

This Malaria Operational Plan has been approved by the U.S. Global Malaria Coordinator and reflects collaborative discussions with the national malaria control programs and partners in country. The final funding available to support the plan outlined here is pending final FY 2018 appropriation. If any further changes are made to this plan it will be reflected in a revised posting.



## U.S. PRESIDENT'S MALARIA INITIATIVE



**PRESIDENT'S MALARIA INITIATIVE**

**ZIMBABWE**

**Malaria Operational Plan FY 2018**

## TABLE OF CONTENTS

<b>ABBREVIATIONS and ACRONYMS</b> .....	<b>3</b>
<b>I. EXECUTIVE SUMMARY</b> .....	<b>5</b>
<b>II. STRATEGY</b> .....	<b>8</b>
1. Introduction.....	8
2. Malaria situation in Zimbabwe .....	9
3. Country health system delivery structure and Ministry of Health and Child Care (MoHCC) organization .....	14
4. National malaria control strategy.....	16
5. Updates in the strategy section .....	18
6. Integration, collaboration, and coordination .....	19
7. PMI goal, objectives, strategic areas, and key indicators .....	21
8. Progress on coverage/impact indicators to date.....	23
<b>III. OPERATIONAL PLAN</b> .....	<b>27</b>
1. Vector monitoring and control.....	26
2. Malaria in pregnancy .....	51
3. Case management .....	57
4. Health system strengthening and capacity building .....	71
5. Social and behavior change communication .....	78
6. Surveillance, monitoring, and evaluation .....	847
7. Operational research .....	91
8. Pre-elimination.....	93
9. Staffing and administration.....	99
<b>Table 1. Budget Breakdown by Mechanism</b> .....	<b>101</b>
<b>Table 2. Budget Breakdown by Activity</b> .....	<b>102</b>

## **ABBREVIATIONS and ACRONYMS**

ACT	Artemisinin-based combination therapy
ANC	Antenatal care
AS/AQ	Artesunate-amodiaquine
ASL	Above sea level
BCC	Behavior change communication
CDC	Centers for Disease Control and Prevention
CHAI	Clinton Health Access Initiative
DHIS2	District Health Information System 2
DHS	Demographic and Health Survey
DPS	Directorate of Pharmacy Services
EHT	Environmental health technician
EPI	Expanded program on immunization
EUV	End-use verification
FETP	Field Epidemiology Training Program
FY	Fiscal year
GHI	Global Health Initiative
Global Fund	Global Fund to Fight AIDS, Tuberculosis and Malaria
GoZ	Government of Zimbabwe
HMIS	Health Management Information System
iCCM	Integrated community case management
IDSR	Integrated Disease Surveillance and Response
IPTp	Intermittent preventive treatment for pregnant women
IRS	Indoor residual spraying
ITN	Insecticide-treated mosquito net
LMIS	Logistics Management Information System
LT	Light trap
M&E	Monitoring and evaluation
MCCM	Malaria community case management
MCH	Maternal child health
MIP	Malaria in pregnancy
MIS	Malaria Indicator Survey
MoHCC	Ministry of Health and Child Care
MOP	Malaria Operational Plan
NatPharm	National Pharmaceutical Company
NIHR	National Institute of Health Research
NMCP	National Malaria Control Program
NMSP	National Malaria Strategic Plan
OP	Organophosphate
OR	Operational research
PMI	President's Malaria Initiative

PR	Principal Recipient
PSM	Pharmaceutical and supply chain management
RA	Resident Advisor
RDNS	Rapid Disease Notification System
RBM	Roll Back Malaria
RDT	Rapid diagnostic test
SBCC	Social and behavior change communication
SHC	School health coordinator
SM&E	Surveillance, Monitoring, and Evaluation
SP	Sulfadoxine-pyrimethamine
TA	Technical assistance
TB	Tuberculosis
TraC	Tracking Results Continuously
UNDP	United National Development Program
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VHW	Village health worker
WHO	World Health Organization
WHT	Ward Health Team
ZIPS	Zimbabwe Integrated Push System
ZAPS	Zimbabwe Assisted Pull System

## I. EXECUTIVE SUMMARY

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

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

Zimbabwe was selected as a PMI focus country in FY 2011.

This FY 2018 Malaria Operational Plan presents a detailed implementation plan for Zimbabwe based on the strategies of PMI and the National Malaria Control Program (NMCP). It was developed in consultation with the NMCP and with the participation of national and international partners involved in malaria prevention and control in the country. The activities that PMI is proposing to support fit in well with the NMCP strategy and plan and build on investments made by PMI and other partners to improve and expand malaria-related services, including the Global Fund to Fight AIDS, Tuberculosis, and Malaria (Global Fund) malaria grants. This document briefly reviews the current status of malaria control policies and interventions in Zimbabwe, describes progress to date, identifies challenges and unmet needs to achieving the targets of the NMCP and PMI, and provides a description of activities that are planned with FY 2018 funding.

The proposed FY 2018 PMI budget for Zimbabwe is \$13.5 million. PMI will support the following intervention areas with these funds:

**Entomologic monitoring and insecticide resistance management:** PMI will support entomological surveillance, including insecticide susceptibility monitoring in sentinel sites, throughout Zimbabwe with an emphasis on sites located in areas receiving PMI supported IRS. Technical assistance will be continued to expand entomological laboratory capacity at NIHR and at Africa University to meet the need for entomological specimen analysis, data dissemination, and use.

**Insecticide-treated nets (ITNs):** PMI will support ITN procurement of approximately 712,569 rectangular ITNs and distribution for routine distribution in ANC, EPI and community channels. PMI will provide support to the NMCP in logistics and operations to strengthen ITN distribution systems as well as utilize intensive SBCC in communities to support the transition from conical to rectangular shaped ITNs. PMI will conduct the final 36-month post-distribution assessment of the ITN durability monitoring from a large-scale distribution in 2015.

**Indoor residual spraying (IRS):** PMI will support a robust, full package of IRS implementation in districts identified with the NMCP based on the most recent entomological and epidemiological data available. Nationwide, PMI will continue contributions to environmental compliance and other cross-cutting efforts, such as entomological monitoring, including insecticide susceptibility monitoring, surveillance, monitoring, and evaluation, and social and behavior change communication.

**Malaria in pregnancy (MIP):** PMI will procure 580,000 treatments of sulfadoxine-pyrimethamine plus approximately 3,333 treatments of clindamycin. PMI will support refresher training of health workers and VHWs on IPTp and implementation guidelines as well as support MIP SBCC activities such as community sensitization and the use of ITNs during pregnancy.

**Diagnosis and treatment:** PMI will procure point of care rapid diagnostic tests (RDTs) and artemisinin-based combination therapy (ACTs). The PMI team will work with the NMCP to update the national rectal artesunate policy to follow the WHO guidelines. If this is completed, PMI will then procure rectal artesunate for severe malaria pre-referral treatment in children under six. PMI will continue refresher trainings for case management and MIP in addition to providing supportive supervision and mentoring in selected districts. In Manicaland and three non-Manicaland districts, PMI will continue supportive training and supervision on malaria case management for village health workers (VHWs) at the community level.

PMI will support the establishment of university laboratory capacity for both epidemiologic and entomologic surveillance sample analysis as well as procure laboratory supplies and reagents to support microscopy diagnosis of malaria. PMI will also build human capacity through the development of in-country reference materials.

**Pharmaceutical management:** PMI will continue to ensure that malaria commodities, such as ACTs, RDTs, severe malaria medicines, and SP, are available in health facilities through the Zimbabwe Assisted Pull System (ZAPS). A focus will be placed on stock management and the ordering system in an attempt to address overstock issues. An assessment will also take place to identify possible causes to the discrepancy between reported malaria cases and consumption of malaria commodities.

**Health systems strengthening and capacity building:** PMI activities result in strengthened health systems that fall under a variety of other technical areas. PMI strengthens health services in case management through the training and supportive supervision of primary health facility staff as well as VHWs. In addition, PMI builds capacity for high-quality IRS implementation and strengthens routine ITN distribution systems. PMI strengthens health information systems through support for entomological surveillance and building laboratory capacity for both epidemiologic and entomologic surveillance sample analysis. PMI also provides technical support to the NMCP for malaria outbreak detection and response in addition to support for IDSR/DHIS2.

**Social and behavior change communication (SBCC):** PMI will support VHWs and school and community leaders to conduct interpersonal communication on key malaria messages around ITNs, malaria in pregnancy, RDTs, and ACTs in the 47 districts with the highest malaria transmission. The school and community leaders' SBCC activities will be complemented by printed materials that accompany packaged ITNs, RDTs and ACTs, radio spots, and drama skits. The primary focus for all activities will be to support the launch of ITN distribution expansion, improve MIP uptake, and promote IRS and appropriate case management. PMI programming on ITNs and IPTp will be guided by findings from the MIP assessment and secondary analysis of ITN MIS data.

**Surveillance, monitoring and evaluation (SM&E):** PMI will continue work with the NMCP to monitor the quality of malaria data collected through the HMIS and to improve data use to ensure that the programmatic needs of the NMCP are met. PMI will support malaria routine system strengthening with a focus on continued and expanded supportive supervision at the facility level. Continued support for rational and effective epidemic detection and response will also be a focus of PMI activities in “moderate” (annual malaria incidence 6-100 cases/1,000 population) to “high burden” (annual malaria incidence >100 cases/1,000 population) areas such as Manicaland.

PMI will continue support for SM&E trainings at all levels, including VHWs as well as supervisory and district health facility trainings. PMI will conduct quarterly surveys to assess the availability of malaria commodities in health facilities and warehouses.

**Operational research (OR):** PMI will work with NCMP and partners to develop a research agenda aligned with the revised National Malaria Strategic Plan (NMSP) for 2016-2020. NMCP is considering initiating a formative assessment in Mbire District due to increased malaria incidence despite improving coverage of interventions. Based on the assessment findings, the PMI team may continue to consider design of an operational research activity but no OR activities are proposed with FY 2018 PMI funds at this time.

**Pre-elimination:** PMI will focus support on filling commodity gaps and strengthening malaria surveillance systems, including supply chain and logistics management. In addition, PMI will provide support for reactive case detection and foci investigation in Matabeland South.



## II. STRATEGY

### 1. Introduction

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

In 2015, PMI launched the next six-year strategy, setting forth a bold and ambitious goal and objectives. The PMI Strategy for 2015-2020 takes into account the progress over the past decade and the new challenges that have arisen. Malaria prevention and control remains a major U.S. foreign assistance objective and PMI's Strategy fully aligns with the U.S. Government's vision of ending preventable child and maternal deaths and ending extreme poverty. It is also in line with the goals articulated in the Roll Back Malaria (RBM) Partnership's second generation global malaria action plan, *Action and Investment to defeat Malaria (AIM) 2016-2030: for a Malaria-Free World* and WHO's updated *Global Technical Strategy: 2016-2030*. Under the PMI Strategy 2015-2020, the U.S. Government's goal is to work with PMI-supported countries and partners to further reduce malaria deaths and substantially decrease malaria morbidity, towards the long-term goal of elimination. Zimbabwe was selected as a PMI focus country in FY 2011.

This FY 2018 Malaria Operational Plan (MOP) presents a detailed implementation plan for Zimbabwe, based on the strategies of PMI and the National Malaria Control Program (NMCP). It was developed in consultation with the NMCP and with the participation of national and international partners involved in malaria prevention and control in the country. The activities that PMI is proposing to support fit in well with the National Malaria Control strategy and plan and build on investments made by PMI and other partners to improve and expand malaria-related services, including the Global Fund to Fight AIDS, Tuberculosis, and Malaria (Global Fund) malaria grants. This document briefly reviews the current status of malaria control policies and interventions in Zimbabwe, describes progress to date, identifies challenges and unmet needs to achieving the targets of the NMCP and PMI, and provides a description of activities that are planned with FY 2018 funding.

## 2. Malaria situation in Zimbabwe

Zimbabwe has seasonal and geographic variation in malaria transmission that corresponds closely with the country's rainfall pattern. In general, the major malaria transmission season occurs during the rainy season between November and April, with the average temperature ranging between 18 and 30 degrees Celsius. Peak transmission season is February through April. The annual rainfall varies from less than 700 mm in Matabeleland South Province to more than 1,500 mm in Manicaland Province. Malaria transmission is lower in the low rainfall areas and higher in the high rainfall provinces.

Geographically, Zimbabwe is divided by a central watershed lying higher than 1,200 meters above sea level and flanked north and south by low lying areas. In 1986, the country was divided into three malaria epidemiological areas based on altitude above sea level (ASL). Malaria is considered to be perennial in areas below 900 meters ASL in the north and below 600 meters ASL in the southern regions. Areas between 900-1200 meters ASL in the north and 600-900 meters ASL in the south are where malaria is seasonal, and these areas are prone to epidemics. In areas above 1,200 meters ASL in the north and 900 meters ASL in the south, malaria transmission does not normally occur. Traditionally, transmission in higher altitude areas has been described as unstable, and lower areas as stable.

Zimbabwe is divided into 10 provinces (2 of which are urban), 63 rural districts, and 1,200 wards. Forty-seven of the rural districts are considered malarious and of those, 30 are considered high malaria burden districts. Currently, 20 rural districts are considered to be in pre-elimination status (Table 1).

**Table 1: Morbidity and Mortality Data by District, Zimbabwe, 2016**

	<b>District</b>	<b>2016 Health Facility confirmed malaria cases</b>	<b>2016 Village Health Worker confirmed malaria cases</b>	<b>2016 Malaria Deaths</b>
	<b>Manicaland Province</b>			
1	Buhera	1015	350	8
2	Chimanimani	5321	6823	15
3	Chipinge	17032	17847	17
4	Makoni	3344	2023	12
5	Mutare	13221	5840	39
6	Mutasa	6490	14344	7
7	Nyanga	8122	8713	8
	<b>Mashonaland Central Province</b>			
8	Bindura	6492	272	3
9	Centenary	9729	1867	1
10	Guruve	1804	964	3
11	Mazowe	2265	276	8
12	Mbire	7555	1933	4
13	Mount Darwin	5728	5164	6
14	Rushinga	2342	2156	5

15	Shamva	2958	896	1
	<b>Mashonaland East Province</b>			
16	Chikomba	206	0	0
17	Goromonzi	7058	6539	3
18	Hwedza	182	1	0
19	Marondera	392	42	1
20	Mudzi	10502	4944	3
21	Murewa	2412	54	7
22	Mutoko	16332	12319	8
23	Seke	320	50	0
24	Uzumba Maramba Pfungwe	4854	1968	6
	<b>Midlands Province</b>			
25	Chirumhanzu**	30	5	1
26	Gokwe North	388	1589	1
27	Gokwe South**	128	15	1
28	Gweru District**	89	0	7
29	Kwekwe**	115	2	0
30	Mberengwa**	130	22	1
31	Shurugwi**	36	0	1
32	Zvishavane**	32	0	2
	<b>Matebeleland North Province</b>			
33	Binga	939	1103	4
34	Bubi**	10	0	1
35	Hwange	324	63	1
36	Lupane**	33	0	1
37	Nkayi**	8	0	0
38	Tsholotsho**	11	2	0
39	Umguza**	12	0	0
	<b>Matebeleland South Province</b>			
40	Beitbridge**	535	68	1
41	Bulilima**	15	1	0
42	Gwanda**	48	3	0
43	Insiza**	24	0	0
44	Mangwe**	4	0	0
45	Matobo**	10	0	0
46	Umzingwane**	7	1	0
	<b>Masvingo Province</b>			
47	Bikita	1951	602	2
48	Chiredzi	9055	3307	21
49	Chivi	227	14	2

50	Gutu	366	80	4
51	Masvingo	445	37	2
52	Mwenezi	589	298	2
53	Zaka	1028	225	4
	<b>Mashonaland West Province</b>			
54	Chegutu	253	30	0
55	Hurungwe	17862	3023	14
56	Kariba	1483	79	4
57	Makonde	1888	562	9
58	Mhondoro**	58	0	0
59	Sanyati	589	4	3
60	Zvimba	621	29	4
	<b>Urban Districts</b>			
61	Bulawayo*	163	0	32
62	Chitungwiza*	883	0	5
63	Harare*	2260	0	44
	<b>Total</b>	<b>174293</b>	<b>106549</b>	<b>339</b>

\* = Urban districts attend to a number of patients referred from rural district facilities

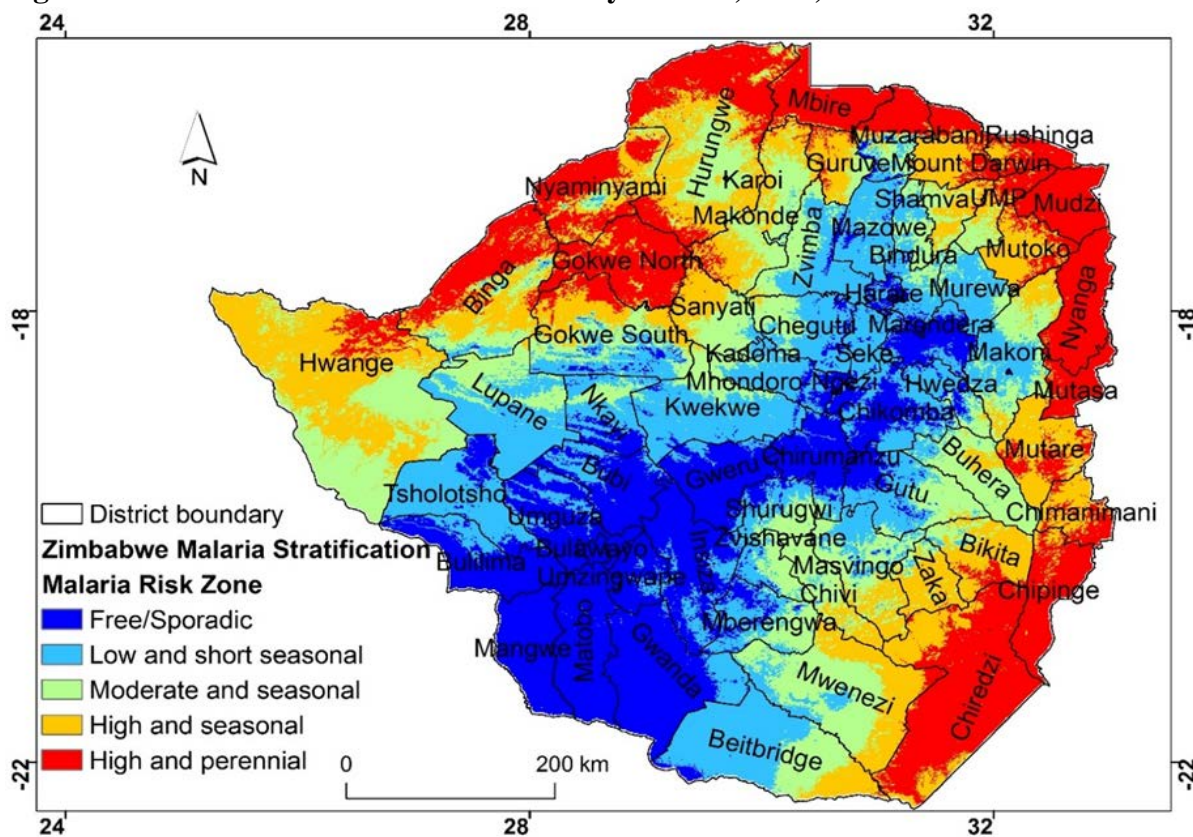
\*\* = Pre-elimination districts

Population estimates for Zimbabwe vary due to recent migration within and outside the country. The 2016 population estimate, as projected from the 2012 census, is 13.5 million and it is estimated that about half of this population lives in malaria risk areas.

*Plasmodium (P.) falciparum* accounts for more than 98% of all reported malaria cases; *P. ovale* and *P. malariae* account for the remainder. Mosquito collections made using the Centers for Disease Control and Prevention (CDC) light traps and pyrethrum spray catches conducted at PMI-supported sentinel sites during 2013-16 showed that *Anopheles (An.) gambiae* s.l. was the most widely distributed species across sites in line with findings from previous vector distribution studies. *Anopheles funestus*, which was previously reported to be the predominant vector in Mutasa and Mutare Districts of Manicaland Province, has been reported recently from several other sites (e.g., sites in Goromonzi, Chimanimani, and Hurungwe Districts), indicating a much wider geographical distribution than previously believed. The Global Fund-supported vector mapping exercise in 2017 is expected to provide new information on the current distribution of the major malaria vectors, i.e., *An. gambiae* s.l and *An. funestus* s.l. as well as the presence of secondary vectors in Zimbabwe.

There is geographic variation in malaria burden risk across and within provinces. Figure 1 shows a comparison of the burden of malaria by district for 2016.

**Figure 1: Annual Malaria Incidence Rates by District, 2016, Zimbabwe**



According to Zimbabwe District Health Information System 2 (DHIS2) data, approximately 82% of all malaria cases in 2016 originated from three eastern rural provinces, Manicaland, Mashonaland East and Mashonaland Central, with 39% of all cases and 31% of all deaths coming from Manicaland (Tables 2 and 3). This trend, where these three provinces rank highest in reported malaria cases, has been consistent since 2013.

**Table 2: DHIS2 Malaria Morbidity Data, 2016, Zimbabwe**

Province	Malaria Cases*	% Contribution
Manicaland	110,485	39
Mashonaland East	68,175	24
Mashonaland Central	52,401	19
<b>Subtotal (3 provinces)</b>	<b>231,061</b>	<b>82</b>
Other Provinces	49,781	18
<b>National</b>	<b>280,842</b>	<b>100</b>

\*Parasitologically confirmed

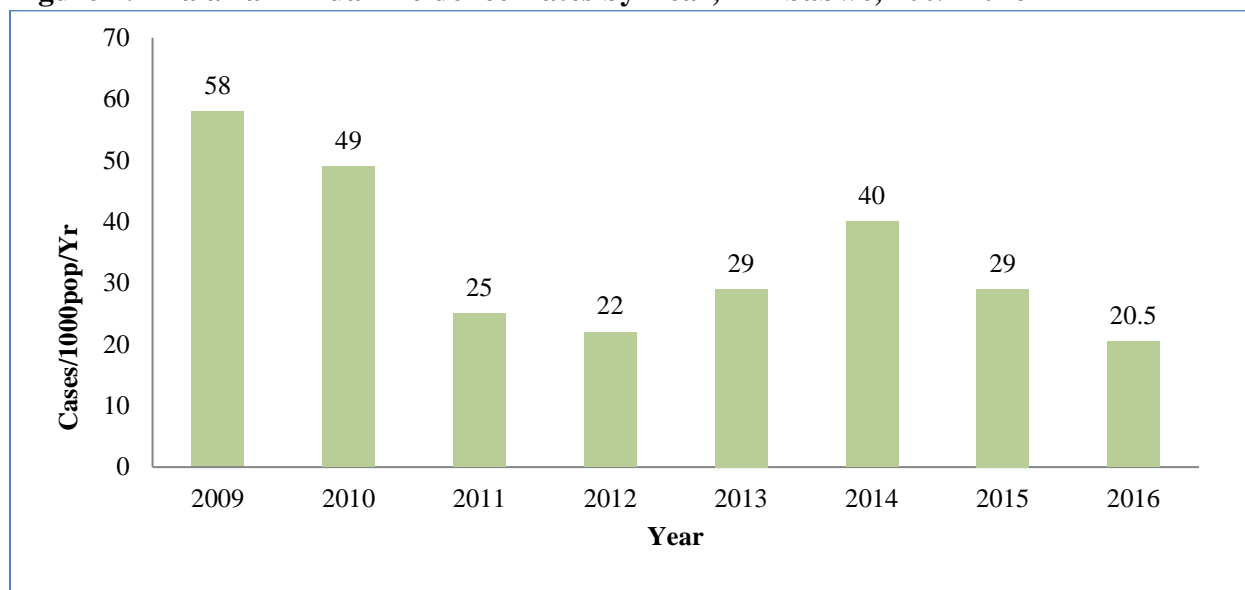
**Table 3: DHIS2 Malaria Mortality Data, 2016, Zimbabwe**

Province	Malaria Deaths	% Contribution
Manicaland	106	31
Masvingo	37	11
Mashonaland West	34	10
<b>Subtotal (3 provinces)</b>	<b>177</b>	<b>52</b>
Other Provinces	162	48
<b>National</b>	<b>339</b>	<b>100</b>

Overall, malaria incidence in Zimbabwe has decreased over the past decade. However, malaria remains a major challenge in certain provinces, districts, and wards. According to the NMCP's latest figures, malaria incidence decreased by 87% from 153 cases/1,000 population in 2004 to 20.5/1,000 in 2016. The 2016 Malaria Indicator Survey (MIS) showed that among children under 5 years of age, 0.5% were found positive for malaria by rapid diagnostic test (RDT) and 0.2% by microscopy; for children aged 5-14 years the prevalence rate was 0.8% by RDT and 0.2% by microscopy; among those aged 15 years and above, 0.5% were positive for malaria by RDT and 0.3% by microscopy.

Reported cases decreased from 1.8 million in 2006 to 281,000 in 2016 (HMIS). A continuous decline occurred until 2012, but an upsurge in cases and incidence was recorded in 2013 and 2014 (Figure 2). Incidence declined by 86% from 2004 to 2012; however, malaria incidence increased by 77% from 22 cases per 1,000 population in 2012, to 39 in 2014. New malaria cases are mostly occurring in areas along the Zimbabwe-Mozambique border, including Manicaland Province, where *An. funestus* resistance to pyrethroid class insecticides was identified in 2013. It is difficult to know how much of the increase is also due to migration across the border, strengthened surveillance systems, or ineffective malaria control interventions. PMI support helped to institute robust measures to prevent malaria infections, mainly by introducing an organophosphate (OP) class insecticide that is highly efficacious against *An. funestus*, and improving systems used to detect and rapidly respond to malaria upsurges. Hence, the national annual malaria incidence decreased by 47% from 39 cases per 1,000 population in 2014 to 20.5 per 1,000 population in 2016. The decrease coincided with the switch to OPs for vector control in Manicaland Province and factors such as reduced rainfall and improvements of other malaria prevention and control interventions.

**Figure 2: Malaria Annual Incidence Rates by Year, Zimbabwe, 2009-2016**



Source: Zimbabwe Health Information System

### **3. Country health system delivery structure and Ministry of Health and Child Care (MoHCC) organization**

The Ministry of Health and Child Care (MoHCC) has three main divisions: Policy Planning, Monitoring, and Evaluation; Curative Services; and Preventive Services, plus the Provincial Medical Directorates. The NMCP is under the Preventive Services directorate and is led by a director who is supported by a team of senior officers responsible for: case management, monitoring and evaluation (M&E), vector control, social behavioral change communication (SBCC), and finance and administration.

At the provincial level, the Provincial Medical Director is responsible for all health activities, including malaria control, and has a team of managers responsible for epidemiology and disease control, nursing services, environmental health, administration, nutrition, health promotion and pharmacy. The Provincial Epidemiology and Disease Control Officers also serve as the provincial focal persons for malaria. The structure at the district level mirrors the province with a District Health Management Team. The District Health Management Team is led by the District Medical Officer, who is responsible for all health delivery services in the district, including malaria. The District Health Management Team works with Ward Health Teams (WHTs) to coordinate and implement health programs. The District Environmental Health Officer manages IRS activities whereas the District Nursing Officer is responsible for case management related issues.

The primary health facility level is staffed by two to three nurses, one to two environmental health technicians (EHTs), and nurse aides. There are approximately 1,500 primary health facilities in Zimbabwe and each primary health facility is linked to a WHT comprised of community members such as village health workers (VHWs), school health coordinators (SHCs), headmen, chiefs, and religious

leaders. The health facility staff is responsible for overseeing program implementation at ward level in conjunction with the WHT. The WHT members are volunteers, although trained community-based health volunteers receive an incentive of \$14/month from the Global Fund grant for health system strengthening as well as the Health Development Fund. An additional \$1/month per VHW goes to the Department of Nursing in the MoHCC to support the VHW program.

The NMCP collaborates with diverse partners and has linkages with the following parastatal, governmental, and nongovernmental organizations:

1. National Institute for Health Research (NIHR), a government entity which operates a center for research, training, and service in the fields of disease control, biomedicine, and public health;
2. National Pharmaceutical Company (NatPharm), a parastatal organization which is responsible for the procurement, storage and distribution of all health pharmaceutical commodities, including malaria medicines;
3. Medicine Control Authority of Zimbabwe, a statutory government institution which is responsible for registration of all medicines in the country;
4. National Microbiology Reference Laboratory, a government entity which is responsible for internal quality assurance;
5. Zimbabwe National Quality Assurance Program, a nongovernmental organization responsible for external quality assurance for laboratories;
6. University of Zimbabwe (Geographical Information Systems and Earth Observation Department), a government institution which recently has been charged with the responsibility of combining different types of data to create an updated malaria stratification map for Zimbabwe; and
7. University of Zimbabwe (Master of Public Health Program), whose students are attached to MoHCC units at national and subnational levels. The students conduct malaria and non-malaria related projects such as outbreak investigations and program evaluations. In turn, the NMCP and MoHCC staff mentors the students.
8. A new partnership was established in 2015, between PMI, the Ministry of Health and Child Care (MoHCC) and the Africa University (AU) Faculty of Health Sciences to expand capacity for malaria-related laboratory skills and services. Africa University is a private Zimbabwe University with a laboratory program and will contribute to the strengthening of health systems and expansion of the entomological resources in Zimbabwe.

The NMCP has ten national level staff in Harare and eight Provincial Malaria Focal Persons. In addition, there is one national level post, Chief Field Officer, supporting vector control as well as a Master of Public Health student attached to the NMCP. At the national level, the NMCP develops policy, national guidelines, and training materials following advice and recommendations from relevant malaria technical subcommittees. The national level also oversees program implementation, monitoring and evaluation (M&E), resource mobilization and partnership coordination.



Due to Zimbabwe's economic collapse in 2008-09, all of the NMCP positions in Harare are supported by the Global Fund. The position of the Provincial Malaria Focal Person is also supported by the Global Fund while the other workers receive additional allowances from the Zimbabwe Health Worker Retention Scheme. A Malaria Logistics Focal Person, who is funded by PMI, sits at the MoHCC under the pharmacy directorate and spearheads malaria supply chain activities at MoHCC headquarters and coordinates with the NMCP. PMI also supports the secondment of a PhD level entomologist to the NMCP, who works to support and coordinate entomological surveillance activities conducted by NMCP, NIHR, and PMI's IRS implementing partner. The Government of Zimbabwe (GoZ) budget is planned annually, based upon district annual plans which are consolidated at the provincial and later at the national levels.

In addition to the above financial assistance, other local and international non-governmental organizations (NGOs) support malaria control activities.

#### **4. National malaria control strategy**

The vision of the NMCP's penultimate draft of the 2016-2020 National Malaria Strategic Plan (NMSP) is to have a malaria-free Zimbabwe with the goal to "reduce malaria incidence to 5/1,000 and malaria deaths by at least 90% of the 2015 figure by 2020".

