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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U.S. PRESIDENT'S MALARIA INITIATIVE

PRESIDENT'S MALARIA INITIATIVE

GUINEA

Malaria Operational Plan FY 2017

TABLE OF CONTENTS

ABBREVIATIONS and ACRONYMS

ACT	Artemisinin-based combination therapy
AL	Artemether-lumefantrine
ANC	Antenatal care
AS/AQ	Artesunate-amodiaquine
BCC	Behavior change communications
BSD	Office of Strategy and Development (for HMIS)
CDC	Centers for Disease Control and Prevention
CHW	Community health worker
DHS	Demographic and Health Survey
DNPL	National Directorate of Pharmacies and Laboratory
DPS	Prefectural Health Directorate
DRS	Regional Health Directorate
EPI	Expanded Program on Immunization
EUV	End-use verification
EVD	Ebola virus disease
FY	Fiscal year
GHI	Global Health Initiative
Global Fund	Global Fund to Fight AIDS, Tuberculosis, and Malaria
GOG	Government of Guinea
HMIS	Health management information system
IDB	Islamic Development Bank
IMNCI	Integrated management of newborn and childhood illness
IPTp	Intermittent preventive treatment for pregnant women
IRS	Indoor residual spraying
ITN	Insecticide-treated mosquito net
KAP	Knowledge, attitudes and practices (survey)
LMIS	Logistic management information system
M&E	Monitoring and evaluation
MICS	Multiple Indicator Cluster Survey
MIP	Malaria in pregnancy
MIS	Malaria indicator survey
MOH	Ministry of Health
MOP	Malaria Operational Plan
NMCP	National Malaria Control Program
PCG	Central Pharmacy of Guinea
PMI	President's Malaria Initiative
RBM	Roll Back Malaria
RDT	Rapid diagnostic test
RMIS	Routine malaria information system (monthly malaria reporting system)
SARA	Service Availability and Readiness Assessment
SBCC	Social and behavior change communication
SMC	Seasonal malaria chemoprevention
SM&E	Surveillance, monitoring, and evaluation
SP	Sulfadoxine-pyrimethamine

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

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

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

This FY 2017 Malaria Operational Plan presents a detailed implementation plan for Guinea, 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 Guinea, 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 Guinea is $15 million. PMI will support the following intervention areas with these funds:

Entomological monitoring and insecticide resistance management:
The national strategy focuses on protecting current vector control activities through entomological surveillance. PMI supports ongoing entomological monitoring in four sites across the country, including pyrethrum spray catches, human landing catches, and light trap collection. Current PMI support is used to conduct standard entomological surveillance including species identification and insecticide resistance, and to build capacity of key personnel to conduct and manage an entomological surveillance program. With FY 2017 funds, PMI will continue to support surveillance and skills building within the NMCP and other national structures to conduct entomological surveillance. Additionally, PMI will support the maintenance of the national laboratory and insectary.

Insecticide-treated nets (ITNs):
The national malaria strategy outlines support for free distribution of long-lasting insecticide-treated nets (ITNs) through antenatal care (ANC) and vaccination clinics; free distribution through mass campaigns; and the sale of ITNs in the commercial sector in order to reach 80% coverage by the end of 2017. PMI contributed approximately 1.75 million ITNs to the first universal coverage campaign, which took place between May 2013 and May 2014. PMI delivered 180,000 ITNs for routine use in 2014 and procured an additional 235,000 for routine delivery in 2015 and 1,000,000 in 2016 for the second universal coverage campaign. With FY 2016 funding, PMI will procure 788,500 ITNs out of 1,000,000 required to cover needs for routine distribution. With FY 2017 funds PMI will procure and distribute approximately 385,000 ITNs for routine service delivery, 700,000 for the next national mass distribution campaign in 2019, and promote correct and consistent use of ITNs throughout the year. PMI will also support durability monitoring of long-lasting ITNs.

Indoor residual spraying (IRS):
There is no PMI support for IRS in Guinea at this time.

