

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 2017 appropriation. If any further changes are made to this plan it will be reflected in a revised posting.



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PRESIDENT'S MALARIA INITIATIVE

DEMOCRATIC REPUBLIC OF THE CONGO

Malaria Operational Plan FY 2017

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ABBREVIATIONS and ACRONYMS

ACT	Artemisinin-based combination therapy
AL	Artemether-lumefantrine
ANC	Antenatal care
AS/AQ	Artesunate-amodiaquine
CCM	Country coordinating mechanism
CDC	Centers for Disease Control and Prevention
CDR	<i>Centrales de distribution régionales</i> (Regional distribution centers)
CHW	Community health worker
DHIS 2	District Health Information System 2
DDT	Dichloro-diphenyl-trichloroethane
DHS	Demographic and Health Survey
DPS	<i>Division provinciale de la santé</i> (Provincial health division)
DRC	Democratic Republic of Congo
EPI	Expanded program on immunization
EUV	End-use verification survey
FELTP	Field Epidemiology and Laboratory Training Program
FY	Fiscal year
Global Fund	Global Fund to Fight AIDS, Tuberculosis and Malaria
HMIS	Health management information system
HSS	Health systems strengthening
iCCM	Integrated community case management
IPTp	Intermittent preventive treatment for pregnant women
INRB	<i>Institut National de Recherche Bio-Médicale</i>
IRS	Indoor residual spraying
ITN	Insecticide-treated mosquito net
LLIN	Long-lasting insecticide-treated net
M&E	Monitoring and evaluation
MICS	Multi-Indicator Cluster Survey
MIP	Malaria in pregnancy
MOH	Ministry of Health
MOP	Malaria Operational Plan
NGO	Non-governmental organization
NAMS	National archive of malaria slides
NMCP	National Malaria Control Program
NSP	National Strategic Plan
OR	Operational research
OTSS	Outreach Training and Supportive Supervision
PCR	Polymerase chain reaction
PMI	President's Malaria Initiative
PBO	Piperonyl butoxide
RBM MERG	Roll Back Malaria Monitoring and Evaluation Reference Group
RDT	Rapid diagnostic test
RHIS	Routine health information system
SBCC	Social and behavior change communication

SLMTA	Strengthening laboratory management toward accreditation
SM&E	Surveillance, monitoring, and evaluation
SMS	Short message service
SP	Sulfadoxine-pyrimethamine
TFM	Tenke Fungurume Mining Company
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
USG	United States Government
WHO	World Health Organization

I. EXECUTIVE SUMMARY

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 RBM Partnership's second generation global malaria action plan, *Action and Investment to defeat Malaria (AIM) 2016-2030: for a Malaria-Free World* and the World Health Organization's (WHO) updated *Global Technical Strategy: 2016-2030*. Under the PMI Strategy 2015-2020, the U.S. Government's goal is to work with PMI-supported countries and partners to further reduce malaria deaths and substantially decrease malaria morbidity, towards the long-term goal of elimination.

The Democratic Republic of the Congo (DRC) was selected as a PMI focus country in Fiscal Year (FY) 2011.

This FY 2017 Malaria Operational Plan presents a detailed implementation plan for the DRC, 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 the DRC, 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 2017 funding.

The proposed FY 2017 PMI budget for the DRC is \$45 million. PMI will support the following intervention areas with these funds:

Entomologic monitoring and insecticide resistance management:

Entomological monitoring has been conducted in seven sites over the past two years, with the aim of understanding mosquito behavior and insecticide resistance. There was no indication of resistance to pirimiphos-methyl or bendiocarb, but dichloro-diphenyl-trichloroethane (DDT) and permethrin resistance was present in all sites. Deltamethrin resistance was present in two sites. The number of entomological monitoring sites will be increased to 11 with FY 2016 funding to provide better geographic coverage throughout the DRC. National and provincial staff will receive training in field entomology, with a focus on quality assurance.

Insecticide-treated nets (ITNs):

The NMCP promotes a four-pronged strategy for distributing ITNs: through mass campaigns, routine distribution via antenatal care (ANC) and child vaccination clinics, continuous distribution in provinces with hyperendemic transmission via schools and the community, and through private sector sales of full-cost and/or subsidized nets. With FY 2015 funding, PMI procured 2.75 million nets for mass campaigns, of which 1.25 million nets were distributed in Equateur province in 2015 and 1.5 million nets distributed in Sud Ubangi province in 2016. In addition, PMI procured 1.95 million nets that were distributed in 2016 in Mongala and Tshuapa provinces with operational costs covered by the Global Fund. Although logistical difficulties hinder the routine system, PMI distributed 834,418 ITNs through ANC and child vaccination clinics in 181 health zones from October 2015 to September 2016. Using FY 2016 funding, PMI will begin supporting school-based distribution in Lualaba, Lomami, and Tanganyika provinces in 2017. Implementation of ITN durability monitoring began in Mongala and Sud Ubangi provinces.

With FY 2017 funding, PMI will contribute 2.5 million nets for mass distribution campaigns scheduled for 2018 in Sankuru and Lualaba provinces. Support will continue for routine distribution through ANC and vaccination clinics, and for initiating school-based distribution via all primary schools in Kasai Central Province. PMI will also continue to support durability monitoring in Mongala and Sud Ubangi provinces.

Indoor residual spraying (IRS):

At this time PMI does not support IRS in the DRC.

Malaria in pregnancy (MIP):

The most recent Demographic and Health Survey (DHS) showed some evidence of improvement in the coverage of MIP interventions in the DRC. Use of ANC services remained relatively stable between the 2007 and 2013-14 DHS surveys, with 79% and 86% of women having at least two ANC visits, respectively. However, IPTp coverage only improved slightly over that same period, increasing from 5% in 2007 to 14% in 2013 for women receiving at least two doses of SP. Over the same period, use of bed nets among pregnant women increased substantially, from 7% in 2007 to 60% in 2013.

Last year PMI supported the implementation of MIP interventions in 181 health zones in 13 provinces. In the past 18 months, 432,144 ITNs were distributed through routine distribution and 2.17 million treatments of SP were distributed to service delivery points. With FY 2017 funds, PMI will continue to supply ITNs and SP and to support refresher training to ensure that providers are aware of the current guidelines regarding IPTp dosing and timing. Also, given the low coverage of IPTp in the DRC, PMI will support the NMCP's efforts to modify the policy on non-facility-based strategies to reach pregnant women; specifically, through ANC outreach programs carried out by health facility staff and supported by village *relais*.

Case management and pharmaceutical management:

Since October 2015, PMI has supported basic malaria diagnostics training and refresher training for 176 provincial and health zone laboratory technicians and supervisors, as well as 3,318 facility and community health workers (CHWs). PMI has strengthened laboratory systems for detecting malaria at the country level by supporting the development of a national archive of malaria slides (NAMS), procuring microscopes and laboratory supplies, and supporting the parasitology department at the National Institute for Biomedical Research (INRB). Case management training and supervision at facility and community levels continue to be pillars of PMI's support and these activities will continue with FY 2017 funding.

PMI supports supply chain management interventions in the DRC to complement its efforts to improve malaria case management. With FY 2017 funds, PMI will provide technical assistance to improve stock management, support transportation and storage of all pharmaceutical commodities procured for its 178 health zones, and provide training and supervision to improve supply chain management at eight regional warehouses.

Health systems strengthening and capacity building:

PMI has extensively invested in supporting various training activities designed to assist the NMCP achieve its overarching goal of reducing mortality and morbidity due to malaria. In addition to training and supervising health workers at the health facility and community levels, PMI has also supported many malaria-related training activities to build capacity and expertise in critical areas. PMI helped build entomologic capacity by supporting initial and refresher field entomology training and implementation of an entomology monitoring system with the National Institute for Biomedical Research. Since 2013, PMI has helped build epidemiology and surveillance capacity within the Ministry of Health (MOH) and specifically the NMCP by funding two fellows per year in the Field Epidemiology and Laboratory Training Program (FELTP).

PMI will continue its focus on building technical and managerial capacity for malaria prevention and control at all levels of the health system. Support will continue for coordination mechanisms, capacity building and professional development, and NMCP supervision in the provinces. Support to the nine PMI provincial malaria advisors will focus especially on the monitoring and evaluation activities in the newly-created provinces. PMI will continue to build capacity in areas identified by the organizational assessment such as entomology, supply chain management, and monitoring and evaluation.

Social and behavior change communication (SBCC):

Since 2011, PMI has supported SBCC activities in targeted health zones in line with the national strategy to promote use of malaria preventive measures and treatment services. Activities have included community sensitization around routine preventive services for malaria in pregnancy and immunization to deliver IPTp and ITNs, as well as community mobilization via the community health promoters (*relais promotionnels*) to ensure correct and timely use of ITNs and to improve care-seeking behavior.

During the past 12 months, PMI broadcast messages through short message service (SMS) and 48,863 SMS messages were sent on malaria-related issues in local languages to community members with telephones. During this period, 1,093 *relais communautaires* were trained on SBCC and they performed 315,340 home visits reaching 776,077 people. In addition, 700,808 pregnant women were sensitized during ANC visits, while 378,851 people were reached at child vaccination clinics. Using FY 2017

funds, PMI will continue to support the implementation of the national malaria communication strategy in PMI-supported health zones.

Surveillance, monitoring, and evaluation (SM&E):

PMI has supported various monitoring and evaluation activities in the DRC, including the Demographic and Health Survey, development of M&E guidelines, the FELTP, end-use verification (EUV) surveys, and strengthening routine health information systems (RHIS). The evaluation of the impact of malaria control interventions on morbidity and all-cause child mortality got underway in 2016.

Given the important contributions to date, PMI will continue to provide M&E technical assistance to the NMCP at both national and provincial levels. PMI will also support strengthening of the RHIS at national, provincial, and health zone levels, and build capacity to use these data. At the health zone level, support will include training and supportive supervision for monitoring and reporting activities, printing and distribution of standardized registers and data collection forms, as well as technical assistance to support data use at the health zone level.

Operational research (OR):

The PMI/DRC team is working to prioritize operational research gaps and is helping the NMCP and local subject matter experts to conduct well-designed studies that meet the needs of decision-makers. In 2016, PMI/DRC is conducting a study with the NMCP to help inform vector control strategies by determining the degree to which mass distribution of ITNs increases the intensity of pyrethroid resistance. In addition, a PMI core-funded study assessing an appropriate follow-up strategy for non-malaria fevers is being conducted in Katanga Province. This study will provide important information on whether patients with fever, who are RDT-negative and do not have pneumonia or diarrhea, can be managed safely at community level.

II. STRATEGY

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.

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Malaria situation in the DRC

The DRC is the second largest country by area in Africa (after Algeria) and the third most populated in Africa. A national census has not been conducted since 1984, but Ministry of Health estimates put the population at approximately 89,284,658 in 2017 and 91,873,913 in 2018¹, with the majority living in rural areas. The annual population growth rate is 3.2%.² It shares borders with nine countries—Republic of Congo (Brazzaville), Central African Republic, Burundi, South Sudan, Uganda, Rwanda, Tanzania, Zambia, and Angola—the last three of which are also PMI focus countries. The DRC is one of the poorest countries in the world and ranks 176 out of 188 countries in the world on the 2015 Human Development Index; an estimated 63% of the population lives on less than \$1 per day. According to the 2013-14 Demographic and Health Survey (DHS), the under-five mortality rate is 104/1,000 live births, a significant reduction from the previous rate of 158/1,000 (Multiple Indicator Cluster Survey 2010).

An estimated 97% of the population lives in zones with stable malaria transmission lasting 8 to 12 months per year. The highest levels of transmission occur in zones situated in the north and west of the country. The remaining 3% of the population lives in highland or mountainous areas (mostly in North Kivu, South Kivu, and Tanganyika provinces), which are prone to malaria epidemics. As is the case throughout tropical Africa, the greatest burden of malaria morbidity and mortality falls on pregnant women and children under five years of age. Malaria is among the principal causes of morbidity and mortality in the DRC, accounting for 32% of all outpatient visits and for 36% of deaths in 2014.³ Given that the majority of the population lives in high transmission zones, it has been estimated that the DRC accounts for 11% of all cases of malaria in sub-Saharan Africa.

Plasmodium falciparum accounts for approximately 95% of all infections. The 2013-14 DHS supplemental malaria report showed estimates of national malaria prevalence in children 6-59 months ranging from 23% to 34% (22.7% for microscopy, 30.9% for RDTs, and 34.1% for polymerase chain reaction (PCR)). Prevalence based on both microscopy and PCR increased with age and was higher for those living in rural areas. The survey also showed that 6.2% of Congolese children aged 6-59 months had severe anemia that could be associated with malaria (8.0 g/dl or less). The new NMCP strategic plan divides the country into four strata based on parasite prevalence (Figure 1).

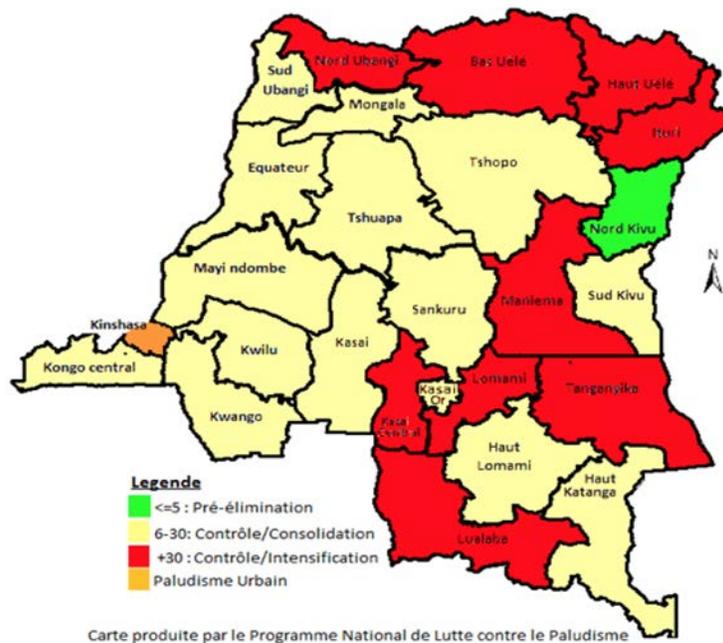
¹ Source: PSN 2016-2020, p 3 Table 1.

² Source: <http://data.un.org/CountryProfile.aspx?crName=democratic%20republic%20of%20the%20congo>

³ Source: PSN 2016-2020, p 9.

Figure 1: Provincial stratification based on malaria parasite prevalence, DRC-DHS II 2013-14

Strata	Parasite prevalence	Main determinant	Provinces	% population
I.	≤5%	Mountain facies, hypo endemic zone	Nord Kivu	8%
II.	6-30%	Equatorial and tropical facies, meso endemic zone	Kwango, Kwilu, Sud Kivu, Mongala, Sud Ubangi, Mai Ndombe, Equateur, Tshuapa, Kongo Central, Tshopo, Haut Katanga, Haut Lomami, Kasai, Kasai Orientale and Sankuru	55%
III.	> 30%	Tropical facies, hyper endemic	Nord Ubangui, Bas Uele, Haut Uele, Ituri, Maniema, Lualaba, Kasai Central, Tanganyika and Lomami	27%
IV.	8.1%	Urban context, with variations from the city center to the periphery	Kinshasa	10%



The primary vectors of malaria in the DRC are *Anopheles gambiae*, *An. coluzzii*, and *An. funestus*. There are several secondary vectors present in different parts of the country including *An. moucheti*, *An. paludis*, and *An. nili*. Resistance to dichloro-diphenyl-trichloroethane (DDT) and permethrin has been found, as well as increasing resistance to deltamethrin. As of yet, little resistance to organophosphates and carbamates has been detected.

Country health system delivery structure and MOH organization

The health system in the DRC has three levels (Figure 2):

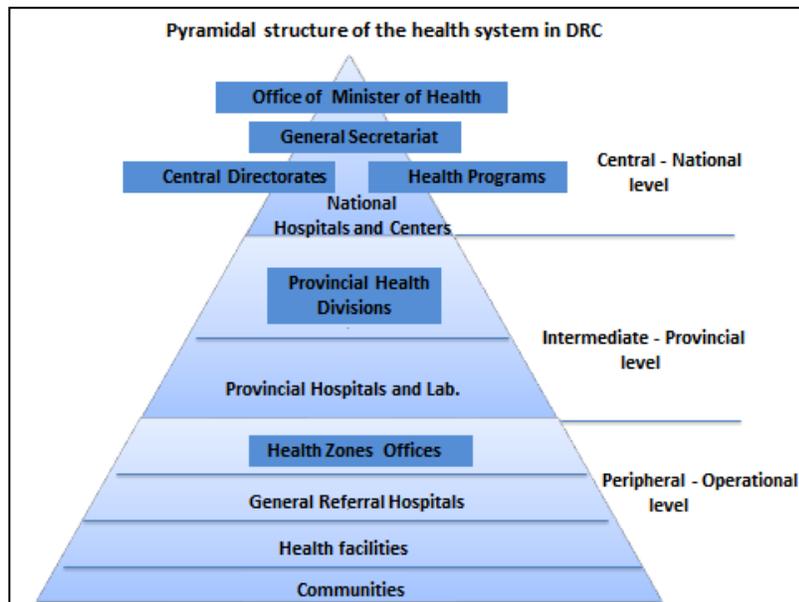
- a central level, which includes the Minister of Health, the Secretary General, Central Directorates, disease-specific programs such as HIV/AIDS, tuberculosis, and malaria, as well as national hospitals and reference centers;
- an intermediate level composed of 26 provincial health divisions (*Division Provinciale de la Santé, DPS*), 26 provincial health inspection offices, provincial level hospitals and laboratories, and regional drug distribution warehouses (*Centrales de Distribution Régionales, CDR*);
- and the peripheral level with 516 health zones comprised of 8,504 health areas, 8,266 of which have a government health center (health facility) where clinical services are provided (approximately 15-20 health centers per health zone).