The objectives and strategies of the NMSP include:

1. To protect at least 85% of the population at risk of malaria with an appropriate malaria prevention intervention for the period 2016-2020, including:
  - Indoor residual spraying;
  - Use of LLINs;
  - Larval source management; and
  - Personal protection.
2. To provide prompt and appropriate treatment to all confirmed malaria cases by 2018 and maintain up to 2020, by:
  - Strengthening quality assurance of diagnostics (RDTs and microscopy) and treatment;
  - Maintaining quality assured treatment of all uncomplicated malaria cases;
  - Ensuring quality-assured supply chain management;
  - Strengthening health facilities to effectively manage severe malaria; and
  - Strengthening case management for special groups (mobile migrant population, miners, refugees, agriculture workers, religious groups, gatherings, etc).
3. To strengthen surveillance, monitoring, and evaluation for all malaria interventions for the period 2016-2020 by:
  - Strengthening the surveillance system (passive and active);
  - Conducting entomological surveillance;
  - Strengthening data management;
  - Generating and maintaining evidence for informed malaria programming;
  - Improving malaria epidemic detection;

- Strengthening epidemic response; and
- Performing program monitoring.

4. To eliminate local malaria transmission in at least nine districts by 2020 by:

- Strengthening elimination surveillance;
- Strengthening capacity for elimination;
- Expanding pre-elimination districts; and
- Preventing reintroduction of malaria.

5. To increase utilization of all malaria interventions to at least 85% by 2020 by:

- Raising the profile of malaria amongst politicians and policy and decision makers at all levels to influence malaria budget increases and support for the utilization of malaria interventions;
- Engaging networks of people to increase utilization of malaria interventions;
- Implementing formative research to understand the social determinants of behaviors and use to inform SBCC approaches and messages; and
- Reinforcing and improving knowledge, attitudes, and practices for positive malaria behaviors.

6. To provide effective leadership and an enabling environment for optimal program management and coordination at all levels by 2020 by:

- Strengthening program management and coordination;
- Advocating for high level commitment, support, and resources for malaria;
- Strengthening cross-border and inter-district collaboration for malaria control and elimination; and
- Strengthening the procurement supply chain management system.

In Zimbabwe, the majority of people seek care for fever and suspected malaria from public sector facilities, including those living in the eight rural provinces and the poor and uninsured living in urban areas. The 2016 MIS indicated that, of children under five years of age with fever in the previous two weeks in the eight rural provinces, 55% received care from public sector facilities (government or mission hospitals, rural health or mobile clinics, or community health workers). About 4% sought care in the private sector (clinics, physicians, and pharmacies) and 6% went to other sources (shops, traditional healer, etc.). Thirty six percent did not seek treatment or advice. The distribution of those seeking care from private sources ranged from approximately 12-20%; among those in the third highest wealth quartiles, their use of public facilities reached 100%, indicating that use of public facilities is common across wealth categories. Similarly, use of public facilities was overwhelmingly greater than private sector regardless of mother's highest education.

## **5. Updates in the strategy section**

- A new NMSP (2016-2020) was developed in late 2016 and a penultimate draft is now in place with a total cost of \$240,758,138. This equates to an average cost of more than US\$80 million per year. This amount is far more than what the country receives from PMI and Global Fund every year. The NMSP lays out six objectives and strategies, as highlighted in sub section 4

above. The significant difference from the previous NMSP is the inclusion of a pre-elimination objective, which aims to eliminate local malaria in at least nine districts by 2020.

- A new SBCC strategy (2016-2020), which is subsidiary to the new NMSP, was also developed and finalized in early 2017. Of note is the inclusion of a recommendation that special populations (e.g., artisanal miners, fishermen, migrants, and cross-border traders) should be given special attention during the planning of preventive and curative services, as well as SBCC packaging.
- An updated malaria stratification map was produced in 2016 (shown in Fig. 1). The stratification, and priorities for malaria control interventions in the six strata, are based on malaria incidence data, vector receptivity, access to health facilities, and results of entomological surveillance.
- PMI has supported the secondment of a qualified Entomological Officer to the NMCP, who sits at the NIHR. This is a great stride towards the revamping of entomological surveillance in Zimbabwe for malaria control programming. This new Entomological Officer will leverage entomological efforts that PMI has been rendering so far throughout Zimbabwe.
- Zimbabwe is part of the Elimination 8 (E8) group for Southern Africa. In 2016, an E8 focal person was assigned for Zimbabwe and now sits at the NMCP. This person is expected to provide the link for Zimbabwe with other E8 countries and provide a concerted effort for malaria control at points of entry for Zimbabwe.
- Zimbabwe was operating with no written policy on vector control in response to changing epidemiology and partners have been advocating for such a policy. In response, a new insecticide resistance management (IRM) plan for Zimbabwe was developed in 2016 and the document is undergoing peer review before final printing. The IRM document is a living guideline designed to support planning to mitigate the emergence of vector resistance. The IRM for Zimbabwe requires that rotation of insecticides for IRS be done after three years of use, insecticides with different modes of action be alternated, and other measures such as mosaic spraying may be employed.
- The current Global Fund grant for the NMCP ends in December 2017. The NMCP and its partners have written and submitted a new malaria funding request to the Global Fund (Jan 2018 - Dec 2020). The request is responsive to the needs and priorities as laid out in the new NMSP. PMI will continue to leverage efforts and sustain the gains the country has so far witnessed in the fight against malaria.

## **6. Integration, collaboration, and coordination**

Both USAID and CDC support programs in three key areas of the U.S. Global Health Initiative (GHI): HIV/AIDS, TB, and malaria. With FY 2018 funding, PMI/Zimbabwe will actively seek opportunities to collaborate with other United States Government health programs so as to ensure maximum impact for every health dollar the U.S. Government invests in the country. Opportunities include the following:

- *Maternal and child health services and malaria:* Since malaria prevention and control activities are implemented as part of integrated maternal and child health services, PMI will make a significant contribution to strengthening capacity to deliver these services. PMI will work with other U.S. Government-funded programs and other partners to support the comprehensive primary health care package, including the training and implementation of community-based diagnosis and treatment of fever, IPTp, and early treatment. PMI will continue to support universal coverage of ITNs via campaigns as well as the integration of ITN distribution within

routine ANC and expanded program on immunization (EPI) services.

- *Integrated Community Case Management (iCCM)*: With women continuing to deliver at home, falling household compliance with key child health household practices, and added barriers to care for women, newborns, and children (i.e., user fees and fewer rural health centers providing birthing and clinical care), the need is evident to focus increased attention on the community and households. PMI/Zimbabwe supports malaria prevention and treatment as a part of iCCM.
- Beginning in early 2010, the MoHCC and its partners launched a training program to revitalize the VHW cadres. Other partners are also supporting iCCM. The United Nations Children's Fund (UNICEF) is currently supporting VHW training and providing other inputs such as bicycles. In addition, the MoHCC is using Global Fund funding to expand VHW refresher training to all districts, provide VHW kits, and once again offer a monthly stipend (approximately \$14 per month) to each VHW. The community-based maternal and newborn care manual, developed by WHO and UNICEF, comprises the primary content for the current VHW refresher training.
- PMI has complemented other partner resources to integrate malaria community case management (MCCM) within the scope of the VHW program. PMI's partners are training VHWs to provide an integrated package of care using a revised community register as a job aid to record visits on conducting comprehensive care. Village health workers have an important role to play in mobilizing their communities and identifying those women, infants, and sick children who require care, including those in hard-to-reach areas or groups.
- *Strengthening of supply chain system*: PMI will also support the strengthening of supply chains, including support for the Zimbabwe Assisted Pull System (ZAPS), which includes management of TB commodities, primary health care packages, and malaria commodities, namely rapid diagnostic tests, SP, and ACTs. The ZAPS has replaced the Zimbabwe Informed Push System (ZIPS).
- *HIV/AIDS and malaria*: Based on the 2015 Demographic and Health Survey, the seroprevalence of HIV infections is high; an estimated 14% among individuals aged 15 to 49 years old are infected. Infection with HIV is higher among women (17%) than men (11%) and is the same in urban and rural areas (14%). Areas where integration will be pursued between the MoHCC's HIV/AIDS Program and NMCP include: promoting adherence to universal precautions when taking blood samples, integrating laboratory quality assurance, providing ITNs to people living with HIV/AIDS, and ensuring appropriate malaria prevention services at Prevention of Mother-to-Child Transmission clinics. At the community level, PMI will support VHWs who provide RDT and ACT services to also communicate important messages regarding HIV prevention and testing.
- *TB and malaria*: The National TB Program supports the activities of village health promoters to inform and support TB diagnosis and follow-up. Where these promoters are the same cadres as the VHWs that provide RDT and ACT services, PMI will work to integrate activities across HIV, TB, and malaria.

- *Routine partner collaboration and coordination:* Commitment to reducing the malaria burden and continuing on the path of malaria elimination is evident at the highest levels of the MoHCC. The NMCP staff meets weekly to review work plans and monitor progress. The NMCP coordinates with partners through five malaria technical working group subcommittees: vector control, surveillance, monitoring, and evaluation (SM&E), case management, SBCC, and procurement and supply management. These subcommittees are slated to meet quarterly and are chaired by the NMCP, other MoHCC staff, or academicians, and include the PMI/Zimbabwe in-country team and Global Fund and PMI implementing partners. Planning for a malaria elimination guiding body is also underway. At this time, it is unclear whether this body will function as a separate sub-committee or will be placed under the SM&E sub-committee.
- The NMCP participates actively in the multi-sectoral Inter Agency Coordination Committee on Health (formerly “Health Cluster”) group meetings, chaired by the MoHCC’s Director of Epidemiology and Disease Control. The NMCP also participates in a number of sub-regional and cross-border initiatives, a priority for the program. The NMCP is an active partner of the Roll Back Malaria (RBM) Southern Africa Regional Network and with the Southern African Development Community malaria network.
- The NMCP is a member of the Malaria Elimination Eight (E8) countries comprised of four front-line countries: Botswana, Namibia, South Africa, and Swaziland, and four second-line countries: Angola, Mozambique, Zambia, and Zimbabwe. Inaugurated in 2009, the E8 countries have a collective goal to eliminate malaria in their region. There is an E8 strategy which guides the eight front runner districts. The major three pillars for the strategy include 1. Strengthening M&E systems, 2. Setting up mobile and static clinics at ports of entry, and 3. Strengthening outbreak detection and response. Malaria pre-elimination activities in Zimbabwe have pushed the targeted districts/provinces to shift focus towards parasite clearance and zero malaria deaths. Malaria is now a notifiable disease in these areas (within 24 hours to the national level). All RDT positive cases are being confirmed by microscopy, all cases are supposed to be followed up to their homes for active case finding and environmental assessment, all hot spots and breeding sites are supposed to be mapped, and interventions are targeted appropriately for the class/type of transmission foci. PMI focuses primarily on the high-burden districts and not pre-elimination areas. However, there are some cross cutting activities that PMI implements in both, high-burden and pre-elimination areas, e.g., SBCC, M&E, emergency preparedness and response (EPR), entomological surveillance, etc. For the first time, the FY 2018 MOP includes resources for the direct support of pre-elimination activities in Zimbabwe. As the country progresses more into pre-elimination, PMI will likely continue to transition more resources into pre-elimination activities.
- The program is also a member of the Trans-Zambezi Malaria Initiative with Zimbabwe, Zambia, Namibia, Botswana, and Angola. The initiative is a convergence of 5 countries on the narrow Caprivi Strip, which includes a total of 16 districts and a combined population of 1.5 million people at risk of malaria. The Initiative’s vision is to eliminate malaria in the Trans-Zambezi communities with social and economic prosperity by 2020.
- The Health Partners Development Group meets on a quarterly basis to discuss issues of mutual

interest. Currently, USAID chairs these meetings with WHO being the alternate chair.

- PMI, led by the PMI in-country team, will work closely with the NMCP, RBM partners, Global Fund, and other health-related programs in Zimbabwe to provide integrated services at the health facility and community levels. PMI will work with others in USAID/Zimbabwe to ensure coordination of PMI-supported activities within the broader context of the health strategies. These approaches will ensure the most cost-effective implementation of prevention and treatment measures. PMI and NMCP have agreed on quarterly PMI implementing partners meetings, attended by PMI Resident Advisors and Malaria Specialist, partners, and NMCP.
- In addition, PMI staff will provide leadership and technical assistance in other coordinating bodies such as the local RBM (including relevant RBM subcommittees). At the planning and implementation levels, PMI and other partners will work together to effectively fill commodity and human resource gaps.

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

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

1. Reduce malaria mortality by one-third from 2015 levels in PMI-supported countries, achieving a greater than 80% reduction from PMI's original 2000 baseline levels.
2. Reduce malaria morbidity in PMI-supported countries by 40% from 2015 levels.
3. Assist at least five PMI-supported countries to meet the World Health Organization's (WHO) criteria for national or sub-national pre-elimination.<sup>1</sup>

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

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

---

<sup>1</sup> [http://whqlibdoc.who.int/publications/2007/9789241596084\\_eng.pdf](http://whqlibdoc.who.int/publications/2007/9789241596084_eng.pdf)

To track progress toward achieving and sustaining scale of proven interventions (area of strategic focus number one), PMI will continue to track the key indicators recommended by the Roll Back Malaria Monitoring and Evaluation Reference Group (RBM MERG) as listed below:

- Proportion of households with at least one ITN
- Proportion of households with at least one ITN for every two people
- Proportion of children under five years old who slept under an ITN the previous night
- Proportion of pregnant women who slept under an ITN the previous night
- Proportion of households in targeted districts protected by IRS
- Proportion of children under five years old with fever in the last two weeks for whom advice or treatment was sought
- Proportion of children under five with fever in the last two weeks who had a finger or heel stick
- Proportion receiving an ACT among children under five years old with fever in the last two weeks who received any antimalarial drugs
- Proportion of women who received two or more doses of IPTp for malaria during ANC visits during their last pregnancy

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

**Table 4: Evolution of Key Survey Based Malaria Indicators in Zimbabwe from 2005 to 2016**

Indicator	2005, DHS*	2009, MIMS**	2010, DHS	2012, MIS †	2015, DHS	2016, MIS ††
% Households with at least one ITN	9%	27%	29%	46%	48%	58%
% Households with at least one ITN for every two people	-	-	-	-	26%	-
% Children under five years old who slept under an ITN the previous night	3%	17%	10%	58%	9%	33%
% Pregnant women who slept under an ITN the previous night ††	-	-	10%	-	6%	24%
% Households in targeted districts protected by IRS	15%	-	17%	49%	-	62%
% Children under five years old with fever in the last two weeks for whom advice or treatment was sought	-	-	-	100%	50%	65%
% Children under five years old with fever in the last two weeks who had a finger or heel stick	-	-	7%	-	13%	-
% Children receiving an ACT among children under five years old with fever in the last two weeks who received any antimalarial drugs	-	-	-	-	0.4%	-
% Women who received two or more doses of IPTp during their last pregnancy in the last two years	-	-	7%	35%	-	37%
Under-five mortality rate per 1,000 live births	8%	-	8%	-	7%	-
% children under five years old with parasitemia (by <b>microscopy</b> , if done)	-	-	-	0.4%	-	0.2%
% children under five years old with parasitemia (by <b>RDT</b> , if done)	-	-	-	1%	-	0.5%

\* Demographic and Health Survey

\*\* Multiple Indicator Monitoring Survey

† MIS was conducted in 51 malaria endemic districts of eight rural provinces

†† Data were collected on net use by women of child-bearing age but not among pregnant women specifically. It should be noted that the sampling frames and data analysis methodologies for the 2012 and 2016 MIS differed and comparisons should be made with caution.

- Data not available



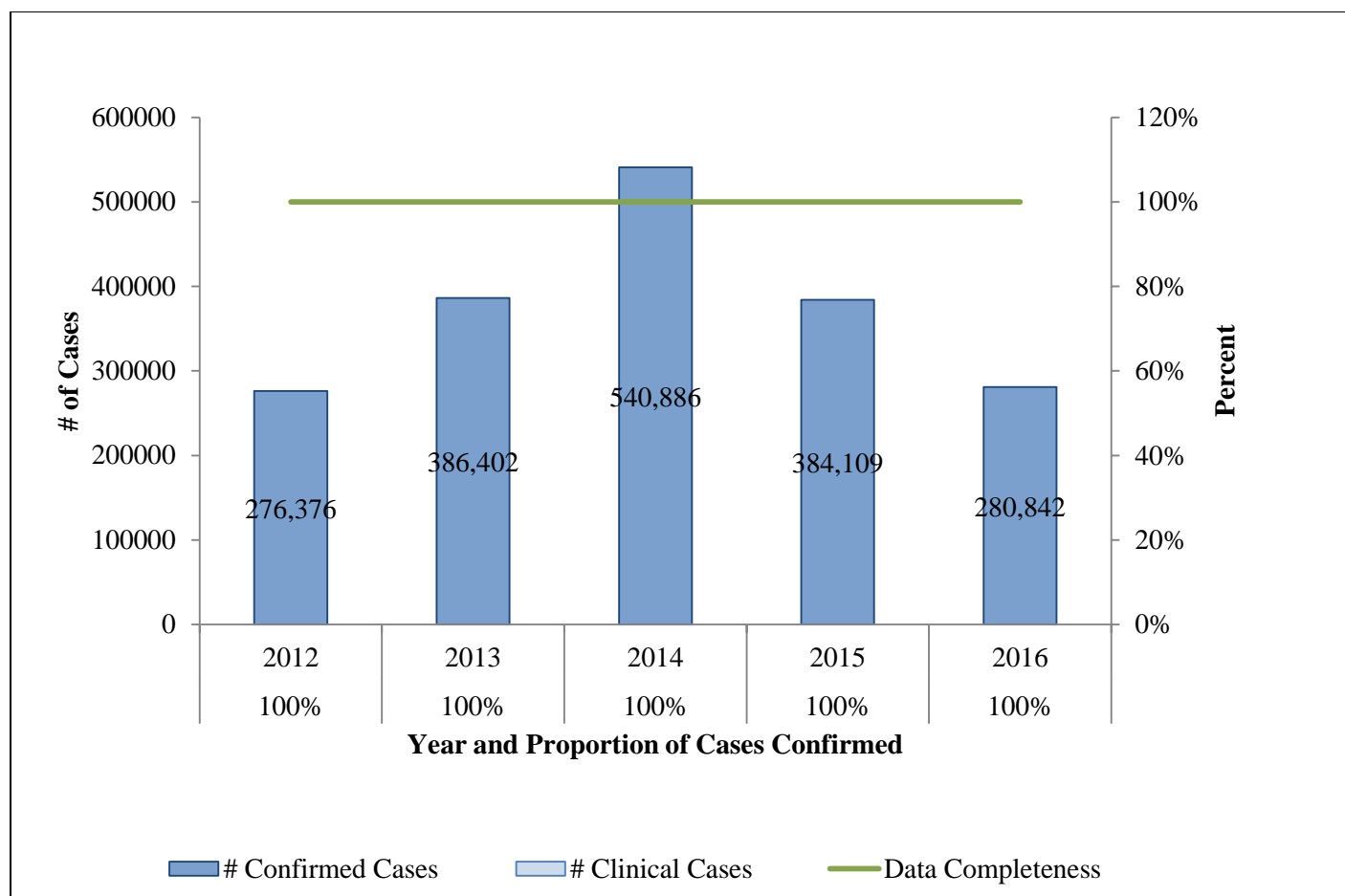
**Table 5: Evolution of Key Malaria Indicators Reported Through Routine Surveillance Systems, 2012-2016**

Indicator	2012	2013	2014	2015	2016
Total # Confirmed Cases	276,376	386,402	540,886	384,109	280,842
Total # Clinical Cases	0	0	0	0	0
Total # <5 Cases	44,666	43,420	85,087	46,730	NA
Total # inpatient malaria deaths	207	283	631	473	339
Data Completeness* (%)	100%	100%	100%	100%	100%

\*Percentage of health facilities reporting each month

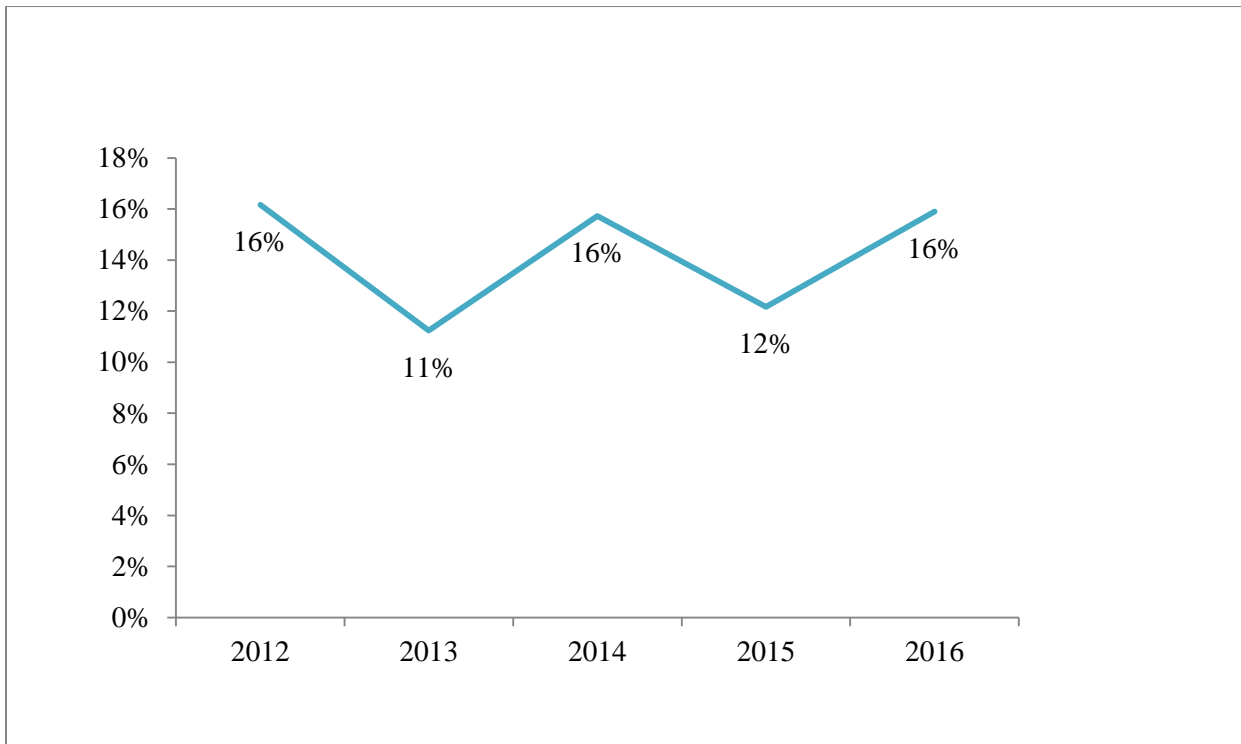
### Trends in Key Routine Based Malaria Indicators

**Figure 3: Reported Malaria Cases: All Ages, Inpatient, Outpatient, and Data Completeness\***



\*Zimbabwe District Health Information System, Version 2

**Figure 4: Percent of Malaria Cases in Children Under Five Years of Age\***



\*Zimbabwe District Health Information System, Version 2.

### III. OPERATIONAL PLAN

PMI is one of the major malaria donors in Zimbabwe working under the strong leadership of the NMCP and coordinating closely with the Global Fund to ensure complementarity of funds and activities. The goal of the NMCP, PMI, and Global Fund is to support the Zimbabwe malaria program to implement the national malaria strategic plan. PMI and Global Fund support is particularly critical at this time in Zimbabwe in order to protect the tremendous gains made in decreasing the malaria burden over the last decade, and to expand pre-elimination areas in the country. For this reason, PMI is providing financial and technical support under all the major malaria interventions and prioritizing areas of the country with the highest malaria burden. PMI's focus on high burden areas helps maintain the malaria control piece of the program. The NMCP has primarily used the Global Fund malaria grant and some funds from the Gates Foundation to initiate and further the program's efforts on pre-elimination. As appropriate, PMI provides, and will continue to provide, some support to the pre-elimination areas, especially as they expand to include more and more districts. PMI provides resources, including financial and technical support, for all the major malaria interventions – vector monitoring and control (ITNs & IRS), malaria in pregnancy (MIP), case management, health system strengthening, SM&E, operational research (OR) and SBCC. Details for each intervention are presented in Operational Plan Sections 1 – 8.

#### 1. Vector monitoring and control

##### NMCP/PMI objectives

Zimbabwe has a long history of vector monitoring and control through implementing IRS, dating back to 1949. Because of this history and continuous evidence of positive results, IRS in households is a major intervention in the country, with robust supporting systems in place. The current NMCP vector control strategy combines IRS with the relatively recent addition of ITNs, circa 2008. These two vector control interventions have become more equally deployed every year, as NMCP and Zimbabweans better appreciate the cost-effectiveness and benefits of ITNs.

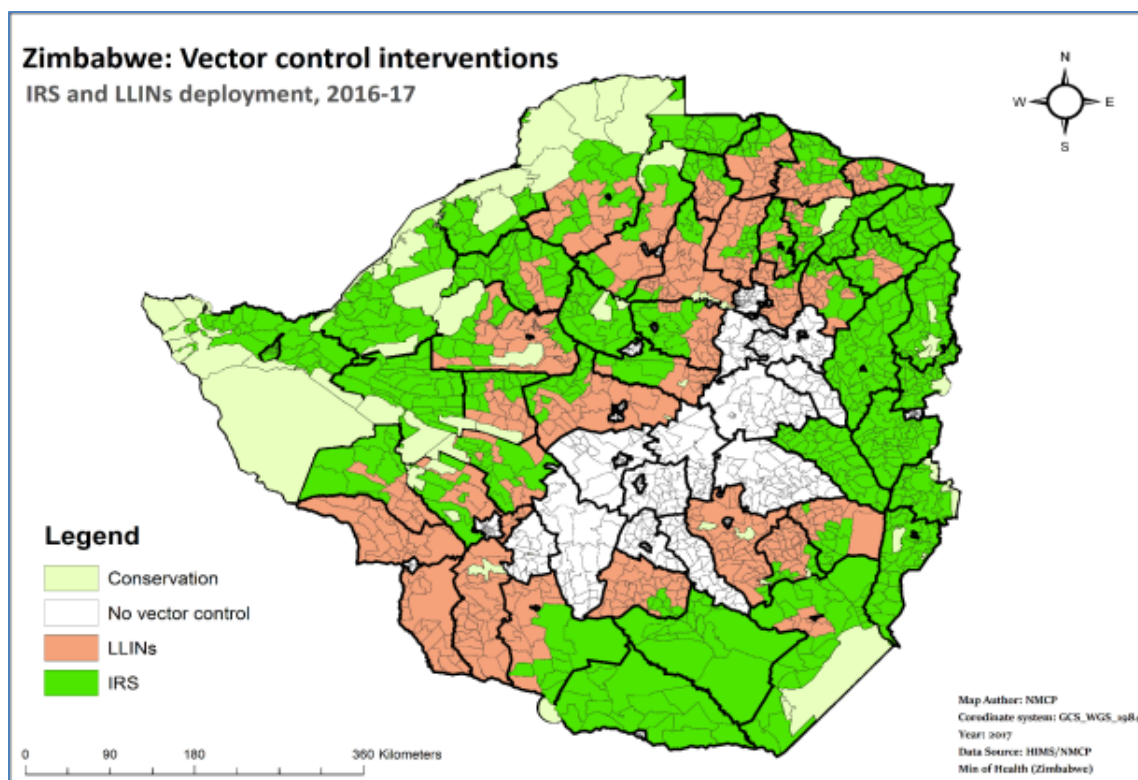
Because of the geographic and seasonal specificity of malaria transmission in Zimbabwe, NMCP's ITN and IRS distribution policy has been refined to the ward level, an administrative division below the district level. Malaria transmission can vary significantly within a district due to altitude, temperature, rainfall, humidity, and other geographic characteristics. Therefore, NMCP has concluded that it is more practical and cost-effective to provide vector control interventions targeted to this level.

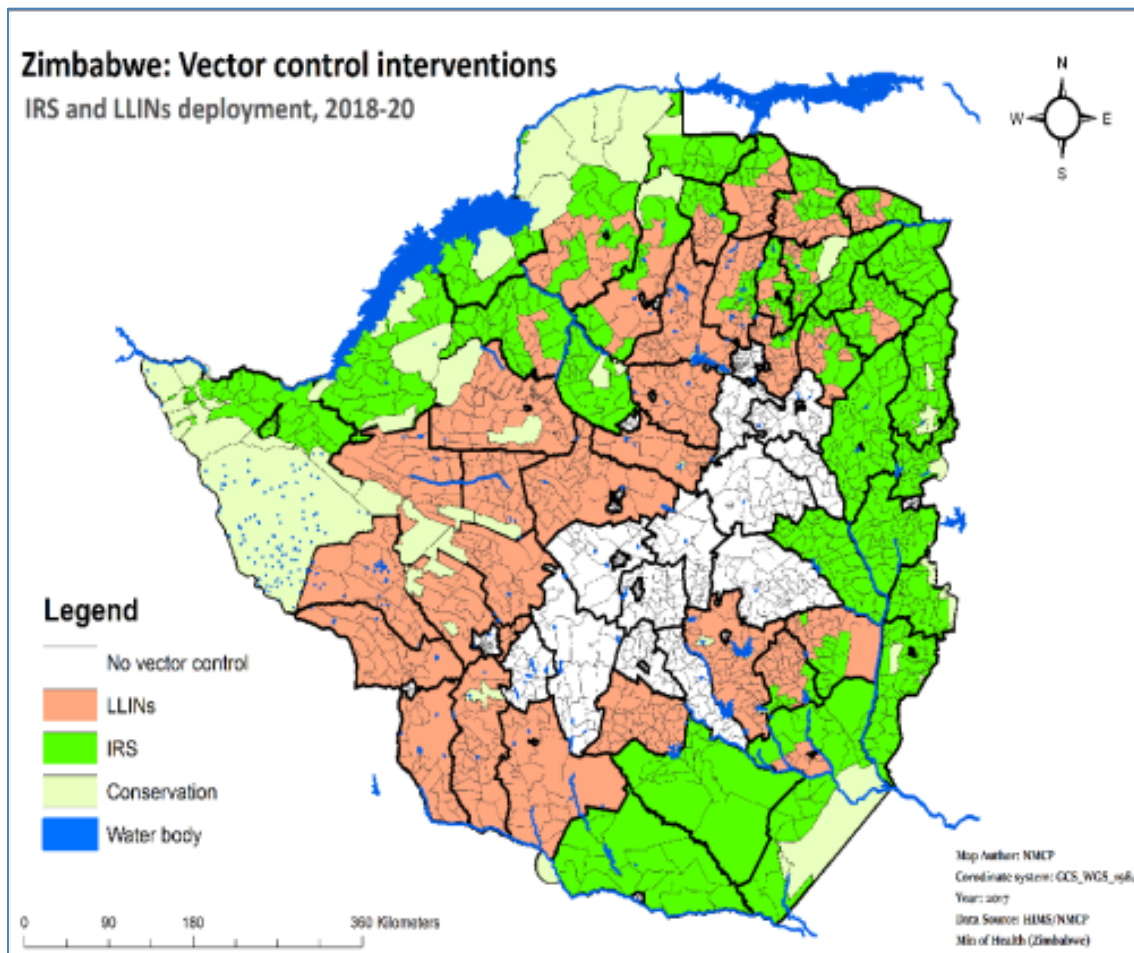
The Zimbabwe NMCP's vector control policy is to deploy both ITNs and IRS (Table 5), with a commitment to achieve and maintain complete vector control universal coverage in all of the 1,160 malarious wards within the 47 malarious districts with ITNs or IRS – with no overlap of either vector control measure. The policy describes that ITNs complement IRS, and ITN distribution is considered to be an important vector control strategy in both low transmission areas (primarily through routine distribution) and moderate to high transmission areas (through both routine and mass distribution). The NMCP supports a mixed model of ITN mass campaign and routine distribution that includes distribution through public health facilities, community-based fixed-point campaigns, and subsequent mop-up campaigns. The NMCP aims to reduce the transmission of malaria by scaling up effective vector control

interventions (IRS and ITNs) to 90% of the population at risk.

