the MCS. Inevitably, PMI funds will not cover every area of need, even with other donor support. Therefore, PMI prioritizes the most urgent SBC priorities.

NMCP plays the coordinating role of all donors and partners to ensure adequate SBC coverage as much as possible with no duplication. PMI and Global Fund, as the major malaria donors in the country, provide a similar package of support to NMCP across all the major malaria implementation areas (IRS, ITNs, IPTp, CM, MIP, and elimination). As stated above, PMI contributes to SBC nationally and specifically covers the three highest-burdened provinces and one elimination district. The NMCP Global Fund grant covers the SBC work in the remaining malarious provinces (Midlands, Masvingo, and Mashonaland West), with a comparatively lower malaria burden, as well as some support to 28 elimination districts. Together, these two major donors support all geographic areas and are supplemented by smaller yet important donors, including: Isdell:Flowers, Wild4Life, and the United Methodist Church. Despite all this external support and diligent work by NMCP some gaps still exist because SBC funding is not sufficient. Consideration of more SBC support was a recommendation of one of the PMI Zimbabwe partner evaluations in 2019. Similarly, the NMCP Director requested more funds be directed toward SBC for MOP FY 2022.

PMI-Supported Recent Progress (FY 2020)

During the last 12 months, the SBC efforts continued to pursue the vision stated in the MCS 2016–2020: "To have a malaria-free Zimbabwe through empowered communities who have knowledge and skills to protect themselves from malaria." In addition, the malaria elimination agenda took on a larger presence than in previous years.

The onset of the COVID-19 operating environment necessitated that PMI partners adapt some of the SBC approaches that rely on interpersonal communication between communities and programmers and increase the use of alternative, safer approaches that can continue to provide critical malaria behavior change information with minimum in-person interactions from the malaria program personnel. Some activities were cancelled or postponed due to COVID-19 and associated lockdowns, which restricted travel and public gatherings.

The socio-ecological model remained the theoretical model that informed the SBC approach. PMI partners worked with NMCP to design and apply interventions that address not only individual practice and behavior, but also the norms, beliefs, and socioeconomic and structural determinants influencing the demand for and use of malaria services.

The selection of activities was based on the NMCP's strategic behavior change priorities, which included community awareness and adoption of lifestyle actions for the following: early illness identification and timely health-seeking behavior, correct and consistent use of ITNs, IRS uptake, personal protection against malaria infection, and appropriate epidemic-conscious behavior during high-transmission season. The activities were also aligned to the communication objectives in the MCS 2016–2020 under the areas of advocacy, vector control, CM, surveillance, cross-border initiatives, special populations, and malaria branding and messaging. Given the overlap of symptoms for malaria and COVID-19, the MOHCC mandated that messaging on malaria was coupled together with appropriate COVID-19 messaging for all materials development.

The community-based approach of Community Action Cycle (CAC) model continued to be implemented this past year in targeted malaria high-burden districts with emphasis on the final phase, *Evaluate Together*.

The following paragraphs represent a selection of SBC activities that were carried out over the past 12 months in collaboration with the NMCP national, provincial, and district levels as well as the national SBC Technical Subcommittee.

Supporting the NMCP to implement rebranding

PMI contributed to the NMCP strategic rebranding which considers the malaria growing elimination agenda for the country. Through this survey exercise over the past year, the NMCP sought to:

- Understand how it is perceived by others within the MOHCC and among the communities it serves.
- Define how it wants to be perceived given its current achievements and situation.
- Make a plan to accomplish the rebranding.

A PMI partner supported NMCP to design and conduct consultations and data collection from stakeholders. The SBC survey team performed key informant interviews virtually with national and some provincial and district level MOHCC and nongovernmental organization colleagues. They also carried out focus group discussions in communities using strict COVID-19 precautions. The team produced and is finalizing a rebranding report with recommendations for the next steps. NMCP anticipates development of a new brand during CY 2021.