At the community level there are two types of volunteer/unpaid health workers called “*relais communautaire*”. Community health promoters (*relais communautaire promotionnel*) carry out health promotion and community mobilization activities, while community treatment workers at integrated community case management (iCCM) sites (called *relais des sites de soins communautaires*) provide treatment for diarrhea, fever, and acute respiratory infection, refer malnourished children to health facilities, and distribute a limited package of family planning commodities. Community treatment workers are selected based on a higher level of education and having an established source of remuneration, independent of their health work.

Only 393 of the 516 health zones have a general reference hospital. Faith-based organizations run 34% of these hospitals, which are integrated into the public health system. In most health zones supported by faith-based/non-governmental organizations (FBOs/NGOs), the MOH pays the salaries of government staff, which are extremely low, and provides additional incentives known as *primes*. FBOs and NGOs often provide additional *primes* to health workers as well as providing essential drugs, laboratory equipment, and in-service training.

The National Essential Medicine Supply Program consists of a centralized pharmaceutical procurement system through a nonprofit association (*Fédération des Centrales d’Achat des Médicaments Essentiels, FEDECAME*), combined with a decentralized warehousing and distribution system through 13 CDRs.

Figure 2: Structure of the health system in the Democratic Republic of the Congo



National malaria control strategy

The NMCP dedicated the last several months of 2015 to assessing progress made under the previous strategy (2013-2015) and developing a new one. The new National Malaria Control Strategic Plan covers the period 2016-2020 and guides PMI's support. The new strategy introduced the stratification of health zones based on parasite prevalence as measured by the 2013-14 DHS (see Figure 1 above). This approach allows the NMCP to focus high-impact interventions in the areas that bear the greatest disease burden.

The overall objective of the new strategy is to reduce malaria morbidity and mortality by 40% compared to 2015 levels. Specific objectives to be achieved by 2020:

- protect at least 80% of the at-risk population with preventive measures;
- test at least 80% of fever cases suspected as malaria and treat 100% of confirmed cases;
- strengthen the surveillance, monitoring, and evaluation system;
- assure that at least 75% of the at-risk population knows modes of malaria transmission, prevention, and treatment; and
- strengthen management of the malaria program

The 2016-2020 National Malaria Control Strategic Plan focuses on the following strategies:

- Vector control, including distribution of long-lasting insecticide-treated nets (LLINs) through mass campaigns and routine systems, indoor residual spraying, and promoting environmental clean-up activities;
- Protection of vulnerable groups (pregnant women and children under five years of age) with preventive treatment;
- Diagnostic testing of suspected malaria cases and systematic treatment of confirmed cases according to national guidelines;
- Strengthening epidemiological surveillance, monitoring, and evaluation;

- Behavior change communication; and
- Strengthening management of the malaria program

Updates in the strategy

The main changes in the Strategy section this year result from the revision of the national malaria control strategic plan, including stratification of the country based on parasite prevalence and updated targets (described above). In addition, the geographic coverage of major malaria donors is undergoing changes (described below).

Integration, collaboration, and coordination

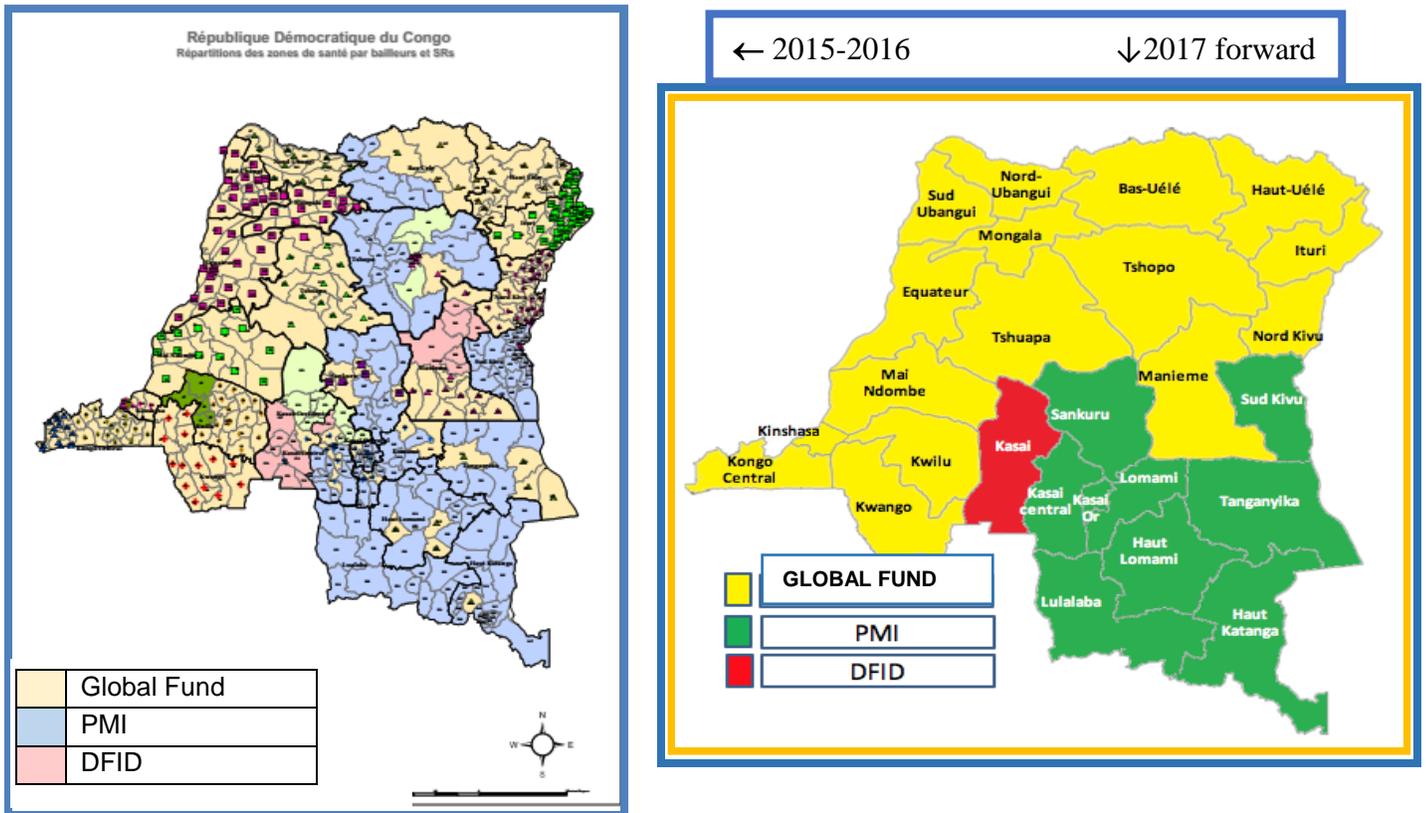
Many donors are contributing to malaria control efforts in the DRC, the largest of which are:

The Global Fund to Fight AIDS, Tuberculosis, and Malaria: The major donor for malaria control activities in the DRC is the Global Fund. In November 2014, the Global Fund approved a \$341.5 million grant for malaria prevention and control activities in the DRC for the 2015-2017 period (including \$36.6 million of incentive funding). Through this grant, the number of health zones covered by the Global Fund increased from 219 to 308. The Global Fund continues to invest in the following main interventions: 1) ITNs for mass campaigns and distribution through routine systems; 2) support for diagnostic testing, case management, and IPTp; 3) public awareness efforts; and 4) strengthening of the national health information system, the pharmaceutical supply chain, and monitoring and evaluation through selected sentinel sites. In addition, the Global Fund and the Department for International Development (DFID) are co-financing a pilot project in Kinshasa to introduce subsidized ACTs in the private sector.

The British Department for International Development (DFID) is funding a 5-year £182 million (~\$275 million) integrated health project in 56 health zones that contains a malaria component. Additionally, a £39.5 million (~\$60 million) malaria project is being implemented from 2013 to 2019. The project includes three components: 1) ITN distribution through mass campaigns and continuous channels (health services, schools, and community-based) in Kasai and Kasai Central provinces, 2) improved availability and accessibility of quality-assured ACTs in the private sector in Kinshasa, and 3) increased capacity of the NMCP to generate and use data through the establishment of ten sentinel surveillance sites and the placement of technical assistants at the NMCP, working in the areas of operational research, information technology, and finance. DFID's objective through this support is to enable the NMCP to more effectively manage data and resources. DFID also received a donation of 1.3 million ITNs from the **Against Malaria Foundation** for its recent mass distribution campaigns.

Figure 3 displays the geographic coverage for the three major malaria donors – the Global Fund, PMI, and DFID. During the past year, PMI has worked closely with the NMCP and these partners on a “rationalization” process to better focus the efforts of each donor in concentrated geographic areas and eliminate overlap within provinces. The result will transform the malaria donor map from the figure on the left to the figure on the right. The transition of some zones is already underway and the process is expected to be completed by January 2017.

Figure 3: Changes in Malaria Donors Map



For PMI, rationalization means leaving health zones in the northern part of the country (Bas-Uélé and Tshopo) and in Kinshasa to concentrate efforts in the Kasais, Katanga, and Eastern Congo provinces. This brings PMI’s interventions into line with USAID/DRC’s Country Development Cooperation Strategy, which focuses on these same geographic areas. The number of health zones supported will decrease slightly from 181 in 2016 to 178 in 2017, but the population covered will increase from approximately 29.8 million to 33.4 million due to moving into more urban areas.

The World Bank: The World Bank does not currently fund any malaria-specific projects in the DRC, but it has two health programs that impact malaria. The *Health System Strengthening for Better Maternal and Child Health Results Project* (2015-2019, \$229 million) supports performance-based financing in 140 health zones as well as at provincial and central levels. This project is implemented in 16 health zones that PMI also covers. Quality antenatal care and malaria case management for children are among indicators that serve as the basis for bonus payments, as well as the availability of tracer drugs including ACTs and SP. The *Human Development Systems Strengthening Project* (2015-2020, \$55 million) includes activities to strengthen the health management information system, the pharmaceutical regulatory system, and the public supply chain management system.

The **Korean International Cooperation Agency (KOICA)** has funded malaria activities in Bandundu Province since 2009 but its current project will end in 2017. Other donors such as **UNICEF**, the **Swedish International Development Agency**, and the **Canadian International Development Agency** support broader maternal and child health programs that include malaria. **WHO** also provides technical

assistance and has been implementing the Rapid Access Expansion Program (RAcE) project in Tanganyika Province to scale up integrated community case management.

Doctors without Borders (*Médecins sans Frontières*, MSF) implements both routine and emergency health interventions in the DRC. Routine programs focus on community case management and health facility services. In 2015, they treated 806,620 malaria cases and in 2016 they responded to a malaria outbreak in Haut-Uélé Province.

The **government of the DRC** has since 2006 provided approximately \$2 million annually to the NMCP for staffing costs, infrastructure, and some commodities. It also is implementing an \$80 million phase 1 “*Projet d’Equipement des Structures Sanitaires*” to build and equip reference hospitals and health centers in targeted, underserved areas. In addition, the government of the DRC has recently contributed \$1,500,000 in cost share funds to the Global Fund.

Tenke Fungurume Mining Company (TFM) is a major malaria control partner in the Fungurume health zone of Lualaba Province. The company has conducted yearly rounds of IRS in 12 of 18 health areas since 2008. It also distributes ITNs and supports community care sites. TFM has a significant M&E component, including entomological monitoring and semi-annual school-based malaria prevalence surveys. Their efforts achieved a 60% reduction in malaria incidence in their workforce and a 62% reduction of malaria prevalence in school age children in the areas covered by their program.

USG Health Sector Funding: The USAID Health Office manages programs in malaria, HIV/AIDS, maternal and child health, family planning and reproductive health, water, sanitation and hygiene, nutrition, and tuberculosis, with an FY 2016 budget of \$136 million. The PMI program is an essential part of the USAID Health Office, and leverages the different USAID funding streams to support the DRC’s health system in a holistic manner. Key areas of collaboration within the Health Office include supply chain, monitoring and evaluation, and integrated community case management.

The DRC has various coordination mechanisms for the health sector:

- The **Steering Committee for the Coordination of the National Health Development Plan** (*Comité National de Pilotage*) is the highest level coordination mechanism established by the MOH to oversee the implementation of the five-year National Health Development Plan (2016-2020).
- The **Health Donors Group** (*Group Inter Bailleurs Santé*) meets monthly to coordinate activities and monitor implementation of the National Health Development Plan. Several sub-groups address specific topics such as supply chain management, human resources, service delivery, and governance. The USG is represented on all of the groups and works to improve harmonization and promote strategic approaches.
- The **Global Fund Country Coordinating Mechanism (CCM)** meets regularly with health sector stakeholders to keep abreast of progress with grant implementation and to provide administrative and financial oversight of the principal recipients. The CCM is undergoing restructuring and will merge into the MOH Steering Committee as a Commission. Until September 2016, USAID co-chaired the CCM as the first vice-president; after this time USAID remains active on the CCM, and continues to provide technical assistance through a Global Fund Liaison. The PMI staff and the USAID Global Fund Liaison have participated in developing and reviewing country proposal submissions.
- The **Malaria Technical Working Group – Task Force:** This open forum is chaired by the Disease Control Directorate and meets quarterly for coordination and technical discussions at the national level; meetings are also held at the provincial level where donor support is available.

Meetings also include representatives of civil society and, more recently, the private sector. A Task Force meeting was held during the development of the PMI FY 2017 Malaria Operational Plan (MOP) and the NMCP presented the proposed interventions.

PMI goals, 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.⁴

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

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

To track progress toward achieving and sustaining scale of proven interventions (area of strategic focus #1), 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 of age 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 of age with fever in the last two weeks for whom advice or treatment was sought
- Proportion of children under five years of age with fever in the last two weeks who had a finger or heel stick
- Proportion receiving an ACT among children under five years of age 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

⁴ http://whqlibdoc.who.int/publications/2007/9789241596084_eng.pdf

Progress on coverage/impact indicators to date

The 2013-14 DHS provides the most up-to-date information on the status of malaria prevention and control interventions in the DRC. Progress to date and the NMCP targets for the 2016-2020 Strategic Plan are summarized in Table 1 below.

The 2013-14 DHS report showed that the DRC is making significant progress, with very promising trends in malaria indicators and all-cause child mortality compared to the 2010 Multiple Indicator Cluster Survey (MICS). From 2010 to 2013, improvements include: 1) the increase in the use of ITNs by children under five years of age, from 38% to 56%; 2) the increase of ITN use by pregnant women, from 43% to 60%; 3) the increase of households owning at least one ITN, from 51% to 70%; and 4) decrease in the all-cause child mortality rate from 158/1,000 live births to 104/1,000 live births. Further gains in ITN access and usage, as well as uptake of IPTp, are still a priority. Treatment-seeking for febrile children less than five years of age was 55% in the 2013 DHS, with testing and treatment with an ACT at only 19% each—a key case management and SBCC challenge for the DRC to address.

Table 1: Evolution of Key Malaria Indicators in the DRC from 2007 to 2014

Indicator	2007 DHS	2010 MICS	2013-14 DHS	NMCP 2020 Targets
% Households with at least one ITN	9%	51%	70%	>80%
% Households with at least one ITN for every two people	N/A	N/A	25%	N/A
% Children under five who slept under an ITN the previous night	6%	38%	56%	>80%
% Pregnant women who slept under an ITN the previous night	7%	43%	60%	>80%
% Households in targeted districts protected by IRS	N/A	N/A	N/A	N/A
% Children under five years old with fever in the last two weeks for whom advice or treatment was sought	N/A	N/A	55%	N/A
% Children under five with fever in the last two weeks who had a finger or heel stick	N/A	17%	19%	>80%
% Children receiving an ACT among children under five years old with fever in the last two weeks who received any antimalarial drugs*	N/A	N/A	N/A	>80%
% Women who received two or more doses of IPTp during their last pregnancy in the last two years	5%	21%	14%	>60%

*This specific indicator was added subsequent to the DRC's national surveys.

Other relevant evidence on progress

No other major surveillance activity has been conducted since the DHS, but the malaria impact evaluation began during 2016 and a MICS is planned for early 2017.