As more and more districts graduate from control to pre-elimination phase, IRS is being withdrawn from some of the pre-elimination districts and is replaced by ITNs. The two maps below show how IRS is being replaced with ITNs over time.

**Figures 5 and 6: IRS and LLINs deployment 2016-17 and 2018-2020**





**Table 5: NMCP/Zimbabwe IRS & ITN Strategic Objective and Strategies**

Strategic Objective	Low-to-no transmission (API = 0-5) 16 districts (including urban metropolitan areas), 49% of population	Moderate-to-high transmission (API = 6 and above) 47 districts, 51% of population
<p><b>To ensure universal access of the population at risk to effective and appropriate malaria prevention interventions by 2017</b></p>	<p><b>Routine</b> ITN distribution in ANC, EPI, Elementary Schools, and Community (via VHWs) ITN distribution through campaigns  <b>No IRS</b></p>	<p><b>Routine</b> ITN distribution in ANC, EPI, Elementary Schools, and Community (via VHWs)  <b>Mass</b> ITN distribution through campaigns or <b>IRS</b> in targeted wards of the 47 districts, based on previous transmission patterns and incidence data  ALL wards are covered by either blanket IRS or campaign ITNs</p>

The MoHCC is responsible for spraying the rural areas outside of municipal boundaries. In urban areas, this responsibility falls under the respective local authority. Historically, the GoZ sprays living and other structures (latrines, fowl runs, etc.), whereas PMI sprays living structures only.

The NMCP defines universal coverage of LLINs as one net for every two persons or one net per sleeping space. The NMCP intends to: 1) increase the proportion of the general population sleeping under an ITN to 80% in ITN targeted areas, and 2) increase the number of children under five years old and pregnant women sleep under an ITN to 85% by 2017.

Zimbabwe has been operating without a written policy on vector control in response to changing epidemiology up to 2015. In 2016, the NMCP with its partners developed an insecticide resistance management plan which stipulates that rotation of insecticides be done after three years of use and that insecticides with different modes of action should be alternated.

NMCP/Zimbabwe revised the country's ITN distribution policy in mid-2016 (currently in draft form), for the first time since 2006. It clearly explains the ITN vision, policy and strategic objectives and monitoring plan. The plan also states that Zimbabwe is giving priority to districts with moderate and high malaria seasonal transmission for the distribution of ITNs through implementation of Universal Access. ITN distribution will not be done in areas where IRS is implemented and areas with known pyrethroid resistance, as defined using the WHO standard (mortality of less than 90%). ITNs will be the major intervention targeting everyone living in districts/areas with annual parasite incidence (API) between two and four and will be maintained until the country is certified malaria-free; and will remain an option for epidemic response where applicable. LLINs seeded into the community through mass distribution should be replaced every three years through mass distribution targeting all populations in districts/areas with API 2-4.

LLIN target groups include:

- Populations living in moderate to high malaria transmission not targeted for IRS, API 2-4;
- Pre- and elimination areas;
- Populations affected by outbreaks;
- Populations in emergency situations (such as flooding, new refugee settlements, etc.); and
- Admitting health facilities and institutions in malaria high-risk areas.

#### **a. Entomologic monitoring and insecticide resistance management**

##### *Progress since PMI was launched*

The Zimbabwe National Institute of Health Research (NIHR), formerly known as the Blair Research Institute, is responsible for providing overarching coordination and support for entomological monitoring nationwide. All chemicals or insecticides used in Zimbabwe must undergo successful field trials or evaluation by the NIHR and must be registered with the Ministry of Agriculture. In 2012, the NIHR and NMCP established 16 entomological surveillance sites using Global Fund resources. These sites have been used to verify the quality of IRS operations and insecticide resistance patterns. Mosquito

vector surveillance has also been implemented to provide information on changes in vector density, vector behavior, and vector composition.

In 2011, a Malaria Program Review identified entomological surveillance as one of the weakest intervention areas for Zimbabwe. That same year, Zimbabwe became a PMI-supported country. In 2013, PMI committed to increase entomological surveillance in Zimbabwe and initiated support for three entomological surveillance sites, one each in Manicaland, Mashonaland East, and Mashonaland West provinces. With rising malaria cases noted in Manicaland province, PMI, in consultation with the NMCP, also initiated comprehensive support for IRS with organophosphates in four districts in that province. To appropriately monitor this IRS implementation, PMI expanded support for entomological surveillance in Manicaland to include three sites (later expanded to four with the inclusion of Mutare City).

By 2013, PMI was also supporting one additional site in each of the seven remaining rural provinces. Initially, the main focus of these surveillance efforts outside of Manicaland was insecticide resistance testing, but this was subsequently expanded to include monitoring of vector distribution, abundance and behavior. In 2014, PMI also supported an assessment of all established sentinel sites. This assessment identified significant human resource capacity and physical resource gaps. PMI subsequently helped to address these gaps through support for training of MoHCC staff and procurement and distribution of entomological supplies and equipment.

PMI has also supported the revitalization of the entomology insectaries at NIHR in Harare and its satellite laboratory, De Beers, in Chiredzi District. Insectary and laboratory revitalization efforts have included technical assistance, specific guidance on maximizing mosquito colonies, and support for equipment, reagents and other consumable supplies.

It should be noted that NIHR has had difficulties producing sufficient laboratory-reared mosquitoes to meet the entomological surveillance needs in Zimbabwe. PMI's support to the NIHR insectaries has helped to improve this situation; however, NIHR continues to struggle to provide sufficient capacity for entomological monitoring. NIHR has also struggled to meet the demand for molecular and other laboratory analyses.

PMI-supported entomological surveillance has helped the NMCP identify insecticide resistance patterns to guide IRS decision-making. In 2014, data from PMI-supported surveillance demonstrated pyrethroid resistance among *An. funestus* in Manicaland, the predominant vector in the two districts sampled (Mutasa and Mutare). This led to a shift from a pyrethroid to an organophosphate insecticide for 2014 IRS operations in the four PMI-supported districts in that province (Nyanga, Mutasa, Chimanimani, and Mutare). Pyrethroid resistance was also identified among *An. gambiae* s.l. populations in three other provinces, Mashonaland West, Matabeleland North, and Matabeleland South. As a result, the NMCP implemented IRS with a mix of OPs, DDT and pyrethroids during the 2014 and 2015 spray seasons and included IRS using OPs in Zimbabwe's concept note for the Global Fund New Funding Model (2015-17).

As the results in Table 6 demonstrate, resistance or emerging resistance to pyrethroids among *An. gambiae* s.l. populations was noted again in Matabeleland North and Mashonaland West, and Midlands

provinces in 2015-2016. DDT resistance was also noted in sentinel sites in Mashonaland West and Midlands provinces.

**Table 6: Results of Insecticide Resistance Tests Conducted with *An. gambiae* s.l., Zimbabwe, 2015-16**

Province	Lambdacyhalothrin		DDT		Bendiocarb		Pirimiphos-methyl	
	Tested	% Mortality	Tested	% Mortality	Tested	% Mortality	Tested	% Mortality
Matebeleland North	100	93PR	-	-	-	-	-	-
Matebeleland South	100	100S	100	85.3R	100	100S	100	95.7PR
Mashonaland East	100	100S	100	100S	100	100S	100	100S
Mashonaland West	100	83R	100	99S	100	71.7R	100	100S
Mashonaland Central	100	100S	100	100S	100	100S	100	100S
Midlands	100	92PR	100	87.5R	100	100S	100	100S
Manicaland	50	100S	25	100S	25	100S	50	100S

Note: S=susceptible; PR=potentially resistant; R=resistant;

The WHO criteria for noting susceptibility to insecticide was used:

Susceptibility = Mortality rate of the exposed vector greater than or equal to 98%

Potential Resistance = Mortality rate of the exposed vector equal to or between 90% and 97%

Resistance = Mortality rate of the exposed vector is less than 90%

#### Progress during the last 12-18 months

As outlined in Table 7, PMI supported monthly, routine entomological surveillance activities at three sites in Manicaland Province in 2016-17. For this period, PMI expanded its support for entomological monitoring to all existing sentinel sites throughout the malarious areas of Zimbabwe (a total of 16 sentinel sites outside of Manicaland). However, activities were only conducted on a semi-annual or annual basis at these sites due to funding constraints.



**Table 7: Monitoring Activities at Three Sentinel Sites in Manicaland Province, 2016-2017**

Activity	Purpose	Planned Timeline	Planned Frequency	Planned Location	Comments
Vector density	To evaluate the density of vectors in IRS-targeted areas	Mar 2016–Feb 2017	Monthly for 3 sites	Burma Valley, Chakohwa (OPs used), Vumba (control)	Completed as planned
Vector behavior	To evaluate the indoor/outdoor resting/biting behavior of the vector	Mar 2016–Feb 2017	Monthly for 3 sites	Burma Valley, Chakohwa, Vumba	Completed as planned
Vector resting behavior in non-living structures	To determine vector resting behavior in non-living structures in conjunction with evaluation of Prokopack aspirator	Mar 2016–Feb 2017	Monthly for 3 sites	Burma Valley, Chakohwa, Vumba	Completed as planned
Wall bioassay	To evaluate insecticide decay rates and quality of spray	Monthly Oct-Feb (or until mortality fell below 80% for 2 consecutive months)	Monthly at 2 sites starting after spraying with Ops	Burma Valley, Chakohwa	Completed as planned.
Molecular analysis	To clearly identify the mosquito species, molecular forms of <i>An. gambiae</i> s.l. and <i>An. funestus</i> s.l. and mechanisms of resistance	Mar 2016–Feb 2017	Specimens from all sites submitted to the lab monthly	Burma Valley, Chakohwa, Vumba	Species identification partially done, molecular forms and resistance mechanisms not done
Vector susceptibility (using WHO tube and CDC bottle assays)	To evaluate the susceptibility of vectors to the four classes of insecticides, and monitor intensity of insecticide resistance	Mar–Apr 2016 (some sites in Aug–Sep or Oct–Dec 2016) or Jan–Feb 2017	Once a year	Burma Valley, Chakohwa, Vumba	WHO tube insecticide resistance tests done for Nyanyadzi (under Chakohwa) only; intensity of resistance not done
AIRS support for entomological surveillance in Mutare City	To determine presence of malaria vector species and distribution in Mutare City	Mar 2016–Feb 2017	Monthly	Mutare urban and outskirts	Bimonthly support was given

In Manicaland, species diversity varied between the Burma Valley, Chakohwa and Vumba sentinel sites. *An. funestus* s.l. was again found to be the primary vector in the Burma Valley (80% of 484 *Anopheles* collected) and Vumba (49% of 308 *Anopheles* collected) sentinel sites. In Chakohwa, of the 363 *Anopheles* mosquitoes collected, 61% were *An. gambiae* s.l. and 11% were *An. funestus* s.l. Other species collected, in varying densities, included *An. pretoriensis*, *An. coustani* and *An. nataliensis*. In Burma Valley, the density of *An. funestus* was higher in unsprayed non-living structures than in sprayed living structures. Although the overall densities remained low, this pattern of resting behavior suggests that collection of more data may be indicated to determine if spraying non-living structures in this area is required. Spraying non-living structures is the recommendation from NMCP and is the standard practice in other areas sprayed by NMCP using Global Fund resources. The outdoor biting peak for *An. funestus* s.l. was 20:00 hours, while indoors, there were two peaks, one around midnight and the other between 03:00 and 04:00 hours. This is consistent with observations reported previously for *An. funestus* s.l. in the area. For *An. gambiae* s.l., the indoor peak was at midnight; there was almost no collection outdoors. Initial spray quality was found to be good, with 100% initial mortality at three wall heights in all sprayed structures tested. The average residual efficacy of pirimiphos-methyl for all surfaces was four to five months in Burma Valley and Chakohwa. Initial results from DNA sequencing revealed unexpectedly high species diversity in local *Anopholes* populations.

In 2016, seasonal entomological monitoring was carried out in 16 other sentinel sites which are routinely collected outside Manicaland. Collections were performed for five days pre-IRS and five days post-IRS, using CDC light traps, Prokopack aspirators and pyrethrum spray collections. In these other 16 sites, the primary vector was *An. gambiae* s.l., again with low densities noted in the vast majority of sites. A total of 1029 *An. gambiae* s.l. were collected, 70% of which were from CDC light traps, 24% from pyrethrum spray collections and 6% from Prokopack aspirations. Of a total of 306 mosquitoes collected from the pyrethrum spray and Prokopack aspirations, 74% were collected from living and 26% from non-living structures. No wall bioassays were conducted in these districts.

Very limited insecticide resistance testing was conducted in 2016 in Manicaland due to lack of mosquitoes, likely resulting from the severe drought experienced throughout the year and country. In particular, entomological surveillance teams struggled to locate breeding sites for *An. funestus*, which is becoming one of the major vector species in this province. In fact, no susceptibility tests have been done since pirimiphos-methyl was introduced for IRS during the 2014 IRS campaign. However, susceptibility tests were conducted on DDT (4%) for *An. gambiae* s.l. from Chakari site in Mashonaland Province in March 2017, which showed 100% mortality. Resistance intensity testing was not done.

PMI continued to provide technical assistance and support for equipment, laboratory reagents and other consumables for the two NIHR laboratories. To expand the overall in-country capacity, PMI initiated support for increased entomological laboratory capacity with African University (AU). PMI, NMCP, NIHR, and AU collaborated to identify an appropriate space and procure a major portion of the supplies needed to establish a fully-functional entomological laboratory, which will eventually be capable of conducting a wide range of entomological testing, including molecular analyses. PMI also supported and provided technical assistance for an initial training of AU and NIHR entomologists and technicians in PCR techniques. Plans are in place for a follow-up training for ELISA testing. In addition, PMI will be supporting the establishment of an insectary at AU in the coming months. The intent of this work is not to replace existing capacity at NIHR but, rather, to expand the overall laboratory capacity in

Zimbabwe.

In a further effort to increase entomological surveillance capacity, PMI supported the secondment of a third country national, doctoral-level entomologist to NMCP. This individual was successfully recruited and is currently working with the NMCP, the NIHR, and the PMI IRS implementing partner to capacitate and better coordinate entomological surveillance activities nationwide.

Finally, PMI in-country staff provided technical support to the NMCP for the development of the *Insecticide Resistance Monitoring and Management Plan for Malaria Vectors in Zimbabwe (2016-2020)*. With regard to entomological surveillance, this document highlights the limited availability of data in most areas of Zimbabwe and calls for increased effort and focus by malaria stakeholders to improve the breadth, timeliness and proper documentation of data, including resistance testing. Equally important, the plan outlines the roles, responsibilities and processes for evidenced-based decision making when choosing insecticides for use in IRS.

#### Plans and justification

PMI will continue to fund entomological surveillance activities for sentinel sites in districts receiving comprehensive PMI support for IRS. (This is currently targeted at four districts in Manicaland province, but may shift in keeping with NMCP insecticide resistance management planning.) PMI will also continue to provide support for entomological monitoring activities in the remaining sentinel sites. In keeping with the expectations of the 2016-2020 *Insecticide Resistance Monitoring and Management Plan*, all PMI-supported data will continue to be shared with NMCP and other partners to ensure its timely use in evidenced-based decision-making.

PMI will continue to provide technical assistance and limited material support for the NIHR laboratories and insectaries, while further strengthening the entomological laboratory capacity at AU. PMI will also continue support for the entomologist seconded to NMCP to help improve and better coordinate entomological activities nationwide. The entomologist's objectives will include extending the geographic scope of entomological surveillance, building capacity at the district level in all malarious districts, and strengthening entomological data warehousing and utilization.

#### Proposed activities with FY 2018 funding: (\$449,000)

Specific activities to be supported by PMI with FY 2018 funding include:

- *Entomological surveillance and monitoring:* PMI will continue to support entomological surveillance, including insecticide susceptibility monitoring, in sentinel sites throughout Zimbabwe, with a particularly emphasis on sites located in areas receiving PMI supported IRS. Entomological surveillance activities will include assessments of vector density and behavior, wall bioassays, molecular analysis, and insecticide resistance testing. (\$300,000)
- *Laboratory capacity building for entomological surveillance:* PMI will continue to expand entomological laboratory capacity at NIHR and AU to meet the national need for entomological specimen analysis, data dissemination, and use. (\$100,000)

- *Procure entomological supplies:* PMI will provide insecticide resistance monitoring equipment and laboratory reagents for entomological activities to the central NIHR and DeBeers laboratories. This support will also be extended to active sentinel sites throughout the country. (\$20,000)
- *Technical assistance to PMI IRS activities:* PMI will provide for two CDC technical assistance visits to support entomology, including enhanced insecticide resistance monitoring. (\$29,000).

#### **b. Insecticide-treated nets**

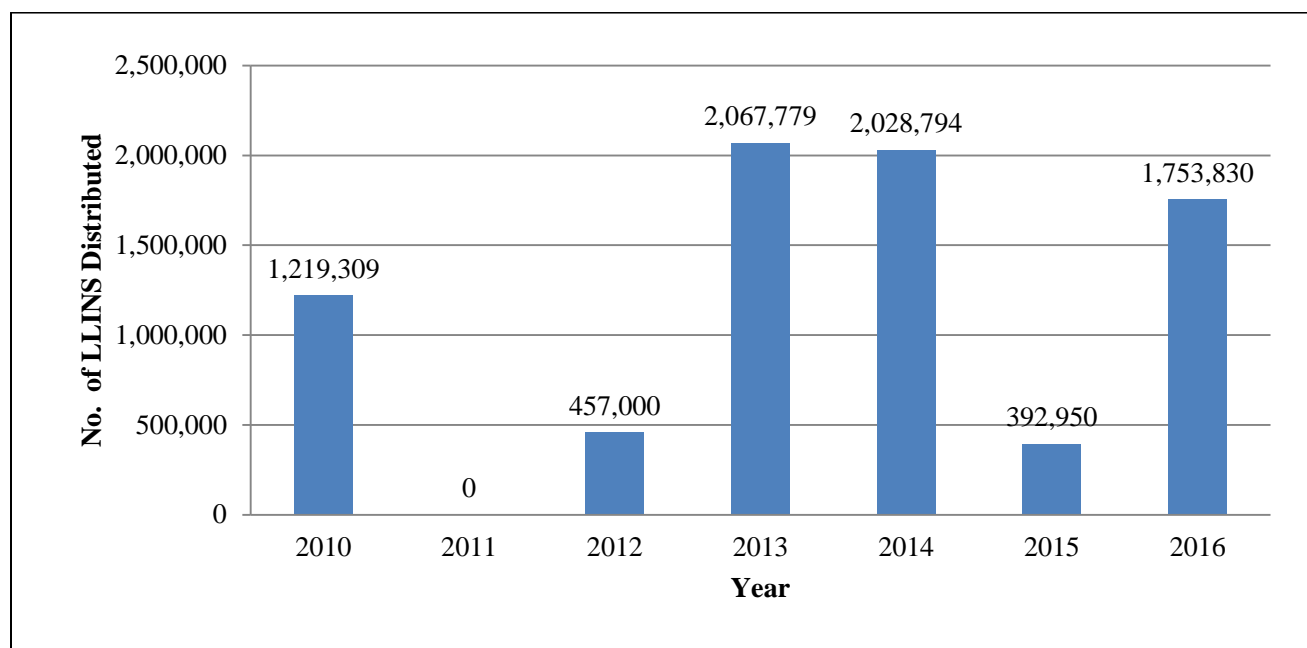
##### *Progress since PMI was launched*

The use of ITNs as a vector control strategy to prevent malaria is now well established and widespread throughout Zimbabwe. However, historically, ITN establishment in the country was slow to be embraced and was characterized by sporadic implementation for the first decade. ITN promotion in Zimbabwe began irregularly in the late 1990s but gained momentum in the early 2000s with the Roll Back Malaria (RBM) initiative launch bringing increased support from donors and partners.

In 2009, the country adopted the concept of a universal coverage approach to ITN distribution in targeted areas, which it hoped to achieve by 2016. Just prior to becoming a PMI country in 2011, NMCP began universal access in practice as a primary prevention tool in control areas and now ITN coverage has persisted to become important as malaria transmission levels have decreased.

In the past seven years, Zimbabwe has successfully carried out four major ITN distribution campaigns: in 2010, 2013, 2014, and 2016 (Figure 7). In 2012 and 2015, mop-up campaigns were conducted to cover areas missed due to shortages of ITNs during the mass campaigns. Between 2014 and 2016, a total of 4,175,574 ITNs were distributed in 30 targeted districts. The main objectives of these campaigns were to increase ownership of, access to, and use of ITNs.

**Figure 7: ITN Mass Distribution Campaigns in Zimbabwe 2010-2016**



The 2016 mass distribution campaign was carried out based on the ITN policy of 2009 and the ITN guidelines for Zimbabwe (2014, revised 2016). In addition to defining universal coverage, the 2009 policy spells out the different roles each institution will play in ITN distribution.

The NMCP worked to increase coverage of ITNs over the past several years through the mass campaigns described above and the implementation of routine distribution channels. Routine distribution is a relatively new area of focus for the NMCP. The shift from mass campaigns to routine distribution began in 2014 and has continued to increase slowly after a pilot period. In late 2014, the NMCP, supported by PMI and partners, began an ITN routine distribution system pilot in four districts in Mashonaland West and Mashonaland Central.

**Table 8: ITN Continuous Distribution Historical Timeline in Zimbabwe, 2014-2017**

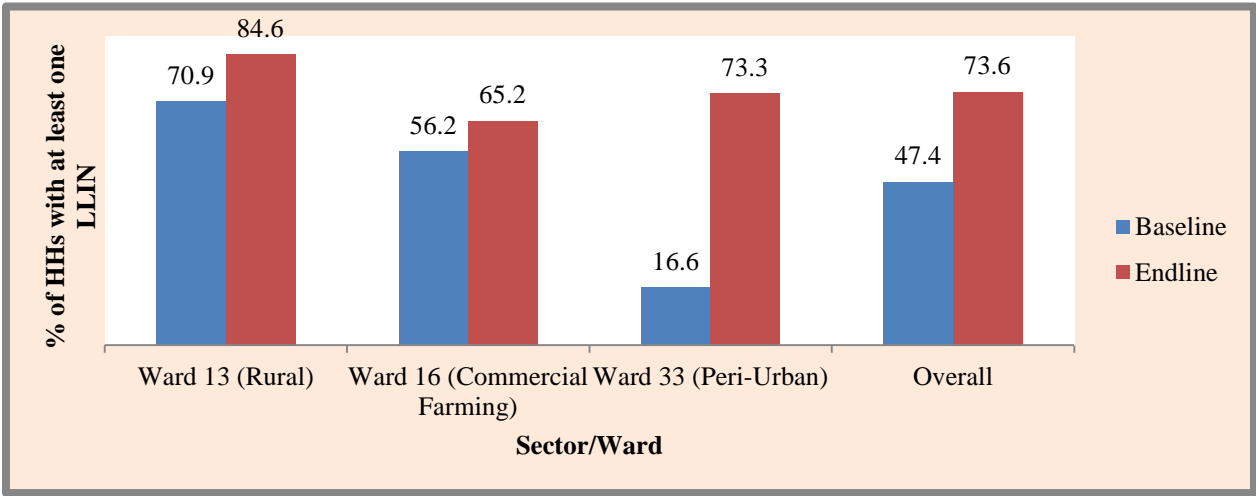
	2014	2015	2016	2017
ITN Routine Distribution	RD Pilot Planning in two Provinces: Mash Central & Mash West	RD Pilot in two Provinces Continues	RD End-line Survey	Roll out RD started in Mbire District, Hard to Reach, High Burden Area
		RD Baseline Survey		

The ITN routine distribution pilot completed its one year anniversary with an end-line survey in August 2016 accompanied by a report describing findings and lessons learned in the pilot districts. The end-line survey was conducted in 3 wards of Mazowe District, representing 3 different sectors: rural (Ward 13), commercial farming (Ward 16), and peri-urban (Ward 33).

In Zimbabwe, the routine distribution pilot used four types of distribution outlets, antenatal care clinics (ANC) first visit for each pregnancy, 18-month routine measles vaccine visits for children, community contact with village health workers (via vouchers redeemed at health facilities), and elementary school students in 3rd and 6th grades distributed annually. For the 1 year-long pilot, which continues distribution today, approximately 95,000 ITNs have been distributed. Since 1 October 2016, we calculate that about 26,500 ITNs have been distributed in the PMI-supported pilot districts. An analysis of data from January 2017 shows that the highest distribution numbers are in the ANC outlet, about 46% of the total distributed here with EPI the second most distributed outlet. Routine ITN distribution scale up will use ANC, EPI, and community outlets.

PMI/Zimbabwe asked a partner to do a process evaluation of the continuous distribution pilot. All four routine distribution outlets have been evaluated and deemed functional. The ANC and EPI channels were considered successful during the pilot but overall the community channel was more popular with community members initially. The evaluation identified some issues with the routine distribution pilot that should be addressed, namely: some commodity stockouts and rationing, minor errors and inconsistencies in health facility ITN documentation, and the need for greater buy-in from the Ministry of Education. The first two issues have been corrected. The relationship and communication issues with the Ministry of Education are viewed as a long-term endeavor including increasing inter-governmental coordination and political will.

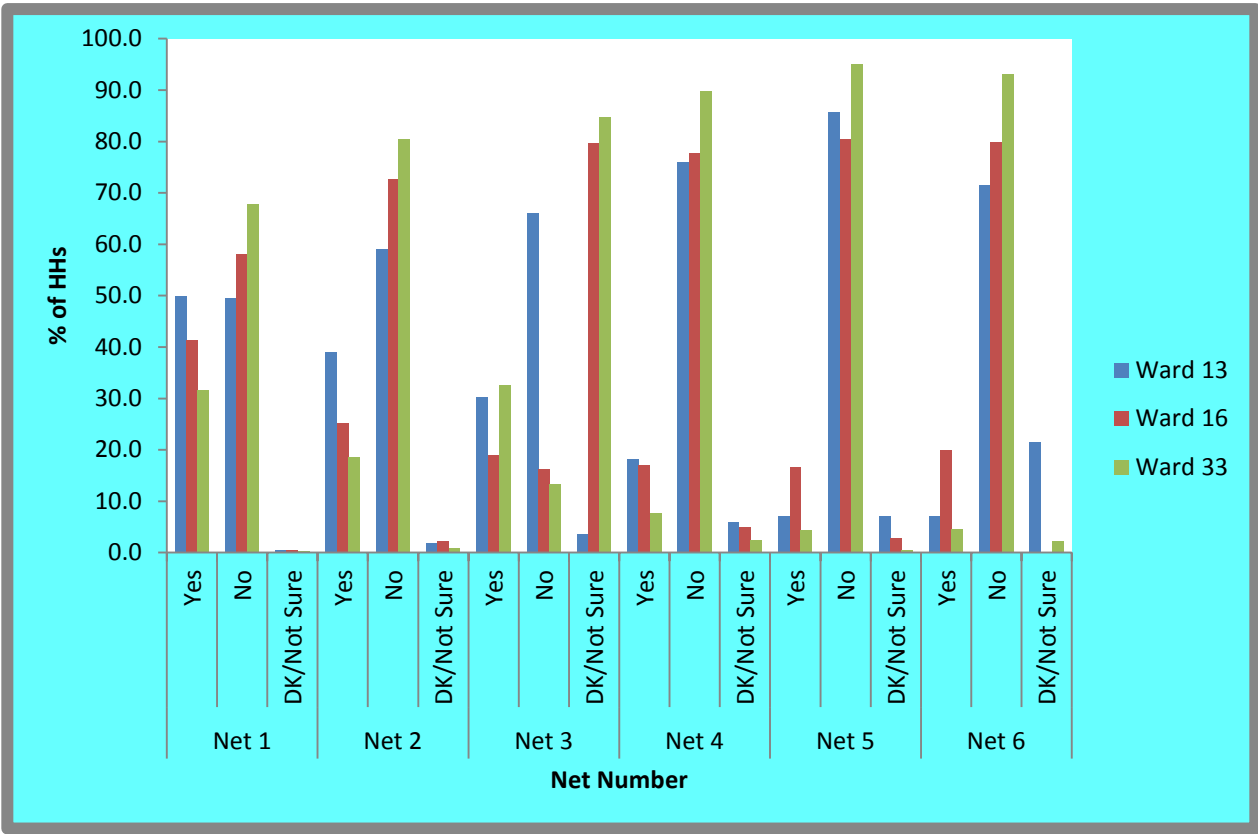
**Figure 8: Continuous Distribution Pilot: ITN Ownership from Baseline (April 2015) to Endline (August 2016) in Zimbabwe**



The Endline Survey sought to provide information to the NMCP and other malaria stakeholders about the availability and use of mosquito nets at the household level in three selected malaria-endemic wards. The survey was also aimed to better understand the preferred distribution channels and to compare outcomes (end-line results) with baseline study findings.

In summary, net ownership increased from the baseline survey to the end-line survey, although it varied by ward. The variability could be related to the different channels used to distribute ITNs during and after the mass distribution of 2014. Although there was increased ownership of nets between the baseline and end-line surveys, this did not translate to higher levels of net use (Figure 9). This finding suggests the need to scale up behaviour change campaigns especially on the importance of using nets. Attention is also needed to identify the best approaches to target the more common reasons for non-use as revealed through this survey and others. The funds for routine distribution support this year will support the scale up of the system to 30 districts for EPI, ANC, and community channels. PMI funds will be supporting systematic preparations for ITN storage and tracking, training of health facility and village health workers, supervision and monitoring the quality of the roll out.

**Figure 9: Continuous Distribution Pilot: ITN Use by Household the Preceding Night in Three Wards in Mazowe District, Endline Survey (August 2016) in Zimbabwe**



Progress during the last 12-18 months

In the last 12-18 months PMI has supported a number of ITN initiatives including: proceeding with the net durability study, the continuous distribution roll-out, and campaign distribution in the third quarter of 2016.

*Net Durability Study.* PMI is supporting a three-year net durability study which has now progressed to year two. To date, the sixth-month baseline data collection has been completed and a report produced.

The local bioassay tests for the sixth month have been completed and we have received a commitment to have the results to us by mid-August 2017. The chemical analysis results from the Walloon Research Facility in Belgium have also been received. Because our local partner was so slow in processing the specimens collected, all partners involved decided to forego the planned 12-month data/specimen collection and focus our efforts on helping our partner complete specimen analysis from the sixth month and plan for the 18-month exercise. The 18-month data collection was just completed in May 2017 and the results are planned to be completed in mid-August 2017. PMI/Zimbabwe was present during the data collection exercises to ensure good quality.