Develop print material on COVID-19 and malaria

As mentioned above, the onset of COVID-19 brought a new knowledge and behavior challenge among communities in malaria endemic areas in Zimbabwe. Due to the similarity of some of the COVID-19 symptoms to those of malaria, misconceptions began to emerge regarding the relationship between COVID-19 and malaria. Late treatment-seeking for malaria became a concern as some communities' confused malaria symptoms with COVID-19 symptoms. The MOHCC, in response, mandated all malaria sensitization materials under development to include COVID-19 aspects to educate communities on the differences and correct course of action. PMI provided technical support to the development of the malaria and COVID19 material content.

Develop materials to support the NMCP elimination initiative through sensitizing communities on elimination

PMI provided technical support to the NMCP to develop materials to be used in sensitizing health facility workers, as well as communities living within malaria elimination districts, including an elimination brochure for facility health workers and another for VHWs and community members. PMI also supported Lupane District to draft other Ndebele language materials for targeting the elimination districts, including a flipchart tool for VHWs to use in educating communities on malaria prevention in elimination settings, wall painting elimination messages located in community central areas, and an elimination flowchart malaria guide for use by health workers working in elimination districts.

Distribute and promote usage of malaria control sensitization and educational materials

This year, PMI continued to support and monitor the dissemination of malaria control messages for the Chikunda-speaking ward of Chapoto via the malaria control audiobook. This audiobook addresses knowledge of malaria transmission, promotes prompt care-seeking, and dispels malaria-related myths. PMI deployed a Provincial Coordinator to make routine and regular follow-ups with VHWs and Chapoto Health Facility regarding community-level use of the book, *Dipa la Malaria*. The Provincial Coordinator ensured the books reached targeted villages, particularly sections of Mariga Village, where most of the Doma ethnic group live. PMI supported the review of *Dipa la Malaria* to document its coverage and effects on the Chikunda-speaking community. A small-scale assessment was conducted to assess audiobook availability, functionality, and audibility of the devices over time. Coverage was also assessed and estimated at 2,682 more women and men listened to the content.

In addition, routine distribution of the *My Net My Life* promotional leaflet continued in Mashonaland East and Mashonaland Central provinces. The purpose of this leaflet is to promote correct and consistent ITN use and build a continuing strong ITN culture in Zimbabwe.

Radio-based IRS promotional messages that were developed during the previous year continue. The IRS messages are broadcast nationally at the commencement of IRS season between October and November. A final radio spot on malaria and COVID-19 was aired in 2020 to sensitize communities on the importance of being vigilant about malaria during the COVID-19 era and encourage communities to continue seeking treatment early.

Support NMCP malaria commemorations

The advent of COVID-19 necessitated cancellation of key events requiring gathering of people, including commemorations. World Malaria Day commemorations were therefore canceled. The “Zero Malaria Starts with Me” campaign did remain on the NMCP agenda.

Community-based SBC activities

PMI continued to support the Community Action Cycle (CAC) activities in the three supported provinces, Mashonaland Central, Mashonaland East, and two control districts in Matabeleland North. Due to COVID-19, activities were limited to smaller groups and continued with COVID-19 protections in place. In Mashonaland East, PMI provided technical support as the province introduced the Community-Led Action (CLA) initiative through the CAC approach. CLA is a participatory, facilitated process that aims to inspire communities to understand the urgency of a situation, and preventive and protective measures they can take to keep themselves safe. This approach has a strong foundation of awareness-raising (often promoted by the Risk Communication and Community Engagement National Task Forces) and recognizes that communities have the power to stop the

spread of malaria and COVID-19 through their collective decisions and actions. This PMI-supported activity gave space to the community to discuss the malaria and COVID-19 messages that they have heard and what it means for them and their families. The CAC approach has been appreciated by and received interest from the provinces and NMCP. The Matabeleland North Provincial Health Executive has started up the CAC in Lupane (a PMI-supported district for malaria elimination) with support from CHAI. In addition, NMCP in their grant proposal writing to the Global Fund, seeks to cascade the CAC approach to other non-PMI-supported districts and provinces. Other partners have shown interest in supporting the approach as well; for example, Isdell:Flowers approached the Matabeleland North Provincial Coordinator about collaborating on CAC activities.