III. OPERATIONAL PLAN

1. Vector monitoring and control

NMCP/PMI objectives

Under the NMCP Strategic Plan 2016-2020, the DRC seeks to achieve high ownership and use of ITNs among the general population, by ensuring that at least 80% of persons at risk of malaria sleep under an ITN. The NMCP promotes a four-pronged strategy for distributing ITNs: 1) distribution of free ITNs through large-scale integrated or stand-alone campaigns; 2) routine distribution of free nets to pregnant women during ANC clinics, and to children less than one year of age at Expanded Program on Immunization (EPI) clinics; 3) continuous distribution in provinces with hyperendemic transmission via schools and the community; and 4) private sector sales of full-cost and/or subsidized nets.

The campaign strategy for achieving universal coverage—quantified as one ITN per 1.8 persons, in accordance with WHO guidelines—is to distribute nets via a voucher system as follows: 1) one net to a household of one to two persons, two nets to a family of three to five persons, three to that of six to eight, and four to a household of greater than nine; and 2) one net per bed or sleeping space through mass campaigns for hospitals and boarding schools. In the absence of information on ITN durability, the NMCP recommends replacing nets every three years.

To sustain ITN coverage post-campaign, the national strategy includes distribution through routine ANC and EPI clinics. Each pregnant woman should receive an ITN during her first ANC visit, and each child under one year of age should receive an ITN after completing the vaccination series (generally at nine months with measles vaccination).

The NMCP's national strategy lists IRS as a key vector control method that can be progressively implemented in areas with high levels of malaria (parasite prevalence of 31-55%) or in Kinshasa, where parasite prevalence is approximately 8%. While IRS is limited, entomological monitoring is important to better understand the distribution of malaria vectors in the DRC and their behavior. This monitoring was previously only conducted at specific time points during the year, but monthly monitoring has now begun in two sites: Lodja, which began monthly monitoring in 2015, the year of a mass ITN distribution campaign, and Kapolowe, which had a campaign in August 2016. Similarly, an operational research project in Kinshasa Province has begun to monitor the effect of a bednet distribution campaign on insecticide resistance intensity. Susceptibility to insecticides (especially pyrethroids) is monitored in all entomological collection sites supported by PMI (seven sites in 2016).

a. Entomological monitoring and insecticide resistance management

Progress since PMI was launched

In 2012, PMI supported the training of 24 entomologists, including personnel from the central and provincial levels, in mosquito identification, collection techniques, and insecticide susceptibility testing as well as an overview of vector control methods. A second training was carried out in June 2013 with 12 participants.

Entomological monitoring began in four sites (Kabondo, Kapolowe, Lodja, and Tshikaji) in 2013, and three additional sites (Fungurume, Kingasani, and Mikalayi) were added in 2014.

Progress during the last 12-18 months

Over the past year, the number of entomological monitoring sites was maintained at seven, but some of the site locations were changed. The current sites are: Kabondo (Tshopo), Kalemie (Tanganyika), Kapolowe (Lualaba), Katana (Sud Kivu), Kingasani (Kinshasa), Lodja (Sankuru), and Mikalayi (Kasai Central). Sites were visited three times during the year and human landing catches and pyrethrum spray catches were conducted at each visit. *Anopheles gambiae s.l.* was the most commonly collected malaria vector in all sites, with the exception of Lodja, where *An. paludis* was the most commonly collected, although its role in malaria transmission is not well understood (see below). Molecular work for the specification of *An. gambiae* is underway. The current results show an overwhelming majority of hybrid (*An. coluzzii/ An. gambiae*), which seems very unlikely. The PCR work is being repeated and training on PCR is being implemented in 2016 and planned for 2017 to allow more timely reporting of molecular results. For 2015, two sites were changed at the request of the NMCP, in order to match the entomological monitoring sites with the sentinel sites supported by the Global Fund. Kalemie (Tanganyika) and Katana (Sud Kivu) were added. The Tshikaji and Fungurume sites were dropped, although entomologists at Tenke Fungurume Mining continue to monitor insecticide susceptibility using their own resources.

Insecticide susceptibility tests were conducted to evaluate the susceptibility of *An. gambiae s.l.* to DDT, permethrin, deltamethrin, bendiocarb, and pirimiphos-methyl. As shown below, there was no indication of resistance to pirimiphos-methyl or bendiocarb, but DDT and permethrin resistance was present in all sites (Table 2). Deltamethrin resistance was present in two sites (Kingasani and Kabondo).

To date, resistance data has not been taken into account when procuring ITNs, but the strong permethrin resistance may justify the preference for alpha-cypermethrin and deltamethrin-treated netting. The response of wild permethrin-resistant mosquitoes to permethrin-treated nets is a topic that may be investigated in the coming year (work plan under development). Insecticide choice will also be discussed with the NMCP.

Table 2: Corrected mortality (and number tested) of *An. gambiae s.l.* in WHO tube bioassays, 2015

Site	Province	Pirimiphos-methyl (0.1%)	Bendiocarb (1%)	Deltamethrin (0.05%)	Permethrin (0.75%)	DDT 4%
Kabondo	Tshopo	100 (100)	100 (100)	85 (100)	52 (100)	37 (100)
Kalemie	Tanganyika	100 (100)	100 (100)	100 (100)	55 (100)	33 (100)
Kapolowe	Haut Katanga	100 (80)	100 (80)	100 (80)	53 (80)	37 (80)
Katana	Sud Kivu	100 (100)	100 (100)	98 (100)	92 (100)	n/a
Kingasani	Kinshasa	100 (80)	100 (80)	97 (80)	91 (80)	8 (80)
Lodja	Sankuru	100 (100)	100 (100)	100 (100)	68 (100)	8 (100)
Mikalayi	Kasai-Central	100 (100)	100 (100)	100 (100)	30 (100)	15 (100)

In 2015, synergist bioassays were conducted to see if the permethrin resistance noted in the entomological monitoring sites is mediated by oxidases. Mosquitoes were tested in WHO susceptibility tests with permethrin and these results were compared with mosquitoes that had been exposed to piperonyl butoxide (PBO) for one hour prior to the tests. The results of these tests are shown in Table 3, which indicates that in some sites oxidases play a major role in resistance to permethrin, such as in Mikalayi, while in others, such as in Kalemie, oxidases play a much less important role.

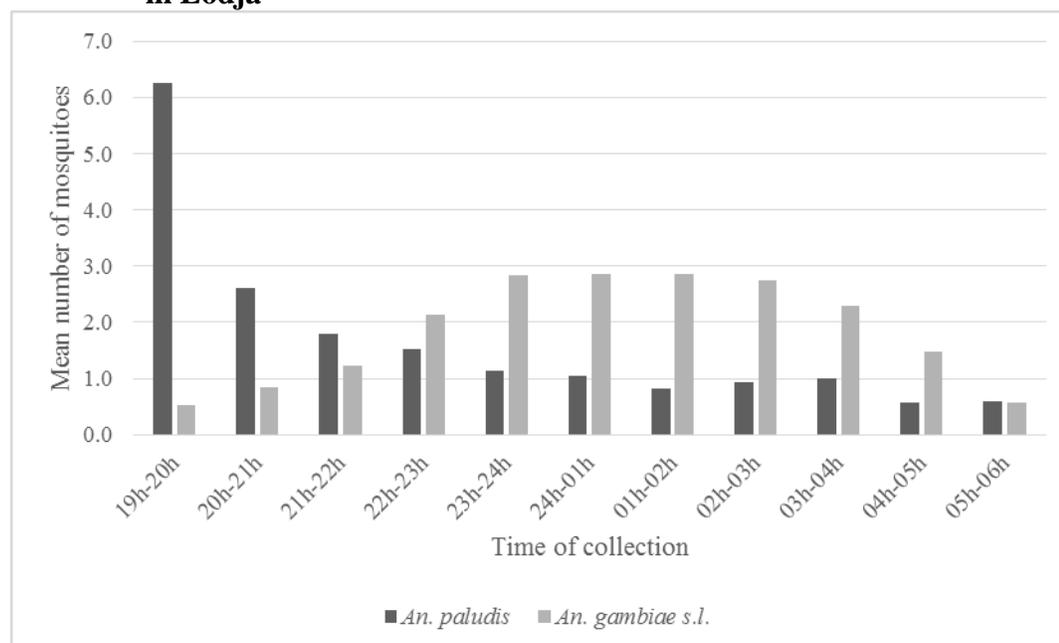
Table 3: Twenty-four hour mortality after WHO susceptibility tests exposing *An. gambiae* s.l. to permethrin, with and without pre-exposure to PBO, 2015

Site	Mortality (%)*	
	Permethrin (0.75%)	Permethrin (0.75%) +PBO
Kabondo	62	86
Kalemie	94	96
Kapolowe	53	100
Katana	99	100
Kingasani	92	99
Lodja	79	100
Mikalayi	30	100

*In all tests, 100 mosquitoes were used

As high numbers of *An. paludis* were collected in Lodja in 2014, and as this species had previously been reported to be a vector in the DRC, a year-long monitoring project was conducted in 2015 in Lodja. Mosquitoes were collected in human landing catches and pyrethrum spray catches each month over the course of the year. The high numbers of mosquitoes collected and the early outdoor biting warranted the concern (Figure 4). However, when sporozoite enzyme-linked immunosorbent assays were conducted to determine the proportion of infective mosquitoes, none of the more than 1,400 mosquitoes tested, were positive. Further work is ongoing as preliminary molecular results indicate that the *An. paludis* collected in Lodja may in fact consist of more than one species, which could explain why infective *An. paludis* were found in previous studies.

Figure 4: Mean number of *An. paludis* and *An. gambiae* s.l. collected in human landing collections in Lodja



An evaluation of the Suna trap was conducted in early 2016 to determine whether this trap could replace human landing collections or light traps for collection of mosquitoes. Data are still being compiled and cleaned, but it appears that the Suna trap collected similar numbers to light traps, but considerably less than a human landing catch.

Entomological training has been a priority in order to assure the quality of entomological monitoring in the DRC. In 2016, two supervisors of PMI entomological monitoring activities attended a one-week training in Dakar, Senegal, organized by PMI. Additionally, two field supervisors from the entomological collection sites (Lodja and Kapolowe) and one member of the NMCP attended a three-month training on field and laboratory techniques at the *Centre de Recherche Entomologique de Cotonou* in Benin.

Plans and justification

The number of entomological monitoring sites will be increased to 11 in the coming year and these sites will be maintained using FY 2017 funds. The addition of these sites will provide expanded coverage of the country, and monitoring in some sites will be increased to better study seasonal factors, secondary malaria vectors, and insecticide resistance. Molecular analysis of samples will allow identification of species and resistance mechanisms. Based on capacity, some of the 11 sites will conduct every activity while some may only conduct susceptibility testing. It is expected that increased collaboration with local institutions and increased capacity due to training of sentinel site staff in 2016 (Kapolowe/Lodja) will ease the supervisory burden on the INRB. In addition, PMI will support training in field entomology for national and provincial staff, with a special emphasis on quality assurance, and expand longitudinal data collection, similar to the approach in Kapolowe and Lodja.

Proposed activities with FY 2017 funding: (\$679,000)

- Continue support for entomological monitoring and insecticide resistance assessments at 11 entomological monitoring sites. (\$550,000)
- Support training in field entomology for national and provincial staff, with a special emphasis on quality assurance. (\$100,000)
- Provide two technical assistance visits from CDC/Atlanta for training, planning, and monitoring entomological activities. (\$29,000)

b. Insecticide-treated nets

Progress since PMI was launched

The 2013-14 DHS showed that 70% of households reported owning at least one ITN, a substantial increase from 9% and 51%, as reported by the 2007 DHS and 2010 MICS, respectively. In addition, 56% of children under five years of age and 60% of pregnant women slept under an ITN the night before the survey, dramatic increases from 6% and 7% reported in 2007, respectively. Ownership of at least one ITN facilitates net use by children under five years of age; in households with an ITN, 76% of children under five years of age slept under a net the previous night, compared to 56% in all households. While indicators improved, a quarter of children under five years of age in households that possessed an ITN did not sleep under one the night prior to the survey. Furthermore, less than half of the population had access to an ITN—i.e., only 47% of persons present in households could have slept under an ITN, if two persons at most used each ITN. These data illustrate the need to increase net ownership to protect all household occupants, and to reinforce communication strategies to ensure that nets are used consistently.

Progress during the last 12-18 months

Mass distribution of free ITNs through campaigns: The NMCP completed its first cycle of universal coverage campaigns between 2008 and 2013, and is now completing replacement campaigns in 4 of 11 old provinces through 2017. PMI procured 2.75 million nets, of which 1.25 million were distributed in Equateur Province in 2015 and 1.5 million distributed in Sud Ubangi Province in 2016. In addition, PMI procured 1.95 million nets that were distributed in 2016 in Mongala and Tshuapa provinces, with the Global Fund supporting operational costs. Note that donors contribute to mass campaigns following a national campaign schedule and available funding, rather than limiting contributions to the provinces they support for routine activities.

Continuous distribution of free ITNs: Based on the results of a PMI-supported qualitative evaluation of continuous distribution strategies in 2014, PMI and partners have supported the scale-up of routine ITN distribution. PMI distributed 834,418 ITNs through ANC and child vaccination clinics in 181 health zones from October 2015 to September 2016. While the approach is implemented in all PMI-supported zones, stockouts of ITNs and other issues have prevented the program from reaching higher coverage.

Since June 2015, DFID has funded a school-based distribution pilot project in two health zones of Kasai Province and 10 health zones of Kasai Central Province, targeting 120,000 children in 1,000 schools. An evaluation scheduled in September 2016 will measure programmatic and cost effectiveness of this channel. The NMCP has requested that PMI begin supporting school-based distribution in 2017. PMI will build on the lessons from the DFID experience to pilot school-based distribution in Lomami, Lualaba, and Tanganyika provinces with FY 2016 reprogrammed funds. These provinces were selected based on hyperendemic malaria transmission, and have moderately high primary school attendance (66% - 77%). This pilot would include an evaluation component to assess the process and outcomes of the school-based distribution, including ownership and use of nets. The NMCP will also use the evaluation results to inform decisions about further scale up.

ITN durability monitoring: The 2014 study of routine ITN distribution channels referenced above used existing data in the former Bas Congo and Katanga provinces to calculate net coverage rates. Although formal durability studies were not conducted, qualitative data indicated a mean time of use of nets at 1.5 years, due to damage from fires and tears. As a result, the need for routine distribution would increase if mass campaigns were performed every three years. To build on these data, PMI initiated the DRC's first national program to monitor net durability linked to the mass distributions in Mongala and Sud Ubangi provinces. The NMCP and PMI decided to monitor two brands of ITNs distributed in two different provinces that have the same environmental context. These criteria were met by neighboring provinces Mongala (Dawa Plus 2.0®) and Sud Ubangi (Duranet®), which both had their mass campaigns in July/August 2016. The first round of monitoring will begin in January 2017. Nets will be monitored for durability and bioefficacy over the three years of their expected lifespan according to the following schedule: 6 months, 12 months, 24 months, and 36 months.

Table 4: ITN Gap Analysis (National)

Calendar Year	2016	2017	2018
Total population	86,696,970	89,284,658	91,873,913
Total population targeted for mass campaigns	23,223,208	27,907,275	54,654,890
Continuous Distribution Needs			
Channel #1: ANC	3,051,733	3,142,820	3,233,962
Channel #2: EPI	1,936,464	1,994,262	2,052,096
Channel #3: School-based distribution	54,322	970,000	0
Total need continuous distribution	5,042,519	6,107,082	5,286,057
Mass Distribution Needs			
Total need mass campaigns	12,901,782	15,504,042	30,363,828
Total Calculated Need	17,944,301	21,611,124	35,649,885
Partner Contributions			
ITNs carried over from previous years	5,745,308	5,388,336	21,787,607
ITNs from Global Fund	14,034,969	14,018,825	TBD
ITNs from DFID	195,696	221,137	0
ITNs from Against Malaria Foundation	0	15,000,000	0
ITNs planned with PMI funding	3,356,664	8,770,434	4,400,000
Total ITNs Available	23,332,637	43,398,731	26,187,607
Total ITNs Surplus (Gap)	5,388,336	21,787,607	(9,462,278)

Gap analysis table assumptions (applicable to national needs and PMI zones)

- Population from 2016-2020 National Health Development Plan
- ANC needs: Pregnant women = 4% of total population, 88% of pregnant women complete at least one ANC visit (2013-14 DHS)
- EPI needs: Children eligible for EPI = 3.5% of the total population, measles vaccine coverage = 64% (2013-14 DHS)
- School-based distribution: PMI will begin school-based distribution in Lomami, Lualaba, and Tanganyika provinces in 2017 with FY 2016 funds; the 2018 need for PMI is 376,162 ITNs for Kasai Central as Lualaba and Tanganyika will be covered by a mass campaign the same year. The 2018 ITNs for school distributions are planned with FY 2016 reprogrammed funds but the distribution costs will be supported with FY 2017 funding.
- Mass campaign needs are calculated based on the population divided by 1.8. The schedule of ITN mass campaigns is:
 - 2016: Lualaba, Tanganyika, Haut Lomami, Haut Katanga, Mongala, Tshuapa, Kinshasa and Sud Ubangi. PMI is covering Sud Ubangi.
 - 2017: Bas Uélé, Haut Uélé, Ituri, Kongo Central, Kasai, Kasai Central, Maniema, and Tshopo. PMI will cover Bas Uélé, Kasai, and Kasai Central.
 - 2018: Equateur, Haut Katanga, Haut Lomami, Kasai Oriental, Kwilu, Kwango, Lomami, Lualaba, Mai-Ndombe, Nord Kivu, Sud Kivu, Sankuru, and Tanganyika. PMI will cover Lualaba and Sankuru. PMI will

contribute 2,420,851 nets with FY 2017 funds. Additional nets are planned with FY 2016 reprogramming to complement the PMI campaign needs for 2018.