*Continuous Distribution Roll Out.* The NMCP began routine distribution of ITNs in Mbire District beginning in January 2017. Mbire District is a hard-to-reach, high burden malaria area in Mashonaland Central Province visited by the MOP18 team in March 2017. Mbire District is traditionally an IRS-targeted area, but NMCP found that there were still gaps in protection. Many community members were not covered by IRS because their houses were not easily spray-able (lacking smooth, contiguous surfaces). In addition, during approximately six to eight months of the year, household members sleep away from sprayed homes to protect their farm fields from wild animals. Some men and boys sleep outdoors and some sleep in roughly-built temporary structures. ITNs were distributed in these areas to cover this protection gap that IRS could not fill. The MOP18 team observed that families and individuals that guard farm fields were using ITNs in all manner of structures. An in-depth study is planned to ascertain the level of protection the ITNs are providing members of the Mbire communities. About 2,750 ITNs have been distributed in Mbire District so far.

This year, 2017, the NMCP plans to roll out continuous distribution in the rest of the 30 districts with preparatory work already underway. As soon as PMI-funded ITNs arrive in country around July 2017, they will be delivered to district distribution points.

During May 2017, a PMI partner supported a refresher NetCalc training which will help NMCP and partners more precisely calculate ITN needs for each district. NMCP will continue with the continuous distribution program until the next big campaign scheduled for 2019. Here are the six phases of the routine distribution roll-out:

- Phase One: Training of Health Facility staff (EHTS and Nurses) in targeted wards (May 29-June 16, 2017)
- Phase Two: Training of Village Health Workers for the community distribution channel-dates will be set during Phase One
- Phase Three: Sensitization of community leaders and the general public
- Phase Four: Distribution of LLINs - July 2017 onwards
- Phase Five: Coordination, support and supervision
- Phase Six: Data Quality Assessment



*Campaign Distribution.* During the June-August 2016 ITN campaign, PMI procured nets along with Global Fund. PMI nets were distributed in ten PMI-focus districts and Kwekwe, Gokwe North, Gokwe South, and Mberengwa Districts in Midlands Province.

**Table 9: PMI-Procured ITNs Delivered for the Mass Distribution Campaign in Zimbabwe: June-August 2016**

District	Number Delivered
Bindura	39,950
Guruve	54,950
Centenary	40,250
Mazowe	120,900
Mbire	4,700
Mt Darwin	46,750
Rushinga	2,300
Shamva	34,950
Goromonzi	129,750
Murewa	99,450
Kwekwe	59,100
Gokwe North	49,900
Gokwe South	99,300
Mberengwa	124,500
Lacho Warehouse (continuous distribution)	31,750
<b>Total</b>	<b>938,500</b>

*ITN Survey Indicators.* The 2016 MIS included specific questions regarding shape and color experience and preference, ITN use, and any barriers to use, motivation to use, etc.

The 2012 and 2016 surveys are not precisely comparable due to differing methodologies; nonetheless, overall results show an improvement in malaria progress. Some indicators, especially the use and access to ITNs by vulnerable groups like pregnant women and children under five, were lower than expected and need to be a priority for future control efforts. PMI and NMCP have jointly decided that there is a need to conduct a special analysis on ITN-related data to verify the coverage in areas targeted for ITNs and fully understand the implications of these data. The ITN MIS secondary analysis will take place in 2017 and findings will be included in a stand-alone report or an addendum to the MIS. Table 10 shows the progress of key malaria indicators over time.

**Table 10: Progress on Key Malaria Indicators to Date**

Indicator	2010-11 ZDHS <sup>1</sup>	2014-15 ZDHS <sup>2</sup>	2012 MIS <sup>3</sup>	2016 MIS <sup>4</sup>
Proportion of households that own at least one LLIN	25%	48%	<b>46%</b>	<b>58%</b>
Proportion of children under five who slept under an LLIN the night before the survey	8%	9%	<b>50%</b>	<b>33%</b>
Proportion of women 15-49 who slept under an LLIN the night before the survey	8%	6%	<b>49%</b>	<b>36%</b>
Proportion of pregnant women sleeping under an LLIN the night before the survey	9%	13%	<b>NA</b>	<b>24%</b>

<sup>1</sup>406 EAs in all 10 provinces surveyed, including non-malaria districts.

<sup>2</sup>400 EAs in all 10 provinces surveyed, including non-malaria districts.

<sup>3</sup> MIS conducted in 327 EAs in 51 districts with data on LLINs only in 30 targeted districts; IRS in 45 targeted districts; and IPTp in 30 targeted districts.

<sup>4</sup>MIS conducted in 353 EAs in 45 moderate and high-risk malaria districts.

*Managing Change in Net Shape.* NMCP SBCC and Vector Control Subcommittees are also currently making preparations for the upcoming introduction of rectangular ITNs in Zimbabwe. For the 2017 mass and routine distribution, Global Fund and PMI procured rectangular nets because they are much less expensive than conical nets. By procuring less expensive nets, the country may purchase more nets and increase ownership and access levels. However, because there is a long history and perceived high levels of preference for conical nets, the NMCP is working to ensure that rectangular ITNs will be accepted and used. There is no conclusive data documenting that rectangular nets would not be used in Zimbabwe. The 2016 MIS shows that over 80% of households prefer conical nets, but determining net preference is difficult in Zimbabwe since most nets distributed from the past seven years to date have been conical nets. The distribution of rectangular ITNs will be accompanied by intensive SBCC and informational campaigns to prepare the way for this transition of differently shaped nets. PMI supported the development of a workshop and guide to ensure NMCP and partners are well prepared and coordinated. Here is brief excerpt from the guide sharing some key points:

## NMCP Communication Guide for the Introduction of Rectangular LLINs in Zimbabwe

### Behavioral Objective

Increase the acceptance and use of rectangular nets.

### Primary Audience

Household heads who own and use mosquito LLINs, with a focus on women, as they tend to be in charge of nets.

### Secondary Audience

Community leaders.

### Primary Communication Objective

To increase the proportion of the population who feels confident in using a rectangular net.

### Key Benefit

Flexibility—rectangular LLINs can be used indoors or outdoors and for any type of home or sleeping space. There are many ways to set it up, enabling anyone to use a net.

### Supporting Points

- The government will provide a new kind of LLIN.
- This LLIN is equally effective at preventing mosquito bites and protecting you from malaria.
- The LLIN is shaped like a rectangle. This means that it will hang from four points, which many people find more spacious and comfortable. It can easily be changed to a conical net.
- There are different ways to hang an LLIN—experiment and see which method works for you.
- If you prefer to hang it from one point, like the other LLINs distributed in the past, you can easily do so by putting a circular shape in the middle of the roof of the net (like a bucket lid or *rusero*—a flat circular basket for processing wheat) and hanging the net through the circle (demonstrate through illustrations, videos, animated Graphics Interface Format, or real-life demonstrations).
- You can use a rectangular LLIN in many places, including:
  - a circular hut
  - a modern house
  - a room used for sleeping only
  - a room used for multiple purposes, like sleeping and cooking
  - outdoors
  - in temporary structures

The rectangular net campaign will, as usual, be a fixed-point distribution method primarily utilizing health facilities as fixed points. Partners will conduct a pre-campaign household survey of distribution areas to determine ITN needs, considering the number and age of ITNs in the households and sleeping spaces indoors and outdoors, including ‘farm sleeping spaces’.

The ITN gap analysis in Zimbabwe must consider the NMCP policy that, in general, ITNs and IRS are distributed separately and do not overlap. The vector control mechanism is determined at the ward level and coverage is blanketed as much as possible. However, there are some exceptions in areas where IRS

is not fully appropriate or adequate. For example, some structures may not be appropriate for IRS or families live in sprayed homes only part of the year. In these cases, NMCP will determine if it's appropriate to consider IRS and ITN overlap to assure all community members are adequately protected. In addition, NMCP has decided to take a conservative approach when districts achieve lower transmission. NMCP will maintain vector control coverage in these areas for several seasons in order to maintain gains.

**Table 11: ITN Gap Analysis**

<b>Calendar Year</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>
Total Population	13,795,586	13,947,338	14,100,759
Total Population in malaria endemic areas	6,897,793	6,973,669	7,050,379
Total Targeted Population	3,626,293	3,698,819	3,700,000
<b>Continuous Distribution Needs</b>			
Channel #1: ANC	256,598	259,420	262,274
Channel #2: EPI	228,296	230,807	230,000
Channel #3: 3rd and 6th Graders	0	0	0
Channel #4: Community	1,093,151	1,104,083	1,200,000
<i>Estimated Total Need for Continuous</i>	1,578,045	1,594,310	1,692,274
<b>Estimated Total Need for Campaigns</b>			
<i>Estimated Total Need for Campaigns</i>	0	0	1,500,000
<b>Total Calculated Need:</b>	<b>1,578,045</b>	<b>1,594,310</b>	<b>3,192,274</b>
<b>Continuous and Campaign</b>			
<b>Partner Contributions</b>			

ITNs carried over from previous year	31,750	0	0
ITNs from Government	0	0	0
ITNs from Global Fund Grant	300,000 from grant ending December 2017	466,692 reprogrammed from grant ending July 2017	771,242 from grant 2018-2020
ITNs from Other Donors	0	0	0
ITNs planned with PMI funding (plus additional purchased with commodities savings)	715,043	986,675	712,569
<b>Total ITNs Available</b>	1,046,043	1,453,367	1,483,811
<b>Total ITN Surplus (Gap)</b>	(532,002)	(140,943)	(1,708,463)

### Plans and justification

Table 11, the ITN gap analysis shows that some additional resources will be needed for 2017 and 2018, though Zimbabwe is close to meeting the projected amount of ITNs. This figure includes the original 811,675 planned ITNs and an additional 175,000 ITNs submitted for procurement with savings in the commodity pipeline. There are still 31,750 in storage left over to assist with routine distribution. Partners with smaller resources may be able to make up the modest gap of 140,943 ITNs in 2017.

In future years, as the country moves forward with the next ITN campaign in 2019 and the 2017-2019 expansion of continuous distribution to maintain universal coverage, there is a substantial ITN gap of 1.7 million. With the Global Fund grant, NMCP has 771,242 ITNs for the campaign, with PMI providing 712,569, making a total of 1,483,811 available. PMI will work with NMCP and Global Fund to continue to raise the profile of ITNs and consider opportunities to purchase more ITNs.

Though the forecasted need for ITNs is quite high given the population projected to be covered, the PMI in-country team will continue to closely monitor ITN procurement and distribution and will adjust action plans accordingly. Note that these estimates for Table 11 were derived during the national quantification exercise and the number of GF-funded ITNs may change as NMCP completes the current grant negotiation. NMCP is also considering amendments to the ITN policy which may result in a greater need. Factors that may influence the need for additional nets include net durability (study completion next year) data in the Zimbabwean context, better estimates of outside and field sleeping

spaces, more accurate counting of communities with structures that are not sprayable, and pre-elimination districts that discontinue IRS and adopt ITNs.

NMCP Zimbabwe may consider a venture to sell ITNs in the private sector accompanied with a social marketing effort. This new consideration has been brought up in subcommittee meetings this year. However, there has not been a market study or assessment on ITNs for sale in the private sector. Anecdotally, the PMI team has observed that ITNs are not available on the private market in Zimbabwe except on a very minute scale in Harare. In addition, we observe that there are untreated nets available in small retail shops. The presence of some ITNs and untreated nets indicate that there may be some market. Zimbabwe is currently experiencing financial challenges but this topic will be considered and discussed further in the future. NMCP may introduce the idea of social marketing of ITNs in urban and growth point areas where residents have more disposable cash and are often not the target areas of campaign and continuous distribution of nets. Coverage of ITNs in these areas is often left to the responsibility of city/urban councils. If NMCP decides to make ITNs available on the private market, PMI/Zim will advise on how to conduct a market/feasibility study and will seek more advice from PMI headquarters.

*Proposed activities with FY 2018 funding: (\$2,752,200)*

PMI will continue to fill strategic gaps in ITN procurement not covered by the Global Fund and the GoZ. Using FY 2018 funding, PMI will support procurement of rectangular ITNs as well as distribution costs for the ongoing continuous distribution approach designed to ensure high coverage of new cohorts of pregnant women and children, and to replace worn out ITNs distributed through previous campaigns to all Zimbabweans that need ITN protection. The purchase of additional rectangular ITNs with any commodity savings or additional funds is a top priority for the PMI in-country team as well as the NMCP.

Specific activities to be supported by PMI with FY 2018 funding include:

- *Procure rectangular ITNs for expansion of routine distribution:* Procure approximately 712,569 ITNs for routine distribution. The routine distribution will include at least three distribution channels – ANC, EPI, and community. (\$2,052,200)
- *Plan, distribute and monitor ITNs:* PMI will provide support to the NMCP in logistics and operations to strengthen ITN distribution systems including supply chain management to ensure continuous availability of ITNs and to strengthen the distribution systems capacity for efficient delivery of ITNs to end users. As planned to begin in June/July 2017, PMI will continue to utilize intensive SBCC in communities to support the transition from conical to rectangular shaped nets. The goal will continue to be promotion of community confidence in the reliability and adaptability of rectangular ITNs as protection from malaria. (\$600,000)
- *Conduct ITN durability monitoring:* Finalize monitoring of the performance and durability of ITNs distributed during a large-scale school-based distribution in 2015. This will be the final 36-month post-distribution assessment and report-writing and distribution period. (\$100,000)

- *Conduct SBCC activities to promote the culture of use of ITNs:* Using both mass media, interpersonal communication via health facility and community health workers, sensitization meetings, informational posters, community road shows (including dramas, singing, and logistical campaign information), community malaria wall signs and *Combi* branding activities will focus on increasing consistent ITN use among those who have access to a net. Consistent use messages for different target groups will be crafted based upon additional analysis of the 2016 MIS. (Budgeted under SBCC section)

### **c. Indoor residual spraying**

#### *Progress since PMI was launched*

PMI began support for IRS activities in Zimbabwe in 2012 by conducting a Supplemental Environmental Assessment to ensure PMI-funded IRS activities would not adversely impact the environment, people, or bio-diversity in the country. The GoZ and the NMCP were not interested in PMI's initial goal of completing a Supplemental Environmental Assessment that would include DDT districts; therefore, PMI support has been limited to districts which do not spray DDT.

Given NMCP's experience and capabilities to conduct IRS, PMI initially (2011 – 2013) provided a limited package of IRS support, stressing environmental compliance, as well as contributing to planning meetings, trainings, monitoring and evaluation, operational logistics and some procurement of insecticides and equipment in pyrethroid districts. This approach enabled PMI to fill operational gaps in the NMCP's IRS program and help to establish an insecticide resistance management system.

In 2014, PMI supported the NMCP with a full package to conduct IRS using OPs in four districts in Manicaland Province, some of the areas with the highest levels of pyrethroid resistance. This transition in IRS support was in response to an NMCP request prompted by recently discovered resistance to pyrethroid insecticide among *Anopheles funestus*, the primary vector in these districts. The remaining IRS districts were sprayed by NMCP with either a pyrethroid or DDT. The purpose of this shift from limited support to a full package was to allow PMI to showcase best practices for planning, implementing, monitoring, and evaluating an IRS program in selected high malaria-burdened districts of Manicaland Province. It was anticipated that these best practices would ultimately form a model IRS program for Zimbabwe. To date, the NMCP has widely adopted the PMI AIRS operational tools for its IRS operations, including: the spray operator (SOP) pocket guide, IRS Team Leader guide, storekeeper pocket guide, environmental compliance (EC) monitoring tools, and spray return forms.

In 2015, the overall number of districts that were covered with OPs increased to 18 and PMI continued its support to the 4 high-burden districts in Manicaland. The situation remained the same in 2016. The goal was to create a protected barrier along the lengthy Zimbabwe-Mozambique border. Areas showing little to no pyrethroid resistance continued to be sprayed using a mix of pyrethroids or DDT. In the 2017 spraying season, the choice of insecticides for given locations will be the same as for 2016.

Indoor residual spraying in Zimbabwe is normally targeted to specific wards in selected districts, yet PMI has supported blanket spraying within the four districts receiving a full package of support.

However, PMI policy and approaches have slowly been embraced and incorporated into district/provincial plans. The new NMSP (2016-2020) and its subsidiary Insecticide Resistance Management Plan (2016-2020) has incorporated a number of PMI approaches for IRS as mentioned previously; e.g. upholding environmental compliance and entomological surveillance for correct decision making. Table 12 shows the historical and projected IRS plans for Zimbabwe.

**Table 12: PMI-supported IRS activities 2012 – 2019**

Calendar Year	Number of Districts Sprayed	Insecticide Used	Number of Structures Sprayed	Coverage Rate	Population Protected
2012**	13 (3 provinces)	Pyrethroid	501,613	86%	1,164,586
2013**	25 (7 provinces)	Pyrethroid	622,300	91%	1,431,643
2014	4 (1 province)	Organophosphates	147,949	90%	334,746
2015	4 (1 province)	Organophosphates	162,127	94%	365,425
2016* ***	4 (1 province)	Organophosphates	229,377	96%	550,475
2017*	4 (1 province)	Organophosphates	277,266	-	612,970
2018*	4 (1 province)	TBD	277,266	-	612,970
2019*	4 (1 province)	TBD	277,266	-	612,970

\*Represents targets based on the 2017 IRS work plan and/or projected targets based on national strategic plan and/or discussions with the NMCP

\*\* Represents the time that PMI was giving limited/gap filling type of support.

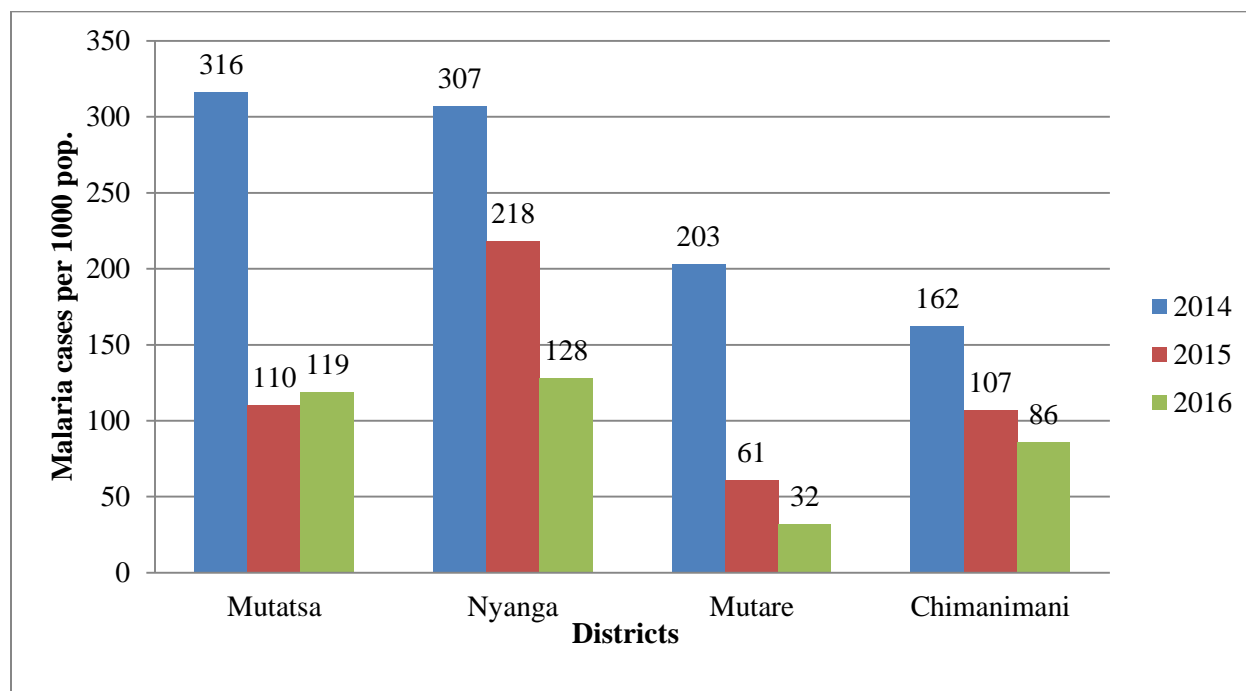
\*\*\*PMI team review led to an increase of blanket coverage in 2016, which NMCP plans to continue moving forward.

### Progress during the last 12-18 months

Support from PMI for the full IRS package and the introduction of a different insecticide (OP) has resulted in a substantial decline in malaria incidence in the sprayed districts. Figure 10 below shows the trend of malaria decrease in the 4 PMI IRS supported districts for 3 consecutive years of support.



**Figure 10: Malaria Incidence in PMI IRS Supported Districts, Manicaland Province, 2014-2016**



In 2016, and with PMI support, 116,520 bottles of Actellic CS OPs were procured and 90.5% of them were used for spraying the targeted districts. Other support included the employment of more than 700 spray operators and the procurement of 184 spray pumps and other IRS supplies (tents, first Aid kits, buckets, torches etc.). Seven hundred and four SOPs, IRS supervisors and storekeepers were medically examined to assess their fitness to enroll into IRS program. Six hundred and eighty-seven spray operators and support staff were trained in spray operations, 29,000 IRS pamphlets and 960 IRS posters were distributed in the 4 PMI supported districts. Ninety-five sensitization meetings in hard to reach areas were conducted to enhance uptake of IRS by communities. PMI was also responsible for the payment of allowances for all the SOPs and supporting staff. Through PMI’s support, 229,377 structures were sprayed, achieving 95.6% coverage and protecting 550,475 people.

PMI continued to build the IRS capacity of Zimbabwe by working with provincial and district health officials to analyze morbidity data and conduct entomological surveillance to ensure evidence-based IRS decision making. This has helped to ensure that effective insecticides are being used in a well-timed manner to make sure that the residual efficacy of the insecticide spans through the peak malaria season in each district.

In 2016, the NMCP and partners came up with a new insecticide resistance management plan for each of the IRS targeted district as shown in Table 13 below.

**Table 13: Insecticide Resistance Management Plan for 32 IRS targeted districts, 2018-2020\***

	<b>District</b>	<b>2016 Incidence***</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
1	Mutoko	266	DDT	OPs	Ops
2	Mbire	251	PY	PY	PY
3	Nyanga**	218	DDT	DDT	DDT
4	Bindura	186	PY	PY	PY
5	Mudzi	167	PY	PY	PY
6	Chipinge	136	DDT	DDT	DDT
7	Makoni	111	Ops	OPs	DDT
8	Mutasa*	110	DDT	DDT	DDT
9	Chimanimani*	107	DDT	DDT	DDT
10	Shamva	92	OPs	OPs	DDT
11	Centenary	82	PY	PY	PY
12	Mt. Darwin	69	PY	PY	PY
13	Kariba	68	PY	PY	PY
14	UMP	67	PY	PY	PY
15	Gokwe North	4	PY	PY	PY
16	Mutare*	61	DDT	DDT	DDT
17	Chiredzi	61	DDT	DDT	DDT
18	Rushinga	51	DDT	DDT	DDT
19	Hurungwe	50	DDT	DDT	DDT
20	Goromonzi	39	OPs	OPs	DDT
21	Guruve	39	OPs	OPs	DDT
22	Mazowe	30	OPs	OPs	DDT
23	Makonde	28	OPs	OPs	DDT
24	Murewa	24	OPs	OPs	DDT
25	Beitbridge	16	PY	PY	PY
26	Mwenezi	15	Ops	OPs	DDT
27	Sanyati	15	DDT	DDT	DDT
28	Binga	15	OPs	OPs	DDT
29	Zaka	13	OPs	OPs	DDT
30	Hwange	10	OPs	OPs	DDT
31	Bikita	8	OPs	OPs	DDT
32	Buhera	5	OPs	OPs	DDT

\*Given the limited information available during drafting, this plan does not include provision for new insecticide formulations. However, prior to annual implementation, possible use of new insecticides will be reviewed.

\*\*= Current PMI IRS supported districts

\*\*\* Cases per 1000 population

An independent environmental compliance assessment was conducted in the 2016 spraying season. The assessment was conducted by the USAID Global Environmental Management Support (GEMS) II project and a final report is available. The field assessment was conducted in two of the four PMI-supported districts (Chimanimani and Mutasa) and evaluated compliance with best management

practices for all aspects of spray operations, including: storage sites, supervision, PPE availability and use, spraying techniques, beneficiary communication, and wash operations. The program was found to be performing very well and the recommendations made in the report will be used to strengthen environmental compliance in future IRS campaigns. Some of the key recommendations included: the need to shorten the number of working hours per day to be close to the standard 6-hour period; continuous donning of PPE particularly on the part of the supervisors; and correct messaging regarding the removal of belongings in households.

### Plans and justification

As part of PMI's commitment to support all major malaria interventions, PMI will continue to provide a robust, full package of IRS implementation. Currently PMI's IRS support has been focused in the highest burden province of Manicaland. Unless otherwise requested by the NMCP to refocus PMI IRS support to other districts to achieve greater impact, this will be the fifth year PMI will support a full IRS package in this area. PMI has agreed with NMCP that PMI's IRS support will be revisited annually to reconsider the areas of greatest need as well as the most appropriate insecticide. The new IRS Supplemental Environmental Assessment being conducted now will be as far-reaching and open as possible since the insecticide and geographic support PMI will provide during these years has not been settled.

The fact that the currently approved Supplemental Environmental Assessment only covers non-DDT districts has restricted PMI's support for IRS to areas designated for spraying with OPs or pyrethroids. However, the current Supplemental Environmental Assessment expires in 2017, and preparations for an updated assessment are underway. Per the IRM plan outlined above, the current PMI-supported IRS districts are scheduled to transition from OPs to DDT from 2018 onwards. There are, therefore, a number of possible options based on dialogue with the NMCP that will determine the future involvement of PMI in supporting IRS:

- i) The new Supplemental Environmental Assessment includes support for using a number of insecticides (including DDT). PMI will continue working in the current four districts but will use DDT instead of OPs.
- ii) The new Supplemental Environmental Assessment will not include DDT. PMI will move from the current districts to other districts were DDT will not be used.
- iii) Even if the new Supplemental Environmental Assessment includes DDT, the NMCP may insist that PMI move to other high-burden districts, using whatever insecticide. The disadvantages of moving to other districts are the possibility of losing the gains so far seen in Manicaland Province and the difficulties of restarting relationships with new province/s and districts. The advantage would be building local IRS capacity in these new areas.

Regardless of the outcome, a primary goal of PMI's support will be to continue to demonstrate a safe and effective IRS program that other districts in Zimbabwe can learn from. This commitment to IRS on the part of PMI is understood to be short-term, to be revisited in the near future. PMI's contributions to environmental compliance and other cross-cutting efforts, such as entomological monitoring, including insecticide susceptibility monitoring, SM&E, and SBCC, will continue nationwide. However, operational support (training, procurement, etc.) will be limited to Manicaland or other province/s or districts if directed to move by the NMCP.

Proposed activities with FY 2018 funding: (\$4,533,687)

PMI will continue supporting IRS needs and will work with NMCP to identify priority districts based on the most recent entomological and epidemiological data. The IRS target dialogue with NMCP regarding FY18 funding will include consideration of new and different districts. The support will continue to demonstrate good IRS implementation practices that other districts can learn from. The NMCP together with its partners has submitted a new global fund request for the period 2018-2020. It is therefore anticipated that the NMCP will secure funding to cover the rest of the districts that are earmarked for IRS. While the non-PMI supported districts will not receive direct PMI support for operations, they will receive indirect support via inclusion in national-level IRS activities, such as, higher-level training, national review and planning meetings, and technical assistance with good environmental compliance practices, SBCC and SM&E.

Specific activities to be supported by PMI with FY 2018 funding include:

- *Support spray operations:* PMI will support IRS in districts selected based on the most recent entomological and epidemiological data available. The support will include procurement of insecticide and equipment, training, operational logistics, environmental compliance, and overall technical assistance to the NMCP. (\$4,533,687)

## **2. Malaria in pregnancy**

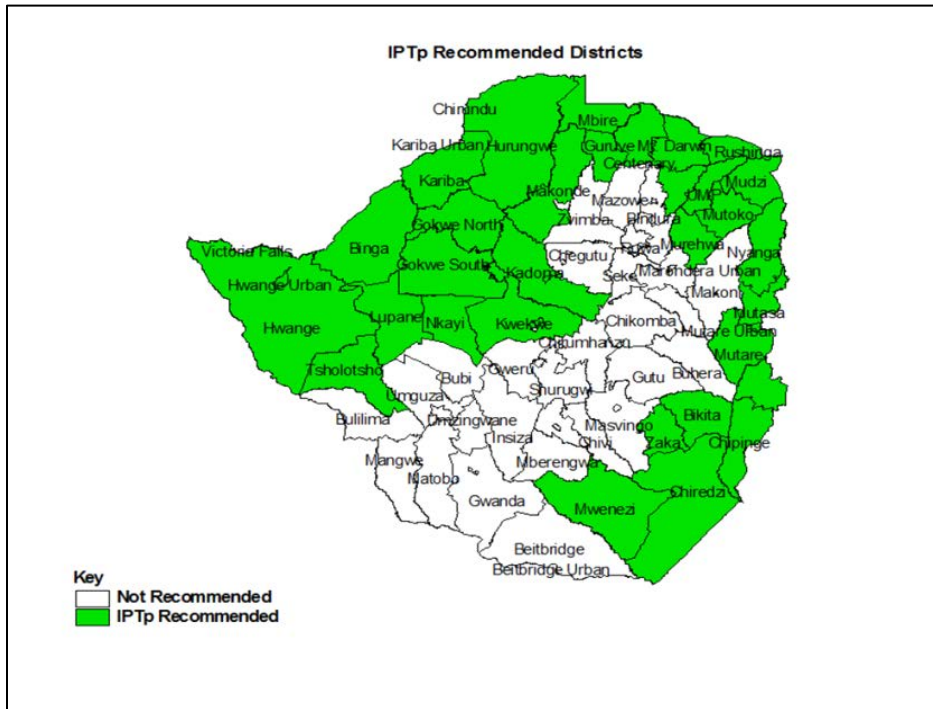
### NMCP/PMI objectives

Zimbabwe policy supports the implementation of activities to control malaria in pregnancy (MIP) in 30 target districts designated as high burden for malaria (Figure 10), as well as in other areas in response to upsurges in local cases. Zimbabwe's MIP policy calls for at least three doses of IPTp using SP, distribution and promotion of ITNs as early as possible in the pregnancy, and early and effective diagnosis and treatment of malaria. The draft Zimbabwe National Malaria Strategic Plan sets a target of 90% of pregnant women in malaria control areas receiving the first dose, which is given as soon as possible after start of the second trimester and every four weeks thereafter, up to delivery. This policy is in line with the 2012 WHO policy recommendation. The second important target for malaria in pregnancy prevention and control is 85% of pregnant women in malaria control areas sleeping under ITNs by 2020.

Zimbabwe follows the WHO guidelines for IPTp, which recommend administration of IPTp with SP at every ANC visit starting as early as possible in the second trimester and up until the day of delivery, as long as doses are given at least four weeks apart. The policy states that pregnant women on co-trimoxazole prophylaxis or with an allergy to sulfa medications should not be administered IPTp. According to the national guidelines, 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.

The doses are elemental iron 60 mg and folic acid 0.4 mg, prescribed as 1 co-formulated tablet daily. The National Malaria Strategic Plan calls for the expansion of continuous ITN distribution, including through ANC services, to all areas where mass ITN distribution campaigns have occurred.