Malaria in pregnancy (MIP):
The national malaria strategy includes the administration of intermittent preventive treatment in pregnancy (IPTp) with sulfadoxine-pyrimethamine (SP) under the direct observation of an ANC attendant, at four-week intervals, starting in the second trimester (from week 13), with at least three treatments given before delivery; the provision of an ITN at the time of the first visit; and prompt diagnosis and treatment of malaria during pregnancy. PMI's support includes procuring and distributing SP and ITNs, training and supervision of health workers, and communication activities to promote IPTp uptake and ITN use among pregnant women. In the past year, PMI procured and distributed 625,000 treatments of SP, 235,000 ITNs for routine distribution at ANC, and trained about 1,728 health facility workers and over 700 CHWs in MIP in PMI-supported zones as part of integrated refresher training courses. With FY 2017 funds PMI will procure and distribute approximately 1,700,000 treatments of SP to cover 100% of the national need, procure 385,000 ITNs for routine distribution at ANC (and EPI), train health workers, and promote IPTp uptake and ITN use via communication efforts.

Case management:
The national program is focused on ensuring universal testing of all suspect malaria cases with RDTs or microscopy and treatment of confirmed malaria cases with ACTs or injectable artemisinin, which is derived from the objective in the national strategic plan for the pharmaceutical system. PMI has supported this through provision of RDTs, ACTs, and injectable artemisinin for severe malaria, as well as necessary training and supervision of healthcare workers in health facilities and at the community level to ensure appropriate testing and treatment practices. PMI will continue this support using FY 2017 funds with a particular focus on strengthening and expanding the community healthcare worker program

to increase access to malaria testing and treatment in the post-Ebola recovery period. PMI will also support the continuation of seasonal malaria chemoprevention (SMC) for children in eight districts in northern Guinea (currently supported by the UNITAID ACCESS-SMC initiative and funded by the Global Fund through 2017), support to improve the pharmaceutical supply system, including system reforms, supply management and regulatory capacity, and therapeutic efficacy studies for first-line antimalarials.

Health systems strengthening and capacity building:
The Guinean health system is slowly recovering from the recent Ebola epidemic. After the country was declared Ebola free in December 2015, the government of Guinea (GOG) embarked on a health system recovery plan designed to reconnect communities to an even stronger health system. The GOG continues to mobilize internal and external resources for the health system recovery plan, with a particular emphasis on the community level. During the past year, PMI supported training in case management, including infection control, for health workers in facilities and the community. PMI continued to support supervision in 14 target districts and the five communes of Conakry. Finally, PMI support assisted the NMCP to coordinate partner activities, the various technical working groups, and the Roll Back Malaria (RBM) Committee. With FY 2017 funds, PMI will continue to strengthen the coordination structure of the NMCP including the establishment of the decentralized RBM Coordination Committee and embedding malaria focal persons in the 19 district health offices in the PMI target area. PMI will support NMCP operations, including communications, to support its role in coordinating partners and stakeholders. Finally, PMI will support Peace Corps Response Volunteers and grant-funded volunteer-led small projects.

Social and behavior change communication (SBCC):
The NMCP's malaria communication plan emphasizes strategies and channels to reach various target groups with culturally-appropriate messaging on malaria prevention and control. A BCC Technical Working Group oversees communication and behavior change activities and provides guidance and approval for changes based on current information and data. PMI is supporting a Multiple Indicator Cluster Survey (MICS-Palu) in 2016 that will collect information on key behavior and knowledge indicators, and provide greater clarity on the perceptions, knowledge levels, social and economic barriers, and behavior determinants of target populations, especially pregnant women and young children. These data will help identify factors underlying uptake and use of ITNs and malaria services and will form the basis for an updated communications strategy derived from the new national malaria strategy to be updated in 2017. With FY 2017 funds, PMI will continue to support the NMCP's communication plan with implementation of SBCC activities reflecting NMCP priorities and national policies, including ITN use, ANC attendance and IPTp uptake, and case management, including RDT and ACT use. SBCC for SMC will be an additional dimension of support and will be informed by lessons learned from the past three years of implementation.