- The current Global Fund grant ends in December 2017. Funding for campaigns in 2018 is unknown at this time.
- The donation from the Against Malaria Foundation is uncertain as a partner to fund operational costs has not yet been identified.

Table 5: ITN Gap Analysis (PMI zones)

Calendar Year	2016	2017	2018
PMI-targeted population for routine distribution	29,816,286	33,429,006	34,398,447
PMI-targeted population for mass campaigns	2,954,077	10,578,712	4,440,618
PMI-targeted population for school distribution	0	970,000	436,348
Continuous Distribution Needs			
Channel #1: ANC	1,049,533	1,176,701	1,210,825
Channel #2: EPI	665,977	746,670	768,324
Channel #3: School-based distribution	0	970,000	0
Total need continuous distribution	1,715,510	2,893,371	1,979,149
Mass Distribution Needs			
Total need mass campaigns	1,641,154	5,877,062	2,467,010
Total Calculated Need	3,356,664	8,770,433	4,446,159
Partner Contributions			
ITNs carried over from previous years	2,035,553	0	0
ITNs planned with PMI funding	3,356,664	8,770,433	4,400,000
Total ITNs Available	3,356,664	8,770,433	4,400,000
Total ITNs Surplus (Gap)	0	0	(46,159)

Plans and justification

With the Global Fund and other donors, PMI will continue to assist the NMCP to achieve and maintain universal coverage of ITNs through mass campaigns and continuous distribution channels. PMI will use FY 2015 and FY 2016 funding to support mass distributions in three provinces in 2017 (Bas Uélé, Kasai, and Kasai Central). At this time no gaps have been identified for 2017 campaigns. PMI has also set aside FY 2016 funding to pre-finance procurement of a portion of the ITNs to be distributed in 2018. With FY 2017 funding, PMI plans to contribute 2.5 million nets for mass distribution campaigns in Lualaba and Sankuru provinces. As mentioned above, PMI and other donors support mass campaigns that follow a national campaign schedule, and donors provide support based on the schedule and available funds, not limiting their resources to the provinces where they support routine activities.

PMI will continue to support routine distribution of free nets through ANC and EPI clinics in all health zones in the nine provinces it supports. If the results of the 2017 pilot are positive, PMI will continue support for school-based distribution and target all primary schools in Kasai Central Province. Finally, PMI will continue to support durability monitoring in Mongala and Sud Ubangi provinces.

Proposed activities with FY 2017 funding: (\$22,327,760)

- Procure 2.5 million ITNs to contribute to the universal coverage replacement campaign in two provinces (Lualaba and Sankuru). The funding includes the cost of the nets as well as the transportation of the nets from the manufacturer to Kinshasa. (\$7,500,000)
- Support the operational cost of distributing 2.5 million ITNs for the universal coverage replacement campaign in Lualaba and Sankuru provinces. The funding includes planning at all levels of the health system, household registration, transportation, training, supervision, and social mobilization/communications. (\$5,000,000)
- Procure and deliver 1.9 million ITNs from port to regional warehouses for free distribution through routine antenatal clinics and EPI clinics in 178 health zones of nine provinces. (\$5,909,000)
- Support the operational costs for 1.9 million ITNs for free distribution through routine services in the 178 target health zones. The funding includes transportation from regional warehouses to distribution points in target health zones, storage, and supervision. (\$2,850,000)
- Support the storage costs for routine ITNs at regional warehouses (\$437,760)
- Procure 380,000 ITNs for school-based distribution in Kasai Central Province. (FY 2016 funds)
- Support the operational costs for 380,000 ITNs for free distribution through schools in target health zones in Kasai Central Province. The funding includes transportation from Kinshasa to distribution points in selected primary schools, storage, training, communications, and supervision. (\$456,000)
- Continue to support ITN durability monitoring in two provinces. (\$175,000)

c. Indoor residual spraying

Very little IRS is currently being implemented in the DRC. Tenke Fungurume Mining company conducts IRS as part of its malaria control program targeting approximately 36,000 houses in 9 health areas in the Fungurume Health Zone in Lualaba Province. PMI has no plan to support IRS activities at this time due to the high cost of the intervention and the scale that would be required to have an impact in a country as large as the DRC.

2. Malaria in pregnancy

NMCP/PMI objectives

The national strategy for prevention and treatment of malaria in pregnancy in the DRC follows the three WHO recommended components: prevention with an ITN; IPTp; and prompt, effective treatment of malaria cases among pregnant women. In 2003, the MOH adopted IPTp with sulfadoxine-pyrimethamine (SP) for prevention of malaria in pregnant women and their newborns. National guidelines for IPTp were revised in 2013 and now reflect the WHO recommendations for treatment at every ANC visit after the first trimester. The Ministry of Health has updated its training materials and the new recommendations are being rolled out nationally.

The NMCP, in its new National Malaria Control Strategic Plan (2016-2020), has identified the following objectives that correspond to the three prongs of the prevention and treatment of malaria in pregnancy program:

- At least 90% of pregnant women receive an ITN during their first ANC visit

- At least 80% of pregnant women sleep under an ITN
- At least 60% of pregnant women receive IPTp2 and 30% receive IPTp3 according to national guidelines
- At least 80% of fever cases suspected as malaria tested and 100% of confirmed cases treated according to national standards

In 2013, the DRC also revised its guidelines for the treatment of malaria, including for pregnant women. The revised guidelines specify the use of quinine in the first trimester, and the first-line ACT in the second and third trimesters. However, the guidelines permit the use of quinine in any trimester when ACTs are not readily available. Furthermore, pregnant women should receive one combined ferrous sulphate (150 mg) plus folic acid (0.4 mg) a day throughout pregnancy.

Progress since PMI was launched

The most recent DHS showed some evidence of improvement in the coverage of MIP interventions in the DRC. Use of ANC services remained relatively stable between the 2007 and 2013-14 DHS surveys, with 79% and 86% of women having at least two ANC visits respectively. However, IPTp coverage still remains low and only improved slightly over that same time period, increasing from 5% in 2007 to 14% in 2013 for women receiving at least two doses of SP at an ANC facility (against a target of 60%). Over the same period of time, use of bed nets among pregnant women increased substantially, from 7% in 2007 to 60% in 2013. The 2013-14 DHS reported that among households possessing an ITN, 83% of pregnant women reported sleeping under a net. Currently no data are available about adherence to treatment protocols for pregnant women with malaria.

Since the launch of PMI in the DRC in FY 2011, MIP interventions have increased considerably from 68 to 181 health zones in FY 2016, although this will change to 178 health zones in 2017 following rationalization (see Strategy section). PMI activities have ensured the availability of both ITNs for routine distribution and SP in antenatal clinics, training health providers in PMI-supported health zones on MIP interventions aligned with international standards, and SBCC activities to improve knowledge among beneficiaries on the importance of sleeping under an ITN and proper antenatal care during pregnancy. PMI has also provided technical support to the NMCP and the National Reproductive Health Program to revise, update, and coordinate guidelines for IPTp based on international guidelines. However, the MIP program in the DRC has been hampered by many of the same supply chain weaknesses that affect delivery of ACTs and RDTs, in particular, widespread stockouts of SP and difficulties in the distribution of ITNs through routine channels.

Progress during the last 12-18 months

PMI supported the implementation of MIP interventions in 181 health zones in 13 provinces. In the past 18 months, 432,144 ITNs were distributed through routine distribution and 2.17 million treatments of SP were distributed to service delivery points. Between 64% and 73% of women in PMI-supported health zones received at least two doses of SP during their most recent pregnancy in the past 18 months while about 15-40% received three doses. These data are substantially higher than the national estimate of 14% as reported by the 2013-14 DHS, but are in line with the most recent national average of 63%, as estimated by service statistics. Due to greater availability of ITNs in country, the distribution of routine ITNs has been on target in PMI-supported health zones, a substantial improvement compared to the previous year. To ensure continued progress in this critical intervention area, 1,735 health professionals were trained in MIP prevention. In addition, efforts to improve case management and treatment across

all populations remain a priority and are supported by PMI. Details pertaining to this are covered in the case management section.

Table 6. Status of IPTp policy in DRC

WHO policy updated to reflect 2012 guidance	2013
Status of training on updated IPTp policy	In progress
Number of health care workers trained on new policy in the last year	1,735
Are the revised guidelines available at the facility level?	Yes
ANC registers updated to capture three doses of IPTp-SP?	Yes
HMIS/ DHIS updated to capture three doses of IPTp-SP?	Yes

Commodity Gap Analysis

Each donor procures SP to cover the population of pregnant women in the health zones that it supports. For 2016-2018, the estimated number of pregnant women in PMI zones is approximately 850,000 to 920,000, resulting in a need of 2.6 million to 2.9 million SP treatments. While PMI planned to procure 3 million SP treatments for 2016, the stock situation is such that no orders will be received during the year and none are planned for 2017 (5.8 million treatments were received in 2015).

Table 7: SP Gap Analysis (National)

Calendar Year	2016	2017	2018
SP Needs (National)			
Total population	86,696,970	89,284,658	91,873,913
Total number of pregnant women attending ANC	2,328,681	2,398,186	2,467,733
Total SP Need (in treatments) - national	6,986,042	7,194,558	7,403,200
Partner Contributions			
SP carried over from previous year	7,328,655	4,129,198	617,114
SP from Government	0	0	0
SP from Global Fund	3,486,585	3,342,135	TBD
SP from Other Donors (DFID)	300,000	340,339	367,720
SP planned with PMI funding	0	0	3,000,000
Total SP Available	11,115,240	7,811,672	3,984,834
Total SP Surplus (Gap)	4,129,198	617,114	(3,418,366)

Gap analysis table assumptions (applicable to national needs and PMI zones)

- Population from 2016-2020 National Health Development Plan
- Pregnant women = 4% of total population; 79% of pregnant women attend ANC visits 2-4; 85% coverage for IPTp; three doses of SP during pregnancy
- The current Global Fund grant ends in December 2017. Funding for commodities in 2018 is unknown at this time.

Table 8: SP Gap Analysis (PMI zones)

Calendar Year	2016	2017	2018
SP Needs (PMI Zones)			
PMI-targeted population	29,816,286	33,429,006	34,398,447
Total number of pregnant women attending ANC	800,865	897,903	923,942
Total SP Need (in treatments) - PMI zones	2,402,596	2,693,709	2,771,827
Partner Contributions			
SP carried over from previous year	2,899,667	497,070	803,361
SP planned with PMI funding	0	3,000,000	3,000,000
Total SP Available	2,899,667	3,497,070	3,803,361
Total SP Surplus (Gap)	497,070	803,361	1,031,534

Plan and justification

Within the 178 health zones covered by PMI following the rationalization exercise, PMI will be providing MIP services to 37% of pregnant women in the DRC.

To improve the uptake of MIP interventions in health facilities, PMI will continue to supply ITNs and SP at routine ANC services and to support refresher training to ensure providers are aware of the current guidelines regarding IPTp dosing and timing. Although a nationwide training program was carried out upon adoption of the new guidelines, there are indications that they are not being followed by all providers. Also, given the low coverage of IPTp in the DRC, PMI will support the NMCP's efforts to modify the policy on non-facility-based strategies to reach pregnant women; specifically through ANC outreach programs carried out by health facility staff supported by community health workers (CHWs).

PMI will procure 3 million treatments of SP to ensure an adequate supply to the estimated 923,942 pregnant women attending ANC clinics in the 178 PMI-supported health zones. PMI will also work on strengthening the supply chain to avoid the stockouts of SP that have hindered this program in the past. Details regarding improvements to the supply chain are covered in the pharmaceutical management section. In addition, PMI will support the procurement and distribution of water filters and cups to allow health workers to directly observe adherence to IPTp.

PMI will procure 1.2 million ITNs for distribution through routine ANC services in PMI intervention areas. PMI will also procure RDTs and ACTs (quantified under the case management section) to ensure that pregnant women have access to appropriate diagnostic and treatment services.

SBCC activities with both health facility staff and CHWs will include counseling strategies on the use of ITNs during pregnancy, the importance of early attendance at ANC and obtaining SP at each visit after quickening, as well as correct diagnosis and treatment of malaria in pregnant women (costs covered in the SBCC section).

Proposed activities with FY 2017 funding: (\$971,600)

- Procure 3 million SP treatments (9 million SP tablets) to meet the needs of 923,942 pregnant women in the 178 PMI-targeted health zones (\$360,000)

- Support the distribution costs for SP, as well as ANC registers, cups, and water filters, from the regional warehouses to health zones (\$180,000)
- Support storage costs for SP at regional warehouses (\$21,600)
- Procure cups and water filters to facilitate directly observed IPTp (\$10,000)
- Support refresher training and supervision to approximately 900 health workers in PMI-supported health zones to implement all three elements of the MIP program: ITN, IPTp, and case management for pregnant women. (\$400,000)
- Procure 1.2 million ITNs for distribution through routine ANC services to ensure that pregnant women are protected by ITNs. (costs included in ITN section)
- Procure RDTs and ACTs for diagnosis and treatment of malaria in pregnant women. (costs included in the case management section)

3. Case Management

a. Diagnosis and Treatment

NMCP/PMI objectives

The DRC National Malaria Control Strategic Plan states that, by the end of 2020, 80% of fever cases should be tested for malaria, and 100% of those who test positive should receive appropriate treatment as per the national guidelines. The national malaria case management guidelines follow WHO guidelines and standards, and the country supports two first-line ACT treatments for uncomplicated malaria - artesunate-amodiaquine (AS/AQ) and artemether-lumefantrine (AL). In case of non-availability of, or intolerance to, one ACT, the patient is treated with the other. In case of confirmed treatment failure by microscopy to both first-line ACT treatments, the patient should be given dual therapy of quinine plus clindamycin. For infants two to six months of age, the recommended treatment is AS/AQ. For pregnant women, the guidelines specify the use of quinine in the first trimester, and the first-line ACT in the second and third trimesters. However, the use of quinine for any trimester when ACTs are not readily available is permitted. All severe cases of malaria should be treated with injectable artesunate or injectable quinine, and severe malaria cases at the community and peripheral health facility level should receive pre-referral treatment with rectal artesunate.

According to the national malaria policy, all febrile patients should be tested for malaria by either microscopy or RDT. All levels of the health system are to use RDTs, with microscopy used in hospitals and reference health centers to monitor severe malaria patients and in case of treatment failure. Guidelines dictate that each provincial hospital (26 in total), and each general reference hospital (one in each of the 516 health zones) have a functioning microscopy laboratory. Currently all 26 provincial hospitals have a functioning microscopy laboratory, but only 393 of the 516 health zones have general reference hospitals. All of those have functioning microscopes. The 123 remaining health zones often have a faith-based hospital or a private health facility that serves as the reference hospital for the zone.

Progress since PMI was launched

PMI has provided technical assistance for malaria diagnosis directly to national and provincial public health officers, as well as to the *Institut National de Recherche Bio-Médicale* (INRB). In PMI-supported health zones, training in RDT use has been integrated into training modules on malaria in pregnancy and malaria case management, while training in microscopy is focused on laboratory staff.

Under the leadership of the MOH and with the support of USAID, the DRC began implementing integrated community case management (iCCM) of uncomplicated malaria, pneumonia, diarrhea, and malnutrition in limited areas in December 2005. In 2010, the NMCP approved community level case management with RDTs and ACTs with implementation beginning in 2012. Currently, there are 10,111 sites targeted for iCCM in the DRC, but only 5,455 have trained CHWs. At present, all 1,461 PMI-supported iCCM sites have CHWs that have been trained and regularly use RDTs and ACTs. In each iCCM site, the MOH guidance is for two CHWs to be trained annually in malaria, pneumonia, and diarrhea diagnosis and treatment. These annual trainings should include performing and interpreting malaria RDTs.

Progress during the last 12-18 months

Since October 2015, PMI has supported basic malaria diagnostics training and refresher trainings for 176 provincial and health zone laboratory technicians and supervisors in 44 health zones, as well as for 3,318 facility and CHWs. PMI has strengthened laboratory systems at the country level for detecting malaria by supporting the development of a national archive of malaria slides (NAMS), procuring microscopes and laboratory supplies, and supporting the parasitology department at the INRB through the accreditation process called strengthening laboratory management toward accreditation (SLMTA). The project also supported external SLMTA training for the director of the Katanga provincial reference laboratory. Provided slides are being used for training of laboratory technicians, outreach training and supportive supervision (OTSS), and quality assurance.