Figure 11: Map of IPTp recommended districts, Zimbabwe



ANC attendance in Zimbabwe is very high, with 93% of pregnant women visiting an ANC clinic at least once during pregnancy. However, only 37% of pregnant women attending an ANC clinic in high and moderate-burden districts received at least two doses of SP, with 5.8% ineligible for IPTp because they were receiving co-trimoxazole prophylaxis (2016 MIS). A 2015 NMCP Case Management Audit also estimated IPTp coverage based on ANC clinic records for 634 pregnant women who had delivered at 26 health institutions in 4 rural provinces. Of the 550 (87%) women who received SP for IPTp, 74 (12%) received a single dose, 327 (52%) received 2 doses, 138 (22%) received 3 doses and 11 (1.7%) received 4 doses. Of the 84 (13%) women who did not receive any SP, 48 (57%) were on co-trimoxazole prophylaxis, 12 (14%) were not booked and 24 (29%) were seen when SP was not available at the health institutions. All women who received IPTp were given correct, directly-observed doses of SP. The average gestational age at booking for the women was 20.8 weeks. The NMCP staff noted that some health workers were not correctly documenting when and which dose of IPTp was given, making it more difficult to monitor IPTp coverage using routine surveillance data as compared to audit data. Consequently, correct documentation of IPTp is being included in health worker training. This audit also found SP stock-outs in some facilities.

The 2016 MIS found that only 25% of pregnant women slept under an ITN the night prior to being surveyed. Although the 2016 and 2012 surveys differed in data collection and analysis methodology, this is a decrease from the 2012 MIS finding of 49%. Sixty-two percent of pregnant women slept either

under an ITN or in a house that had been treated with IRS. This is well below the national goal of 85%. Reasons given for not sleeping under an ITN included misperceptions about the timing of the malaria season, and heat.

To improve the prevention of MIP and the use of ANC and IPTp, NMCP asks VHWs to educate women at the community level. This strategy supplements facility-based patient education and care services and SBCC efforts. Even though VHWs do not provide IPTp services in the communities, they do advise pregnant women on MIP and encourage early ANC visits, uptake of IPTp, timely presentation at ANC, and consistent use of ITNs. Village health workers also evaluate pregnant women for malaria, test with RDTs, and treat those who are positive, unless they have signs and symptoms of severe disease or have not felt fetal movement. In these cases, the VHW refers the woman to the nearest health facility.

The recommended treatment of uncomplicated malaria in pregnant women is oral quinine plus oral clindamycin during the first trimester. However, the NMCP has had difficulty finding funding to procure clindamycin, so it is unavailable. If quinine is also unavailable, the recommendation is to use artemether-lumefantrine (AL), which is the first-line ACT for uncomplicated malaria in non-pregnant people. Women in subsequent trimesters are to be treated with AL. With the recent adoption of a second-line ACT, patients in any trimester of pregnancy who do not respond or have side effects to the first-line treatment should be treated with the second-line treatment, which is artesunate-amodiaquine (AS/AQ).

If a woman develops severe malaria during her first trimester, current policy is to treat her with intravenous quinine until she is able to take oral medicines. At that time, she is to be given oral quinine plus clindamycin to complete a seven-day course of treatment for both medicines. If the woman is in her second or third trimester, she is to be given intravenous artesunate initially. Once improvement is noted and she is able to tolerate oral medications, she should be switched to oral AL, to complete a three-day course with this medicine.

### *Progress since PMI was launched*

PMI has supported both facility-based and VHW training and supportive supervision for malaria case management and MCCM, respectively, including education on prevention measures, IPTp, and treatment of MIP. Since 2012, PMI has supported the training of 1,874 facility-based health workers in MIP prevention and management. PMI has focused its support for VHWs in Manicaland Province and has trained 1,764 of the 2,130 total. Global Fund has also supported VHW training in other provinces. Given attrition and recruitment of new VHWs as the VHW program grows, there will be a continuous need for training moving forward. PMI-supported MCCM training includes assessment and case management of children and adults, testing with RDTs, treatment and referral, MIP prevention and management, and community health information management. In addition to VHWs, PMI has trained 47 VHW trainers, 196 nurse aides and 130 SHCs in MCCM since 2014, including a module on MIP. Consistent with the objective to support supervision, 40 VHWs were oriented to conduct supportive supervision visits to other VHWs. After Zimbabwe adopted the WHO IPTp policy in 2014, PMI supported facility-based health workers and VHW training on the revised IPTp and malaria case management guidelines, as part of their malaria case management training (more information in case management section), either in their initial training or as an update.

Recently collected MIP indicators demonstrate conflicting results from various sources. The 2012 and 2016 MIS reflect that there has been little improvement in IPTp utilization, from 35% in 2012 to 37% of pregnant women taking at least two doses of SP in 2016. However, the denominator used in the 2016 MIS for this indicator included wards that were not targeted for IPTp and thus underestimates the coverage in targeted wards. Case management audits conducted in 2013 and 2015 demonstrated an improvement in the same indicator, from 61% to 75%. HMIS data from 2014 indicated that 66% of pregnant women received at least two doses of IPTp; this statistic improved in 2015 (77%), and 2016 (80%).

PMI has procured and distributed approximately 2.6 million SP treatments for Zimbabwe to date. PMI supported pharmaceutical and supply chain management through the ZIPS and ZAPS systems to distribute SP, iron, and folate in the primary care packages and other commodities for diagnosis and treatment of malaria. One challenge is lack of timely and accurate stock management to allow for redistribution of SP, primarily from facilities that have not used their stock, to a higher burdened location.

#### *Progress during the last 12-18 months*

PMI trained 1318 facility-based health workers on MIP as a component of malaria case management, as well as 1120 village health workers. Supportive supervision and mentoring was provided to clinical staff in the PMI target districts, which make up half of Zimbabwe's MIP focus target districts. PMI procured and distributed 156,533 doses of SP, and continued to support the full rollout of ZAPs to distribute SP. The proportion of HCW trained on new policy in 2016 is shown on Table 14.

In order to better understand barriers and drivers of IPTp, PMI supported a formative research assessment in Mutasa district. Conducted to inform the questions and methods for a later, larger study in Manicaland Province, the formative assessment identified factors within the health system of interest for further research. The assessment found: a limited physical availability of updated national IPTp guideline documents; that ANC services are provided at limited times; and that IPTp is not provided as a part of ANC services in private sector facilities. Most missed opportunities for IPTp (about 5% of the 3,904 ANC visits reviewed) were due to facility stock-outs of SP. Community health workers, community leaders and men were identified as influencing IPTp uptake. These preliminary findings were used to design a research study to further explore drivers and barriers for achieving target IPTp coverage in the Chipinge and Mutare districts of Manicaland Province. This descriptive, cross-sectional study, conducted in May-July 2017, employed both qualitative and quantitative techniques to explore the health system or supply-side drivers for IPTp at the national, provincial, district and facility levels to determine barriers to coverage. It also worked to determine the client-related or demand-side drivers and barriers to IPTp coverage. Finally, the study was aimed at determining the IPTp coverage in health facilities in Chipinge and Mutare districts over the five-year period from 2012 to 2016. Results from this study should be available by September 2017.

**Table 14: Status of IPTp policy in Zimbabwe**

Status of training on updated IPTp policy		Number and proportion of HCW trained on new policy in the last year if training on new policy is not yet completed	Are the revised guidelines available at the facility level?	ANC register updated to capture 3 doses of IPTp-SP	HMIS/DHIS updated to capture 3 doses of IPTp-SP
Completed/Not Completed	Date (If completed, when, if not completed, when expected)				
Not yet completed	2018	894/ 80% of PMI target areas	Yes, but not all	Old registers being used, but updated manually to include dose 3.	Yes

*Commodity gap analysis*

**Table 15: SP Gap Analysis for Malaria in Pregnancy**

Calendar Year	2017	2018	2019
Total Population	13,795,586	13,947,338	14,100,759
Total Population in malaria endemic areas	6,897,793	6,973,669	7,050,379
<b>SP Needs</b>			
Total number of pregnant women	275,912	278,947	282,015
Total number of pregnant women attending ANC (ANC 1 through 3)	725,648	733,630	741,700
<b>Total SP Need (in treatments)</b>	<b>725,648</b>	<b>733,630</b>	<b>741,700</b>
<b>Partner Contributions</b>			
SP carried over from previous year	464,116	23,985	1,126,120
SP from MOH	0	0	0
SP from Global Fund	128,967	965,765	500,000
SP from Other Donors	0	0	0
SP planned with PMI funding	156,550	870,000	580,000
<b>Total SP Available</b>	<b>749,663</b>	<b>1,859,750</b>	<b>2,206,120</b>
<b>Total SP Surplus (Gap)</b>	<b>23,985</b>	<b>1,126,120</b>	<b>1,464,420</b>

Footnotes: Total population figures based on 2012 census with a growth rate of 1.1%. Approximately half of the population is in malaria endemic areas and 4% are assumed to be pregnant. ANC attendance based on DHS 2015 for ANC1 and ANC4, with estimated amounts for ANC2 and ANC3. SP need incorporates DHS 2015 reports for ANC4. SP carried over from previous year in 2017 is based on central stock level from the PPMRm. The SP from Global Fund is currently an estimate, as this was in the grant request for 2018-2020. However, despite the table indicating a surplus in SP, PMI is still planning funding in the case that the grant request is not fulfilled and will reprogram if needed.



### Plans and justification

With FY 2018 funds, PMI will procure 580,000 treatments of SP (the gap analysis is shown on Table 15 above). This amount has been programmed to compensate for any gap in the amount of SP that will be procured with Global Fund resources. PMI will also procure a small amount of clindamycin for treatment of uncomplicated malaria in women who are diagnosed during their first trimester. This number of cases is expected to be small, approximately 0.18% of all cases nationwide or approximately 300. A facility-based distribution approach will be used with 100 tablet bottles of 150 mg doses being distributed to clinics and hospitals, with more to those in malaria-endemic areas than to those in non-endemic areas. PMI plans to procure 1,400 bottles or 3,333 treatments. Usage will be monitored through clinical audits and end-use verification (EUV) surveys to identify dispensing to first-trimester pregnant women.

PMI will continue to support the training and supportive supervision of health workers at the districts and facility levels to build skills and capacity in providing MIP services. With FY2018 funding, efforts will focus on refresher training for existing staff and new trainings to accommodate staff turnover. This training and supportive supervision support will benefit health center nurses and ANC nurses in the district hospitals and will instruct them that HIV-positive women on co-trimoxazole prophylaxis do not need IPTp with SP. VWHs, SHCs, and nurses' aides will also be trained to promote the uptake of IPTp and improve demand for ANC services in general, promote ITN use and treatment of malaria for pregnant women, and improve their data recording and reporting skills. As part of the integrated iCCM/MCH/MCCM activities, nurse aides and VHWs will increase their knowledge of new practice guidelines and guide pregnant women to follow the current WHO recommended IPTp with SP dosing schedule, use ITNs during pregnancy, and seek early diagnosis and treatment of suspected malaria or febrile illness. Training of VHWs will focus on refresher training and updates as well as improving VHW coverage in underserved areas.

PMI will promote the use of data from the study on barriers and facilitators to IPTp uptake to form community-based approaches for prevention of MIP and knowledge of and adherence to updated treatment guidelines for cases of malaria in pregnant women.

### Proposed activities with FY 2018 funding: (\$119,800)

- *Procure SP:* PMI will procure 580,000 SP treatments. (\$104,400)
- *Procure clindamycin:* PMI will procure 3,333 clindamycin treatments for treating uncomplicated malaria in first trimester pregnant women. (\$15,400)
- *Facilitate facility-based health worker training and supervision in MIP:* PMI will support refresher training of health workers on IPTp and implementation guidelines. (Costs included in case management: diagnosis and treatment section.)
- *Assess, train and supervise VHWs:* PMI will support MCCM refresher training, including training on MIP. (Costs included in case management: diagnosis and treatment section.)

- *Support for MIP SBCC activities:* PMI will support activities focusing on community sensitization, improved IPTp uptake, and other preventive measures such as the use of ITNs during pregnancy. (*Costs included in SBCC section.*)

### 3. Case management

#### a. Diagnosis and treatment

##### NMCP/PMI objectives

Ensuring access to prompt and appropriate management of all malaria cases within 24 hours of onset of symptoms is a key objective of the 2016-2020 Zimbabwe Malaria Strategic Plan. To achieve this objective, the NMCP is focusing its efforts in the following areas:

1. Strengthening quality assurance of diagnostics (RDTs and microscopy);
2. Maintaining quality assured treatment of all uncomplicated malaria cases;
3. Capacitating health facilities to effectively manage severe malaria;
4. Strengthening case management for special groups (mobile migrant population, miners, refugees, agriculture workers, religious groups, gatherings, etc.); and
5. Ensuring quality assured supply chain management.

In the 2015 *Guidelines for Management of Malaria in Zimbabwe*, the NMCP recommends parasitological diagnosis of all suspected malaria cases prior to treatment. While microscopy is still recognized as the gold standard for parasitological confirmation, its use is primarily reserved for follow-up of admitted malaria patients, confirmation of suspected treatment failure, and confirmation of co-infections or infections with non-*falciparum* malaria species. Rapid diagnostic tests 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. Multispecies RDTs are procured by Global Fund and, in some instances, GoZ.

The 2015 *Guidelines for Management of Malaria in Zimbabwe* recommend oral AL as the first-line treatment and ASAQ as the second-line treatment for uncomplicated malaria. Oral quinine with either doxycycline or clindamycin is listed as an alternative second-line treatment and as the first-line regimen for pregnant women in the first trimester. Consistent with the most recent WHO treatment guidelines, Zimbabwe recommends intravenous artesunate as the first-line treatment for severe malaria and as pre-referral treatment at the health facility level. Parenteral quinine is recommended as the first-line treatment for severe malaria for first trimester pregnant women and for children less than five kg. Parenteral quinine is also recommended as an alternative treatment in other patients when parenteral artesunate is unavailable or contraindicated. The 2015 guidelines recommend rectal artesunate suppository (RAS) for pre-referral treatment of severe malaria at the community level for all age groups, a difference from the WHO *Guidelines for the Treatment of Malaria* (2015), which recommend RAS only for those under six years old. Rectal artesunate suppository uptake has been slower than predicted since introduction, with relatively low and inconsistent consumption patterns noted in 2016. PMI is working with NMCP and partners to quantify the uptake and monitor it closely this year.

To decrease transmission in low transmission/pre-elimination areas, the 2015 *Guidelines for Management of Malaria in Zimbabwe* (Table 16) recommend the use of low-dose primaquine (for its gametocytocidal effect) for uncomplicated malaria. To date, Global Fund has supported the procurement of this medication.

Zimbabwe has 6 central hospitals, 8 provincial hospitals, and 68 district hospitals, 4 of which are situated in urban areas; all of these facilities have laboratories. Zimbabwe has three main cadres of facility-based laboratory staff: clinical scientists with a masters or doctorate-level degree, general laboratory scientists with a bachelor's degree from a university, and state certified laboratory technicians who receive two years of training post-high school at the polytechnic level and hospital training institutions. A professional registry, the Medical Laboratory and Clinical Scientist Council, accredits personnel before they can practice.

There is a quality control and quality assurance system for both laboratory and pharmaceutical supplies. Commodities are procured by the GoZ and donors, which are then pooled and distributed by the National Pharmaceutical Company. Both case and stock management data are reported from the facility to the national level. The RDTs procured by PMI are lot tested before shipment to Zimbabwe. In country, the National Medical Reference Laboratory lot tests all RDTs before they are distributed to public sector facilities.

**Table 16: Status of Case Management Policy in Zimbabwe**

<b>Status of Case Management Policy according to 2015 Guidelines for the Management of Malaria in Zimbabwe</b>	
What is the first-line treatment for uncomplicated <i>P. falciparum</i> malaria*?	<i>P. falciparum</i> - artemether-lumefantrine <i>P. vivax</i> – artemether-lumefantrine in patients without G6PD deficiency, primaquine in patients with moderate G6PD deficiency.
What is the second-line treatment for uncomplicated <i>P. falciparum</i> malaria*?	<i>P. falciparum</i> - artesunate-amodiaquine <i>P. vivax</i> – artesunate-amodiaquine in patients without G6PD deficiency
What is the first-line treatment for severe malaria?	Parenteral artesunate
In pregnancy, what is the first-line treatment for uncomplicated <i>P. falciparum</i> malaria in the first trimester*?	Oral quinine <b>plus</b> clindamycin or doxycycline
In pregnancy, what is the first-line treatment for uncomplicated <i>P. falciparum</i> malaria in the second and third trimesters*?	Artemether-lumefantrine
In pregnancy, what is the first-line treatment for severe malaria?	Oral quinine
Is pre-referral treatment of severe disease recommended at peripheral health facilities? If so, with what drug(s)?	Yes, parenteral artesunate, or rectal artesunate
Is pre-referral treatment of severe disease recommended for community health workers? If so, with what drug(s)?	Yes, rectal artesunate
If pre-referral rectal artesunate is recommended, for what age group? (note: current international guidelines do not recommend administering to those $\geq 6$ years)	All age groups

\*Provide recommended treatments for *P. vivax* if these are also in a country's guidelines.

#### Progress since PMI was launched

PMI has supported the procurement of malaria commodities, including RDTs and malaria medicines. Through September 2016, PMI has procured approximately 8.2 million RDTs, 4.5 million ACTs, 120,000 quinine treatments, 60,000 rectal artesunate suppositories, and 350,000 vials of injectable artesunate.

In support of the NMCP's efforts to strengthen malaria case management, PMI has focused on the training of VHWs and facility-based health workers to improve quality of care at all levels of the health system. Strategies have included case management courses, supportive supervision (including peer-to-peer), and integrating iCCM and MCH care. Since 2012, PMI has supported training of VHWs in Manicaland, the province with the highest burden of malaria in the country. School health coordinators, who help form school health clubs to educate students about malaria prevention and treatment, also received training in this province, as have nurse aides. An assessment in 2014 estimated that there were

about 1,800 VHWs in Manicaland, each ideally serving 1 village of approximately 120 households. Based on 2012 census data, 3,417 VHWs are needed in this province to completely reach all villages and approximately 25,500 VHWs are needed nationwide in order to attain the coverage goal of one VHW for 120 households. PMI has also supported facility-based, malaria case management training in moderate and high-burden areas since 2012. There are an estimated 18,000 health care workers in the country (including some administrative staff), 12,000 of which are admitting hospital-based workers.

In 2015, PMI supported the revision of the *Guidelines for Management of Malaria in Zimbabwe*, including funding for updated curriculum and training materials for VHWs and health facility staff. PMI and other funders subsequently supported the training of over 1,900 VHWs in Manicaland on malaria case management in the community, including the use of pre-referral rectal artesunate, prevention of MIP and how to message to community members. Approximately 60 SHCs and 60 nurse aides also received initial malaria case management training. At the health facility level, 191 trainers and over 7,200 health care workers, the latter representing over 50% of those working in admitting hospitals throughout the country, received 1-day training in the new case management guidelines. This training utilized facilitator and trainee manuals printed and distributed by PMI.

Training, supervision, and procurement efforts have contributed to increased parasitological confirmation of cases. Since 2005, the number of cases diagnosed clinically has decreased, whereas parasitological diagnosis has increased. In 2005, only 8.5% of clinical cases seen in public health facilities were tested, while in 2015, the percentage had increased to 99.8%. An evaluation in 2015 showed VHWs in Manicaland tested 99% of suspected malaria cases with an RDT.

According to the NMCP, parasitological diagnosis of malaria was rolled out to all health facilities by 2009. Health centers primarily use RDTs but a few health centers also possess microscopy capability with trained microscopists, who perform both TB and malaria microscopy. External quality assurance for malaria microscopy has been offered since 2011 by Zimbabwe National Quality Assurance Program Trust (ZINQAP) but the number of participating laboratories has remained inadequate over the last few years.

Funding for external quality assurance of malaria microscopy is insufficient for the expansion of this program and PMI has been unable to support ZINQAP due to historical, administrative challenges and administrative irregularities. However, PMI is aware that this is an area of need and has discussed with NMCP the possibility of bringing in an international partner. These discussions are promising, but ongoing.

Currently, there are only 84 public facilities (out of 1,700) enrolled in this program, with support from the GF. In addition to low enrollment, the program is also quite limited in functionality due to these funding constraints, with no on-site follow-up for identified issues. At a recent Case Management sub-committee meeting, ZINQAP presented and there was comment from both central and provincial level MOHCC staff about the inadequacies of the program given. Although there are no dedicated funds for expansion, the NMCP Director suggested the possible use of GF savings (which are very significant) to enhance and expand the program. However, it is not clear that this could be arranged and implementation could occur prior to the end of the grant period.

Between February and May 2014, a therapeutic efficacy study was conducted in four PMI-supported sites (Dindi, Hauna, Nyamhunga, and Simatelele) with two additional sites supported by WHO. Preliminary polymerase chain reaction (PCR)-corrected data indicated 97.5% of participants (391 out of 401 persons from six sites) had adequate clinical and parasitological response to treatment using AL. Final PCR-corrected results have not been made available by NIHR.

*Progress during the last 12-18 months*

Since October 2016, PMI has procured an additional 1,398,300 RDTs and 8,640 artesunate suppositories.

PMI has continued to prioritize workforce development through case management trainings and supportive supervision at the facility level, while expanding the geographic scope of case management activities at the community level. Facility-level trainings primarily targeted new health workers and those that did not receive initial training following the 2015 guideline revision. Over the last 18 months, PMI supported the training of just over 1,000 facility-based health workers in Mashonaland East, Mashonaland Central, and Matabeleland North, reaching 99% of the training target for PMI and over half of the overall MOHCC target for these provinces. Global Fund supported the training for the remaining staff. PMI supported post-training follow-ups and supportive supervision in these three provinces is currently being initiated, and planning for an upcoming mentorship pilot in selected districts is underway. The goal of this last initiative is to begin to decrease reliance on workshop-based instruction.

PMI also expanded community-level case management activities beyond Manicaland by supporting the training of 53 community-level trainers (including Nurses, Pharmacists, Pharmacy Technicians, and Laboratorians) in Mashonaland East and Mashonaland Central Provinces. These trainers then cascaded malaria case management training to approximately 600 VHWs in these 2 provinces. The districts prioritized for this initial effort were those with the highest burden of transmission and/or those with extremely hard to reach areas. Further trainings are imminently pending in other districts in these provinces and subsequent expansion to districts in Matabeleland North province is planned. In addition, facility-based supervisors are now being trained to provide post-training follow-up and supportive supervision to VHWs. Initial trainings for a VHW peer-to-peer supportive supervision program are scheduled for the coming months. It should be noted that these activities are coordinated with the Global Fund-supported training and supervision conducted in these provinces.

In Manicaland, PMI trained 518 VHWs, 318 nurse aides, and 140 school health coordinators in calendar year 2016 and the first quarter of 2017. PMI also continued to provide for quarterly supportive supervision visits by health facility staff from the national, provincial, district and facility levels using a standard supervision tool and corrective action plan for the assessed worker. The VHW peer-to-peer supervision program in Manicaland continued, with high-achieving VHWs identified and trained to be peer supervisors.

To improve the documentation of trained workers, PMI supported the development of data collection tools and trained GoZ staff in the use of the TrainSMART software. Results from 68 training events have already been entered into the system. PMI also provided technical guidance and funding for the development and printing of a revised malaria treatment chart as a reference guide for health workers.

Availability of microscopy reagents and consumables continued to be a challenge. In an effort to maintain microscopy capacity at health facilities, PMI procured these commodities to supplement those available through the MoHCC.

Finally, PMI initiated support for malaria death documentation and audit meetings, holding three provincial-level meetings in Mashonaland East and Mashonaland Central. Attendees included District Medical Officers, District Nursing Officers, doctors, matrons, Sisters-in-Charge, and nurses from all admitting facilities in the provinces. These meetings provided a platform to discuss the management of severe malaria cases, identify preventable causes of malaria deaths, and outline areas for improvement. Recommendations from these initial meetings included ensuring that all health facilities have death investigation forms, that these forms are completed in a timely manner, and that continued quantitative and qualitative review of reported deaths be conducted to inform programmatic decision-making.

The NMCP is currently conducting a therapeutic efficacy study using Global Fund resources. As in 2014, this is a one-arm, prospective study assessing the efficacy of the first-line medication for uncomplicated malaria, artemether-lumefantrine. To date, readiness assessments have been conducted for the 6 study sites and staff training has been completed as shown in Table 17 below.

**Table 17: PMI-funded TESs**

<b>Completed TESs</b>		
<b>Year</b>	<b>Site name</b>	<b>Treatment arm(s)</b>
2014	Hindi, Hauna, Nyamhunga, Simatelele (PMI supported), Dotito, Nyamhunga (WHO supported)	One arm, prospective study of the efficacy of artemether-lumefantrine
<b>Ongoing TESs</b>		
<b>Year</b>	<b>Site name</b>	<b>Treatment arm(s)</b>
2017	Hindi, Hauna, Nyamhunga, Simatelele, Dotito, Nyamhunga (Global Fund supported)	One arm, prospective study of the efficacy of artemether-lumefantrine
<b>Planned TESs FY 2018</b>		
<b>Year</b>	<b>Site name</b>	<b>Treatment arm(s)</b>
2020	TBD (Funding included in request submitted to Global Fund in March, 2017)	TBD

*Commodity gap analysis*

**Table 18: RDT Gap Analysis**

Calendar Year	2017	2018	2019
<b>RDT Needs*</b>			
Total country population	13,795,586	13,947,338	14,100,759
Population at risk for malaria	6,918,067	6,994,165	7,050,379
PMI-targeted at-risk population	6,918,067	6,994,165	7,050,379
Total number of projected fever cases	808,840	808,840	808,840
Percent of fever cases tested with an RDT	100%	100%	100%
<b>Total RDT Needs</b>	<b>808,840</b>	<b>808,840</b>	<b>808,840</b>
<b>Partner Contributions</b>			
RDTs carried over from previous year	0	1,748,285	2,362,070
RDTs from Government	0	0	0
RDTs from Global Fund	1,158,825	922,625	1,039,250
RDTs from Other Donors	0	0	0
RDTs planned with PMI funding	1,398,300	500,000	615,385
<b>Total RDTs Available</b>	<b>2,557,125</b>	<b>3,170,910</b>	<b>4,016,705</b>
<b>Total RDT Surplus (Gap)</b>	<b>1,748,285</b>	<b>2,362,070</b>	<b>3,207,865</b>

\*Total country population is projected from the 2012 Census. At risk population includes those individuals living in malaria endemic areas. Number of fever cases is based on total number of suspected cases tested from RDT registers. No reduction in the number of fever cases was projected during the most recent (February, 2017) national quantification exercise.



**Table 19: ACT Gap Analysis**

Calendar Year	2017	2018	2019
<b>ACT Needs*</b>			
Total country population	13,795,586	13,947,338	14,100,759
Population at risk for malaria	6,918,067	6,994,165	7,050,379
PMI-targeted at-risk population	6,918,067	6,994,165	7,050,379
Total projected number of malaria cases	248,400	208,656	148,146
<b>Total ACT Needs</b>	<b>248,400</b>	<b>208,656</b>	<b>148,146</b>
<b>Partner Contributions</b>			
ACTs carried over from previous year	642,554	614,984	838,948
ACTs from Government	0	0	0
ACTs from Global Fund	220,830	432,620	0
ACTs from Other Donors	0	0	0
ACTs planned with PMI funding	0	0	310,977
<b>Total ACTs Available</b>	<b>863,384</b>	<b>1,047,604</b>	<b>1,149,925</b>
<b>Total ACT Surplus (Gap)</b>	<b>614,984</b>	<b>838,948</b>	<b>1,001,779</b>

\*Projected malaria cases taken from the most recent national quantification exercise (February, 2017). These projections are based on actual reported cases from 2016 in HMIS, with a predicted 10% reduction in 2017, a further 16% reduction in 2018, and a further 29% reduction in 2019.

### Plans and justification

In FY 2018, PMI plans to procure RDTs, ACTs and rectal artesunate suppositories. As in previous years, large discrepancies exist for both RDTs and ACTs between the projected need for calendar year 2019 (based on a national quantification exercise using case data) and the need based on historical consumption. At the time of writing, a PMI-funded assessment is being initiated to investigate this case and commodity consumption disparity. It is hoped that findings from that assessment will be available by September 2017. At this time, it is unclear what impact this assessment and any subsequent actions taken by the MoHCC will have on commodity consumption patterns in Zimbabwe but the expectation is that multiple causes for this discrepancy will be identified, and substantial reductions in this situation will require intervention on multiple fronts by NMCP and partners, and will take some time to be realized. For now, PMI is taking into consideration the morbidity-based commodity needs projected during the national quantification exercises (and presented in Table 18 and 19), but planning future funding for commodities with the understanding that the case data may be substantially underreported

and that commodity funding will be reprogrammed as needed. Before placing all orders, PMI will continue to closely monitor stock at the central level.

Table 18 above presents the projected needs for RDTs per the most recent Zimbabwe national quantification exercise (February 2017), based on the reported number of suspected cases tested in RDT registers in 2016. Using these projected needs, there appears to be a large surplus of RDTs in calendar year 2019. However, the actual annual consumption of RDTs in Zimbabwe has historically been over three times higher than the projected need figures that were used for this quantification exercise. As a result, PMI will plan to procure an additional 615,385 RDTs with FY 2018 funds to ensure adequate future availability. Given past and current trends in RDT consumption, the PMI team projects that this will be sufficient, despite the large gap projected during the national quantification exercise.

Table 19 above predicts a significant surplus of ACTs in 2019 based on the most recent Zimbabwe national quantification exercise. However, this surplus is predicated on the assumption that a dramatic decrease in malaria cases will occur over the coming years. Further, it is morbidity based and does not reflect actual, recent consumption patterns. As PMI does not have funding for ACTs planned in the FY 2017 MOP, the Zimbabwe team plans to procure 311,000 ACTs with FY 2018 funds to ensure adequate availability of this life-saving medication in 2019.

Of note, PMI had planned an ACT order using FY 2016 funding. However, that order has not yet been placed based on current stock status (and pending the outcome of the assessment of the discrepancy between reported cases and commodity consumption). PMI will continue to hold on this order as there is not a current need, but will continue to monitor the stock status and utilize this funding if necessary.

PMI plans to procure 33,377 rectal artesunate suppositories to support the management of severe malaria cases at the community level. Before placing the order, PMI will provide guidance to NMCP and partners to revise the current rectal administration policy, under which rectal artesunate is given to all age groups, to be in-line with WHO guidelines. According to WHO guidelines, rectal artesunate suppositories should be administered in appropriate dosage to children over six months and under six years of age. In addition to guiding and confirming that this policy change has taken place and is being rolled out, PMI will review the consumption rates at that time and adjust the procurement as needed.

The consumption of rectal artesunate suppositories has been low, as expected of a new product. Slow uptake may be due to time it takes for training VHWs and potential acceptability issues. PMI's in-country team has entered into a dialogue with NMCP and GF on the urgent and critical need to change this policy before PMI and GF can support further procurement and related training activities. NMCP has agreed to seriously consider this change. PMI will continue to discuss with NMCP and PMI's case management team, and raise the issue at the NMCP case management subcommittee meeting.

PMI will continue support for quality facility and community level case management through training and an increasing emphasis on supportive supervision and mentorship activities. This will include the maintenance and continued expansion of activities targeting VHWs in PMI-supported districts. Activities will be planned and tracked using the TrainSMART database, which is now fully operational. PMI will review the pace of recruitment and baseline training of VHWs and consider whether it can support iCCM training to expand this cadre to the communities where it is needed. This expansion may

include expansion of VHWs in pre-elimination areas. It should be noted that the PMI Zimbabwe team is working with our case management training implementing partner to more accurately enumerate the VHWs and facility based health workers in the three provinces we support, better catalogue which VHWs have received malaria case management training, and ensure that our programming is complimentary to that of Global Fund, which also supports training in these provinces. This effort includes working directly with the Provincial Health Executive team during provincial planning for training activities. Depending on the outcome of the upcoming mentoring pilot, this activity may be expanded to additional districts. Death audit meetings will also be supported on a quarterly to biannual basis depending on the number of deaths experienced in each province.