Surveillance, monitoring and evaluation (SM&E):
The NMCP and malaria partners use the national M&E plan to guide surveillance, monitoring and evaluation priorities in Guinea. These priorities include data collection activities to inform implementation, such as routine health facility-based surveillance, household surveys, health facility surveys, and therapeutic efficacy monitoring. Additional priorities include health information system strengthening and capacity building for data analysis, interpretation, and use. PMI works with the NMCP and other partners such as Global Fund and UNICEF, to ensure SM&E activities are coordinated and adequately supported; examples of this collaboration include the 2012 DHS, the 2016 MICS-Palu, the Service Availability and Readiness Assessment, and the development of routine health facility

reporting tools and supervision checklists. With FY 2017 funds, PMI will continue to support: health facility surveys, including the end-use verification (EUV) survey; routine malaria reporting to ensure high-quality malaria data are available to decision-makers and that they have the capacity to routinely analyze and use those data; and the integrated Health Management Information System to ensure malaria data are included in this system as it is rebuilt and that the NMCP has access to data.

Operational research (OR):
No PMI-supported OR has been completed, is ongoing or planned.

II. STRATEGY

1. Introduction

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

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

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

Guinea is highly endemic for malaria. In a 2012 national survey, malaria infection prevalence in children under five years of age was 44% nationwide.[1] Malaria is the main cause of health facility visits in Guinea, responsible for over 30% of all public health facility visits.[2] A pillar of the National Malaria Control Program's (NMCP) efforts to reduce malaria morbidity and mortality is the expansion of access to malaria diagnostics, most commonly in the form of rapid diagnostic tests (RDTs), and antimalarial treatments in the form of ACTs for uncomplicated malaria and parenteral treatment with artemisinin derivatives for severe malaria. Access to ACTs and RDTs is provided through public health facilities and health posts, and a network of over 3,000 community health workers (CHWs), each supplied and supervised from a health center.

Large-scale implementation of ACTs and IPTp began in 2011 and has progressed rapidly with support from PMI and other partners. Rapid diagnostic tests, ACTs, and sulfadoxine-pyrimethamine (SP) for

[1] Institut National de la Statistique (INS) and ICF International. 2012. Guinea Demographic and Health Survey 2012. Conakry, Guinea

[2] National Malaria Control Strategy 2013-2017

IPTp are now available across the country in public health facilities. In addition to over 5 million long-lasting ITNs distributed through a mass distribution campaign in 2013 and early 2014, routine nets distribution was initiated in November 2014 targeting pregnant women in antenatal clinics and children under one year of age in immunization clinics.

Despite recent resurgence of Ebola virus disease (EVD) after the country was declared Ebola free in December 2015, PMI activities in Guinea continue to recover from the impact of the epidemic, which began in December 2013 affecting most of Guinea with the most important impact being a drastic reduction in health facility attendance both for all causes and fever cases, as well as a drop in the number of cases of suspect malaria treated with antimalarial drugs, as evidenced in the December 2014 survey commissioned by the NMCP.[3]

The impact of Ebola on the overall health system will continue to have an indirect effect on malaria interventions particularly in the areas that continue to experience new cases.

Guinea still faces the unique challenge of trying to revive the health system and malaria activities in a country affected by an underlying threat of an Ebola resurgence. This includes having to constantly adjust the implementation of guidelines on malaria case management in the context of Ebola, and promoting infection control in health facilities by providing personal protective equipment to health workers to examine patients, including RDT testing for suspect malaria cases.

This FY 2017 Malaria Operational Plan (MOP) presents a detailed implementation plan for Guinea, based on the strategies of PMI and the 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 Guinea, 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.

2. Malaria situation in Guinea

Guinea is a coastal country in West Africa composed of four areas with distinct ecologies: lower Guinea, which includes the coastal lowlands; middle Guinea, the mountainous region running north-south in the middle of the country; the sahelian upper Guinea; and the forested jungle area in the south. Guinea borders Guinea-Bissau and Senegal to the north, Mali and Côte d'Ivoire to the east, and Liberia and Sierra Leone to the south. Guinea has 33 prefectures (districts) divided into eight administrative regions, one of which is the capital city of Conakry and its five communes. Guinea's entire estimated population of 11,780,162 (July 2015 est.)[8] people is at risk of malaria. According to the 2014 Human Development Index, Guinea has among the lowest health and development indicators, ranking 179 out