PMI is about to start the post-implementation phase of the rectal artesunate pilot (the third and last phase of the pilot), which consists of a survey to determine the population's perceptions and degree of satisfaction with the strategy of pre-referral rectal artesunate administration (including CHWs). The survey will also assess the capacity of CHWs to correctly identify danger signs of malaria and administer rectal artesunate as a pre-referral treatment and the adherence of caregivers to the referral.

PMI support ensured that health zones and health facilities received quarterly supervisory visits from provincial authorities and from health zone management teams. PMI provided support to the MOH to conduct 126 supervisory visits at the health zone level, 987 supervisory visits at the facility level, and 1,532 visits at the community level. Stock managers also participate in these visits to help maintain adequate stocks of commodities.

During 2015, just over 12 million malaria cases were diagnosed nationally, including 10,878,974 uncomplicated cases and 1,307,665 severe cases (NMCP 2015 Annual Report). Of those, 9.7 million patients received ACTs. More than 9.6 million RDTs and 15.5 million ACTs were distributed by PMI in the health zones it supports, and a total of 1,129 health workers were trained in the management of uncomplicated malaria with artemisinin-based combination therapy.

The NMCP has begun preparations to carry out a therapeutic efficacy survey in 2016/2017. Unfortunately, the process has been stalled due to issues with contracting an implementer. The Global Fund is providing the majority of resources and PMI will contribute using FY 2016 reprogrammed funds.

Commodity gap analysis

The limited availability of quality health system data makes quantification of commodity needs very challenging. Different methods used by partners result in very different forecasts, and these also differ

significantly from case rates reported by the NMCP. For example, the national quantification exercise recently completed by the NMCP and its partners was based on hypotheses about expected malaria morbidity and use of health services, and also incorporated expected decreases in consumption due to increased intervention coverage. PMI's implementing partners, however, used consumption data collected directly from a selection of health zones, which was then extrapolated to the PMI-supported population. A third source of data to consider is the NMCP's 2015 Annual Report, which presents the actual number of cases tested and treated for the year.

Table 9 below shows the figures that resulted from these different exercises. National estimates for ACT and RDT needs in 2017 are approximately three times higher than actual use for 2015. This difference cannot be explained by population growth and is contrary to the hypothesis that the number of cases will decrease due to the effectiveness of interventions. For PMI zones, the difference between the quantification exercise based on hypotheses and partner estimates based on past consumption is approximately 150% for RDTs and 47% for ACTs.

These figures corroborate the situation that the country has been dealing with in recent years - on numerous occasions PMI and the Global Fund have needed to shift commodities among regional warehouses in order to avoid having them expire, an indication of excess stocks.

Table 9: Estimates resulting from different quantification methods, contrasted with actual cases

	RDTs	ACTs
National quantification exercise for 2017 – national needs ⁵	40,545,957	26,588,961
NMCP 2015 annual report - national	13,574,891 (fever cases tested)	9,700,155 (malaria cases treated)
National quantification exercise for 2017 – PMI zones	15,180,783	9,955,154
Implementing partner estimate for 2017 – PMI zones	5,979,907	6,785,798

PMI also recognizes that there are numerous challenges with malaria case management in the country, and in particular a high rate of presumptive diagnosis and treatment (as indicated by the higher figure for ACTs than for RDTs in the implementing partner estimate above). PMI has begun taking steps to make sure that presumptive / clinical cases are recorded in the routine reporting system, which should help in understanding the magnitude of the problem. A health facility survey planned for 2017 will also provide more insight into case management practices and the reasons for noncompliance with country guidelines.

⁵ The small difference between the figures in this table and those in the specific gap analysis tables below is due to other factors that the NMCP took into account in their quantification. In other words, the PMI analysis in the tables below is a simplified version.

The gap analysis tables below show a need of 12.6 million RDTs and 8.2 million ACTs for PMI zones in 2017 – lower than the estimate based on expected morbidity but higher than the estimate based on past consumption. Given the lack of precision on population estimates, limited data on commodity consumption, previous experience on the use of ACTs and RDTs, and the large quantities currently in the pipeline, PMI decided to plan its procurements conservatively in order to avoid overstocks and expiration of commodities.

In addition, PMI's analysis indicates that the majority of ACT and RDT needs for calendar year 2017 will be covered from existing commodity and budget pipeline (the current stock situation leads us to believe that the carry-over from 2016 to 2017 will in fact be higher than the figure in the table). The exception is the infant weight-band for ACTs, of which approximately 500,000 doses are needed for 2017.

The PMI team will continue to closely monitor stock levels in coordination with the NMCP and other donors, and, if necessary, will make adjustments through reprogramming when more accurate consumption data are available. PMI efforts to improve commodity management, quantification, and case management are outlined below.

a. RDTs

The gap analysis shows that in the DRC approximately 33 to 35 million RDTs per year are needed in calendar years 2016, 2017, and 2018, respectively, to cover RDT needs in the country (Table 10). Due to a surplus from previous years, PMI plans to procure 8 million RDTs with FY 2017 funds. Although PMI is responsible for providing commodities in the health zones it supports, coordination with the NMCP, the Global Fund, and other partners will enable the country to redistribute stocks to meet needs regardless of the donor supplying.

Table 10: RDT Gap Analysis (National)*Gap analysis table assumptions (applicable to national needs and PMI zones)*

Calendar Year	2016	2017	2018
RDT Needs (National)			
Total country population (100% at risk)	86,696,970	89,284,658	91,873,913
Total number of projected fever cases	129,374,421	133,235,924	137,099,765
Total number of fever cases seeking care	46,574,792	47,964,933	49,355,915
Total number of fever cases tested with an RDT	32,695,504	33,671,383	34,647,853
Total RDT Needs - National	32,695,504	33,671,383	34,647,853
Partner Contributions			
RDTs carried over from previous year	17,274,976	17,482,856	11,268,851
RDTs from Government	0	0	0
RDTs from Global Fund	16,103,383	14,539,347	TBD
RDTs from other donors (DFID)	1,800,000	1,918,031	2,072,337
RDTs planned with PMI funding	15,000,000	11,000,000	8,000,000
Total RDTs Available	50,178,359	44,940,234	21,341,188
Total RDT Surplus (Gap)	17,482,856	11,268,851	(13,306,664)

- Population from 2016-2020 National Health Development Plan.
- Projected fever cases obtained from national malaria quantification and defined as number of fever episodes per age group. Average number of febrile episodes per year for the 0–11 month age group = 2.4; 1 to 5 year age group = 4; 6 to 13 year age group = 1.9; >13 year age group = 0.46.
- 51% of all fever cases seek care; 90% of all fever cases are tested; among those, 78% are tested for malaria using RDTs, and 22% are tested with microscopy.
- 15% reduction in cases due to increased coverage of interventions.
- The current Global Fund grant ends in December 2017. Funding for commodities in 2018 is unknown at this time.

Table 11: RDT Gap Analysis (PMI zones)

Calendar Year	2016	2017	2018
RDT Needs (PMI zones)			
PMI-targeted population (100% at risk)	29,816,286	33,429,006	34,398,447
Total number of projected fever cases in PMI zones	44,493,651	49,884,768	51,331,426
Total number of fever cases seeking care in PMI zones	16,017,714	17,958,517	18,479,313

Number of fever cases tested with an RDT in PMI zones	11,244,435	12,606,878	12,972,478
Total RDT Needs - PMI zones	11,244,435	12,606,878	12,972,478
Partner Contributions			
RDTs carried over from previous year	2,887,928	6,643,493	5,036,614
RDTs planned with PMI funding	15,000,000	11,000,000	8,000,000
Total RDTs Available	17,887,928	17,643,493	13,036,614
Total RDT Surplus (Gap)	6,643,493	5,036,614	64,136

b. ACTs

Table 12 shows the estimated national needs for ACTs in the DRC for both the public sector and the three-year pilot in the private sector, according to the most recent gap analysis conducted by the NMCP. The number of febrile episodes in the different age groups, utilization rates of public sector facilities, the impact of prevention strategies, and expected positivity rate of malaria tests were all considered in these calculations. It is unclear to what extent these estimates reflect the real needs in the country and the absorptive capacity of the health system. The estimates account for number of ACT treatments needed to fill the drug supply chain in 2017, and the estimated pipeline.

Table 12: ACT Gap Analysis (National)

Calendar Year	2016	2017	2018
ACT Needs (National)			
Total country population (100% at risk)	86,696,970	89,284,658	91,873,913
Total number of projected fever cases - National	129,374,421	133,235,924	137,099,765
Total number of fever cases seeking care and testing positive for malaria - National	21,199,681	21,832,438	22,465,579
Total ACT Needs - National	21,199,681	21,832,438	22,465,579
Partner Contributions			
ACTs carried over from previous year	27,711,823	29,904,166	27,193,309
ACTs from Government	0	0	0
ACTs from Global Fund	14,087,424	15,203,550	TBD
ACTs from Other Donors	1,800,000	1,918,031	2,072,337
ACTs planned with PMI funding	7,504,600	2,000,000	2,678,832
Total ACTs Available	51,103,847	49,025,748	31,944,478
Total ACT Surplus (Gap)	29,904,166	27,193,309	9,478,900

Gap analysis table assumptions (applicable to national needs and PMI zones)

- Population from 2016-2020 National Health Development Plan.
- Projected fever cases obtained from national malaria quantification and defined as number of fever episodes per age group. Average number of febrile episodes per year for the 0–11 month age group = 2.4; 1 to 5 year age group = 4; 6 to 13 year age group = 1.9; >13 year age group = 0.46.
- 51% of the population with fever seeks care; 90% are tested for malaria using RDTs or microscopy and 51% are expected to be malaria positive.
- 30% reduction in cases due to increased coverage of interventions
- The current Global Fund grant ends in December 2017. Funding for commodities in 2018 is unknown at this time.

Table13: ACT Gap Analysis (PMI zones)

Calendar Year	2016	2017	2018
ACT Needs (PMI Zones)			
PMI - zones population (100% at risk)	29,816,286	33,429,006	34,398,447
Total number of projected fever cases - PMI zones	44,493,651	49,884,768	51,331,426
Total number of fever cases seeking care and testing positive for malaria - PMI zones	7,290,863	8,174,268	8,411,321
Total ACT Needs - PMI zones	7,290,863	8,174,268	8,411,321
Partner Contributions			
ACTs carried over from previous year	13,447,765	13,661,502	7,487,234
ACTs planned with PMI funding	7,504,600	2,000,000	2,678,832
Total ACTs Available	20,952,365	15,661,502	10,166,066
Total ACT Surplus (Gap)	13,661,502	7,487,234	1,754,745

PMI also plans to procure 153,000 treatments of rectal artesunate for pre-referral treatment of severe malaria in children under five years of age at community care sites and health centers, and 305,000 treatments of injectable artesunate to treat severe malaria in children under five years of age at reference health centers and hospitals.

Plans and justification

PMI will continue to support refresher training and supervision of health care workers at all levels to provide quality case management services. Given the low rate of health facility use, the expansion and maintenance of community care sites is essential; thus, PMI will continue to support the scale-up of iCCM in the 178 supported health zones. These iCCM sites will provide RDTs and ACTs for uncomplicated cases of malaria as well as rectal artesunate for pre-referral treatments of severe malaria cases. The procurement of diagnostic and treatment commodities at all levels remains a high priority. The NMCP has recently approved a shift from combination RDTs to single band tests, and this will be used going forward. Quality control and quality assurance activities for malaria diagnosis will continue with the participation of PMI and other partners working in malaria control in the DRC. Using FY 2017 funds, PMI will support the strengthening of malaria diagnosis and treatment in health facilities and at community care sites in its 178 health zones through the following activities. RDT and ACT usage will be closely monitored to adjust procurement in case of unexpected drug needs or overstocks.

Proposed activities with FY 2017 funding: (\$11,148,816)

- Supervise and implement a system for quality control and quality assurance of malaria diagnosis, assist in preparation for the WHO accreditation of laboratory technicians, and provide equipment. Funding will also allow for the training of trainers at the different levels of the healthcare system. Support will be provided to train approximately 80 laboratory technicians in 40 health zones. This supervision activity also includes support to QA/QC for diagnostics to approximately 90 health facilities in these zones. (\$300,000)
- Procure microscopes and microscopy kits to support activities in PMI-supported provinces both at provincial and health facility levels. Exact quantities of these commodities will depend on assessments by PMI implementers; a maximum of 70 microscopes will be purchased and distributed. (\$175,000).
- Procure approximately 8 million RDTs for malaria diagnosis in PMI-supported health zones. (\$4,240,000)
- Procure approximately 2.7 million ACT treatments for management of uncomplicated malaria in PMI-supported health zones (70% AS/AQ for use in rural zones and 30% AL for use in urban zones). (\$1,835,000)
- Procure 305,000 treatments of parenteral artesunate for management of severe malaria. For planning purposes, a treatment was estimated at 300 mg of artesunate (5 ampules), which is sufficient for a three-day treatment of a 30-kg child (2.4 mg/kg per doses, 4 doses). (\$2,421,090)
- Procure approximately 153,000 doses of rectal artesunate to cover the national need for pre-referral treatment of malaria. For estimation purposes, a dose is estimated as 100 mg of artesunate, enough for a patient of 10–20 kg. (\$126,000)
- Support in-service training and supervision of approximately 2,500 facility health workers responsible for the management of both uncomplicated and severe malaria. (\$1,100,000)
- Support initial and refresher training and supervision of approximately 2,000 health workers that offer integrated case management for malaria, diarrhea and pneumonia at community care sites. (\$941,726)
- Provide one technical assistance visit by CDC/Atlanta staff to support activities related to case management and quality assurance/control, in particular, to assist with issues related to training of health providers and community case management of malaria. (\$10,000)

b. Pharmaceutical Management

NMCP/PMI objectives

The continuous availability of quality antimalarial products is essential to achieving the NMCP's objectives of testing at least 80% of suspected malaria cases and treating 100% of confirmed cases. The 2016-2020 National Malaria Strategic Plan lists several strategies for improving commodity procurement and stock management:

- Hold quarterly meetings of the national supply chain work group
- Assure the availability of quality commodities in all health facilities, including the private sector
- Provide training on stock management
- Accelerate the development of a logistics management information system using SMS
- Advocate with regulatory authorities to consult with specialized programs during the process to provide market authorization for new pharmaceuticals
- Establish mechanisms to assure commodity security

Progress since PMI was launched

Since its beginning, PMI has been supporting the strengthening of the pharmaceutical system at all levels, in collaboration with other USAID health programs and other donors. In 2014, a PMI-funded project established its first office in the DRC to support drug forecasting, customs clearance, and distribution of drugs to the regional warehouses. This work has significantly facilitated management and distribution of malaria commodities at the health facility and community levels. The March 2016 end-use verification (EUV) survey showed that 40% of facilities surveyed had stock available according to guidelines, compared to 6% in March 2014. In addition, PMI supported the refurbishment of a regional warehouse in Mbuji-Mayi (Kasai-Oriental Province) and contributed to an audit of ASRAMES (the central procurement agent for eastern DRC), which received a positive rating. This rating allows USAID implementing partners to procure some health commodities locally, supporting the regional system and saving time and money.

Progress during the last 12-18 months

In the past year, PMI supported quarterly EUV surveys to monitor the availability of malaria commodities. Table 14 below shows that stockouts and appropriate stock management continue to be a challenge. PMI has also initiated discussions with Global Fund implementing partners to co-fund EUV surveys in the provinces that they support.

Table 14: EUV results for selected products

	September 2015	March 2016
Product	% of health facilities surveyed with stockout the day of the visit	
Infant AS/AQ	35	21
SP	29	17
RDT	19	12
ITN	33	40
	% facilities appropriately stocked according to min/max guidelines	
Infant AS/AQ	18	23
SP	24	19
RDT	23	29
ITN	26	29

PMI supported the training of 251 healthcare workers in pharmaceutical stock management, and in April 2016, organized a training-of-trainers workshop to prepare the roll-out of a new distribution and logistics system. Twenty-four participants from regional warehouses, Provincial Health Divisions, and the NMCP attended. In addition, PMI supported nine DPS to conduct at least one supervisory visit to their health zones and facilities.

In June 2016, PMI supported the first national quantification exercise for malaria commodities, led by the NMCP with participation of all stakeholders. Previously each donor had worked directly with the NMCP to quantify commodity needs for its intervention areas, resulting in some overlap and gaps. This workshop also provided the opportunity to revise some of the assumptions used in estimating needs, resulting in more accurate quantification. In addition, the major donors developed a memorandum of understanding regarding the interchangeability of malaria commodities within and across regional

warehouses, thereby allowing the warehouses to manage the commodities provided by different donors according to the “first expire, first out” principle and simplifying the process to redistribute products to different zones or provinces when needed.

Finally, since early 2015 PMI has been supporting the process to develop a strategic plan for the National Supply Chain System (*Système National d’Approvisionnement en Médicaments Essentiels, SNAME*), along with other USAID health programs and donors. The process was at a standstill for several months due to dissatisfaction with the initial product and lack of consensus among stakeholders regarding how to proceed. In July 2016 the work was taken up again with new consultants and a new strategy document is expected by November.