Community SBC in the three PMI-supported provinces

Following a CAC *Act Together* phase training, Binga and Hwange district facilitators conducted supportive supervision with Health Center Committees and at the same time engaged key community members during community sensitization meetings in preparation for the indoor residual spraying. The following issues were covered during the meetings:

- Addressing myths and misconceptions on causes of malaria, signs and symptoms of the disease.
- How to prevent and control malaria.
- Insecticides to be used for spraying.
- Food and personal safety measures.
- Spraying schedules.
- Ways in which communities can participate meaningfully in spraying activities.

Communities identified the need to clear impassable roads to enable spray team trucks to access hard-to-reach areas. Village headmen agreed to engage and sensitize their communities on the program schedule. Communities were tasked with selecting community volunteer guides who complement VHWs and accompany spray operators. In addition, each village headman in 26 wards from Hwange and 22 wards from Binga, was asked to assist with facilitating call backs in the case of some missed houses. Hwange facilitators managed to reach an audience of 838 community members while Binga facilitators managed to reach 851 community members.

In Mashonaland Central, Health Center Committees actively participated in sensitizing communities on IRS particularly in Mbire and Centenary districts. The Tobacco Marketing Industry Board provided financial support, which covered fuel and refreshments. The committees aimed to achieve 95 percent IRS coverage and distribution of ITNs to 100 percent of eligible beneficiaries. The committees also sought to improve utilization of ITNs through promotion of the *My Net, My Life* campaign, promote early treatment-seeking behavior in communities, and encourage all pregnant women to register early for antenatal care.

SBC in Malaria Outbreak Response in Centenary District

Centenary District experienced malaria outbreaks starting in the second week of 2020. As an outbreak response measure, a national-level team conducted supportive supervision visits to the affected facilities and communities to understand the causes of the outbreaks and consider deploying mitigation measures for control of the outbreaks. PMI supported additional technical participation on the team and established several reasons for the outbreaks including people moving in search of work in tobacco farms and low ITN utilization. CAC teams were tasked to mobilize stakeholders by the district facilitators for a multisectoral response to the outbreaks including

Health Center Committees, community leaders, VHWs, community members, and tobacco and cotton buyers. At each of these meetings, PMI distributed 15 T-shirts (titled "*Kudzivirira malaria kunotanga neni*" meaning "Malaria prevention starts with me") and "ITNs for prevention of malaria" pamphlets (50). Communities led by the councilors conducted door-to-door health education sessions and visits to assess net utilization, promote use, and emphasize malaria risk. The stakeholders developed local regulations to reduce misuse and abuse of ITNs and destruction of mosquito breeding sites in Mashonaland East.

Achievements of CAC training: Siabuwa Ward Health Team in Binga District, Matabeleland North Province

Siabuwa Rural Hospital in Binga District serves Nabusenga 2, Nagangala, and Kalungwizi wards with a total of 17 administrative villages. Siabuwa was one of the eight facilities trained on the CAC approach due to its high malaria burden. The CAC approach to community mobilization seeks to empower communities to assess their health situation, plan interventions, implement, and monitor implementation effectiveness. The District CAC team trained the Siabuwa Ward Health Team.

In week 9 of 2020, Siabuwa Rural Hospital reported a malaria outbreak in the area that lasted until week 15. The EHT trained Ward Health Team members in one of their meetings during week 9. The Ward Health Team then resolved to mobilize communities to participate in identifying any breeding sites in their areas. Communities participated in identifying active breeding sites through scooping larvae with support from the EHT who recorded larval density. Breeding sites were identified along Nebusenga River (1.5 km stretch) and along Sengwa (3.5 km stretch). Larvicides were requested from the District Environmental Health Officer through the EHT. During the exercise, the villagers were shown the different stages of larvae and adult mosquitoes. In addition, information about malaria and the outbreak was shared, which helped to instill community understanding of the relationship between mosquitoes, water bodies, and malaria. One week after the larvicide treatment, Ward Health Team members and community members visited the treated sites and conducted scooping to see if the larvicides had been effective in killing the mosquito larvae. Larval density had decreased. In addition, malaria cases were showing a downward trend from week 16 onward.