Plans will again include supporting two NMCP Case Management Advisory Subcommittee meetings, with one goal being to develop a prioritized multi-year training plan. These meetings did not occur last year despite the offer of support and advocacy from PMI. PMI feels that these meetings are necessary for adequate coordination of case management activities and will continue to push for them to be held.

PMI will prioritize support for developing and maintaining proficiency in microscopy, starting out in the 15 districts in Mashonaland East, Mashonaland Central, and Matebeleland North Provinces. A technical assistance visit is planned to facilitate development of these activities for MOP 2018 and subsequent years. In addition, supplies and equipment will continue to be procured to support microscopy already existing in the country as well as the development and distribution on reference materials and bench aids.

PMI will continue to focus its support on reducing malaria in the highest burdened areas while other partners provide the primary support for efforts to decrease transmission and eliminate the disease in lower transmission and pre-elimination areas. However, PMI will continue to participate in discussions and provide technical input into pre-elimination efforts in Zimbabwe and the region (e.g., through the E8 Initiative), and to stay abreast of topics, needs, and plans. Additionally, PMI will provide limited resources for the direct support of activities in these pre-elimination areas. (Please refer to *Pre-elimination section* for more details).

*Proposed activities with FY 2018 funding: (\$2,035,313)*

- *Procure RDTs:* Procure approximately 615,385 RDTs for use at health facilities and by VHWs. (\$400,000)
- *Procure ACTs:* Procure approximately 311,000 RDTs for use at health facilities and by VHWs. (\$357,623)
- *Procure artesunate suppositories:* Procure approximately 33,377 artesunate suppositories (half 50mg and half 200mg). (\$17,690)
- *Procure malaria diagnostic supplies:* Purchase laboratory supplies and reagents to support microscopy diagnosis of malaria. (\$50,000)
- *Support case management technical assistance visit:* Provide a technical assistance visit by a CDC laboratory expert to provide technical support to the NMCP on ongoing diagnostic

activities for quality assurance of case management in country. (\$10,000)

- *Facilitate supportive supervision for health facility workers:* Continue refresher trainings for case management and MIP; provide supportive supervision and mentoring in selected districts. (\$400,000)
- *Assess, train, and supervise VHWs in iCCM (Manicaland):* Continue supportive training and supervision on malaria case management for VHWs at the community level on ACTs, RDTs, and MIP prevention. (\$300,000)
- *Assess, train, and supervise VHWs in iCCM (three non-Manicaland districts):* Continue supportive training and supervision on malaria case management for VHWs at the community level on ACTs, RDTs, and MIP prevention. (\$400,000)
- *Strengthen malaria microscopy capacity:* Expand laboratory capacity to increase access to quality assurance for malaria surveillance activities in Zimbabwe, while also building human capacity through the development of in-country reference materials. (\$100,000)

## **b. Pharmaceutical management**

### NMCP/PMI objectives

The availability of medicines is one of the key performance indicators for the MoHCC. Over the past ten years, MoHCC has developed and implemented a number of supply chain systems in order to ensure the availability of health commodities at the facility level.

These multiple supply chain systems have traditionally been separated out by health commodity type and, as of 2012, consisted of four parallel systems. Each varied in structure, cost and level of performance. In an effort to prepare the MoHCC to provide a larger role in supporting public health supply chain management systems, stakeholders, with DPS leadership, created a vision to bring the management of all health commodities under a single unified commodities system for all primary care facilities and to have TB, malaria, and preventive commodities distributed via one system to all levels. The MoHCC's goal, first envisioned in 2012, was to reduce the number of systems to one or two, and to implement more effective and efficient supply chain operations that are sustainable in the medium to long term. The main requirements in consolidating the systems included ensuring that the needed data is collected, that re-supply takes place according to a defined schedule, and that coverage/order rates and stockout rates remain at or are better than those achieved under the current multiple systems.

The Zimbabwe Informed Push System (ZIPS) was one of these four parallel systems. It was based on a rolling warehouse concept that used an informed push mechanism, distributing malaria commodities (ACTs, SP, and severe malaria pharmaceuticals), TB, and 26 selected essential medicines and medical supplies (including RDTs) to approximately 1,600 service delivery points quarterly. ZIPS was piloted in 2009 and quickly rolled out. It allowed, for the first time, collection of data on consumption, stock on hand, losses and adjustments for malaria commodities. The MoHCC DPS in conjunction with NatPharm provided leadership to the ZIPS, including spear-heading the annual national quantification process and

mid-year updates. However, the need to integrate the multiple supply chain systems led to the Zimbabwe Assisted Pull System (ZAPS), which includes the management of all health commodities under a harmonized system of assisted ordering to create cost-efficiency without losing any of the availability of data and maintaining the low stockout rates realized under ZIPS. Roll-out of ZAPS began in 2014 and is now essentially complete.

ZAPS includes all of the commodities originally distributed under ZIPS as well as condoms, contraceptives, HIV and syphilis rapid test kits, prevention of mother to child transmission and antiretroviral therapies (ART) with antiretroviral drugs (ARVs), fluconazole, Early Infant Diagnosis, and point of care consumables. Previously these additional commodities were distributed through the Delivery Team Topping Up (DTTU) and the Zimbabwe ART Distribution System (ZADS). Therefore, ZAPS combines four distribution systems, ZIPS and DTTU, which are push systems, the Essential Medicines Pull System, and ZADS, a full pull system, into one system for the primary health care level. ZAPS places the responsibility of picking, packing and delivery of commodities on the NatPharm team. The system built on the technology and lessons learned from the ZIPS and other systems while removing the limitations on the number of products that the system can manage by integrating the transport, warehousing, and management information systems.

As started under ZIPS and continues under ZAPS, the quantification of malaria commodities is integrated with other program commodities such as TB, HIV/AIDS, drugs for opportunistic infections, and other essential medicines and medical supplies. An annual quantification process, including an update semi-annually, is led by the DPS in consultation with the NMCP. The MoHCC programs (AIDS, TB, malaria) and partners (Clinton Health Access Initiative [CHAI], UNDP, UNICEF, Elizabeth Glaser Pediatric AIDS Foundation, PEPFAR and PMI) participate and provide input to the quantification.

#### *Progress since PMI was launched*

PMI has supported procurement and distribution of commodities as well as operational and logistical support for procurement and supply management. Activities covered under the ZIPS and ZAPS operations budget line included fuel, maintenance and repairs for delivery trucks and monitoring vehicles, forms printing, information technology hardware and software maintenance for the Logistics Management Information System (LMIS), mop-up training, support and supervision of the distribution system, and direct and indirect costs for technical assistance (including, but not limited to, maintaining critical positions and field office operations). The availability of vehicles and fuel under the informed push system facilitated needed deliveries of malaria commodities and decreased stockout rates.

PMI supported two critical positions, including a PSM specialist and the secondment of a pharmacist to DPS. Their technical expertise helped with coordination of malaria supply chain activities, annual quantification and updates leading to needed revisions in procurements, and support for quarterly end-use verification (EUV) surveys, for which a pharmacist is the lead data analyst and reporter. Prior to the initiation of the EUV surveys, PMI supported a stakeholders' meeting to explain the process and anticipated outcomes, which enhanced stakeholder buy-in and adherence to the quarterly survey schedule. These PMI-funded EUV surveys have provided insight into stock availability and have served as a point of comparison for the quality of LMIS data. In addition, immediate stock reallocation actions have often been taken based on EUV survey findings, providing stock availability and mitigating

expiries by moving products from overstocked facilities to understocked facilities.

As previously stated, PMI supported the Logistics Management Information System (LMIS), including both the paper based form printing for the lower levels of the supply chain and the technology support for the move into the electronic ordering system.

To achieve the goal of moving to a unified system, in late 2013, the MoHCC, with support from PMI, designed ZAPS, the integrated single “assisted ordering pull” system described earlier. An evaluation of existing distribution systems was conducted with PMI support as part of a baseline measurement for the evaluation of the ZAPS system. The evaluation collected data for 2013 and the first quarter of 2014 and looked at indicators for performance and costs. With respect to information availability and quality, almost 100% of ZIPS facilities received a quarterly visit; however, cash flow challenges at NatPharm presented obstacles to obtaining essential medicines kits. In an effort to find a more cost-effective program, PMI supported the pilot of ZAPS in Manicaland Province for a one-year period spanning 2014-2015. This involved providing support for delivery trucks, monitoring vehicles, LMIS maintenance (in coordination with other donors) and ongoing monitoring of both the ZIPS and ZAPS.

At the end of the ZAPS pilot, preliminary results were shared at a workshop in Harare in June, 2015 and PMI supported an end-line report that was shared with stakeholders. The pilot was deemed successful as it demonstrated a higher level of cost-effectiveness than previous systems without sacrificing the level of visibility and high levels of performance of ZIPS. ZAPS also lowered the burden of stock management on the health facility workers while handling a higher volume of commodities at a similar cost to the baseline assessment. The existing systems used similar resources that were organized and managed separately, using separate transport, warehousing, and management information systems, and drawing on different funding streams. Combining these systems under one management increased efficiency. Performance measures demonstrated ZAPS to be cheaper and more effective than the baseline system (or the four separate systems), and was a driving force in the enthusiasm to roll out the system nationally on an aggressive timeline starting at the end of 2015.

#### *Progress during the last 12-18 months*

An ambitious timeline for rolling out ZAPS, expanding province by province, was realized. The rollout in the first few provinces after Manicaland had initially not progressed as quickly as anticipated. However, the MOHCC eventually succeeded (with PMI supporting training and shifting from operational support of ZIPS to the operations of ZAPS). By the end of calendar year 2016, all 10 provinces had switched to ZAPS.

Historically under both ZIPS and ZAPS, discordance between malaria cases reported in the HMIS and LMIS data presents challenges for the quantification process and the commodity management system. Past studies have found that the splitting and combining of ACTs by service delivery points, challenges with record keeping (including use of different source records and inconsistent record keeping, especially during malaria outbreaks), lack of standardized RDT registers, late submission of VHW reports, and poor understanding of malaria case definitions among health workers are all contributing factors to the discrepancy in data. However, it is unlikely that these factors alone are leading to the consistent difference of greater than 300% between the consumption data in comparison to malaria

cases. The annual quantification exercises are calculated based on both consumption and morbidity data, with consumption data historically being relied upon more than case data. Another concern has arisen around the recording and ordering units of commodities. It is unclear if the commodity quantities entered into the ordering system are consistently recorded as the number of treatments, number of pills, or number of boxes. If for one quarter the number of pills is recorded, then for the next quarter the number of treatments is recorded, this might show a greater consumption than what actually occurred. Irregularities such as these may be contributing to the discrepancies between consumption and case data.

Connected to this concern over possible “over-ordering” is the high level of overstock being seen at the facility level. According to the quarterly EUV surveys from the last couple of years, more products were reported to be overstocked than understocked. The percentage of commodities that are appropriately stocked consistently remain low. Overall, malaria products appeared to be consistently overstocked while essential medicines showed higher risk of being understocked. Of particular concern are the consistent high levels of overstock for AL and injectables. In the January 2016 EUV survey, 80% or more of facilities showed an overstock of all four AL presentations, injectable quinine, and injectable artesunate. In the July 2016 EUV survey, although the percent of facilities showing overstock of all four AL presentations and injectables dropped to 58% or more, overstock was still the most likely scenario for malaria products at the end of the malaria season, placing these commodities at risk of expiry before they could be consumed by patients. This indicates a need to relook at the current stock management practices and ordering systems as this overstock is not seen consistently at the central level in the Procurement Planning and Monitoring Reports, indicating an issue further down the system. These EUV surveys may result in stock transfer between health facilities to transfer product from one facility that is overstocked to another that is understocked.

PMI has supported increased logistics data visibility through warehousing and inventory management trainings as well as on the use of the LMIS. Reporting rates remain high in the first quarter of FY 2017, with 97% of service delivery points reporting to the LMIS on malaria commodities. For this increased logistics data visibility to be the most effective, PMI will continue to support activities to improve LMIS data quality and commodity management through workshops for district pharmacy managers to improve stock management and record keeping at the facility level. For example, stock counts may be incorrect when the unit reported differs between facilities and reporting quarter, expired stock is not separated from usable stock, or stockout days are not recorded correctly, affecting average monthly consumption calculations. There are concerns that overstock and expiries are not seen as a problem at the facility level due to the priority placed on preventing stockouts, and therefore the overstocks are less likely to result in follow-up.

Due to concerns around cost-effectiveness of programs and appropriate use of resources, PMI is currently using FY2016 funding to support an assessment of this discrepancy between ACT consumption and reported cases. PMI and its implementing partners worked to facilitate an initial planning meeting in early April 2017, which convened key stakeholders from NMCP, NatPharm, and the MoHCC Health Information Unit. Following this meeting, a desk review of historical data was initiated to better characterize the temporal and geographic scope of the problem to inform the protocol development process. The assessment protocol has been finalized with support from PMI and implementing partners. The tools have been developed and piloted. Data collection is taking place in July 2017 and the data analysis and report should be concluded by September 2017.

Balancing stock availability is also complicated by the occurrence of unstable epidemic patterns influenced by climate and weather patterns. NMCP's adoption of WHO treatment recommendations, particularly in the treatment of severe malaria, also causes some changes in the supply chain as providers adjust to switching from quinine injectable to artesunate injectable and the use of RAS for pre-referral treatment. PMI will continue to support this transition.

#### Plans and justification

PMI will continue to ensure that malaria commodities, such as ACTs, RDTs, severe malaria medicines, and SP, are available in health facilities through ZAPS and continue to monitor the performance of the fully rolled out ZAPS system at the national level. A focus will be placed on stock management and the ordering system in an attempt to address overstock issues. Support will also be given to strengthen and expand supervision and quality assurance of the LMIS. PMI support will complement that of other donors, including pharmaceutical supply chain management training and procurement of SP, ACTs, primaquine, quinine, injectable artesunate, RAS, and RDTs by the Global Fund.

#### Proposed activities with FY 2018 funding: (\$900,000)

*Supply Chain Strengthening:* Support ZAPS operations to distribute ACTs, RDTs, severe malaria medicines, and SP to approximately 1,600 health facilities nationwide. Funds will complement other pharmaceutical and commodities management funding from other partners. PMI support will include operational costs, technical assistance, trainings, quantification support and logistics. Improve LMIS reporting and ordering as well as stock management, based on results of an LMIS and HMIS assessment. (\$900,000)

#### **4. Health system strengthening and capacity building**

PMI supports a broad array of health system strengthening activities which cut across intervention areas, such as training of health workers, supply chain management and health information systems strengthening, drug quality monitoring, and NCMP capacity building.

#### NMCP/PMI objectives

The NMCP was elevated to a directorate within the MoHCC in 2015 and leads Zimbabwe's malaria control efforts through the formulation of policy, strategies, and the coordination of all partners involved in malaria control in Zimbabwe. The NMCP coordinates malaria activities at all levels, and implements programs directly at the national and provincial levels. In 2015, the MoHCC became the Principal Recipient for malaria and tuberculosis related activities funded by the Global Fund in Zimbabwe. As such the NMCP directs all activities under the malaria grant, and reports to and advises the program coordination unit within the MoHCC. The current Global Fund grant ends in June 2017 and NMCP received a costed extension from July through December, 2017. The NMCP and its partners have written and submitted a new funding request to the Global Fund (Jan 2018 - Dec 2020). The request is responsive to the needs and priorities as laid out in the new NMSP. The NMCP collaborates with many partners including USAID, UNICEF, UNDP, WHO, CDC, Bill and Melinda Gates Foundation through CHAI, and other international and local institutions.



The NMCP has demonstrated strong management and planning capabilities. Technical areas that NMCP leadership would like to see strengthened within the institution include entomology, vector control, epidemic detection and response, and prevalence estimate mapping or stratification.

Through the Field Epidemiology Training Program (FETP), the University of Zimbabwe trains public health personnel in field epidemiology, data analysis, epidemiologic methods, and use of strategic information to make appropriate health decisions. This is a two-year course that typically benefits central- and provincial-level MoHCC personnel. At the end of the program, graduates earn a Master of Public Health degree. The University also organizes a short course on leadership and health management for middle-level MoHCC personnel who work at the district level.

#### *Progress since PMI was launched*

PMI supported a cohort of FETP students that began coursework and training in January 2013 and partnered with the University of Zimbabwe to strengthen the malaria curriculum within the existing FETP program. The goal has been to support students in receiving a malaria-focused education and enhance the malaria competency of the entire class. To date, two students from each cohort have been selected annually. One FETP candidate was assigned to the NMCP under the supervision of the NMCP Director to support their programmatic and monitoring work, and another candidate was assigned to a province under the supervision of the Medical Director to support malaria work at the provincial level. In 2014 and 2015, the PMI-supported fellows conducted 13 malaria-related projects and their classmates conducted 8. Six of the projects were malaria outbreak investigations in Zimbabwe. These projects were presented to the NMCP, and MoHCC staff, academicians, partners, FETP alumni, and PMI staff during monthly seminars. Some were chosen for these.

Over the past five years, PMI has worked with the NIHR, which is a national center for research, training, and service in the fields of disease control, biomedicine, and public health. It comprises the Blair Research Laboratory (established in 1939), Health Systems Research Unit (established in 1981) in Harare, and the De Beers Research Laboratory (established in 1965) in Chiredzi. PMI has supported entomological activities by providing training and updated staff at NIHR-Harare and De Beers Laboratory on insectary management and mosquito rearing to improve the insectaries and establish two colonies of susceptible mosquitoes for insecticide resistance monitoring. This included the refurbishment the Harare NIHR and Chiredzi insectaries, and improving the capacity of the entomology laboratories to carry out entomologic monitoring activities. PMI has also provided reagents and supplies to NIHR-Harare to perform molecular and immunodiagnostic assays for the entomological monitoring activities.

#### *Progress during the last 12-18 months*

The two students in the first FETP cohorts to receive PMI support both graduated the program in 2015 with merit and are currently employed by the MoHCC. The second cohort has also gone on to continue working in public health. PMI staff worked directly with the University of Zimbabwe FETP to enhance the malaria-focused education of supported fellows and others in the class, and provided guidance on modifying existing program documents to capture the malaria- and HIV/AIDS-focused projects and

contributions. A PMI Resident Advisor participated in FETP conferences and acted as an attending or faculty member critiquing students' oral presentations. The FETP staff created a tool to capture the malaria-focused activities and contributions of PMI-supported residents. PMI-supported residents conducted at least three of six required projects on malaria topics. Due to the U.S. Government regulatory constraints, PMI support as of March 2016 has been limited to in-kind mentoring.

During the past year, PMI provided technical assistance and support to the Faculty of Health Sciences of the Africa University in Manicaland. The faculty building complex was constructed with funding from the American Schools and Hospitals Abroad in 2004. Africa University is currently recruiting laboratory personnel to support molecular surveillance activities and will process mosquito specimens from the selected entomological monitoring sites. In February 2017, PMI coordinated a training to build human capacity in malaria-related laboratory skills. The focus of the training was in the implementation of a molecular and immunodiagnostic laboratory at the College of Health, Agriculture and Natural Sciences (CHANS) at Africa University. The laboratory implementation is being implemented in two phases. Phase I included support for a molecular laboratory and training to identify *Anopheles* mosquito species and detection of molecular resistance mechanisms. Phase II will be implemented in late 2017 and will focus on training for immunodiagnostic assays.

#### *Plans and justification*

Many PMI activities result in strengthened health systems, including those that fall under other technical areas. Below, Table 20 describes activities budgeted under all program areas that contribute to strengthening health systems in Zimbabwe, listed by health system building block.

#### *Proposed activities with FY 2018 funding: (\$0)*

*See activities for strengthening health systems which are covered under each of the PMI-supported interventions.*

**Table 20: Health Systems Strengthening Activities**

<b>HSS Building Block</b>	<b>Technical Area</b>	<b>Description of Activity</b>
<b>Health Services</b>	Case Management (Health Facility)	PMI will support the NMCP to conduct training and supportive supervision on malaria CM for primary health facility staff and VHWs on ACTs, RDTs, and MIP. Support will be provided for limited refresher training on case management and real time active case detection and follow-up in selected pre-elimination districts.
	Case Management (VHW)	PMI will assess the status and needs of the VHW network and ability to support malaria control and pre-elimination activities to inform new projects in following year. SBCC message development for pre-elimination areas are also included in the new SBCC strategy.
	IRS	PMI will work with national, provincial, and district level institutions to build capacity for high-quality IRS implementation, including international environmental compliance standards.
	ITNs	PMI will expand and strengthen routine ITN distribution systems in ANC and EPI clinics, the community, and possibly schools.
	IRS	PMI will provide support to local institutions, including the NMCP and provincial level, for comprehensive entomological surveillance.
<b>Health Information</b>	Health Systems Strengthening M&E	PMI will build laboratory capacity for both epidemiologic and entomologic surveillance sample analysis.  PMI will provide technical and logistic support to the NMCP for malaria outbreak detection and response in outbreak-prone areas and/or pre-elimination settings.
	M&E	PMI will support quarterly district health team meetings, provincial M&E review meetings, training support and supervision across all levels. PMI will also continue to support the IDSR/DHIS2.
<b>Essential Medical Products, Vaccines, and Technologies</b>	NA	NA
<b>Health Finance</b>	Pre-service training	PMI will support pre-service technical leadership training at the Africa University which will include malaria vector sibling species differentiation PCR.

<b>Leadership and Governance</b>	NA	NA
----------------------------------	----	----

## 5. Social and behavior change communication

### NMCP/PMI objectives

The NMSP 2016-2020 objectives form the basis for the implementation of SBCC activities for the malaria control program in Zimbabwe. In 2016, PMI supported the NMCP and partners to revise the national malaria SBCC strategic plan that corresponds to and supports the goals of the NMSP.

#### **Vision and Goal of the National Malaria SBCC Strategic Plan 2016-2020**

**Vision:** To have a malaria free Zimbabwe through empowered communities who have the knowledge and skills to protect themselves from malaria.

**Goal:** (NMSP Objective 5) Increase the utilization of all malaria interventions to at least 85 percent by 2020.

To achieve NMSP’s desired outcome, PMI supports a comprehensive package of SBCC activities that aim to promote correct and consistent use of ITNs, acceptance of IRS, and adherence to diagnosis and a full course of treatment. PMI also supports SBCC to improve uptake of IPTp for all eligible pregnant women residing in areas with high malaria burden.

The new the national malaria SBCC strategic plan adds desired strategies and behaviors in the areas of advocacy, surveillance, cross-border initiatives, and special populations. There is also a call for a focus on branding strategies to support the NMSP.

The NMCP SBCC Subcommittee remains active and committed to providing countrywide leadership and coordination. The subcommittee’s overall leadership and guidance is provided by the NMCP and there is a rotating chair from one of the implementing partners. All partners, funded either by PMI or Global Fund and active in malaria SBCC, are invited to participate in the subcommittee which meets quarterly and on an ad hoc basis. In addition to implementing partners, non-implementing partners that have a stake in malaria advocacy, such as private sector representatives, also participate in the subcommittee. The Ministry of Health and Child Welfare SBCC staff from the provincial and district level also attend on a quarterly basis and occasionally ad hoc if an SBCC event or activity pertains to their area. The SBCC Subcommittee is the forum for SBCC policy making, technical discussion and event coordination among partners under the leadership and guidance of NMCP, specifically the SBCC Officer.

### Progress since PMI was launched

PMI has been supporting malaria SBCC in Zimbabwe since the first MOP in 2011. This support included a revision of SBCC materials and development and dissemination of new materials in the key malaria intervention areas (ITNs, IRS, MIP/IPTp, and case management). In 2012, PMI supported a small survey to gather data to better understand SBCC needs in the malarious districts – both facilitators and barriers in different areas of the country. The MIS, conducted in March-April 2012, provided useful information that has helped malaria partners to better tailor SBCC supporting messages to address critical gaps in knowledge, attitudes, and practices.

In 2013, PMI supported the revision of the Zimbabwe Malaria Communication Strategy (2008-2013) and which was extended to 2017 in line with the NMSP. The strategy sets forth seven key interventions to be achieved: vector control (IRS, larviciding and ITNs); case management; EPR; IPTp; SBCC; OR; and SM&E.

PMI also supported the development of an SBCC Implementation Guide for 2014-15 which provided principles for malaria SBCC including communication theories, situational analysis, strategic design (approach, messages, channels), development and testing of materials, implementation, and monitoring and evaluation. Malaria partners now use this reference guide to help with better planning and management of SBCC activities to assist communities in malaria control. The first of its kind in Zimbabwe, it has been heralded as a model for other departments of the MoHCC.

In 2015, PMI continued to work through VHWs to promote ITN use and IPTp as well as early treatment seeking behavior. These outreach activities included routine and specific SBCC activities in areas where outbreaks of malaria were reported. PMI also supported increased and broader dissemination of IRS messaging to assist with information and acceptance on a new IRS chemical, OPs, deployed in PMI-supported spraying areas. Indoor residual spraying messages prepare families for arrival of the sprayers and provide safety messages.

For ITN activities in 2014-2015, PMI partners used a combination of outreach methods including radio, promotional materials, drama events (also known as road shows) and also added the branding of mini buses (known as *Combis* in Zimbabwe) and prominently located wall space at schools, clinics, and market places.

PMI supported radio messages on three radio stations nationwide, as well as the production of promotional materials in two languages. Over 100 road shows were performed annually in advance of ITN and IRS activities in target areas.

PMI engaged schools to be malaria prevention and treatment advocates by supporting school health clubs and training teachers as SHC. Increasing malaria awareness in schools ties into plans for routine distribution of LLINs in elementary schools and reinforces the presence of SHC who can test and treat malaria.

At the end of calendar year 2015, management of the majority of SBCC communications were smoothly transferred from one PMI partner to another. Also during 2015 and into 2016, the NMCP SBCC Subcommittee remained active and committed to providing countrywide leadership.

*Progress during the last 12-18 months*

Over the last year, PMI funds have supported the usual comprehensive package of malaria behaviors – correct and consistent use of ITNs, acceptance of IRS, adherence to diagnosis, early and full course of treatment, and IPTp for all eligible pregnant women residing in areas with high malaria burden.

Social and behavior change communication activities are implemented at the national, provincial, district, and community levels. This year PMI allocated more than the usual 15% of the SBCC budget, seen in previous MOPs, to the national level to conduct and participate in the SBCC national strategic plan development in January 2017. The workshop convened to create the plan included an initial week looking closely at the 2016 MIS from the SBCC perspective. Therefore, because of this need at the national level, during this year the ratio of national- to community/interpersonal-level support was approximately 30/70. However, mobilizing communities and traditional and religious community leaders and civic organizations to support and promote malaria prevention and control remains critical for achievement of the NMCP's NMSP and PMI objectives.

One of the primary objectives of PMI's support for the SBCC strategic plan development was to build capacity of the national level NMCP and partners and some key provincial and district level staff. The 2-week residential workshop for about 20-25 persons included a discussion on SBCC theory, 2016 MIS results from the SBCC lens, setting primary indicators, and identifying audiences. The first week was spent scrutinizing MIS findings and reflecting on whether questions included in the MIS would provide as much information as possible for SBCC. PMI sought outside expertise on the questionnaire content especially on ITN consistent use and shape preference. This part of the workshop included SBCC subcommittee members but was well attended by other members of NMCP and partners working on vector control and case management/IPTp. The second week of the workshop consisted of drafting a revised SBCC strategy. This writing session included outside experts and a PMI headquarters SBCC team member. One of the challenges faced by the writing team was how to target behaviors and messages for areas with different levels of transmission. The writing team decided not to include two separate sections on control and elimination; but rather to include separate communication objectives, channels and activities for low-transmission areas. An example is shown on Table 21.

**Table 21: MIP Behavior Change Objectives**

<p><b>MIP Behavior Objectives:</b></p> <p>1 Increase the proportion of pregnant women who book at ANC early in their first trimester to 85% by 2020</p> <p>2 Increase the proportion of pregnant women who receive three or more doses of IPTp from 27% baseline levels to 85% by 2020</p>	<p><b>Priority Audience:</b> Pregnant women</p>
	<p><b>Secondary Audience:</b> Spouse/partner, service providers, elders, mothers-in-law, aunts and peers</p>
	<p><b>Communication Objective 1:</b> Increase the proportion of pregnant women who are aware of the benefits of booking ANC early to 85% by 2020</p> <p><b>Communication Objective 2:</b> Increase the proportion of pregnant women who believe IPTp is an effective method of preventing MiP to 85% by 2020</p>
	<p><b>Key Benefit:</b> If I am aware of IPTp and its effectiveness, then I am more likely to take a complete course of IPTp (at least three doses) and have a healthier pregnancy and child</p>
	<p><b>Supporting Points:</b> A healthier pregnancy reduces direct medical costs and allows me to be more productive during pregnancy A healthy child requires less care and allows more time for caregiver to do other work A sick child increases the stress for the caregiver and family, and can result in increased costs for care</p>
	<p><b>Channels/Activities:</b> ANC appointments, community meetings, SMS, Care Group male and female champions and community support groups</p>
<p><b>Low-transmission Areas</b></p>	<p><b>Communication Objective 1:</b> Increase the proportion of women of childbearing age in target districts who understand that malaria can still be locally transmitted or imported from other areas to 85% by 2020</p> <p><b>Communication Objective 2:</b> Increase the proportion of women of childbearing age in target districts who believe that sleeping under an ITN is the most effective method of preventing malaria to 85% by 2020 (ITN use will be the only means of prevention in areas that no longer recommend IPTp)</p>

In addition, the attendees began preparing a Communication Guide for the Introduction of Rectangular ITNs in Zimbabwe.

The 2016 MIS results are discussed more fully in the SM&E section and other specific implementation sections (ITNs, IRS, CM, MIP) but some brief highlights relevant to SBCC can be mentioned here.

**Malaria Messaging Exposure and Recall:** When asked about the causes of malaria, most respondents (85%) knew that mosquitoes spread the disease and that sleeping under a mosquito net can protect against malaria (80%). About a third of respondents reported ever seeing a message or information about malaria with most of the messages coming directly from health facility workers and community health workers. Very few reported receiving messages via radio, newspapers and posters/billboards. Respondents preferred receiving messages about malaria through media which they already used to receive malaria messages.

**ITN Use:** Only a third of children under 5 years old had slept under an ITN the night before the survey. However, protection by at least one vector control intervention was substantially higher as 74% had slept the previous night either under an ITN or in a dwelling sprayed with IRS in the past 12 months. About a third of women (15-49 years) and a quarter of pregnant women slept under an ITN the previous night.

**IPTp Uptake:** Forty two percent of women had taken either two doses of SP/Fansidar or were on lifelong co-trimoxazole during pregnancy, in accordance with the HIV policy in Zimbabwe.

**Dose Compliance:** When asked when they should stop giving a child with malaria an anti-malarial drug, only 27% of women reported that it should be when the child has taken the full dose prescribed by the health worker, 38% said when the child no longer has fever, and 2% when the child is feeling better.