Plans and justification

Assuring the continuous availability of malaria commodities remains one of the DRC’s biggest challenges. PMI will continue to procure and distribute commodities for the 178 health zones that it supports in 9 provinces. Given the logistical and capacity challenges of the DRC, a significant portion of the pharmaceutical management budget is dedicated to direct distribution and storage costs. Technical assistance will continue to focus on critical aspects such as quantification, supply planning, stock monitoring, and the logistics management information system. Activities will be guided by the new National Supply Chain Strategy.

Proposed activities with FY 2017 funding: (\$1,904,768)

- Support logistics and distribution costs for malaria case management commodities (RDTs and medicines) from eight regional warehouses to health zones. (\$627,480)
- Support stock management and storage for malaria case management commodities at regional warehouses. (\$502,288)
- Provide technical assistance to strengthen the supply chain management of commodities at the national level, and in 9 provinces and 178 supported health zones. (\$775,000)

4. Health system strengthening and capacity building

NMCP/PMI objectives

The NMCP’s National Strategic Plan 2016-2020 places high priority on capacity building activities, targeting in particular entomological expertise, commodity logistics, procurement and rational use of medicines, and data management. PMI supports strengthening activities in these priority areas, along with training and supervision of health workers, NCMP operational capacity building and many others.

Progress since PMI was launched

PMI has extensively invested in supporting various training activities designed to assist the NMCP achieve its overarching goal of reducing mortality and morbidity due to malaria. In addition to training and supervising health workers at the health facility and community levels, PMI has also supported many malaria-related training activities to build capacity and expertise in critical areas. PMI helped build entomologic capacity by supporting initial and refresher field entomology trainings and implementation of an entomology monitoring system with the National Institute for Biomedical Research. PMI has supported training of national and provincial health workers and community health care providers on malaria in pregnancy, malariology, case management, and behavior change communication. Since 2013, PMI has helped build epidemiology and surveillance capacity within the

MOH and specifically the NMCP by funding two fellows per year in the Field Epidemiology and Laboratory Training Program (FELTP). The PMI in-country team has advised the FELTP resident advisor and fellows on epidemiological training needs and operational research in malaria prevention and control.

Since 2014, PMI and other partners have championed the organization of the National Malaria Task Force at both the central and provincial levels. The Task Force includes the NMCP and other MOH officials (such as those in reproductive health), civil society organizations, private sector organizations, key malaria donors, and members of the academic and research communities. Through meetings and report dissemination, the Task Force has played an important stewardship role in prioritizing NMCP strategies, and addressing critical emerging issues such as malaria outbreaks.

Progress during the last 12-18 months

Extensive technical training and supervisory activities in all malaria interventions continue with PMI support. In 2015 alone, a total of 4,383 facility and community-based workers received PMI-funded technical training, reaching all of those workers targeted in the PMI-supported provinces. PMI also funded the training of field entomologists, focusing on quality assurance. Other capacity building activities for NMCP staff include funding quarterly supervision by NMCP staff to each of the nine PMI-supported provinces, with special attention on strengthening data collection and analysis.

The lack of a geographically accessible, well-equipped national office with reliable internet connection has compromised the NMCP's effectiveness and productivity for years. The MOH has identified a new location and the Global Fund has pledged funding for the construction of a new office building, but internal administrative hurdles have impeded progress. To support the NMCP's advocacy efforts for a new office, and to allow use of Global Fund resources for construction before they expire in late 2017, PMI has offered funding in FY 2016 to equip a new building with furniture, computers, and internet installation.

PMI has strengthened the NMCP's management capacity by assigning a monitoring and evaluation specialist to the program at the central level, and embedding five PMI provincial advisors at the provincial level. Both cadres of advisors have helped build capacity to plan and implement all aspects of the malaria control program, with special emphasis on monitoring and evaluation and reporting. The PMI-sponsored M&E specialist at the central level helped revive the M&E Working Group, improve gap analyses for commodities and funding, strengthen analysis and use of data generated from the DHIS 2 database, and provide on-the-job mentoring of NMCP staff. This support continues to improve the visibility and effectiveness of the NMCP's monitoring and evaluation unit, especially in coordination of data collection, analysis, processing, and use for decision-making. This activity is critical as M&E continues to be a challenge, as identified by the NMCP organizational assessment carried out in 2014. In addition, the NMCP recently developed a new National Strategic Plan 2016-2020 that will need more technical support to ensure that it is implemented and monitored appropriately.

The five PMI provincial advisors have, to date, played a similar role to the M&E advisor, though focused more on monitoring the completeness and timeliness of data reporting from health zones along with building general provincial-level malaria control capacity. Given their important role in the provinces, PMI is expanding the number of provincial advisors to nine, one for each of the new provinces that PMI targets under rationalization of malaria donor support. Starting in late 2016, the provincial advisors will also take on a larger role to assist with coordination among PMI implementing

partners and act as an extension of the PMI resident advisors, given the vastness of the country and the complexity of programming. The provincial advisors will prepare quarterly reports for the PMI team and will come to Kinshasa for coordination meetings at least twice each year in order to review progress, address bottlenecks, and strategize for future activities. This will improve communication lines between the advisors and the PMI in-country team and will be especially important for the new provinces that are establishing new public health structures including malaria focal points.

The FELTP currently has two active cohorts of residents, making up 43 residents. To date, nine residents have been placed at the NMCP and have received further training in malaria, with another five upcoming residents to be posted there shortly. In 2015-2016, FELTP fellows developed three malaria-related operational research abstracts for presentation at the African Field Epidemiology Network conference: one entomological study related to larval pools in Kingasani health zone of Kinshasa; another exploring factors associated with low prescription of NMCP-recommended malaria drugs in children 6-59 months of age in Kinshasa; and an evaluation of ITN use in the Kinshasa neighborhood of Malueka in 2014. FELTP fellows have also participated in fever outbreak investigations.

Plans and justification

PMI will continue its focus on building technical and managerial capacity for malaria prevention and control at all levels of the health system. Support will continue for coordination mechanisms, capacity building and professional development, and NMCP supervision in the provinces. Support to the nine PMI provincial advisors will focus especially on the monitoring and evaluation activities in the newly-created provinces. PMI will continue to build capacity for central level NMCP staff in areas identified by the organizational assessment such as entomology, supply chain management, and monitoring and evaluation, and will co-fund malariology training for health system actors engaged in malaria control activities at all levels. PMI plans to support NMCP and/or INRB staff to attend key malaria scientific conferences or participate in exchange visits to learn best practices from other countries in the region. Another in-country opportunity that PMI will support is the *Journées Scientifiques* (science days), linked to World Malaria Day, which will include presentations about malaria program initiatives and related operational research.

PMI will also expand its training and mentoring efforts under FELTP. Along with supporting two new FELTP fellows in the upcoming cohort, the PMI country team will now work more closely with the FELTP and the NMCP to increase opportunities for epidemiological engagement directly with the NMCP in Kinshasa, and to link fellows with NMCP provincial staff and PMI provincial advisors to help improve surveillance capacity and reporting quality. Engagement in future fever and malaria outbreak responses will complement NMCP and partner efforts while providing training opportunities for fellows. Other opportunities will include data collection for entomological response to outbreaks, and presentation of operational research findings during the annual *Journées Scientifiques* that PMI will support. The selected capacity building activities will complement other donors' support such as the Global Fund and DFID's plan to provide a package of trainings and team building to the NMCP.

Proposed activities with FY 2017 funding: (\$1,110,000)

- Continue support to the country coordination efforts as well as national and provincial malaria task force teams, to help address the NMCP's objective to improve coordination of government, donor, and civil society malaria program activities and resources. (\$150,000)
- Support NMCP capacity building, including attendance of NMCP and INRB staff at a key malaria scientific conference, malariology courses and training that address critical technical

needs identified by PMI and the NMCP. May include site visits to observe activities and explore new approaches to supply chain management, community case management, monitoring and evaluation, and other technical areas. (\$125,000)

- Support the costs for nine PMI provincial advisors. Funding will include support for semi-annual meetings of advisors with the national NMCP and PMI/DRC staff to debrief on their programs, receive continuing education, and learn best practices from other provincial staff. (\$585,000)
- Support the logistics and organization of the annual *Journées Scientifiques* associated with World Malaria Day. (\$25,000)
- Support semi-annual supervision visits by two NMCP staff of malaria activities in PMI-supported provinces. (\$75,000)
- Support malaria-related epidemiology training and mentorship for new two fellows under the FELTP. Depending on progress in malaria-related training through FELTP in 2016-2017, PMI may consider increasing the number of fellows supported should additional PMI funds be identified. (\$150,000)

Table 15: Health Systems Strengthening (HSS) Activities from Other Technical Areas

HSS Building Block	Technical Area	Description of Activity
Health Services	Case Management	<ul style="list-style-type: none"> • Improve, through training and supervision, QA systems to monitor the quality of laboratory diagnostic services. • Supervise and implement a system for quality control and quality assurance of malaria diagnosis, assist in preparation for accreditation of laboratory technicians and provide equipment. • Provide training and supervision to laboratory staff and health workers performing malaria RDTs.
Health Workforce	Health Systems Strengthening	<ul style="list-style-type: none"> • Through training and technical assistance, build NMCP managerial and leadership capacity for effective malaria control. • Support in-service training and supervision of facility health workers responsible for the management of both severe and uncomplicated malaria. • Support nine provincial advisors embedded in government offices. • Support in-service training and supervision of CHWs responsible for the management of uncomplicated malaria at the community level. • Support two fellows and malaria epidemiological training in the FELTP.
Routine Health Information	Monitoring and Evaluation	<ul style="list-style-type: none"> • Strengthen disease surveillance systems to improve decision-making, planning, forecasting, and program management. • Support a surveillance, monitoring, and evaluation advisor in the NMCP. • Conduct periodic EUV surveys.
	Operational Research	<ul style="list-style-type: none"> • Provide facilities, equipment, training, and financial support for in-country malaria operational research.
Essential Medical Products, Vaccines, and Technologies	Case Management	<ul style="list-style-type: none"> • Support improved forecasting, procurement, quality control, storage and distribution of malaria commodities, such as insecticide-treated nets, artemisinin-based combination therapies and rapid diagnostic tests.
Health Finance	Health Systems Strengthening	<ul style="list-style-type: none"> • Provide technical assistance to NMCP to leverage financial contributions and services from government and private sector partners for malaria prevention and control.
Leadership and Governance	Health Systems Strengthening	<ul style="list-style-type: none"> • Support strengthening of national coordinating and regulatory bodies to direct and manage malaria resources, develop guidelines, and improve quality of services.

5. Social and behavior change communication

NMCP/PMI objectives

The SBCC strategic plan that accompanied the NMCP 2013-2015 strategic plan has not been updated to align with the current 2016-2020 strategic plan. In the new strategic plan, the NMCP will ensure at least 75% of the population at risk is knowledgeable about the modes of malaria transmission, malaria prevention, and case management measures by the end of 2020. With FY 2016 funding, PMI will support the revision of the SBCC strategic plan to support the new NMCP strategic plan.

Progress since PMI was launched

Since 2011, PMI has supported SBCC activities in targeted health zones in line with the national strategy to promote use of malaria preventive measures and treatment services. Activities have included community sensitization around routine preventive services for malaria in pregnancy and immunization to deliver IPTp and ITNs, as well as community mobilization via the community health promoters (*relais promotionnels*) to ensure correct and timely use of ITNs and to improve care-seeking behavior.

Since August of 2012, PMI has strengthened the capacity of the NMCP to coordinate SBCC activities among partners and stakeholders, and develop effective and quality materials for SBCC interventions. More specifically, PMI trained NMCP central and provincial coordinators on SBCC in the old provinces of Oriental, Katanga, South Kivu, and Eastern and Western Kasais, sponsored MOH participants to attend a malariology course, and facilitated development of the SBCC module.

PMI took advantage of special events such as the African football championship to enhance awareness of radio and TV journalists on key malaria preventive and treatment behaviors. During that event, the briefed journalists broadcasted messages through radio and TV program promoting proper use of ITNs and early care-seeking. PMI supported the development of the NMCP's first SBCC strategy that covered the 2009-2013 national strategic plan. This SBCC strategy was updated in 2013 to be aligned with the NMCP strategic plan 2013-2015. Finally, PMI has supported the production of promotional tools for nets distribution, a comic book to support the students at their schools, and supported a malaria day campaign in targeted provinces.

Progress during the last 12-18 months

PMI has used various SBCC approaches to deliver key messages in the 181 supported health zones to raise awareness on key malaria preventive and treatment behaviors during household visits, ANC and EPI clinics. The key malaria prevention and treatment messages disseminated to target audiences were focused on the appropriate use of ITNs (especially the fact that they should not be used for fishing), early care-seeking at ANC and completion of the required number of SP doses for pregnant women, and prompt treatment for fever in children less than five years of age. PMI used several channels including trained *relais communautaires* and journalists to disseminate effective messages.

PMI supported the broadcast of messages through short message service (SMS), sending out 48,863 SMS messages on malaria-related issues in local languages to community members. Overall, the messages were culturally acceptable, well received and reached beyond those with phones as the messages were shared at community meetings and among various church networks. According to feedback from the field, all of those who received SMS messages wanted increased message frequency, from once weekly up to two to three times per week and that the messages included broader topics.

During 2017, PMI intends to support a health facility survey to further explore reasons for noncompliant behaviors, in particular, barriers to IPTp uptake.

Over the past year, 1,093 *relais communautaires* were trained on SBCC and they performed 315,340 home visits reaching 776,077 people. In addition, 700,808 pregnant women were sensitized during ANC visits, while 378,851 people were reached at EPI clinics. During home visits and sensitization meetings at ANC and EPI clinics, the *relais communautaires* and the trained providers used appropriate supportive educational materials developed by the NMCP with PMI support. Also, 34 champion communities and 1,289 functioning health area development committees developed their operational plans that included malaria activities.

PMI participated in the *Journées Parlementaires* (parliament days) led by the NMCP and partners to advocate to parliament on increasing the government budget for malaria prevention and treatment.

Plans and justification

Using FY 2017 funds, PMI will support the implementation of the national malaria communication strategy in PMI-supported health zones. SBCC activities will be focused on better understanding the determinants of behavior among health workers, community leaders, CHWs, community groups, school students, and other malaria stakeholders in order to improve malaria prevention and treatment practices. Key malaria-related communications messages will be integrated into SBCC activities throughout the USAID health portfolio to leverage the effectiveness and reach of interventions. PMI will also engage government officials, donors, parliamentarians, and private sector to increase attention to malaria, mobilize resources, and foster greater coordination of activities.

In compliance with PMI SBCC guidance, SBCC support will continue to utilize local communication channels that are culturally sound and familiar to the communities and target populations. These activities will also address the following key issues targeting providers and patients, while supporting advocacy for policies that address other systemic determinants.

- PMI will **promote changes in provider behavior** to use ACTs as the first-line treatment for malaria; improve patient knowledge of malaria services through sensitization at antenatal care and EPI clinics by healthcare providers; advocacy meetings with community leaders; family outreach by CHWs; community and small group discussions; SMS; television and radio spots, posters. The cultural and other contextual determinants will be explored to better understand health worker behavior, and SBCC interventions will be developed to counter inappropriate provider diagnostic and treatment practices.
- **Increase the coverage of IPTp** for prevention of malaria in pregnancy: More than 88% of pregnant women attend ANC at least once in the DRC and 79% make two visits. In spite of this, according to the most recent DHS, only 14% of pregnant women received two doses of SP during ANC visits. Again, SBCC efforts will target both providers and patients, supporting the NMCP's efforts to increase IPTp uptake through ANC outreach services (see MIP section). The results of the health facility survey planned for 2017 should shed light on the reasons for the large gap between ANC attendance and IPTp coverage.
- **Stimulate the appropriate use of ITNs** among targeted risk groups: While the use of ITNs has shown improvement, major gaps remain. Only 56% of children less than five years of age and 60% of pregnant women sleep under an ITN. As a recent assessment of the ITN program showed a significant drop in ITN use between campaigns, SBCC activities will reinforce the ongoing

universal coverage campaigns and routine distribution of ITNs at health facilities, especially reinforcing SBCC activities between the campaigns. Messages delivered on a routine basis will be strengthened, and will be disseminated both during the campaigns and at the health facilities. PMI will emphasize advocacy activities and messaging to discourage populations located near rivers and lakes from using ITNs for fishing, due to the environmental damage caused by this practice and the loss of those nets for malaria prevention purposes.

- As PMI will support ITN distribution through primary schools, **SBCC activities will be conducted at school** both by teachers and pupils. With PMI funds, teachers from selected schools will receive training on malaria prevention and treatment and how to disseminate messages to pupils. The pupils who receive ITNs will encourage their parents/caregivers to sleep every night under the ITN to protect them against malaria. PMI will coordinate with USAID's Education Office to harmonize approaches in schools where both programs are working.
- **Continue promoting the acceptability of three commodities:** RDTs for malaria diagnosis, injectable artesunate for treatment of severe cases, and rectal artesunate for pre-referral treatment of severe cases at the community level.
- **Explore the barriers to access and uptake** of malaria prevention and treatment approaches in order to inform SBCC activities across the PMI portfolio.
- PMI will **support NMCP advocacy activities** that engage greater involvement with government, donors, parliamentarians, and the private sector through meetings, workshops, and development of materials and media campaigns. As part of Roll Back Malaria mandate, the NMCP has developed an advocacy plan to continue with mobilization of resources. PMI together with other donors have been collaborating to support workshops, meetings and other outreach activities to meet the planned objectives

PMI will ensure that appropriate tools and NMCP communication plan are in place to monitor SBCC activities and the impact of messages on population behavior. SBCC activities will be evaluated under planned end of project and mid-term evaluations.