PMI-Supported Planned Activities (FY 2021 with currently available funds)

The PMI planned activities for the next 12 months will be negotiated with NMCP and a new partner under a new agreement just awarded April 2021. In addition, PMI and NMCP do not have updated data to guide activity selection until the next national-level assessment, which was delayed due to the COVID-19 pandemic and associated lockdown. However, the PMI/Zimbabwe team can anticipate that the following activities will be included in some form over the next year:

- Depending upon the availability of funds and competing priorities, PMI will work with NMCP and its new partner to conduct a **rapid assessment** to obtain data that can inform the direction and emphasis of PMI SBC activities until 2022 or 2023, when results are available from the rescheduled DHS/MIS (due to the COVID-19 pandemic). The assessment will likely be conducted in selected areas within the 10 districts with the highest malaria transmission in the country. It will obtain data on IRS acceptance; ITN ownership, access, and use; healthcare-seeking behavior; and uptake of IPTp.

- PMI will advocate with DHS/MIS supporting partners to include the optional SBC module as an addition to the women's questionnaire, which includes nine priority indicators pertaining to recall, knowledge, risk/efficacy, attitudes, and norms.
- As mentioned above, PMI will support a process to **review, revise, and disseminate the MCS**. The process will be led by the NMCP SBC Officer and informed by a consultative process, as well as lessons learned from activities during the last five years. PMI and partners will participate and provide recommendations to the NMCP including malaria preventative and health-seeking behaviors and key messages for each target group (beneficiaries and providers), high-risk "special" subpopulations, and tailored messages; the best modes of communication and trusted sources of information, especially those that can be deployed in a COVID-19 context and beyond; and indicators to measure progress.
- PMI partners will develop an integrated, multifaceted, and holistic package of malaria **SBC interventions** that is aligned to NMCP's strategy and suited to the COVID-19 context. Informed by the results of the rapid assessment and tested with communities, PMI partners will develop audience-specific, consistent messages for targeted behaviors (e.g., prompt treatment within 24 hours, taking appropriate medication from trusted sources, or consistent ITN use) and behavioral factors. The package will include a menu of activities, tools, materials, and communication channels that can be tailored to subgroups. Centered on the socioecological model, PMI will work with those most affected at the individual and household levels, as well as those with a direct influence on them, such as service providers and VHWs. In addition to activities for control districts with high transmission, PMI will also continue to work on SBC activities and messages for elimination in one or more districts that can also be adopted by the other 28 elimination districts.
- Focusing on communities in high-burden districts, including the hard-to-reach, PMI will build on interventions implemented historically to increase engagement in malaria prevention and treatment by communities. PMI partners will continue working with **Health Center Committees** and using a version of the **CAC to ensure local communities identify their health priorities**, share their experiences of care quality, and actively participate in the provision and use of malaria services. The outputs will inform SBC activities, such as media campaigns around ITN use, care-seeking behavior, and ANC attendance for IPTp. In addition, the outputs will feed into national, provincial, district, and facility efforts to improve delivery of quality services that communities are willing to use. The CAC process is a proven approach to engaging communities and addressing the health issues that are of importance to them. PMI partners will conduct regular supportive sessions with communities to share data on progress from their plans via a community bulletin board, and to identify outstanding issues and discuss solutions. The sessions also capture community feedback about service quality, beliefs and misconceptions around malaria, and reasons why services are and are not used. Greater participation helps address gender disparities as activities and services can be tailored specifically for and by women, men, and youth, including exchanges between different groups for increased understanding. The approach also builds ownership by communities of the activities in their plans.
- PMI plans to use a range of **digital tools for SBC**, including social media platforms that are widely used in Zimbabwe (e.g., WhatsApp, Facebook, and Twitter), to encourage two-way communication and share concise, engaging, and easy-to-access malaria information, especially youth-friendly messages. Products like a previously developed (in 2021) short animation on ITN use, could be disseminated this way. PMI partners will work with local internet providers to negotiate favorable rates for bulk SMS broadcasts and to introduce a malaria hotline modeled on the COVID-19 hotline. With content developed by PMI