Overall, the 2016 Zimbabwe MIS results indicate that some progress has been made in malaria control since the last survey in 2012. However, some indicators are low and will be further analysed and prioritized for future programming efforts, for example ITN use. Knowledge of disease control and when to stop prescribed anti-malaria treatment also needs to be prioritized. Both indicators are part of the new Zimbabwe Social Behaviour Change Communication Strategy priorities.

Aside from the MIS, other routine activities within the last 12-18 months included:

- Completion of a desk review of SBCC activities over the past eight years (2008–2015). The information gained from this activity was used to strengthen the SBCC immediate plans and will continue to be used as a reference point in the future.
- PMI continued to support the national SBCC subcommittee events. At one SBCC subcommittee meeting held on June 10, 2016, seven provinces were represented, in addition to the NMCP and seven partner organizations. Key issues at the meeting were: sharing malaria program performance review results, with a focus on informing provincial-level SBCC programming; creating a malaria SBCC web-based repository; provincial reporting on SBCC materials and equipment needs; and partner progress reports on SBCC.
- A PMI partner organization coordinated the procurement of all MIS promotional materials. The NMCP distributed the materials to the enumeration teams and participating partner organizations.
- PMI supported Mashonaland East province with SBCC materials during World Malaria Day commemorations on June 23, 2016. The theme was: End Malaria for Good — Yes, We Can Do It!
- The primary PMI SBCC partner supported cluster meetings with health center committees in Mashonaland East, a high burden area, aimed at increasing community participation in malaria



prevention and control activities. During the cluster meetings, the representative health committees were also provided with participatory analytical skills to analyze the malaria situation in their communities and to develop micro plans showing how each respective committee will participate in prevention and control strategies in their context. These cluster meetings (Tables 22 and 23) were conducted before the mass ITN distribution campaigns and the IRS campaign.

**Table 22: Number of Cluster Meetings Conducted in Mashonaland East Province**

District	No. of Health Facilities in the District	No. of Health Facilities Reached	No. of Clusters per District	Attendance		Total Attendance
				Male	Female	
Goromonzi	23	7	2	41	46	87
Mudzi	26	13	2	53	28	81
Murewa	20	13	3	47	33	80
Mutoko	27	20	2	51	36	87
UMP	27	27	2	35	50	85
<b>Total</b>	<b>123</b>	<b>80</b>	<b>11</b>	<b>227</b>	<b>193</b>	<b>420</b>

**Table 23: Number of Cluster Meetings Conducted in Mashonaland Central**

District	No. of Health Facilities in the District	No. of Health Facilities Reached	No. of Clusters per District	Attendance		Total Attendance
				Male	Female	
Bindura	17	14	3	84	74	158
Rushinga	18	11	2	44	15	59
Mazowe	28	28	1	27	10	37
Guruve	20	19	4	100	57	157
Centenary	13	12	2	50	13	63
Mt Darwin	21	18	3	57	37	94
<b>Total</b>	<b>117</b>	<b>102</b>	<b>15</b>	<b>362</b>	<b>206</b>	<b>568</b>

- Forty-six staff (nurses and EHTs) from local health centers were trained in interpersonal communication skills to improve effective dissemination of malaria messages. Participants were drawn from Mashonaland East Province (Goromonzi, UMP, Murewa, Mutoko and Mudzi Districts).
- PMI supported the development, production, and printing of IRS communication materials for 2016, as well as one radio announcement campaign in Manicaland.

The SBCC team developed and co-presented a poster with the NMCP for the 2016 Roll Back Malaria Communication Community of Practice meeting in Dakar, Senegal. The poster was entitled: “Malaria prevention and control — is ‘one size fits all’ the best approach? SBCC challenges and lessons learnt — the case of Angwa Ward, Mbire District, Zimbabwe 2016.”

Here is a list of some additional multi-level, PMI-supported SBCC activities in the past 12-18 months:

- Forty-five health workers comprising EHTs, Nurses and VHWs were trained on steps to promoting uptake and utilization of LLINs with a focus on continuous distribution. Key benefits and messages on LLINs were emphasized. Literature on LLINs was also distributed.
- Three advocacy meetings with a total of 87 traditional leaders were conducted in 3 wards: Masoka (22), Chapoto (22), and Angwa (43) in Mbire District. The purpose of the meetings was to enlist the support of the leaders towards the continuous distribution of LLINs in the respective wards and to promote utilization of LLINs. Communities are likely to adopt malaria preventive behaviors when they see their leaders practicing the behaviors (diffusion of innovation).
- Eleven cluster meetings with health center committees in Mashonaland East Province aimed at increasing community participation in malaria prevention and control activities. A total of 420 committee members, 227 men and 193 women, attended the meetings representing 103 district health institutions (85.8 percent) in the 5 ZAPIM districts of Goromonzi, UMP, Mudzi, Murewa, and Mutoko. During the cluster meetings the representative health committees were also provided with participatory analytical skills to analyze the malaria situation in their communities and to develop micro plans showing how each respective committee will participate in prevention and control strategies in their context. These cluster meetings were conducted before the mass LLINs distribution campaigns and the IRS campaign.
- A total of 46 health workers from Mashonaland Central (13) and Mashonaland East (33) provinces were trained on how to use malaria participatory education tools. The groups comprised of community health nurses, EHTs, primary health care nurses and health promotion officers. Of these, 33 had no previous exposure on how to use the tools while 15 had some previous experience in use of the tools. This training is expected to transform the nature of trainings from top-down approach to learner centered approach and ensure communities are fully engaged in prevention and control of malaria activities at community level.
- A PMI implementing partner supported Goromonzi District to conduct an eight-day interpersonal communication sensitization campaign for communities in wards experiencing a malaria outbreak, promoting correct use of LLINs, early treatment seeking and awareness of malaria signs and symptoms. The sensitization campaign focused on meeting known religious objectors to malaria prevention and treatment measures such as the Apostolic Faith sects. Spearheaded by the district health promotion team, the campaign reached more than 5,000 people directly. SBCC materials in the form of pamphlets and posters were distributed in the process.
- Two provinces, Mashonaland East and Mashonaland Central, were supported to conduct supportive supervision to assess progress and challenges related to implementation of malaria SBCC micro-plans developed by health communications committees. A checklist was used for the assessment.
- A PMI partner facilitated two community dialogue meetings in Mashonaland Central in Mbire District at Angwa Clinic. The dialogue meetings were aimed to understand the socio-cultural drivers and barriers that prevent the adoption of recommended malaria preventive behaviors in the community.

- PMI supported the development, production, and printing of IRS communication materials for 2016 and 2017 (37,000 copies of a poster promoting IRS for communities and families and 186,000 copies of a pamphlet describing IRS steps for households) were printed, as well as 1 radio announcement campaign in Manicaland Province.
- An annual malaria planning calendar was printed and distributed to health facilities nationwide. This tool alerts staff to plan for upcoming seasonal needs and events, for example, IRS spraying season, ITN distribution, quarterly malaria review meetings, etc.

Results or effects of these activities listed above cannot be fully measured yet since they occurred largely after the data collection of any national survey, such as the 2016 Malaria Indicator Survey, data collection in March/April 2016. However, the data from the 2016 Malaria Indicator Survey has been examined closely by the NMCP SBCC subcommittee prior to the creation of the new SBCC strategy. The MIS data has been discussed elsewhere in the MOP but overall NMCP feels that it has much more work to do with improving SBCC. For example, only about a third of respondents reported ever seeing a message or information about malaria in the previous twelve months. IRS community acceptance and confidence indicators are high but indicators for ITN ownership and especially use among vulnerable groups is low.

The current version of the MIS states that only a third of children under 5 years had slept under an LLIN the night before the survey. About a third of women aged 15-49 years compared to only a quarter of pregnant women slept under an LLIN the previous night. The most common reason given for not sleeping under a net is 'not malaria season.' Note that PMI is supporting a closer look at the ITN indicators. They are being reviewed for accuracy and undergoing secondary analysis. And, NMCP is considering a rapid ITN knowledge attitudes and practices assessment as well, funded by GF.

The NMCP coordinates PMI and GF activities so there is complementarity but no duplication, and they align with NMCP SBCC strategy. GF funds the same array of activities and associated SBCC as PMI but focuses on different geographic areas - IRS, ITN, IPTp, CM, and MIP. For example, the GF grant promotes SBCC for IRS in all non-PMI areas. The GF grant activities are reported at the malaria coordinating committee meetings quarterly and PMI participates in these regularly. Additionally, planning for materials, including print materials, slogans and scripts for radio, community dramas, etc. is coordinated with NMCP and all partners.

### Plans and justification

PMI support will complement Global Fund malaria grant activities and, under the NMCP's guidance, focus on interpersonal communication, development of print materials and multimedia messages to support pre-transmission season malaria prevention activities (ITNs, IRS), early care-seeking behavior, and IPTp uptake early in pregnancy.

Based on needs identified during initial analysis of 2016 MIS data, the SBCC subcommittee will focus on a few key malaria control measures. The subcommittee will work with PMI and partners to further analyze MIS data about ITN ownership and use. A greater understanding of ITN data throughout the

country will guide interventions to increase ITN use especially in high-risk groups, such as children under five and pregnant women. In general, NMCP, with support from PMI, will continue to increase the adoption of an ITN culture (i.e., making daily ITN use a lifestyle, good behavior, like brushing your teeth or washing your hands) in Zimbabwe, a journey begun in 2011. There will be many opportunities for increasing net culture, for example, as ITN routine distribution continues to roll out. Similarly, PMI will support the introduction of rectangular nets and follow the SBCC guide developed for this purpose. SBCC will also support IPTp uptake during pregnancy and promote complete dosing compliance of ACTs of children.

PMI-supported partners will work with NMCP and other implementers to promote the objectives and behaviors identified in the SBCC strategic plan. Using the 2016 MIS data as a baseline, partners will monitor progress quarterly and annually through partner reports and ad hoc, small-scale surveys during SBCC events. The SBCC indicators will be measured in full during the planned 2019 MIS.

PMI has recently identified a significant gap in SBCC in pre-elimination areas and plans to gradually begin to address this gap. The initial focus will be on pre-IRS messaging that has historically been a challenge in Matabeleland South Province. NMCP has been struggling to maintain community support for adequate IRS coverage (historically, coverage is about 70%; but NMCP policy seeks to achieve 95%) as urban households tend to be locked during the day due in part to householders 9-5 work hours and frequent travel across the border to South Africa. In addition to SBCC messages designed to achieve IRS acceptance and preparedness, messages in pre-elimination areas will also promote awareness and behaviors, encouraging rapid reporting of suspected malaria cases and highlighting the importance of compliance in diagnosis, case confirmation, and treatment with the addition of primaquine prescribed to limit further malaria transmission. These messages will target health workers in facilities and VHWs in communities. Similar messages with less clinical focus will target community members, community leaders, leaders in hard-to-reach religious communities, mothers, and mothers-in-law.

*Proposed activities with FY 2018 funding: (\$440,000)*

*Support malaria SBCC:* With FY 2018 funds, PMI will support facility health workers, VHWs, school, and community leaders to conduct interpersonal communication on key malaria messages around ITNs, malaria in pregnancy, RDTs, and ACTs in the 45 districts with the highest malaria transmission. The school and community leaders' SBCC activities will be complemented by printed materials that accompany packaged ITNs, RDTs and ACTs, radio spots, and drama skits at various locations including religious institutions, schools, and community events. The primary focus for all activities will be to support the continued roll-out of routine distribution of ITNs; improve MIP intervention uptake (SP at each ANC at least four weeks apart, starting early in the second trimester, increase early and consistent use of ITNs during pregnancy, and early and effective diagnosis and complete treatment of malaria); and promote IRS and appropriate case management. Specifically, PMI programming on ITNs and IPTp will be guided by findings from the MIP assessment and the secondary analysis of ITN MIS data, both to be conducted in 2017. In addition, PMI planning with the SBCC Subcommittee meetings (supported by PMI) and innovative meetings with PMI partners in work plan development will add more specificity to the plans for FY 2018 MOP funds. (\$440,000)

Specifically, the \$440,000 budget for FY 2018 can be disaggregated as follows:

- Support routine ITN distribution and any mop-up distribution from the 2017 ITN campaign (\$165,000)
- Improve MIP uptake (SP at each ANC at least four weeks apart, starting early in the second trimester, early and consistent use of ITNs during pregnancy, and early and effective diagnosis and treatment of malaria) (\$100,000)
- Appropriate case management (\$100,000)
- Support SBCC on IRS (\$60,000)
- Support for malaria advocacy and commemoration events and the SBCC Working Group quarterly meetings (\$15,000)

The proposed activities for FY 2018 may be slightly increased depending on funding and commodities needs for this FY.

## **6. Surveillance, monitoring, and evaluation**

### NMCP/PMI objectives

The NMCP's SM&E Plan was released in 2009, the indicator table was updated in 2014, and the plan was subsequently extended through 2017 to reflect the changing malaria landscape in Zimbabwe and to align with the NMSP and the WHO pre-elimination strategy. The main objective of the SM&E plan is to provide a comprehensive tracking system that enables transparent and objective management of information on malaria control program activities to optimize implementation of malaria interventions in Zimbabwe. Strategies to achieve this objective include:

- Ensuring collection, collation, processing, analysis and use of malaria data at all levels of malaria control programming;
- Enabling regular monitoring and documentation of program performance based on implementation plans and targets;
- Harmonizing data collection based on standardized tools and indicators;
- Establishing and operationalizing a comprehensive malaria database for warehousing, retrieving, and using malaria control information;
- Facilitating and coordinating linkages of malaria control activities with other programs and partners to eliminate duplication; and
- Providing information for evidence-based decision making at all levels.

Malaria SM&E procedures and activities have evolved over time and have helped improve the quality of the malaria morbidity and mortality data in the HMIS. Major SM&E activities include nationwide surveys (e.g. DHS, MIS), program reviews, planning and data review meetings, supervisory visits to provincial and district health offices, collaboration with global and national institutions, strengthening routine data collection management and use, and improving the NMCP's capacity to measure and define

seasonal variation. Table 24 shows surveillance, monitoring, and evaluation data sources. The information obtained is used for evidence-based decision making, program management, and accountability.

An SM&E TWG sub-committee is responsible for planning, monitoring and coordinating partner engagement on malaria SM&E activities conducted in Zimbabwe. Committee members include persons from the NCMP, NIHR, WHO, PMI and multiple other malaria stakeholders. This sub-committee is supposed to meet quarterly; however, meetings occur sporadically, due to prioritization of other activities by NMCP and other stakeholders.

Two sources of routine malaria data are reported and followed in Zimbabwe. One is the HMIS, which documents malaria cases and deaths from all public health facilities and most mission clinics, aggregated by month. The other is the national Rapid Disease Notification System (RDNS), an electronic system where weekly malaria data is submitted by cell phone short message service (SMS or text message) from approximately 95% of the nearly 1,600 public health facilities. Data from both the HMIS and RDNS are entered into a District Health Information System 2 (DHIS2) platform.

As part of RDNS, malaria case data from the same week from the previous four to five years are used to determine an epidemic “alert” threshold (i.e., cases exceed the average of the previous four to five years from the same week) or an epidemic “action” threshold (i.e., cases exceeding one-and-a-half standard deviations above the mean number of cases from the same week from the previous four to five years). If an “action” threshold is reached in any given week, it is referred to as an “outbreak” by the NMCP.

**Table 24: Surveillance, Monitoring, and Evaluation Data Sources**

Data Source	Survey	Year
-------------	--------	------

	Activities	2011	2012	2013	2014	2015	2016	2017	2018	2019
Household surveys	Demographic Health Survey (DHS)*					X				
	Malaria Indicator Survey (MIS)^		X				X			
	Multiple Indicator Monitoring Survey*				X					
	AIDS Indicator Survey*					X				
	EPI survey*			X						
Health Facility and Other Surveys	Rapid Impact Assessment*			X						
	Tracking Results Continuously*	X		X^						
	ITN durability monitoring						X	X	X	X
	EUV survey		X	X	X	X	X	X	X	X
Malaria Surveillance and Routine System Support	Support to HMIS/IDSR	X	X	X	X	X	X	X	X	X
Therapeutic	In-vivo drug efficacy testing				X**			X*		
Entomology	Entomological surveillance and resistance monitoring		X	X	X	X	X	X	X	X

\*Not PMI funded

^Partially PMI-supported

\*\*PMI supported four sites and WHO supported two sites

### Progress since PMI was launched

#### **National household surveys**

In April 2009, UNICEF supported a Multiple Indicator Monitoring Survey (MIMS), which is similar to the Multiple Indicator Cluster Survey, and included a malaria module. A 2010-11 DHS included a standardized malaria module. Data from the DHS and MIMS provided pre-PMI baseline estimates for most of the coverage indicators used by PMI. In 2012, PMI supported an MIS, which also included anemia and parasitemia biomarkers collected from children aged 6-59 months in households from 51

malaria endemic districts in eight rural provinces. Key results from the 2012 MIS include the finding of low national parasitemia in children less than five years of age: 1% by RDT and 0.4% by microscopy, yet there was high anemia prevalence. Additional findings from the survey include: moderate ITN utilization, low IPTp uptake, and that radio or TV were not common sources of malaria information. Zimbabwe completed a DHS in 2015, but did not measure parasitemia.

### **End-use verification surveys**

PMI has provided support for EUV surveys (a quarterly survey to verify availability of malaria commodities in a sample of health facilities and warehouses) since 2012. Quarterly reports have summarized the EUV activities and findings. These reports provide key observations, recommendations, and next steps for commodity distribution and are distributed by NMCP to MoHCC personnel and in-country partners in Zimbabwe. To improve the utility of the EUV surveys in Zimbabwe for 2016 and onward, the survey tool, as well as the timing and facilities visited during the survey, was adjusted to better accommodate the seasonality and epidemiology of malaria in the country.

### **Malaria surveillance and routine systems**

The NMCP approach to strengthening the routine health information systems includes ongoing support for data quality assurance, including on-site validation checks, training and supervisory visits for staff performing SM&E functions, data review meetings, and ensuring the availability of registers and internet connectivity. PMI has consistently provided support for these routine activities, as monthly, aggregate, and high-quality data are most appropriate for decision-making in the moderate to high burden areas where PMI has targeted its resources. For example, in early 2014, PMI supported Zimbabwe's transition from a paper-based, routine HMIS to the electronic DHIS2 platform and, in 2015-16, PMI supported 2 district health team meetings in Chipinge and Mutare with a total of 169 participants, 5 SM&E trainings of 196 participants, and 1 IDSR training of 40 participants.

The NMCP has also prioritized improvements in “outbreak” detection (using the RDNS) and response. Until recently, PMI has provided limited direct support for this activity (see *Progress during the last 12-18 months*).

### **Other monitoring activities**

As documented in Table 24 above, PMI has also provided support for ITN durability, therapeutic efficacy, and entomological monitoring. Please see the relevant sections (ITN, Case Management, and Vector Control, respectively) for further detail on these activities.

### **Progress during the last 12-18 months**

#### **National household surveys**

PMI was the primary supporter for a second MIS conducted in 2016. Preliminary results are presented in the strategy section *Progress on indicators to date*. Key findings included:

- Moderate ITN coverage, with 58% of households owning at least one ITN;
- Low utilization of ITNs the night before the survey among high-risk groups (33% among children under 5 years of age and 24% among pregnant women);
- High combined ITN and IRS coverage, with 85% of owning at least one ITN or receiving IRS in



the past 12 months;

- Continued low IPTp coverage at 37%; and
- Low national malaria parasitemia prevalence in all age groups (range 0.2%-0.8%, all infections caused by *P. falciparum*). As the estimates from the 2012 MIS were also below 1%, per PMI guidance, PMI will not support national parasitemia testing in future surveys, should PMI funding be required.
  - Among children 6-59 months old tested for malaria, 0.5% were found positive by RDT and 0.2% by microscopy
  - Among children 5-14 years old tested for malaria, 0.8% were found positive by RDT and 0.2% by microscopy
  - Among those aged 15 years old and older, 0.5% were positive for malaria by RDT and 0.3% by microscopy

At the time of writing, PMI is working with the NMCP and partners to review and finalize the results from this 2016 survey and to conduct further analyses on ITN coverage and use. Once finalized, PMI will support the printing and dissemination of the final MIS report. It should be noted that the sampling frames and data analysis methodologies for the 2012 and 2016 MIS differed and comparisons should be made with caution.

### **End-use verification surveys**

PMI supported Zimbabwe MoHCC to conduct quarterly EUV exercises for malaria commodities (medications and RDTs). The EUV surveys assess the availability of malaria commodities at facility level, identify areas of strength and weakness in the supply chain and malaria case management, and provide data and insight for analysis, advocacy, and decision-making on a quarterly basis.

### **Malaria surveillance and routine systems**

PMI has continued to provide support for routine system strengthening in the 15 PMI supported districts in Mashonaland East, Mashonaland Central and Matabeleland North. This has included an SM&E training needs assessment and training of district level HMIS officers (10 of 15 officers reached to date). Specific training objectives included: equipping officers with DHIS2 skills and knowledge, ensuring in-depth understanding of malaria indicator definitions and the tracking system, reinforcing awareness of data quality issues and use of information for effective decision making, and reviewing district-specific performance. Based on the needs assessment, PMI is currently supporting IDSR training for 115 health workers, HMIS / DHIS2 training for 55 health workers, RNDS training for 35 VHW in the 3 targeted provinces, as well as national and district level data quality audits. In these 3 PMI-supported provinces, the needs assessment identified approximately 2,800 health workers in need of IDSR training and approximately 2,400 health workers in need of routine HMIS/DHIS2 surveillance training. So, the numbers trained thus far represent a small portion of the total. However, much of the training already completed has been training of facilitators, and it is expected that in the coming year, cascading of training will result in a much higher proportion of health workers being trained. The exact figure will be determined during work plan development discussions with the partner. It should also be noted that GF funding will be used to support a portion of the HW trainings included in the total need.

PMI also has support available for two SM&E sub-committee meetings and is working with the NMCP and partners to ensure these meetings occur. In the coming months, PMI will also support efforts to strengthen the HMIS and DHIS2 systems to improve data quality; strengthen the capacity of NMCP and partners to analyze, use, and disseminate routine data; strengthen the DQA and data verification process; improve data reporting from VHWs; and develop the NMCP strategic plan for SM&E.

Increasingly, PMI has received requests from the NMCP to support the identification of and response to “outbreaks.” In some instances, PMI has provided technical and logistical support for outbreak verification and response in PMI targeted districts. However, these “outbreaks” have often not been found to be verifiable increases in cases, but rather due to reporting discrepancies or delays, inaccurate calculation of threshold values, shifts in the timing of expected seasonal increases, or longer-term epidemiologic changes in areas previously recording little malaria. This has resulted in the diversion of PMI resources from routine strengthening activities for questionable benefit (and the same has occurred with NMCP-managed Global Fund resources). PMI has therefore engaged with the NMCP to re-assess this approach, beginning with a planned stakeholders’ meeting to review relevant data and discuss alternative methodologies for identifying areas experiencing unexpected increases in cases. PMI is also working to identify (and support) educational opportunities for NMCP staff to improve capacity in this area.

### **Other monitoring activities**

PMI provided continued support for ITN durability monitoring and entomological monitoring. Please see the relevant sections above for details on these activities.

Although not strictly an SM&E strengthening exercise, it is worth mentioning that PMI is currently supporting an assessment of the significant discrepancy between reported cases and ACT consumption in Zimbabwe. Although the driver for this assessment was primarily the need to improve quantification forecasts and supply chain management, it will have positive benefits for SM&E strengthening as well. The assessment protocol has been finalized by NatPharm, the Directorate of Pharmacy Services and NMCP with support from PMI and implementing partners. The tools have been developed and piloted. Data collection is taking place in July 2017 and the data analysis and report should be concluded by September 2017. In order to determine the extent to which malaria cases may be underreported, the approach will include a thorough review of HMIS data collected over recent years and evaluation of data quality in selected districts and health facilities. The findings from this assessment should help guide future programmatic decision-making and targeting of HMIS strengthening activities.

### **Plans and justification**

#### **National household surveys**

In keeping with the current three-year cycle, the NMCP plans to conduct a third MIS in 2019. Funding for this survey has been included in Zimbabwe’s funding request to the Global Fund, submitted in March 2017. As a result, PMI has not included funding for this survey in FY 2018. However, PMI will continue to monitor the funding situation and may provide supplemental funding for the survey through reprogramming, should the need arise. PMI and NMCP have discussed the need for a subsequent MIS given the improving quality of routine malaria surveillance data and the overall low malaria prevalence

captured in the 2012 and 2016 surveys. In response to technical guidance from PMI, the NMCP is considering the cost effectiveness of parasitemia collection during the 2019 survey and contemplating removing it from the protocol. However, they still feel that the remaining indicators are critical for monitoring program implementation in Zimbabwe.

### **End-use verification surveys**

Given the need for further strengthening of LMIS, PMI will continue to support quarterly end-use verification surveys.

### **Malaria surveillance and routine systems**

PMI will continue work with the NMCP to improve the quality of routine malaria data reporting and to strengthen the capacity for data analysis and use at all levels of the health system. With FY 2018 funding, PMI will continue to build human resource capacity through support for training, but with an enhanced emphasis on supportive supervision. Training and supervision resources will continue to be targeted based on ongoing assessment of need. PMI will continue to provide support to district level staff to conduct data review meetings, data audits, and provide quality supervision to health facility staff in their catchment areas. PMI will work to build upon current efforts to support rational and effective detection and response to unexpected increases in malaria cases through training, supervision and direct support for response activities, as appropriate.

### **Other monitoring activities**

PMI will continue support for entomological surveillance activities as outlined in the Vector Control section above.

#### ***Proposed activities with FY 2018 funding: (\$610,000)***

- End-use verification survey: Conduct quarterly surveys to assess availability of malaria commodities in health facilities and warehouses. (*\$100,000*)
- Epidemic detection, investigation and response: PMI will provide continued support for rational and effective epidemic detection and response through training, supervision and limited support for response activities. (*\$100,000*)
- National SM&E support: Support quarterly district health team meetings. Support the implementation of the revised SM&E strategic plan to be developed with FY2017 funds. Further focus on data use and interpretation for trend analysis and programmatic decision making. (*\$300,000*)
- Quarterly supervision/quality assessment for SM&E: Support on-the-spot training/supervision at the facility level to improve data collection; provide technical assistance at the district level to conduct supervision and use data for decision making. (*\$100,000*)
- Technical assistance: Provide one CDC TDY to support PMI/Zimbabwe SM&E activities. (*\$10,000*)

## 7. Operational research

### NMCP/PMI objectives

The revised NMSP 2016-2020 reiterates the importance of conducting operational research (OR) to generate and maintain evidence for informed malaria programing. Key priority research areas will be developed in a broader research agenda specific to malaria with the participation of all key stakeholders. The 2016 Malaria Program Review also recommended formation of an OR technical working group to foster collaboration between research institutions and the malaria program; setting up a malaria research database; and creating a research-to-policy forum to share evidence to guide polices and strategies.

### Progress since PMI was launched

NMCP currently collaborates with key regional and international institutions, including Johns Hopkins Bloomberg School of Public Health (USA), Witwatersrand University (South Africa), International Centers for Excellence in Malaria Research (ICEMR), CHAI, and the Bill and Melinda Gates Foundation. Most malaria partner-initiated OR activities in Zimbabwe are aimed at optimizing the coverage, quality and appropriateness of interventions. Some recent OR studies include:

- Monitoring for molecular markers of resistance to chloroquine and pyrimethamine in *P. falciparum*;
- Validating malaria drug sensitivity studies and case management in sentinel sites;
- Assessing association of house spraying with lower levels of drug resistance;
- Monitoring insecticide resistance;
- Evaluating insecticides in laboratory and field settings for future registration; and
- Review of new challenges and prospects for malaria elimination in Zimbabwe.

Results of these studies have helped guide malaria control activities in country. For example, a research study supported by NMCP<sup>2</sup> in Manicaland Province in 2015 found several conditions favoring malaria elimination efforts in Mutare and Mutasa Districts: predominantly endophilic behavior of *An. funestus*; absence of cross resistance between pyrethroids and DDT, carbamates, or organophosphates; and high coverage with malaria control interventions, especially IRS and LLIN. However, challenges included the resurgence of one of the most efficient malaria vectors, *An. funestus*, and incomplete spraying of houses, including roofs/ceiling where mosquitoes prefer to rest. The NMSP 2016-2020 addresses these findings by emphasizing entomological surveillance and improvement in spray operations.

Though not classified as operational research, NMCP has supported monitoring and assessment of drug

---

<sup>2</sup> Shadreck Sande, Moses Zimba, Peter Chinwada, Hieronymo Takundwa Masendu, Joseph Mberikunashe and Aramu Makuwaza: A review of new challenges and prospects for malaria elimination in Mutare and Mutasa Districts, Zimbabwe: *Malaria Journal* 2016 15:360

efficacy in uncomplicated cases of *P. falciparum* in sentinel sites. NMCP's therapeutic efficacy studies confirmed that the first-line anti-malarial medication (artemether lumefantrine) remains efficacious for uncomplicated malaria, with 97.5% adequate clinical and parasitological response, in aggregate. For a more thorough description on therapeutic efficacy studies, please refer to the case management section.

#### Progress during the past 12-18 months

Epidemiological assessment supported by CHAI and BMGF in 2015 indicated that there were 889 malaria cases across all 7 districts in Matabeleland South Province, of which 457 cases were classified as local and 410 (89%) were reported in 1 district, Beitbridge. Three districts in the province reported no local cases in 2015.

Though not classified as operational research, PMI is funding an assessment in response to the limited progress in increasing rates of IPTp uptake in Zimbabwe. PMI is currently supporting an assessment of the drivers and barriers to IPTp uptake in Manicaland Province. At the time of writing, the assessment data collection activities are anticipated to conclude in July 2017. The assessment will include both quantitative and qualitative aspects, including review of ANC records, interviews with mothers receiving post-natal care, and focus group discussions with key stakeholders, including beneficiaries, community members, health care providers and programmatic decision-makers. For a more complete description, see the Malaria in Pregnancy Section.

NMCP is considering initiating a formative assessment in Mbire District, which has the second highest malaria transmission rates in Zimbabwe. Malaria incidence in Mbire has increased from 100/1000 population in 2012 to 251/1000 population in 2016, despite improving coverage of interventions during this period. Observational and anecdotal evidence suggests that the impact of IRS is reduced by the community's outdoor activities and use of temporary shelters while guarding fields from wild animals. Based upon the assessment findings, the PMI team may continue to consider design of an operational research activity to pursue the Mbire District high transmission issues. In addition, GF savings may be considered to fund this activity.

#### Plans and justification

PMI will work with NMCP and partners to develop a research agenda aligned with the revised NMSP for 2016-2020. In addition, CHAI and BMGF in 2017 are planning to conduct the following OR activities in Matabeleland South Province:

- Testing new tools for mapping and modelling to inform malaria elimination efforts in the short term;
- Assessing new strategies for improving passive surveillance, including using routine surveillance data and data collected via mobile phones to better target interventions; and
- Testing novel strategies to detect reactive infections and identify asymptomatic infections.

#### Proposed activities with FY 2018 funding: (\$0)

No OR activities are proposed with FY 2018 PMI funds.