Proposed activities with FY 2017 funding (\$1,775,000)

Direct Communication

- Support SBCC activities to raise awareness on ownership and correct use of ITNs, especially, during routine distribution. (\$350,000)
- Promote the use of malaria treatment commodities and services in 178 supported health zones in 9 provinces. (\$350,000)

Training

- Support SBCC training for facility and CHWs to promote MIP interventions, including ITN use, IPTp (especially IPTp3 and beyond), and treatment-seeking behavior for suspected malaria along with general messages on the importance of antenatal care in 178 supported health zones in 9 provinces. (\$300,000)

Design and Development

- Support the development of comprehensive and effective educational materials and specific SBCC intervention related to malaria prevention and treatment including a formative assessment of barriers to appropriate use of ITNs and treatment. (\$750,000)

Advocacy

- Support NMCP advocacy activities in order to increase political will and mobilize the DRC's government resources (both human and monetary). (\$25,000)

6. Surveillance, monitoring, and evaluation

NMCP/PMI objectives

The DRC NMCP's National Strategic Plan (National Strategy) for 2016-2020 outlines several goals and strategies related to malaria surveillance, monitoring, and evaluation. The related objectives for 2020 as outlined in the National Strategy are:

- Reduce morbidity associated with malaria by 40% as compared to 2015
- Reduce mortality associated with malaria by 40% as compared to 2015
- Test at least 80% of suspected malaria fever cases
- Strengthen the surveillance, monitoring, and evaluation systems
- Ensure routine availability of critical indicators to the NMCP

Progress since PMI was launched

PMI played an essential role in the development of the 2013-2015 National Malaria Monitoring and Evaluation Plan that accompanied the 2013-2015 National Malaria Strategic Plan, as well as the updated National Strategy and the relevant M&E elements. Currently, M&E guidelines that will accompany the National Strategy are under development. In 2013, PMI supported an organizational assessment of the NMCP that included an evaluation of the monitoring and evaluation department and its functions. The first draft of the report recommended that all monitoring and evaluation activities be grouped under a single department in order to regularly monitor all donor-supported activities. Implementing actions coming from this report are still awaiting approval from the Minister of Health, while a separate assessment of the NMCP's M&E division is currently implementing recommended actions.

PMI continues to support two FELTP trainees per year to support the NMCP as described in the health system strengthening and capacity building section. Since 2013, PMI has supported a full-time senior M&E advisor who provides technical assistance to national-level NMCP staff, as well as five provincial advisors to support the NMCP M&E activities at the provincial level. All officers are housed at the respective NMCP office where they are based, and they assist with collection, compilation, and analysis of data, to improve reporting completeness, timeliness and data quality, as well as supportive supervision.

Household surveys: The DRC has benefited from several nationally representative surveys, the three most recent have reported on key malaria indicators for assessing progress towards the NMCP's targets and objectives. A DHS was conducted in 2007 and again in 2013-14, and a MICS was carried out in 2010. According to the 2013-14 DHS, the under-five mortality rate is 104/1,000 live births, a substantial reduction from the previous rate of 158/1,000 as reported in the 2010 MICS. PMI was a primary supporter of the 2013-14 DHS, the first nationally representative survey to collect parasitemia measurements in the DRC. A second parasitemia measure will be collected in coordination with the upcoming 2017 MICS.

EUV surveys: In 2013, PMI began supporting EUV surveys of commodity availability in the DRC. These are conducted twice yearly on small convenience samples of health facilities and depots. These surveys are not intended to be national in scale or representative in nature, but in a country with such geographic expansiveness and comparatively limited infrastructure, these snapshots play a key role in understanding essential malaria commodity availability and case management practices in the DRC.

Routine data and HMIS: The MOH is in the final year of a planned three-year transition of the National Health Management Information System (HMIS) from a Microsoft Access®-based platform to the District Health Information System 2.0 (DHIS 2) platform. PMI has supported improvements to the HMIS in the DRC, and has expanded that support in recent years with an increased focus on DHIS 2. While DHIS 2 is being rolled out, PMI has continued to support the use of a malaria specific reporting instrument (Form III) for routine data collection in health zones supported by PMI's implementing partners where DHIS 2 is still not fully functional. Where DHIS 2 is functioning, PMI has supported training to over 100 staff from over 30 health zones and supported internet access to 30 central offices in these zones.

Prior to the transition to DHIS 2, PMI has supported NMCP efforts to strengthen routine data systems at the health zone, provincial, and national levels by providing M&E training at all levels, and working to improve reporting timeliness and completeness of the parallel routine malaria reporting system. PMI has also supported NMCP efforts to build in-house M&E capacity and strengthen collection, analysis, and use of routine malaria data at all levels through technical assistance and trainings.

Progress during the last 12-18 months

PMI is supporting an in-depth evaluation to assess the extent to which the roll out of malaria interventions and control activities in the DRC has had an impact on morbidity and all-cause child mortality rates. This evaluation is part of a larger PMI portfolio to document the impact of the scale-up of malaria control interventions on morbidity and mortality in PMI focus countries. In the DRC, the various implementing partners have endorsed the impact evaluation activity; the protocol has been reviewed by the steering committee and was submitted to the ethical review board in July 2016. The team has also begun collecting background documents, and compiling data from both household surveys and HMIS. Full-scale impact evaluation activities and analysis will start as soon as there is approval from the ethical review board.

PMI has also supported the development of a central NMCP database (<https://pnlprdc.com/>) that houses all the relevant data collected by the various malaria partners in the DRC. This was done to support the NMCP in managing in-country partner data, and provide a space to report on process, output and outcome indicators collected by various implementing partners. The central NMCP database will extract the 18 available malaria indicators collected on the DHIS 2 platform, and also serves as a central location to house additional indicators coming from implementing partners. Once finalized, the database will be accessible to all partners engaged with malaria control in the DRC, and should minimize parallel data collection and analysis. Standard operating procedures are currently under development to ensure that these data are validated and confirmed prior to being posted on the site, and several staff members from the Division of HMIS and the NMCP have been trained on the development and management of the database. Ideally, all malaria program indicators could be housed on DHIS 2, but it is not currently possible to collect every program indicator from all implementing partners for all health elements on a single platform. Furthermore, given the geographic expansiveness of the DRC, several key partners are working in geographically separate areas, and this provides a way to bring the various program data together in one space.

PMI has continued to support the implementation of DHIS 2 at national, provincial, and health zone levels with trainings, internet connection, data collection tools, and quarterly monitoring and supervision. At the national level, PMI participates in regular meetings with the Division of HMIS to

discuss aspects of DHIS 2 implementation nationwide. In addition, PMI supported rapid data quality assessments - the main findings were unavailability of data collection tools, and discrepancies between data reported on the DHIS 2 platform and data on paper forms and ledgers at the health zones. As a complement to the technical assistance provided to the national and provincial levels, PMI supports strengthening of the routine health information system (RHIS) in selected facilities of four health zones. This support is currently being expanded to two additional health zones and to all facilities within four of the six health zones. The RHIS strengthening efforts at the health zone level aim to ensure improved data reporting, quality, and use for an entire health zone. After the first two years of this activity, an expansion plan will be developed based on the initial experience and outcomes, to identify the most appropriate and scalable approach to strengthening RHIS across all PMI provinces.

Table 16. Monitoring and Evaluation Data Sources

Data Source	Survey Activities	Year								
		2010	2011	2012	2013	2014	2015	2016	2017	2018
National-level household surveys	Demographic Health Survey (DHS)				X					
	Multiple Indicator Cluster Survey (MICS)	X*							(X)	
Health facility and other surveys	SPA survey								(X)	
	EUV survey				X	X	X	X	(X)	(X)
Malaria surveillance and routine system support	Support to enhanced malaria surveillance system through “centers of excellence”							X	X	(X) (X)
	Support to NMCP vertical malaria info system		X	X	X	X	X	X		
	Support to routine HMIS			X	X	X	X	X	(X)	(X)
Therapeutic efficacy monitoring	<i>In vivo</i> efficacy testing							X	(X)	(X)
Entomology	Entomological surveillance and resistance monitoring				X	X	X	X	(X)	(X)
Other data sources	Malaria Impact Evaluation							X		

*Not PMI-funded

Table 17. Routine Surveillance Indicators (2015)

Indicators	Value*	Comments
Data source for all indicators is NMCP reporting form		
Total number of reported malaria cases	12,186,639	Clinically diagnosed cases not provided
Total diagnostically confirmed cases	12,186,639	Both RDT and microscopy
Total clinical/presumed/unconfirmed cases	N/A	Not available
Total number of suspect malaria cases	16,566,209	
<i>If available, report separately for outpatients and inpatients</i>		Not reported by outpatient/inpatient but by uncomplicated and severe cases
Number of reported uncomplicated malaria cases (outpatient)	10,878,974	
Diagnostically confirmed	10,878,974	
Clinical/presumed/unconfirmed	N/A	Not captured
Number of reported severe malaria cases (inpatient)		
Diagnostically confirmed	1,307,665	
Clinical/presumed/unconfirmed	N/A	Not captured
Total number of reported malaria deaths		
Diagnostically confirmed	39,054	
Clinical/presumed/unconfirmed	N/A	Not captured
Malaria test positivity rate (by test)		
Test positivity rate for microscopy	66%	
Test positivity rate for RDT	72%	
Completeness of monthly health facility reporting	85%	
Numerator: Number of monthly reports received from health zones	5,263	
Denominator: Number of health zone reports expected (i.e., number of zones expected to report multiplied by the number of months considered)	6,192	516 health zones x 12 months

*The PMI team is working with the NMCP to better understand questions surrounding several data values.

Plans and justification

Given their important contributions to date, PMI will continue to support M&E technical advisors to the NMCP at both national and provincial levels. Furthermore, with the subdivision of provinces from 11 to 26, PMI will hire an additional four provincial advisors in late 2016 to ensure that each of the nine provinces supported by PMI in FY 2017 will have the necessary assistance to carry out provincial level M&E activities.

Although capacity within the NMCP has improved, the need for further technical assistance remains, particularly with continued scale-up of DHIS 2. In addition, technical assistance is critical to implement the National M&E Strategy for 2016-2020. PMI will continue to work closely with the NMCP to coordinate and implement M&E training and activities.

There is a need to strengthen routine health facility malaria surveillance and build capacity at the provincial and health zone levels to analyze and use data. PMI will continue to support RHIS strengthening at all critical levels (national, provincial, and health zone), but given the vast area being supported by PMI, it is unrealistic to provide the same level of support across all levels. In response, PMI will provide more intensive technical assistance in targeted health zones. The experience in these model zones will serve as a basis for a more comprehensive plan to strengthen RHIS in all PMI health zones. In all supported health zones, PMI will provide standard training and supervision for monitoring and reporting activities, and printing and distribution of standardized registers and data collection forms for both health facilities and community care sites.

PMI will continue to support the development and use of routine data on the DHIS 2 platform at all levels. With reprogrammed funds from FY 2016, PMI will conduct an assessment of DHIS 2 implementation and functionality in the nine PMI-supported provinces. Based on this assessment, PMI will support actions to improve the functionality of the system to ensure regular access and data transmission is occurring at all levels.

It is anticipated that the rationalization process will facilitate M&E activities given that PMI will now be supporting all health zones within a given province. This will facilitate regional level data review and analysis activities since PMI can now look at data for an entire province, and hold province-wide data reviews. As for nationally representative surveys, these will continue to be implemented as usual given that all donors contribute to national surveys. The rationalization will also make interpretation of these data more applicable to each donor given that provinces, often the lowest level of disaggregation of many of the DHS indicators, will be fully covered by a single donor, so PMI will be able to look at an indicator for the area it covers, as opposed to a province where it supports two-thirds of the health zones, as it is now.

The following activities will be supported at the various levels:

- National: PMI will support an M&E technical advisor to provide technical expertise and build M&E capacity within the NMCP on use of data for program management and regular programmatic evaluation. PMI's support at this level will focus on analyzing program data and ensuring a high level of reporting completeness and timeliness as well as resolving issues related to DHIS 2 implementation.
- Provincial: PMI will provide technical assistance and training to the provincial level NMCP staff with an emphasis on improving the collection, analysis, and use of malaria data at the provincial level. Support will include supervision for data collection, analysis, and quality control, as well as ensuring coordination among partners working on RHIS strengthening, roll out of the DHIS 2, and possible SMS data transmission capacity.
- Health Zone / Health Facility: PMI will support targeted, intensive RHIS strengthening activities in selected zones as an initial phase to inform future scale-up at the health zone level. This activity will

focus on the development of a few “model” health zones, and include intensive training and coaching on the recording, validation, and use of data. This activity will cover all facilities in a selected health zone and lessons learned will serve to improve the national health information system and future expansion of PMI support at this level. The bilateral project implemented by PSI/ASF focuses on M&E activities at the health facility and community levels, with a focus on training and supportive supervision for monitoring and reporting activities, including iCCM, provision of forms and registers to health facilities, as well as facilitation of data validation meetings at 178 health zones in 9 provinces. These interventions, along with guidance on data use at the health zone level are supported in all PMI zones.

The PMI team has determined a great need for a Service Provision Assessment (SPA) survey in the DRC and will fund this activity from reprogrammed FY 2016 funds.

Proposed activities with FY 2017 funding (\$1,617,000)

- M&E capacity building at central level to support better use of data for program management. In order to build M&E capacity within the central NMCP staff, PMI will support technical assistance and training on the use of data for program management. The ultimate goal of this activity is to ensure that the NMCP M&E system is running and fully functional and that staffs at the national and provincial levels have the capacity to continue to perform well without technical support from partners. A baseline assessment of M&E capacity was conducted in 2014 and a follow-up will be done in 2017 to assess changes. A particular focus will be placed on analyzing program data collected by the NMCP and its partners as well as addressing the issues of DHIS 2 implementation identified in the FY 2016 assessment. (\$457,000)
- M&E capacity building at the provincial level. With FY 2017 funding, PMI will provide technical assistance and training to the provincial level NMCP staff and field-based M&E activities aimed at improving the collection, analysis, and use of malaria data. This provincial level assistance will also support improvements in the data collection and aggregation system in selected health zones, including coordination among partners working on RHIS strengthening, roll out of the DHIS 2, and possible SMS data transmission capacity. This activity will also support supervision for data collection, analysis, and quality control. (\$200,000)
- RHIS strengthening at the zonal level. As a complement to the technical assistance provided to the provincial NMCP staff (see above), PMI will support targeted, intensive RHIS strengthening activities in selected zones as an initial stage with future scale-up planned. This support will include training and supportive supervision for monitoring and reporting activities. (\$500,000)
- Support to health facilities and health zones for routine reporting. Provision of forms and registers to health facilities as well as facilitation of data validation meetings at 178 health zones in 9 provinces. Technical assistance to support data use at the health facility level. In areas with iCCM activities, this activity will also provide support to the CHWs. (\$250,000)
- EUV surveys. In order to track the availability of PMI-purchased commodities at the health facility level, PMI will continue to conduct EUV surveys twice annually in selected provinces. These data will be used to monitor the effectiveness of PMI’s efforts to improve the supply chain in the DRC and case management practices at the lowest level of the health system. (\$150,000)
- Contribute to mid-term review of 2016-2020 National Malaria Control Strategic Plan. Support costs related to organizing workshops and field visits to review progress in achieving strategy objectives. (\$50,000)
- CDC technical assistance. Assist national M&E planning and support capacity building for M&E. (\$10,000)

7. Operational Research

NMCP/PMI objectives:

In 2014, the NMCP developed a Plan of National Surveys 2015-2020, as part of the National Strategy, and included 25 research/surveys priorities. This Plan aims to fill the gap in operational research and surveys required to meet the needs of the malaria program. Many of the priorities involve monitoring and evaluation activities that PMI supports, including monitoring of insecticide resistance, implementation of pre-referral rectal artesunate, ITN use, therapeutic efficacy, and population-based surveys such as the MIS.

Progress during the last 12-18 months

The PMI/DRC team is working to prioritize operational research gaps, and is helping the NMCP and local subject matter experts to conduct well-designed studies that meet the needs of decision-makers. In 2016, PMI/DRC is conducting a study with the NMCP to help inform vector control strategies by determining the degree to which mass distribution of ITNs increases the intensity of pyrethroid resistance. Understanding the buildup of resistance (both of resistance mechanisms and physiological resistance) is important in ensuring that this primary intervention is not being compromised. The NMCP has specifically pointed out the need for a better understanding and management of insecticide resistance in their recent National Strategic Plan. This study will additionally provide information on resistance in Kinshasa where nearly 15% of the Congolese population lives. Furthermore, the understanding of how the intensity of resistance changes in the months following a mass distribution of mosquito nets fits within the operational research priority of determining what is driving resistance, such as ITNs, IRS, or agriculture and will be valuable for other PMI focus countries.