partners and the MOHCC/NMCP, PMI will consider introducing voice recognition for interactive, path-based games and messages that can help callers to adopt healthier behaviors.

- Local civil society organizations and community-based organizations play a critical role in representing the needs and interests of key and vulnerable populations and provide a channel to extend the NMCP's reach with efficient implementation of SBC activities. Furthermore, their focus on broader health issues provides an opportunity to integrate consistent malaria messaging into other health areas. PMI will support strengthening **engagement of civil society organizations and community-based organizations in high-transmission areas.** We will deliberately work with groups that have demonstrated performance in reaching women and youth with essential health information, as well as malaria-vulnerable populations who are far from facilities.

Key Goal

Through the use of SBC interventions and in alignment with Zimbabwe's national MCS, 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?

Based on most recent data available from the last national-level survey in 2016 and those behaviors endorsed by NMCP, PMI is prioritizing support for prompt care-seeking, consistent ITN use, and IPTp uptake (Figure A-22). PMI will also continue to support the following behaviors:

- Maintaining high rates of IRS acceptance.
- Increasing health facility and VHW/community awareness of their roles in attaining malaria elimination.
- Advocating for local leadership and facility and community participants to support and sustain malaria control and elimination in their communities.

In addition, NMCP and PMI agree that the underlying perception that one is at low risk of getting malaria outside of malaria season and if mosquitoes are not seen/heard is of particular concern. For ITN use in particular, it is important to note that malaria is seasonal in Zimbabwe. Malaria risk perception is low when inhabitants determine that it is not malaria season based upon the presence of rain and/or the presence of mosquitoes seen and/or heard in the environment. For more information about ITN use, IPTp uptake and malaria care-seeking behavior, please see the ITN (Table A-3), MIP (Figure A-25 on IPTp), and Case Management Sections (Figure A-17 on care-seeking) above.

Supporting Data

Table A-22. Prioritized behaviors with FY 2022 funds

Behavior	Target Population	Geographic Focus	Justification
Prompt care-seeking for fever	All persons with fever and especially mothers of children under five years of age	47 districts	Pre-COVID, Zimbabwe experienced a positive temporal trend in care-seeking, yet there was still a desire to improve. The highest level recorded was 65% in the MIS 2016. There are many, varied barriers to seeking treatment in Zimbabwe that have been identified including economic hardship, distance to facility, and recognition of signs/symptoms.
Consistent use of ITNs for every sleeping space	Zimbabweans residing in districts with malaria transmission indicated for ITN receipt	35 targeted ITN districts	There is widespread misconception regarding malaria risk in Zimbabwe: 42% of respondents said the main reason they would not sleep under a net is because they perceive no malaria is currently present, it is not perceived to be the rainy season, and they hear/see no mosquitoes.
Uptake of IPTp among eligible pregnant women	Pregnant women residing in districts with malaria transmission indicated for IPTp	26 targeted IPTp districts	The percentage of pregnant women attending four or more ANC visits is relatively high, suggesting that the majority of women have opportunities to receive the recommended minimum of three IPTp doses. However, there is still a need to increase the number of ANC visits by each pregnant woman and to improve early antenatal care-seeking to minimize missed opportunities for IPTp administration. According to the 2015 DHS, the average gestational age at first ANC was 4.4 months, with 35% of pregnant women making the first visit at four to five months and 17% delaying until the sixth or seventh month. There are several possible drivers for this behavior, including the cultural norms regarding concealment of pregnancy.