## 8. Pre-elimination

### NMCP objectives

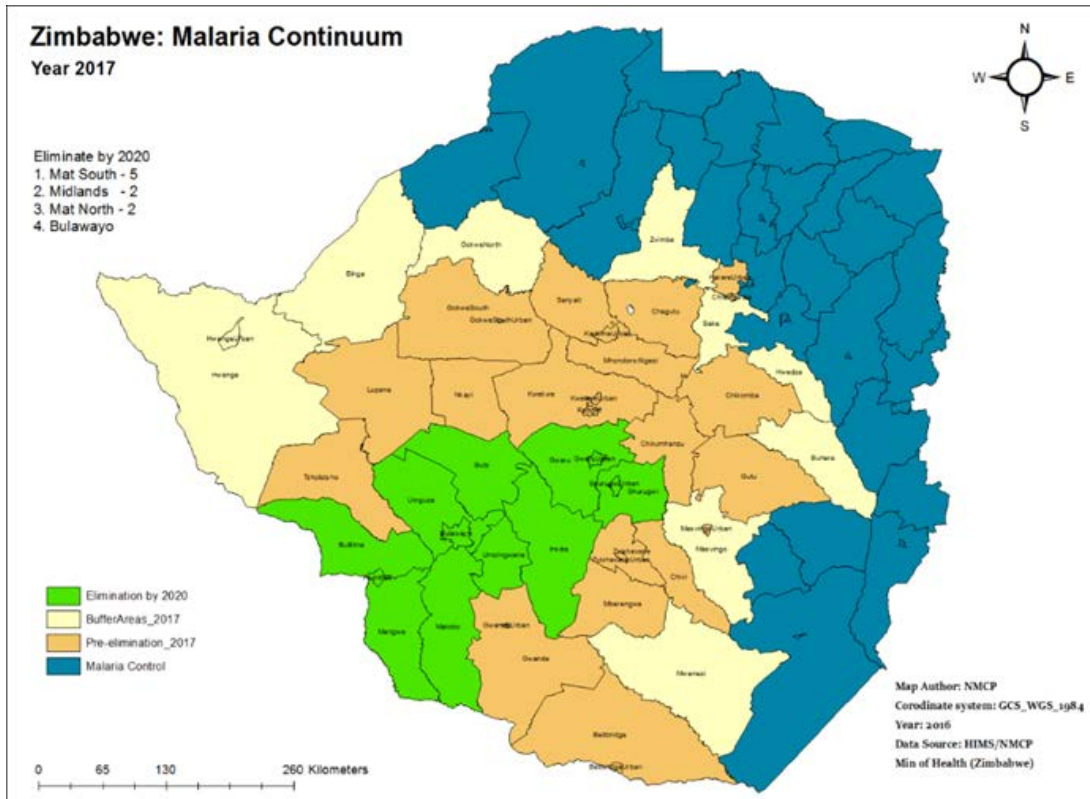
Given the broad range of malaria transmission levels in Zimbabwe and the progress already made in reducing transmission, both overall and in specific high-burden districts, the NMCP is making a deliberate effort to build capacity for pre-elimination activities. This effort is currently focused in selected low-burden districts. However, the secondary intent is to lay the groundwork for expansion of an effective, well-vetted package of pre-elimination interventions to other districts as they achieve better malaria control. The lessons learned in these early experiences will be applied during future pre-elimination efforts. Historically, PMI has only provided direct support for control activities in Zimbabwe. However, in recognition of the gains made in the control areas to date, the shifting epidemiology of malaria, and the NMCP's objectives for pre-elimination, PMI will gradually begin to expand its support for pre-elimination activities.

### Progress since PMI was launched

Malaria pre-elimination activities were launched in 7 districts in Matabeleland South in 2012, and, as seen in Figure 12 below, expanded to 13 more districts by 2015, including 5 in Matabeleland North, 6 in Midlands, 1 in Mashonaland West, and 1 in Bulawayo City Metropolitan area.

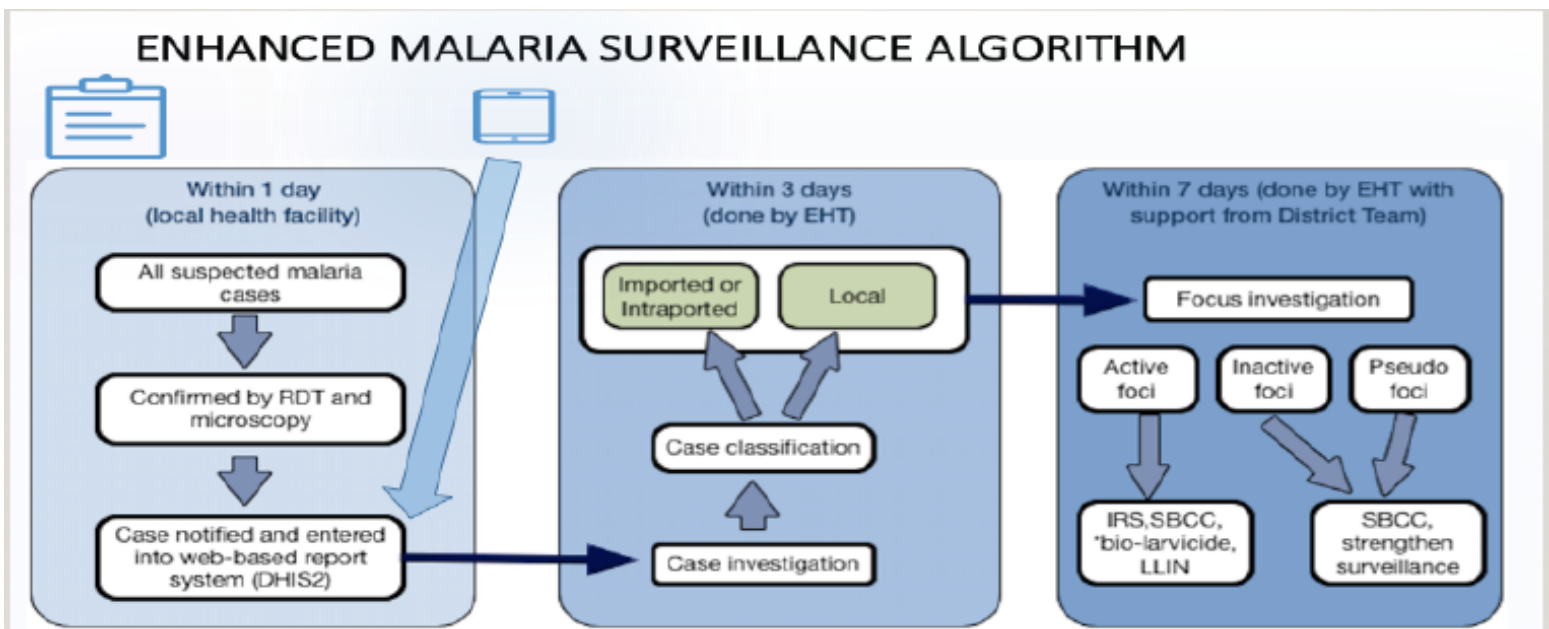
**Figure 12: Zimbabwe Malaria Pre-elimination Areas in 2015 (top) and 2017 (bottom)**





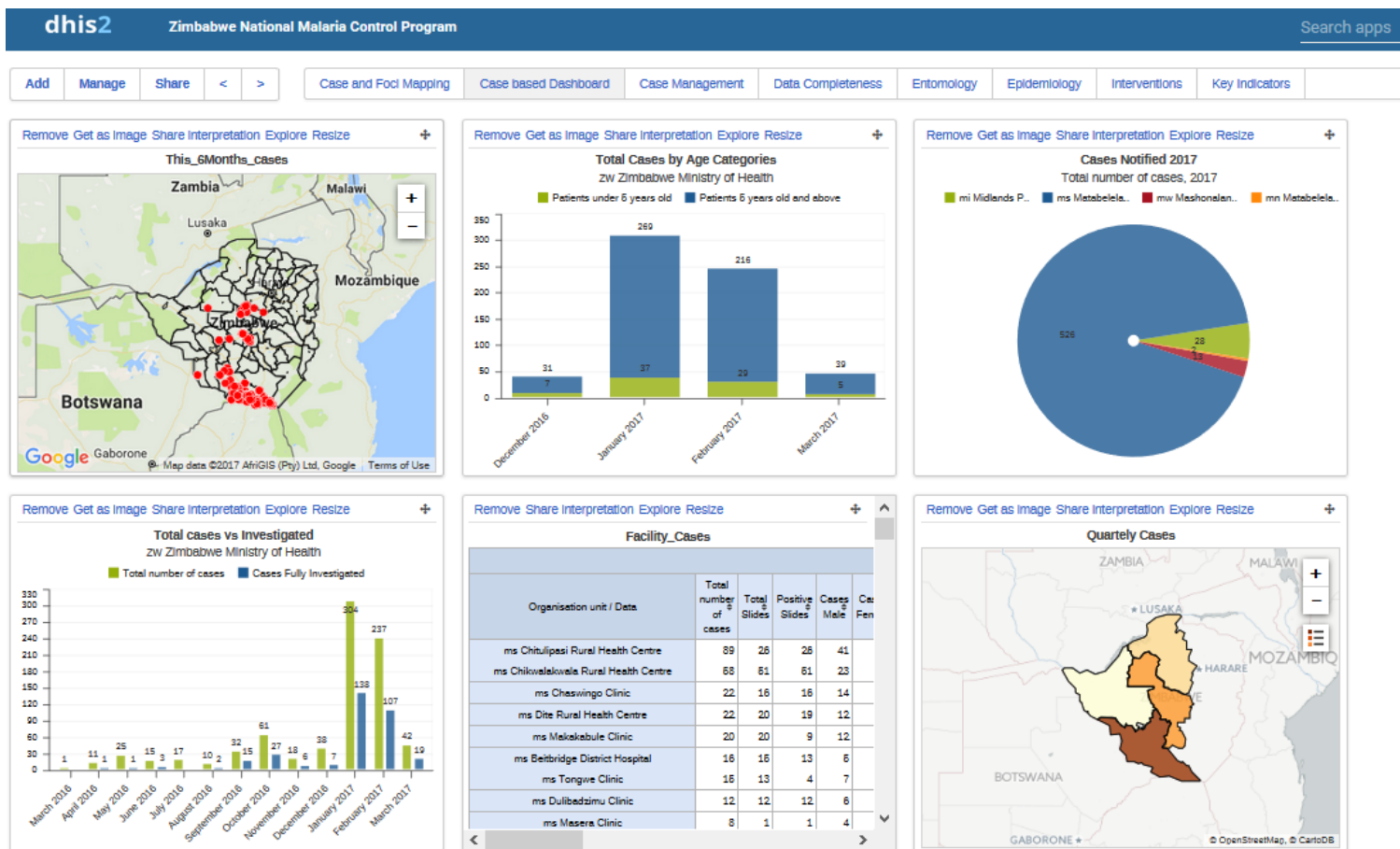
In the revised National Malaria Strategic Plan 2016-2020, at least 9 of these districts have been identified for elimination of local transmission by 2020, as seen in the 2017 map in Figure 12. The selection of these districts was guided by the malaria stratification map completed in 2016 and the annual parasite index. For the seven districts in Matabeleland South, case-based surveillance and low-dose primaquine is added to malaria treatment. The revised surveillance and case management protocols were rolled out in the districts in 2015 along with an enhanced three-way malaria information system, including a case-based information system, case classification, and foci investigation. Figure 13 depicts these processes.

**Figure 13: Enhanced Malaria Surveillance Algorithm Used in Zimbabwe Pre-Elimination Areas**



The case-based surveillance system runs on the DHIS2 Tracker, which is used to capture patient data, including number of visits, services received, and adherence to treatment. The dashboard is presented in Figure 14 below (the data presented is for illustrative purposes only). Pre-elimination districts in Matabeleland South have increased the proportion of malaria cases investigated from 82% in 2014 to 99% in 2016. Malaria diagnosis in these seven districts is done using both RDT and microscopy.

**Figure 14: Zimbabwe DHIS2 Tracker Dashboard**



With support from the Clinton Foundation, Bill and Melinda Gates Foundation and the Global Fund, NMCP has developed and implemented a customized DHIS2 Tracker application and completed user training in Matabeleland South Province. This support has also enabled NMCP to:

- Improve and manage surveillance at provincial level;
- Assess CHW integration in malaria activities in elimination districts, focusing on surveillance;
- Pilot approaches to integrating CHWs into rapid reporting of case-based surveillance data and advocate for CHW policy alignment at central level based on pilot findings;
- Provide technical and financial support for customization of DHIS2 dashboard for malaria elimination based on NMCP needs and regional best practices;
- Train staff on dashboard use & refine dashboards based on user feedback;
- Develop national guidelines & SOPs for foci investigation and response;



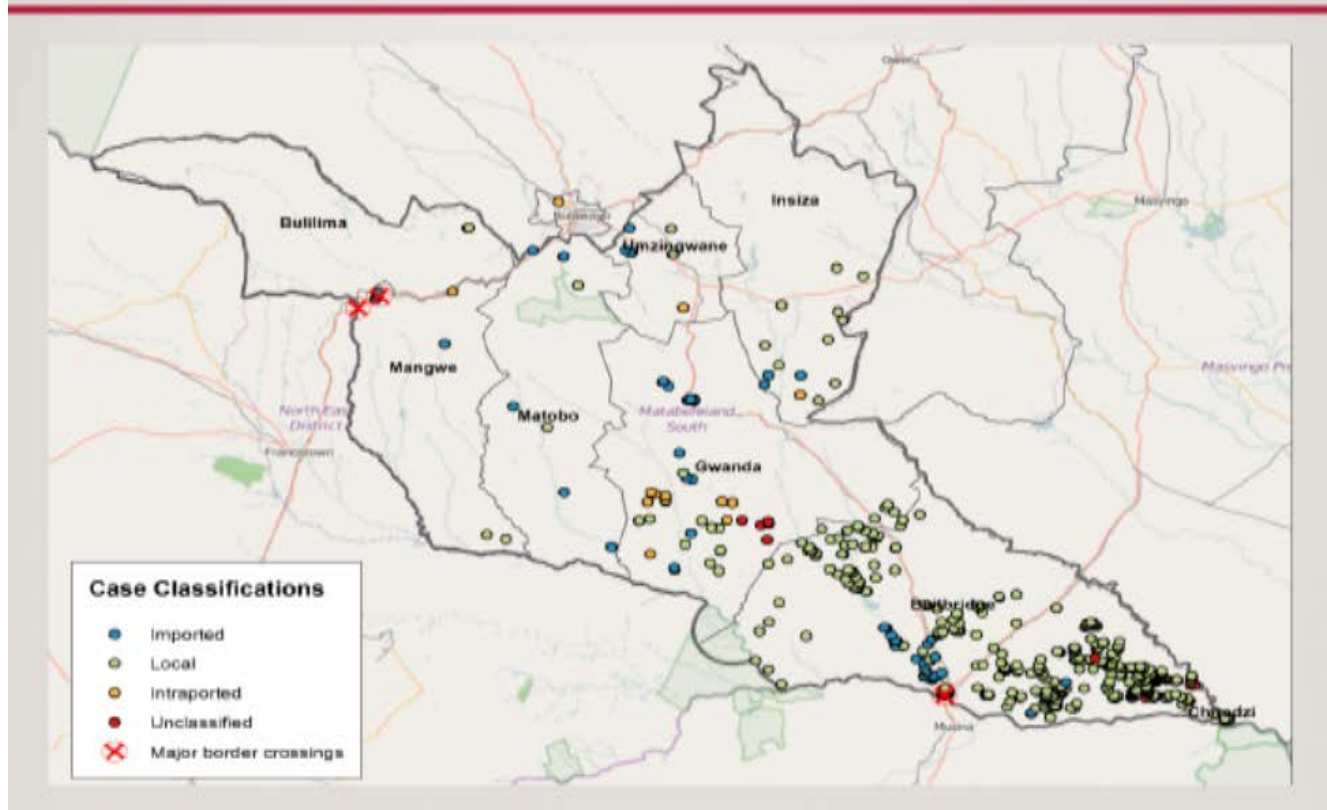
- Train staff on use of guidelines & SOPs; and
- Support provincial meetings for review and analysis of data for foci identification, classification and response.

Progress includes training of 231 health workers and 530 WHT members in enhanced surveillance. This training was intended to increase the capacity of health teams at community level to conduct malaria surveillance activities. A snapshot of the data entered into the new electronic malaria surveillance system between September and December 2014 showed that 65% (199) of the 295 cases confirmed and investigated were classified; 74% (148) of the cases classified were locally acquired cases; 24% (48) were imported cases; and 1.5% (3) were intraported cases. These data show that local malaria transmission is still prevalent in the Province and there is need for intensified surveillance and vector control activities.

Of the 7 districts in Matabeleland South Province, 6 (Bulilima, Gwanda, Matobo, Umzingwane, Mangwe, and Insiza) have an API of < 1/1,000 population. However, Beitbridge has an API > 1/1,000 population and is responsible for about 80% of cases in the province annually. In Beitbridge, 2,481 malaria cases were reported and 1,952 cases were fully investigated in 2015; these accounted for 88% (2,172) of all the confirmed malaria cases in the Province. Beitbridge district borders South Africa and a considerable number of cases seen in the health facilities are people on transit from their resident districts and provinces who receive treatment and become “lost to follow-up” and cannot be investigated. In addition, Beitbridge district borders Mwenezi and Chiredzi districts in Masvingo Province; people residing in the border areas often opt to be treated at Chitulipasi and Chikwarakwara, health facilities located in Beitbridge district. These cases are therefore not investigated because they are from a neighboring province.

The investigation of these cases is believed to be costly; but NMCP is working to estimate a range of the possible costs. However, the issue of investigation of cases identified with neighboring-province origins may be discussed further with NMCP and pre-elimination areas. There may be feasible, innovative approaches, such as notifying the province where the infection was likely acquired and asking whether those provincial or district authorities would do the investigation. This may be possible unless the neighboring province or district is not yet doing case investigations because the malaria burden is too high. In that situation, cases should be counted as an imported case and treated appropriately.

**Figure 15: Spatial Distribution of Malaria in Matabeleland South Province in Zimbabwe in 2015**



Progress during the last 12-18 months

Under the Global Fund, Matabeleland South Province and the national malaria program carried out pre-elimination activities. Table 25 below summarizes some of the key activities in the province.

**Table 25: Zimbabwe Pre-Elimination Activities in 7 districts in Matabeleland South in 2016**

Technical Area	Description of Activity
<b>Prevention</b>	<p>In 2016, pre-elimination districts conducted IRS in two districts and ITNs were distributed to sustain low transmission in the area as funding would allow. However, the major 2016 funding gap (two districts) will be included in the July-August 2017 distribution.</p> <p>Targeted ITN distribution is conducted at households and surrounding foci of verified malaria cases to supplement coverage of IRS/ITNs. NMCP is considering universal vector control coverage in pre-elimination areas.*</p>
<b>Case management</b>	<p>All suspected malaria cases in pre-elimination areas should be followed up with microscopy. **</p> <p>After a positive malaria case finding with RDT in a pre-elimination area, the diagnosis is verified with microscopy. If verified, the patient receives treatment with ACT as well as primaquine. The verified case is part of the active investigation in process and is documented in DHIS2. Further RDT screening is also done at the household level of the verified case.</p>
<b>SBCC</b>	<p>SBCC was conducted across the communities to encourage participation in community activities. There was continuous advocacy within the communities to all leaders and influential community members.</p>
<b>SM&amp;E</b>	<p>DHIS2 Tracker was used as a system for reporting in the elimination districts. It is an android-based application customized to the context.</p> <p>Case classification and foci investigation was done within a 1.5 kilometers radius by the EHTs after each case was identified and microscopy performed. Cases were classified as local, intraported or imported.</p> <p>In the event of an outbreak, a Rapid Response Team was convened and interacted with the community and facility to identify hotspots. Community members were tested and treated.</p>
<b>OR</b>	None

\*Note: The NMCP policy for ITN distribution in pre-elimination areas is targeted distribution to identified positive cases and foci. However, there is a concern and discussion about covering districts with ITNs that have discontinued IRS and where the API is <1. NMCP is covering two districts that meet this criteria with ITNs in mid-2017.

\*\* Note: Current NMCP guidance is that all suspected malaria cases in pre-elimination areas should be followed up with microscopy. However, NMCP is considering changing this guidance to microscopy follow-up of only positive mRDTs to limit costs.

## **Key challenges**

- Limited technical capacity of health workers on malaria elimination.
- Limited financial resources to support case-based surveillance system (DHIS2 Tracker) – e.g. fuel, airtime and motorcycle servicing currently causing delays in case investigation.
- Limited funds for SBCC specific to elimination.
- Low acceptance of IRS in Matabeleland South.
- Sub-optimal timeliness of reporting.
- Limited entomology surveillance capacity and entomological data to inform intervention selection and/or foci response
- Limited capture of drivers of transmission during foci investigations, leading to weak response.
- Poor involvement of community in pre-elimination activities, including case investigation by CHBW and breeding site identification.
- Lack of investments to prevent reestablishment of malaria transmission in districts with zero transmission.

## ***Plans and justification***

PMI will focus support on filling commodity gaps and strengthening malaria surveillance systems, including supply chain and logistics management. In an effort to support the pre-elimination activities in Matabeleland South Province, PMI, in collaboration with CHAI, Global Fund, and other stakeholders, will contribute to foci investigation and developing a common roadmap for all partners to strengthen the malaria surveillance system in Matabeleland South Province.

## ***Proposed activities with FY 2018 funding: (\$100,000)***

Provide support for pre-elimination activities through national-level activities described under ITN, Case Management, SBCC, and SM&E as well as support for reactive case detection and foci investigation in Matabeleland South. Reactive case detection and foci investigation may include: SBCC support, entomological training and support of local environmental health technicians, and ITN support for districts discontinuing IRS. (\$100,000)

## **9. Staffing and administration**

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

The PMI interagency professional staff work together to oversee all technical and administrative aspects of PMI, including finalizing details of the project design, implementing malaria prevention and treatment activities, monitoring and evaluation of outcomes and impact, reporting of results, and providing guidance and direction to PMI implementing partners.

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

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

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

Funds allocated for USAID will be used to support in-country PMI staff and in-country mission program development and learning costs. The latter will be to a maximum of 2% of the total PMI/Zimbabwe budget.

*Proposed activities with FY 2018 funding: (\$1,560,000)*

- *USAID in-country staffing and administration:* Support management and administration costs, USAID RA and one Foreign Service National PMI-supported salaries, CDC and USAID RAs' International Cooperative Administrative Support Services costs, and program development and learning costs (\$1,000,000)
- *CDC in-country staffing and administration (\$560,000)*

**Table 1: Budget Breakdown by Mechanism**

**President’s Malaria Initiative – ZIMBABWE  
Planned Malaria Obligations for FY 2018**

<b>Mechanism</b>	<b>Geographic Area</b>	<b>Activity</b>	<b>Budget (\$)</b>	<b>%</b>
TBD-IRS Project	TBD	IRS and Entomological Monitoring	\$4,853,687	36%
ZAPIM	National and 15 Focus Districts	LLIN Distribution, CM/MIP training supervision and mentoring, SBCC, SM&E, and Ad hoc assessments and studies	\$2,740,000	20%
GHSC-PSM	National	Commodities	\$3,997,313	30%
TBD MNCH-FP Bilateral	Manicaland Province	VHW Support	\$300,000	2%
CDC-IAA	National	Technical Assistance	\$609,000	5%
USAID Admin & Ops	National		\$1,000,000	7%
<b>Total</b>			<b>\$13,500,000</b>	<b>100%</b>

**Table 2: Budget Breakdown by Activity**

**President's Malaria Initiative – ZIMBABWE  
Planned Malaria Obligations for FY 2018**

Proposed Activity	Mechanism	Budget		Geographic Area	Description
		Total \$	Commodity \$		
<b>PREVENTIVE ACTIVITIES</b>					
<b>VECTOR MONITORING AND CONTROL</b>					
<b>Entomologic monitoring and insecticide resistance management</b>					
Entomological surveillance and monitoring	TBD - IRS Project	\$300,000		National	Provide support to local institutions for comprehensive entomological surveillance
Laboratory capacity building for entomological surveillance	ZAPIM	\$100,000		National	Support entomological specimen analysis, data dissemination and use
Procurement of entomologic supplies	TBD - IRS Project	\$20,000	\$20,000	National	Procure laboratory supplies necessary for entomological surveillance
TA for entomological surveillance	CDC/IAA	\$29,000		National	Two CDC TDYs to provide support for entomological activities
<b>Subtotal Entomonitoring</b>		<b>\$449,000</b>	<b>\$20,000</b>		

<b>Insecticide-treated Nets</b>					
Procurement of ITNs	GHSC-PSM	\$2,052,200	\$2,052,200	National	Procure 712,569 rectangular ITNs for routine distribution throughout the country
Distribution of ITNs	ZAPIM	\$600,000		National	Distribute and monitor ITNs through the routine system
Conduct ITN durability monitoring	ZAPIM	\$100,000		National	Final year follow-up of ITN durability monitoring for ITNs distributed through school-based distribution campaign, including data analysis, report writing and dissemination
<b>Subtotal ITNs</b>		<b>\$2,752,200</b>	<b>\$2,052,200</b>		
<b>Indoor Residual Spraying</b>					
Support IRS activities	TBD - IRS Project	\$4,533,687	\$2,000,000	TBD	Support IRS activities in selected districts, based on the most recent entomological and epidemiological data
<b>Subtotal IRS</b>		<b>\$4,533,687</b>	<b>\$2,000,000</b>		
<b>SUBTOTAL VECTOR MONITORING AND CONTROL</b>		<b>\$7,734,887</b>	<b>\$4,072,200</b>		
<b>Malaria in Pregnancy</b>					
Procurement of SP	GHSC-PSM	\$104,400	\$104,400	National	Procure 580,000 SP treatments for IPTp. This amount has been programmed to compensate for any gap in SP that will be procured with Global Fund resources



Procurement of clindamycin	GHSC-PSM	\$15,400	\$15,400	National	Procure 3,333 clindamycin courses for treatment of uncomplicated malaria in first trimester pregnant women
<b>Subtotal Malaria in Pregnancy</b>		<b>\$119,800</b>	<b>\$119,800</b>		
<b>SUBTOTAL PREVENTIVE</b>		<b>\$7,854,687</b>	<b>\$4,192,000</b>		
<b>CASE MANAGEMENT</b>					
<b>Diagnosis and Treatment</b>					
Procurement of RDTs	GHSC-PSM	\$400,000	\$400,000	National	Purchase approximately 615,385 POC RDTs for use at health facilities and by VHWs. Commodities are pooled, distributed to all malarious areas and use FEFO principals. Final quantifications will be based upon the findings of the 2017 assessment of case and consumption data and current forecasts based on case data and existing stock surplus.

Procurement of ACTs	GHSC-PSM	\$357,623	\$357,623	National	Purchase approximately 311,000 ACTs for use at health facilities and by VHWs. Commodities are pooled, distributed to all malarious areas and use FEFO principals. Final quantification will be based upon the findings of the 2017 assessment of case and consumption data and current forecast based on case data and existing stock surplus.
Procurement of artesunate suppositories	GHSC-PSM	\$17,690	\$17,690	National	Procure 200 mg and 50 mg suppositories (approximately 16,688 of each) for use in the pre-referral treatment of severe malaria
Procure malaria diagnostic supplies	GHSC-PSM	\$50,000	\$50,000	National	Purchase laboratory supplies and reagents to support microscopy diagnosis of malaria
Case management TDY	CDC/IAA	\$10,000		National	One CDC TDY to support microscopy capacity and quality assurance
Facilitate supportive supervision and training of malaria case management, including MIP, for health facility workers	ZAPIM	\$400,000		National	In ZAPIM supported districts, continue refresher trainings for case management and MIP, provide supportive supervision and mentoring.

Assessment, training and supervision of VHWs	TBD MNCH-FP Bilateral	\$300,000		Manicaland	In Manicaland Province (all 7 districts) support training and supervision on malaria case management and MIP for VHWs at the community level
Assessment, training and supervision of VHWs	ZAPIM	\$400,000		National	In ZAPIM supported districts, conduct training and supervision on malaria case management and MIP for VHWs at the community level
Strengthen malaria diagnostic capacity	ZAPIM	\$100,000		National	Expand laboratory capacity to increase access to quality analysis for malaria diagnosis and building human resource capacity through the development of reference materials
<b>Subtotal Diagnosis and Treatment</b>		<b>\$2,035,313</b>	<b>\$825,313</b>		
<b>Pharmaceutical Management</b>					
Supply chain strengthening	GHSC-PSM	\$900,000		National	Support ZAPS operations to distribute malaria commodities to approximately 1,600 health facilities nationwide, including operational costs, technical assistance, trainings, quantification support and logistics. Improve LMIS reporting and ordering as well as stock management, based on

					results of an LMIS and HMIS assessment
<b>Subtotal Pharmaceutical Management</b>		<b>\$900,000</b>	<b>\$0</b>		
<b>SUBTOTAL CASE MANAGEMENT</b>		<b>\$2,935,313</b>	<b>\$825,313</b>		
<b>HEALTH SYSTEM STRENGTHENING / CAPACITY BUILDING</b>					
<b>SUBTOTAL HSS &amp; CAPACITY BUILDING</b>		<b>\$0</b>	<b>\$0</b>		
<b>SOCIAL AND BEHAVIOR CHANGE COMMUNICATION</b>					
Support malaria SBCC	ZAPIM	\$440,000		National	Support malaria BCC for ITNs, MIP, IRS, and case management, particularly for the VHWs, facility health workers, school and community leaders
<b>SUBTOTAL SBCC</b>		<b>\$440,000</b>	<b>\$0</b>		

<b>SURVEILLANCE, MONITORING, AND EVALUATION</b>					
End-use verification	GHSC-PSM	\$100,000		National	Conduct quarterly surveys to assess availability of malaria commodities in health facilities and warehouses
Epidemic investigation and response	ZAPIM	\$100,000		National	Continued support for rational and effective epidemic detection and response through training, supervision and limited support for response activities
Support & facilitate SM&E activities	ZAPIM	\$300,000		National	Support quarterly district health team meetings and the implementation of the revised SM&E strategic plan. Further focus on data use and interpretation for trend analysis and programmatic decision making.
Quarterly Supervision/QA for SM&E	ZAPIM	\$100,000		National	Support training and supervision at facility level to improve data collection; technical assistance at the district level to conduct supervision and use data for decision making.
Technical assistance trip to support SM&E	CDC/IAA	\$10,000		National	One CDC TDY to support on-going SM&E activities in country.
<b>SUBTOTAL SM&amp;E</b>		<b>\$610,000</b>	<b>\$0</b>		

<b>OPERATIONAL RESEARCH</b>					
<b>SUBTOTAL OR</b>		<b>\$0</b>	<b>\$0</b>		
<b>PRE-ELIMINATION</b>					
Reactive case detection and foci identification	ZAPIM	\$100,000		Pre-elimination districts	Provide support for pre-elimination activities through national-level activities described under ITN, Case Management, SBCC, and SM&E, as well as support for reactive case detection and foci investigation in Matabeleland South
<b>SUBTOTAL PRE-ELIMINATION</b>		<b>\$100,000</b>	<b>\$0</b>		
<b>IN-COUNTRY STAFFING AND ADMINISTRATION</b>					
USAID		\$1,000,000			
CDC		\$560,000			
<b>SUBTOTAL IN-COUNTRY STAFFING</b>		<b>\$1,560,000</b>	<b>\$0</b>		
<b>GRAND TOTAL</b>		<b>\$13,500,000</b>	<b>\$5,017,313</b>		