[3]Plucinski, M., Guilavogui, T., Sidikiba, S., et al. Effect of the Ebola-virus-disease epidemic on malaria case management in Guinea, 2014: a cross-sectional survey of health facilities. *Lancet Infectious Disease* 2015; published online June 24, 2015. http://dx.doi.org/10.1016/S1473-3099 (15)00061-4.

of 187 countries.[4] Poverty has been steadily increasing over the past decade and as of 2012 over half (55%) of Guinea's population lives below the World Bank poverty head count ratio.[5]

The overall literacy rate is 41% for adults over 15 years (52% males, 30% females). Infant and under-five mortality rates are 81 and 130 per 1,000 live births, respectively. Although antenatal care (ANC) coverage of at least one visit is high (88%), the percentage of women who make at least two to three visits is still low at 18%. The lifetime risk of maternal death is one of the worst in the world, at 1 in 26. Total GDP expenditure on health is 4.7% and life expectancy at birth is low at 55 years.

Guinea has year-round malaria transmission with peak transmission from July through October in most areas. The three main vectors are *Anopheles gambiae*, *An. coluzzii*, and *An. funestus*. According to the national strategy, malaria remains the number one public health problem in Guinea, with 92% of malaria infections caused by *Plasmodium falciparum* (2012 DHS). The annual incidence rate in 2011 was estimated to be 92 per 1,000. National statistics in Guinea also show that among children less than five years of age, malaria accounts for 31% of consultations, 25% of hospitalizations, and 14% of hospital deaths. This estimate does not include malaria cases seen in the community or in private facilities. Among the general population, malaria is also the primary cause of consultations (34%), hospitalizations (31%), and death (14%) according to the Ministry of Health (MOH).[6]

According to the 2012 Demographic Health Survey (DHS), the prevalence of malaria among children under five years of age ranged between 3% in Conakry and 66% in Faranah with a national prevalence of 44% for children 6-59 months using microscopy, and 47% based on RDT results. Parasitemia prevalence showed strong variations by place of residence with 53% in rural areas compared to 18% in urban areas (strongly influenced by Conakry). The survey results also showed that 77% of children 6-59 months had anemia, and 16% had severe anemia (Hgb<8g/dl).[7]

Coverage estimates for key interventions showed room for improvement in reaching targets. A little more than half of households surveyed had at least one mosquito net, treated or untreated (53%), while 47% of households own at least one ITN. These proportions were somewhat higher in rural areas (55% and 50%) than in urban (48% and 42%). The proportions of children who slept under any mosquito net and under an ITN the night before the survey were 29% and 26%, respectively. These proportions were higher in rural areas (30% and 27%) than in urban (28% and 24%). In households with an ITN, the proportion of children under five years of age who slept under an ITN the night before the survey was 51% with no difference between urban and rural households. One in three pregnant women reported sleeping under any mosquito net (33%) while 28% reported sleeping under an ITN. In households with an ITN, the proportion of pregnant women who slept under an ITN the night before the survey was 59%. This proportion is higher in urban (62%) than rural (58%) areas. Coverage with IRS was relatively low as this intervention was not part of the national malaria control strategy. As a result, limited IRS activities were found to be happening in the country (1.7% of households per year, 2012 DHS), mainly in the mining sector (BHP Biliton, Global Alumina, Vale and RioTinto).

Malaria treatment indicators reflected low coverage: among children less than five years old with fever in the two weeks before the DHS survey, 37% had sought advice or treatment for the fever, 28% had

[4] http://hdr.undp.org/en/content/table-1-human-development-index-and-its-components
[5] http://data.worldbank.org/country/guinea
[8] https://www.cia.gov/library/publications/the-world-factbook/geos/gv.html
[6] National Malaria Control M&E Strategy 2014-17.
[7] *Institut National de la Statistique (INS)* and ICF International. 2012. Guinea Demographic and Health Survey 2012. Conakry, Guinea

received any antimalarial treatment, and less than 1% received an ACT on the same or next day. Of those children under five with fever that took any antimalarial, only 4.8% of these took an ACT; of the rest, 35.7% took chloroquine, 30.7% took quinine, 23.3% took monotherapy Amodiaquine, 6.0% took SP/Fansidar, and 5.3% took something else.