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?

All of the prioritized behaviors listed in the table above are affected by data gaps. Within Zimbabwe MOP 2020, PMI/Zimbabwe described widespread gaps in recent data that would assist NMCP and PMI in understanding barriers or factors influencing the adoption and maintenance of malaria prevention and treatment behaviors. The malaria program was looking forward to funding a combined DHS/MIS planned for CY 2020 with data collection taking place during malaria high season (February–May 2020). However, the COVID-19 pandemic and associated lockdowns restricted movements of all malaria partners and led to a re-prioritization of activities limited to only the most critical, lifesaving events, such as vector control and malaria CM. Despite the substantial gaps in data

over such a long period of time, the MOHCC/NMCP and partners decided that the DHS/MIS would be delayed until it could be conducted safely. The DHS/MIS is now rescheduled for 2022 at the earliest.

Prompt Care-Seeking for Fever: Need new national-level survey to measure important SBC barriers and facilitators and intermittent SBC surveys (e.g., Knowledge, Attitudes, and Practices Studies, and qualitative and quantitative assessments) in between national surveys.

Supporting Data

N/A

Key Question 2b

For consistent use of ITNs for every sleeping space, what gaps exist in understanding the barriers to the adoption and maintenance of malaria prevention and treatment behaviors?

All of the prioritized behaviors listed in the table above are affected by data gaps. For full explanation, please refer to the response to Question 2a above.

Consistent use of ITNs for every sleeping space: Need new national-level survey to measure important SBC barriers and facilitators and intermittent SBC surveys in between national surveys.

Supporting Data

N/A

Key Question 2c

For uptake of IPTp among eligible pregnant women, what gaps exist in understanding the barriers to the adoption and maintenance of malaria prevention and treatment behaviors?

All of the prioritized behaviors listed in the table above are affected by data gaps. For full explanation, please refer to the response to Question 2a above.

For uptake of IPTp among eligible pregnant women: Need new national-level survey to measure important SBC barriers and facilitators and intermittent SBC surveys in between national surveys.

Supporting Data

N/A

Key Question 3

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

As described above, NMCP commitment and capacity for SBC activities is evident in national-level staff commitment, theoretical understanding of SBC, existence of a strategy, knowledge of desired key behaviors, and existence of other key SBC documents in the major malaria implementation areas, and a reliable subcommittee coordinating mechanism. The major challenges include the current difficult operating environment, limited

subnational staff to carry out SBC routinely, and insufficient funding for SBC. NMCP and partners have attempted to cope with these challenges and have repeatedly advocated for additional SBC prioritization and funds.

NMCP, PMI, and partners have found creative ways to cope with the challenging operating environment, however limited their influence. The difficult operating environment in Zimbabwe ranges from infrastructure to economic to social challenges, all largely beyond the control of PMI and partners.

NMCP and PMI have discussed ways to bolster the country's capacity for SBC, including the introduction of SBC staff at the ward level (an administrative level lower than district level), which would provide more human resources to carry out SBC. Ward SBC staff would be managed at the district level and would engage VHWs and community groups such as Health Center Committees. Introduction of a new cadre at the ward level may be beyond the resources of PMI, but PMI/Zimbabwe will continue discussing alternate proposals for ward/village-level SBC staff or volunteers.

Finally, within MOP 2022, PMI has been able to prioritize SBC funds, due to a strategic shift in resources from IRS to ITNs and other key malaria interventions. For the first time in the history of the malaria program, PMI has more than doubled funding for SBC to ensure critical gaps can be addressed in this chronically under-funded area.

Supporting Data

NMCP and partner SBC capacity is high at the national level. However, lower level staffing is limited throughout the country. In addition, staff and partners must cope with the challenging operating environment and SBC resources are limited.