Low mosquito net use has been noted in several areas where malaria upsurges have taken place. With FY 2016 funding, PMI has proposed to collaborate with the NMCP and other local partners to study the seasonal use of mosquito nets, biting times associated with human behavior (indoor versus outdoor), and to look closely at actual versus reported ITN use. This study is in the preliminary stages of development. If approved, this research will be done in two sites in different ecological zones, where monthly entomological monitoring is already underway. Such information will increase our understanding of how actual net use is reflected in outcome indicators such as parasitemia rates, and help the NMCP focus its communication and monitoring and evaluation strategies related to ITN use.

In addition, a PMI core-funded study assessing an appropriate follow up strategy for non-malaria fevers is underway in the former Katanga Province. This study will provide important information on whether patients with fever who are RDT-negative and do not have pneumonia or diarrhea, can be managed safely at the community level.

Proposed activities with FY 2017 funding: (\$0)

PMI currently has no studies or other OR activities planned with FY 2017 funding.

Table 18. PMI-funded Operational Research Studies

Completed OR Studies			
Title	Start date	End date	Budget
None to date			
Ongoing/Planned OR Studies			
Title	Start date	End date	Budget
Assessment of the extent to which mass-distribution of ITNs increases the intensity of pyrethroid resistance.	January 2016	December 2016	\$100,000
Study of seasonal use of ITNs, the biting times associated with human behavior, and actual versus reported bednet use.	2017 TBD	2017 TBD	\$350,000
Assessment of appropriate follow-up strategies for non-malaria fevers (Core budget funded).	April 2015	December 2016	\$749,989
Planned OR Studies FY 2017			
Title	Start date (est.)	End date (est.)	Budget
None planned			

8. Staffing and administration

Two health professionals serve as resident advisors to oversee PMI in the DRC, one representing CDC and one representing USAID. In addition, six Foreign Service Nationals (FSNs) will work as part of the PMI team: two full-time Project Management Specialists and four shared staff who will work on cross-cutting issues of supply chain management and logistics, community case management, monitoring and evaluation, and an administrative assistant. 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 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 overall leadership for PMI is delegated to the USAID Health Office Director, while the Malaria Team Leader, a Foreign Service Officer, provides day-to-day technical guidance and direction to the RAs and FSNs on the PMI team. The technical expertise housed in Atlanta and Washington complements PMI programmatic efforts.

The two PMI resident advisors are physically based within the USAID Health Office but are expected to spend approximately half their time providing TA to the NMCP and implementing partners, including time in the field monitoring program implementation and impact.

Locally hired staff to 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 US Global Malaria Coordinator.

Proposed activities with FY 2017 funding: (\$3,466,056)

- Salaries and support costs of one CDC resident advisor, including equipment, ICASS, other Mission taxes and fees, and other associated expenses. (\$946,000)
- Salaries and support costs of one USAID resident advisor, two USAID FSN full-time PMI staff, and four FSNs whose costs are shared across the Health Office. This includes equipment, ICASS, other Mission taxes and fees, and other associated expenses. (\$2,520,056)

Table 1: Budget Breakdown by Mechanism**President's Malaria Initiative – DRC
Planned Malaria Obligations for FY 2017**

Mechanism	Geographic Area	Activity	Budget (\$)	%
CDC/IAA	178 health zones in 9 provinces	FELTP and technical assistance for entomological monitoring, case management and M&E	1,145,000	2.5%
GHSC/PSM	178 health zones in 9 provinces	Procurement of ITNs, SP, RDTs, ACTs, microscopes, and severe malaria drugs	15,066,090	33.5%
TBD – Supply Chain Contract	National level and 8 regional warehouses	Technical assistance for supply chain strengthening, transportation and storage costs for malaria commodities, end-use verification surveys	1,886,648	4.2%
IHP-DRC	178 health zones in 9 provinces	Support training and supervision on malaria in pregnancy and case management for health facility and community levels; assist with transportation of malaria commodities from regional warehouses to health zones; support NMCP supervision to provincial level; support SBCC activities for malaria prevention and control	7,434,206	16.5%
IRS TO6 with INRB subgrants	11 sites in 10 provinces	Entomological monitoring and training	650,000	1.4%
Measure Evaluation	178 health zones in 9 provinces	Support malaria coordination mechanisms; support PMI provincial advisors; provide technical assistance for monitoring and evaluation at national and provincial levels; support <i>Journées Scientifiques</i>	2,092,000	4.6%
TBD BCC	178 health zones in 9 provinces	Develop communication campaigns/materials to support malaria BCC activities; support NMCP advocacy activities	775,000	1.7%
TBD Laboratory	178 health zones in 9 provinces	Support reference laboratories at national and provincial levels for microscopy and RDTs; implement a system of quality control for malaria diagnosis	300,000	0.7%
UNICEF	Lualaba, Sankuru and Kasai Central	LLIN mass distribution campaign in two provinces and school-based distribution in one province	12,956,000	28.8%

USAID	178 health zones in 9 provinces	In-country staffing and administration	2,520,056	5.6%
VectorWorks	Mongala and Sud Ubangi	LLIN durability monitoring in two provinces	175,000	0.4%
Total			45,000,000	100%

Table 2: Budget Breakdown by Activity

**President's Malaria Initiative – DRC
Planned Malaria Obligations for FY 2017**

Proposed Activity	Mechanism	Budget		Geographic Area	Description
		Total \$	Commodity \$		
PREVENTIVE ACTIVITIES					
VECTOR MONITORING AND CONTROL					
Entomologic monitoring and insecticide resistance management					
Entomological surveillance and insecticide resistance monitoring	IRS TO6 with INRB sub-grants	550,000		11 sites in 10 provinces: Kingasani, Kabondo, Mikalayi, Lodja, Kalemie, Kapolowe, Katana, Equateur, Bandundu and Kongo Central	Improved support for species identification and insecticide resistance monitoring at sentinel sites in supported provinces. Includes increased supervision/support of field and laboratory activities and quality assurance activities.
Support entomological training	IRS TO6 with INRB sub-grants	100,000		11 sites	Support training in field entomology for national and provincial staff, with a special emphasis on quality assurance.
Technical assistance for entomological monitoring	CDC/IAA	29,000		11 sites in 10 provinces	One visit to support activities related to entomological monitoring.

Subtotal Entomonitoring		679,000	0		
Insecticide-treated Nets					
Procurement of long-lasting insecticide-treated bed nets (LLINs) for mass campaigns	UNICEF	7,500,000	7,500,000	Sankuru and Lualaba provinces	2.5million ITNs @ \$3. Includes delivery to Kinshasa.
Operational costs for mass campaigns	UNICEF	5,000,000		Sankuru and Lualaba provinces	2.5 million ITNs @ \$2. Includes training, supervision, household census, transportation, and communications.
Procurement of LLINs for continuous distribution through ANC and child health clinics	GHSC/PSM	5,909,000	5,909,000	178 health zones in 9 provinces	1.9 million ITNs @ \$3.11. Includes delivery to regional warehouses.
Operational costs for continuous distribution of LLINs	IHP-DRC	2,850,000		178 health zones in 9 provinces	1.9 million ITNs @ \$1.50. Includes delivery from regional warehouses to health zones and/or health facilities, storage, and supervision.
Storage costs for LLINs at regional warehouses	TBD supply chain	437,760		8 regional warehouses in 9 provinces	8% of ex-works (factory) cost.
Procurement of ITNs for continuous distribution through primary schools	UNICEF	0		Kasai Central Province	Procure 380,000 ITNs @\$3 with MOP FY 2016 reprogramming funds. Includes delivery to Kinshasa.
Operational costs for continuous distribution through	UNICEF	456,000		Kasai Central Province	380,000 ITNs @\$1.20. Includes training, supervision, household census, delivery to schools, and communications.

primary schools					
LLIN durability monitoring	VectorWorks	175,000		Sud Ubangi and Mongala provinces	Conduct durability monitoring for LLINs distributed through mass campaigns in two provinces.
Subtotal ITNs		22,327,760	13,409,000		
Indoor Residual Spraying					
Subtotal IRS		0	0		
SUBTOTAL VECTOR MONITORING AND CONTROL		23,006,760	13,409,000		
Malaria in Pregnancy					
Procurement of SP	GHSC/PSM	360,000	360,000	178 health zones in 9 provinces	3 million treatments for 923,000 pregnant women (3 doses each). Includes delivery to regional warehouses.
Distribution costs for SP from regional warehouses to health zones	IHP-DRC	180,000		178 health zones in 9 provinces	\$0.06 per treatment distribution cost.
Storage costs for SP at regional warehouses	TBD supply chain	21,600		10 regional warehouses in 8 provinces	8% of ex-works (factory) cost.
Replace water filters and reusable cups to facilitate directly observed IPTp	IHP-DRC	10,000		178 health zones in 9 provinces	Replace or provide new supplies as needed.

Training and supervision of health facility workers on malaria in pregnancy	IHP-DRC	400,000		178 health zones in 9 provinces	Train health workers with initial or refresher courses and provide supportive supervision.
Subtotal Malaria in Pregnancy		971,600	360,000		
SUBTOTAL PREVENTIVE		23,978,360	13,769,000		
CASE MANAGEMENT					
Diagnosis and Treatment					
Support reference laboratories at national and provincial levels for microscopy and RDTs training of trainers and implement a system of quality control and assurance of malaria diagnosis	TBD Laboratory	300,000		National, provincial, and selected referral hospitals	Supervise and implement a system for quality control and quality assurance of malaria diagnosis, assist in preparation for accreditation of laboratory technicians and provide equipment. Conduct training of trainers at the different levels of the health system.
Procurement of microscopes and supplies to support laboratories at provincial and health facility levels	GHSC/PSM	175,000	175,000	National, provincial and selected referral hospitals	Purchase of 70 microscopes and reagent kits for reference laboratories at the national and provincial levels, as well as selected reference hospitals.

Procurement of RDTs	GHSC/PSM	4,240,000	4,240,000	178 health zones in 9 provinces	8 million Ag/Pf RDTs @ \$0.53. For use at hospitals, health centers, and community care sites. Includes delivery to regional warehouses.
Procurement of ACTs	GHSC/PSM	1,835,000	1,835,000	178 health zones in 9 provinces	2.7 million ACT treatments divided as follows: 30% AL for use in urban areas @ \$0.86/treatment and 70% AS-AQ for use in rural areas @ \$0.61/treatment. For use at hospitals, health centers, and community care sites. Includes delivery to regional warehouses.
Procurement of injectable artesunate for treatment of severe malaria	GHSC/PSM	2,421,090	2,421,090	178 health zones in 9 provinces	305,000 treatments of injectable artesunate for use in children 0-5 years at reference health centers and hospitals (960,750 vials @ \$2.52). Includes delivery to regional warehouses.
Procurement of rectal artesunate for pre-referral treatment of severe malaria	GHSC/PSM	126,000	126,000	178 health zones in 9 provinces	153,000 treatments of rectal artesunate for use in children 0-5 years at community care sites and health centers (180,000 suppositories @ \$0.70). Includes delivery to regional warehouses.
Training and supervision of facility-based health workers on malaria case management	IHP-DRC	1,100,000		178 health zones in 9 provinces	Support in-service training and supervision of facility health workers responsible for the management of both uncomplicated and severe malaria.
Training and supervision of community-based health workers on integrated case management	IHP-DRC	941,726		178 health zones in 9 provinces	Support initial and refresher training and supervision of health workers that offer integrated case management for malaria, diarrhea, and pneumonia at community care sites.
Technical assistance for case management	CDC/IAA	10,000		National	One visit to support activities related to case management.

Subtotal Diagnosis and Treatment		11,148,816	8,797,090		
Pharmaceutical Management					
Distribution costs for all case management commodities from provincial warehouses to health zones	IHP-DRC	627,480		178 health zones in 9 provinces	\$0.06 per unit distribution cost for 5 million RDTs, 5 million ACTs, 153,000 RA treatments, and 305,000 injectable artesunate treatments. From regional warehouses to health zones.
Storage costs for diagnosis and treatment commodities at CDRs	TBD supply chain	502,288		10 regional warehouses in 8 provinces	8% of ex-works (factory) cost for 5 million RDTs, 5 million ACTs, 153,000 RA treatments, and 305,000 injectable artesunate treatments.
Supply chain strengthening	TBD supply chain	775,000		National level and 8 regional warehouses	Strengthen supply chain management for malaria commodities including forecasting, inventory management, and the logistics management information system at national and provincial levels.
Subtotal Pharmaceutical Management		1,904,768	0		
SUBTOTAL CASE MANAGEMENT		13,053,584	8,797,090		
HEALTH SYSTEM STRENGTHENING / CAPACITY BUILDING					

Support to malaria coordination mechanisms at the national and provincial levels	Measure Evaluation	150,000		National and provincial	Support multi-partner National Malaria Task Force at the central and provincial levels, including meetings, report dissemination, support to technical assistance for coordination, annual review.
Capacity building for NMCP staff	Measure Evaluation	125,000		National	Attendance of NMCP and INRB staff at a key malaria scientific conferences; attendance of NMCP at course(s) that addresses critical technical needs identified by PMI and the NMCP; and/or a site visit to observe activities and explore new approaches.
Support 9 provincial advisors to reinforce coordination and M&E activities at NMCP and Provincial Health Divisions	Measure Evaluation	585,000		9 provinces	Salary for nine advisors and operational costs for supervision and other field-based activities.
Contribute to the organization of Journées Scientifique in conjunction with World Malaria Day	Measure Evaluation	25,000		National	Contribution to costs of organizing sessions, including travel costs for presenters coming from the field.
Support NMCP to conduct supervision of malaria control activities at provincial level	IHP-DRC	75,000		9 provinces	Two national supervisors conduct semi-annual supervision visits to nine provinces.
Support Field Epidemiology and Laboratory training Program	CDC/IAA	150,000		National	Support two participants for Field Epidemiology and Laboratory Training Program, with malaria focus.

SUBTOTAL HSS & CAPACITY BUILDING		1,110,000	0		
SOCIAL AND BEHAVIOR CHANGE COMMUNICATION					
SBCC for routine distribution of LLINs	IHP-DRC	350,000		178 health zones in 9 provinces	Support SBCC activities to raise awareness among the population about ownership and use of bed nets, particularly for vulnerable groups.
SBCC related to malaria case management	IHP-DRC	350,000		178 health zones in 9 provinces	Support SBCC activities to promote appropriate care-seeking and treatment adherence among the population and respect of diagnosis and treatment guidelines among healthcare providers.
SBCC related to malaria in pregnancy	IHP-DRC	300,000		178 health zones in 9 provinces	Support SBCC activities related to MIP interventions, including bednet use, IPTp, and treatment-seeking behavior for suspected malaria, along with general messages on the importance of antenatal care.
Development of specific communication campaigns/materials to support malaria BCC activities.	TBD BCC	750,000		178 health zones in 9 provinces	Includes formative research on determinants of behavior, design services, pre-testing, and production/dissemination.
Support NMCP advocacy activities	TBD BCC	25,000		National	As part of resource mobilization, engage government, donors, and the private sector through meetings and workshops.
SUBTOTAL SBCC		1,775,000	0		

SURVEILLANCE, MONITORING, AND EVALUATION					
Support better use of data for program management at the central level and address DHIS 2 implementation issues	Measure Evaluation	457,000		National	Support training on data analysis and use for program management, supervision, coordination. Address challenges identified by DHIS 2 assessment.
Build M&E capacity at provincial level	Measure Evaluation	200,000		9 provinces	Training and coaching on data analysis and use, general M&E support to the NMCP at the provincial level.
Support RHIS strengthening at the zonal level through training and supervision to improve data quality, collection, and use	Measure Evaluation	500,000		Selected health zones (TBD)	Initial phase of RHIS strengthening at the zonal level.
Support collection and transmission of malaria data at health facility and health zone levels	IHP-DRC	250,000		178 health zones in 9 provinces	Includes provision of registers and forms as needed, monthly data validation meetings, and transmission of data to the zone level.
End-use verification surveys	TBD supply chain	150,000		9 provinces	Twice yearly visits at a representative sample of health facilities and warehouses.
Contribute to mid-term review of 2016-2020 National Malaria Control Strategic Plan	Measure Evaluation	50,000		National	Support costs related to organizing workshops and field visits to review progress in achieving strategy objectives.

Technical assistance	CDC/IAA	10,000			One visit to support activities related to monitoring and evaluation.
SUBTOTAL SM&E		1,617,000	0		
OPERATIONAL RESEARCH					
SUBTOTAL OR		0	0		
IN-COUNTRY STAFFING AND ADMINISTRATION					
CDC	CDC/IAA	946,000			One Resident Advisor
USAID	USAID	2,520,056			One Resident Advisor, two Malaria Program Specialists, one (30%) Malaria Commodities and Logistics Specialist, one (30%) Community Case Management Specialist, one Administrative Assistant, and Program Design and Learning costs.
SUBTOTAL IN-COUNTRY STAFFING		3,466,056	0		
GRAND TOTAL		45,000,000	22,566,090		