Since 2005, prevention of malaria among pregnant women using sulfadoxine-pyrimethamine (SP) was included in the national ANC health package with support to the NMCP from several partners. PMI will focus on improving prevention of malaria in pregnancy (MIP) as only 18% of women reported receiving two or more doses of SP during their last pregnancy (2012 DHS)

3. Country health system delivery structure and Ministry of Health (MoH) organization

The health care system in Guinea is managed by the Ministry of Health (MOH) and based on the administrative division of the country into eight regions. Within the eight regions there are 38 health districts composed of 334 rural municipalities and 38 urban municipalities. The MOH has three levels in its administrative structure: central, intermediate, and peripheral. The health system is organized around a pyramidal structure on three levels:

1. The central level is responsible for the strategic development plan, policy, monitoring and evaluation, and resource allocation. The new Minister of Health (as of November 2015) is instituting a reorganization of the MOH. The reorganization includes many of the previous positions, but also includes restructured directorates. The reorganized MOH includes the cabinet of the Minister of Health (Secretary General, advisers, chief of staff, and support services), as well as National Directorates: the National Directorate of Pharmacy and Medicines, the National Directorate for Hospital Facilities and Hygiene, the National Directorate of Family Health and Nutrition, the National Directorate of Community Health and Traditional Medicine, and the National Directorate of Epidemiology and Disease Control (which includes the NMCP).
2. The intermediate level: includes the seven Regional Directorates of Health (DRS) plus Conakry Directorate of Health. Within each region there are four sections: prevention and disease control, a regional inspection of the pharmacy and laboratories, administrative and financial section, and a hygiene section. Each section or unit is filled by one individual. The prevention and disease control officer alone for instance oversees all diseases within the region. The pharmacist inspector alone oversees all pharmaceutical activities within the region.
3. The peripheral level includes the 38 Prefectural and Municipal Directorates of Health (DPS/DCS). Within each prefecture there is a section of Prevention and Disease Control, as well as lab-pharmacy, planning and training, administrative and financial, and hygiene sections.

Health care is provided by the public and private sectors. Public health facilities consist of health posts, health centers, prefectural hospitals, regional hospitals, and national hospitals. There is a rapid growth of the private health sector in Guinea, providing basic to specialized health services, with very limited or no control by the Ministry of Health. When supported by a program, community health workers (CHWs) attached to health centers provide essential basic care at the community level, particularly in the management and prevention of malaria.

Public health facilities are organized into three levels that provide primary, secondary, and tertiary health care. The first level is represented by the health district and consists of three levels:[8]

1. About 963 health posts provide basic primary care and serve several villages (about 3,000 people) each. Health posts are usually staffed by an *agent technique de santé*, a clinical officer with three years of training.
2. About 413 health centers provide preventive and curative care (about 10,500 people each) and supervise the health posts. Health centers are staffed by several clinicians, including nurses, midwives, and doctors.
3. About 26 district hospitals serve as a reference for health centers and provide care to an average of 285,777 people in the district.

The second level is represented by the regional hospital and serves as a reference for the districts. There are 7 regional hospitals plus 9 municipal hospitals providing care to an estimated 1,401,400 people in the region.

The third level consists of the university hospitals at the national level. This is the highest level of reference for specialized care and includes two such hospitals in the country: Donka and Ignace Deen hospitals, both in Conakry. In addition, there is a highly specialized Sino-Guinean hospital built by the Chinese Government.

In addition to public structures, Guinea has a large number of private structures and traditional practitioners. At the community level, CHWs and hygiene committees have the responsibility of understanding health issues, monitoring health programs, and coordinating with local medical officers to improve access and quality of care in their communities.

Access to care is a major problem in Guinea. The MOH estimate that only 55% of the population has access to public health care services. The MOH and partners are investing in community case management through a trained nationwide cadre of CHWs to expand health care access to communities, especially in remote and inaccessible areas. A comprehensive policy on community health care has been elaborated and a mapping of CHWs was conducted in January 2016, which showed that Guinea has a total of 5,871 CHWs. More than 3,300 CHWs have been trained and provide health education and basic curative care to surrounding communities – although this has been impacted by the Ebola epidemic, with fewer CHWs providing a standard set of services. The CHWs have been specifically trained on infection control and diagnosis of malaria using RDTs, and provide ACTs to patients with uncomplicated malaria. Guinea's MOH strongly supports integration of priority national health programs, including malaria, HIV/AIDs, neglected tropical diseases, nutrition, reproductive health and family planning, safe delivery, and epidemic surveillance.