Conclusions for SBC Investments

- PMI/Zimbabwe proposes more than doubled funding for SBC under MOP FY 2022 to ensure critical gaps can be addressed in this chronically under-funded area.
- PMI MOP FY 2022 funds will support improvement in the six key malaria behaviors listed above, especially the prioritized behaviors regarding early healthcare-seeking behavior, ITN consistent use, and IPTp uptake. PMI's funds will be targeted to the districts with the highest malaria transmission in Manicaland, Mashonaland East, and Mashonaland Central. A modest amount of funds will continue to support SBC in elimination areas. A new partner spearheading SBC for PMI has just been awarded and their work plan with specific activities in the ensuing years will be determined over the next few months with NMCP.
- There are major reliable data gaps in malaria data after MIS 2016. A DHS/MIS was funded and planned for 2020 but unfortunately was postponed due to COVID-19. Therefore, Zimbabwe does not have current data on which to base SBC programming. Therefore, PMI/Zimbabwe will use existing data from MIS 2016 with an acknowledgement that it is dated. PMI/Zimbabwe will request its newly awarded PMI partner to conduct a rapid assessment in Zimbabwe's high-transmission districts in order to inform programming in the interim as the program awaits the rescheduled DHS/MIS in 2022 or 2023.
- As previously mentioned, NMCP and partner SBC capacity is high at the national level. However, lower-level staffing is limited throughout the country. In addition, staff and partners must cope with the challenging operating environment and SBC resources are limited.

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

Providing effective leadership and an enabling environment for optimal program management and coordination at all levels of the health system is a key objective of the 2021–2025 NMCESP.

NMCP Approach

The NMCP outlines the following specific strategies for achieving this objective within the 2021–2025 NMCESP:

- Promoting accountability and governance of the program.
- Promoting efficient and effective supply and utilization of resources.
- Advocating for more additional resources for malaria prevention and control.
- Strengthening cross-border collaboration.
- Strengthening risk management.

PMI Objective in Support of NMCP

Given the substantial needs, the ongoing deterioration of the health system and economic situation in Zimbabwe, PMI strives to support NMCP's efforts to develop strong leadership and an enabling environment at all levels of the health system. At this time, this support is leveraged through PMI implementing partners due to the restrictions regarding direct government-to-government support. PMI support includes training, supportive supervision, mentoring, smaller infrastructure support, and many other activities already described in the previous sections. Additional activities not already mentioned are described in the next section.

PMI-Supported Recent Progress (FY 2020)

The vast majority of PMI/Zimbabwe's HSS efforts from October 2019 to December 2020 are already listed in the previous sections and the funding is included under the relevant line items for those areas. A few additional efforts that were not previously listed (but funded under other technical area line items) include support for the following:

- Secondment of a technical officer to DPS to ensure strong coordination and effective implementation of the pooled malaria commodity warehousing and distribution system.
- Placement of Malaria Provincial Coordinators (PMI implementing partner staff) in PMI-supported provinces to ensure service delivery strengthening and IRS activities were successfully implemented and coordinated with Global Fund and other donor-funded activities. These officers also provided support for strategic planning by the provinces and districts.
- Assistance to provincial- and district-level MOHCC staff to devise a systematic approach for documenting and reviewing training gaps for CM, community CM, SBC, and SM&E thematic areas.

PMI-Supported Planned Activities (FY 2021 with currently available funds)

Through FY 2021, PMI will continue the secondment of a technical officer to DPS and will likely continue to support the Provincial Coordinators in PMI areas. Other activities may be identified when the incoming, follow-on service delivery project is awarded, in consultation with the NMCP and taking into consideration Global Fund and other partner plans and resources.

Key Goal

To leverage resources to improve the implementation of malaria interventions through the Zimbabwe health system.

Key Question 1

PMI partners with the NMCP, Global Fund, and other partners to leverage resources to improve the implementation of malaria interventions through the Zimbabwe health system. PMI strives to support HSS efforts through each of the programmatic areas and assist in emergency response that affects malaria programming.

Supporting Data

N/A

Conclusions for Additional Health Systems Strengthening Investments

PMI does not intend to fund any specific HSS activities not already included in the prior sections.

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