[8]The number of health posts and hospitals are based on 2011 estimates; the number of health centers is based on a 2013 estimate.

4. National malaria control strategy

The national strategic plan covers a period of five years: 2013-2017. The goal is to reduce malaria-related morbidity by 75% from the year 2000, and to reduce malaria mortality to near zero by the end of 2017.

The National Strategic Plan objectives are:

- Protect at least 80% of the population with effective preventive interventions for malaria;
- Ensure biological confirmation of at least 90% of suspected malaria cases;
- Ensure prompt and effective treatment of at least 90% of malaria cases;
- Strengthen monitoring and evaluation (M&E) at all levels in accordance with the NMCP's monitoring and evaluation plan;
- Strengthen management capacity, partnership, and program coordination at all levels; and
- Increase the population's knowledge about prevention and management of malaria.

Main interventions:

- Ensure universal access to prevention measures for the entire population, including ITNs and IPTp;
- Protect the entire population in areas targeted for IRS;
- Ensure laboratory confirmation by RDT or microscopy for all suspected cases of malaria seen in health facilities (public, confessional, and private sectors) and community;
- Ensure proper management of all confirmed malaria cases at all levels of the health pyramid, including the community level;
- Strengthen entomological surveillance in sentinel sites;
- Strengthen epidemiological surveillance of malaria through the Integrated Disease Surveillance and Response system at all levels of the health pyramid;
- Strengthen M&E at all levels for the collection and analysis of high quality data to inform decision-making;
- Strengthen behavior change communication to increase uptake of malaria prevention and treatment interventions;
- Strengthen coordination capacity and program management at all levels;
- Ensure availability of commodities at all levels for malaria prevention, diagnosis and treatment;
- Strengthen the partnership of Roll Back Malaria (RBM) to mobilize funding through the state budget, the private sector, and partners; and
- Strengthen international and sub-regional cooperation in malaria control.

The current strategy has been in place since 2013, and will soon be updated as a result of the ongoing mid-term review of the NMCP. The purpose of the mid-term review is to assess the progress and results of implementation of the strategic plan 2013-2017 to inform any programmatic changes that may be warranted in the remaining two years (2016-2017).

In the prevailing context of Ebola, health facilities and the community level must continue to observe the principle of universal protection for both the providers and the public through proper management of biomedical waste.

To ensure proper oversight and follow-up for planned activities, a series of joint (MOH and partners) supervision visits are planned throughout the year.

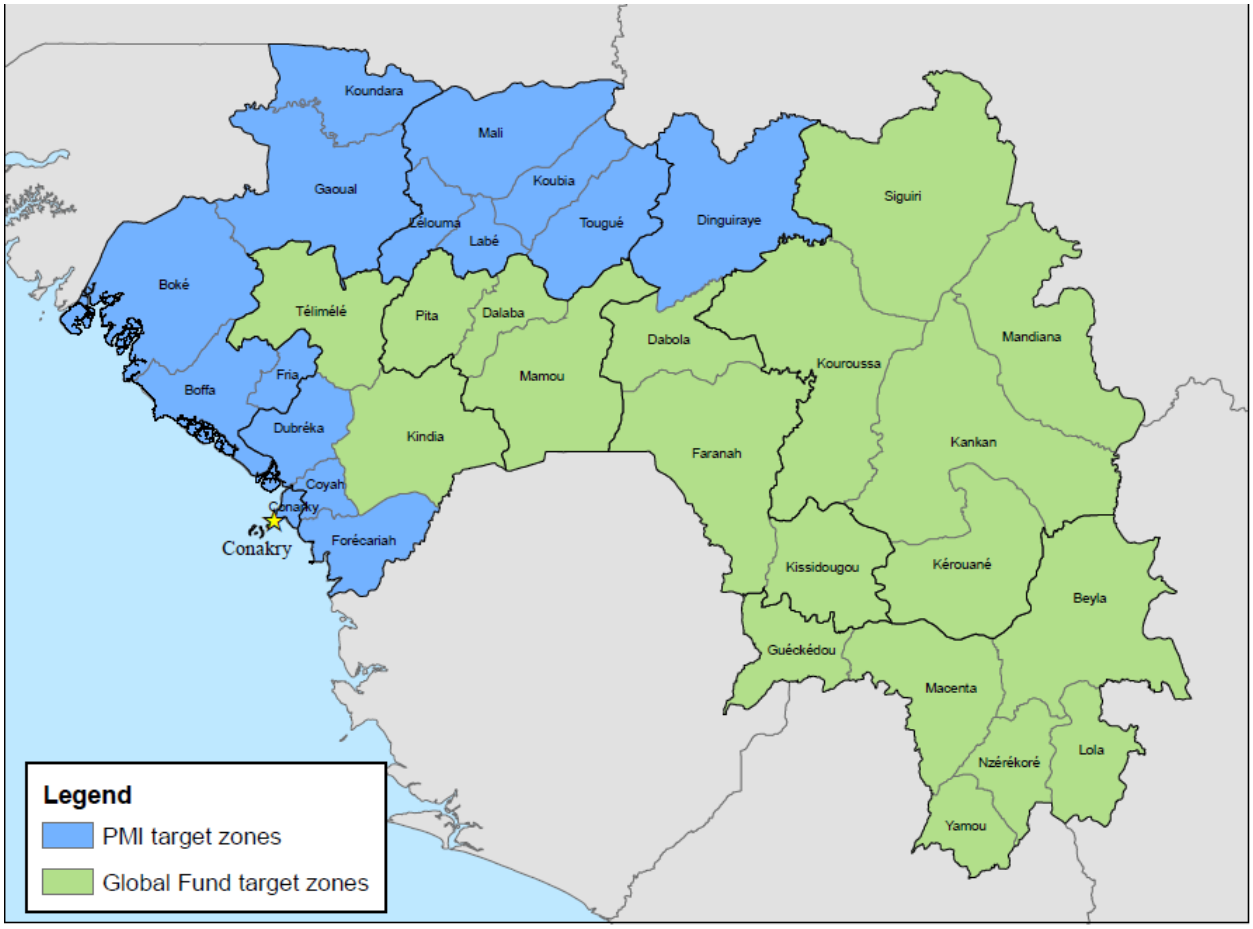
5. Updates in the strategy section

- The NMCP is currently undergoing a mid-term review of its own program which will result in the revision of the national strategy. The dissemination of the draft report of the review has been delayed due to the activities of the national bed net campaign and a new date has not been set. A full Malaria Program Review will take place in 2017 to inform the new national strategy 2018-2022.
- As of April 1, 2016, the temporary national guideline to suspend use of malaria RDTs by CHWs in favor of presumptive treatment with ACTs for suspect malaria cases was repealed and the standard guideline of universal testing by CHWs was reinstituted.

6. Integration, collaboration, and coordination

Two main donors (PMI and Global Fund) support the malaria program in Guinea; see the map below for donor target zones. The two donors divide their support across the eight regions and 33 districts (prefectures) of the country. PMI supports 14 districts in upper and middle Guinea and the five communes of Conakry, while Global Fund supports the remaining19 districts in middle Guinea, lower Guinea, and the forest areas. PMI and Global Fund work collaboratively to address the needs that were identified through the gap analysis by NMCP and all its stakeholders. Both donors use the same materials and tools, and collaborate on a number of activities which include: 1) contributing to national needs for malaria commodities (i.e., contributing to a “common basket”); 2) monitoring and evaluation (M&E) using the same M&E tools that support the NMCP such as those used for malaria quarterly reviews, monthly reports, and end-use verification (EUV) surveys; 3) integrated supervision activities conducted jointly with Global Fund and other partners; 4) evaluations and research such as assessing the impact of Ebola on malaria (December 2014); and 5) technical assistance to the NMCP during the preparation of the Global Fund concept note. However, the two donors finance the following activities separately in their own target zones: 1) training and supervision of health care workers and community agents; 2) behavior change communications; and 3) distribution of malaria commodities. As stated above, Global Fund and PMI use the same materials and guidelines in both health facility-based and community-based interventions to ensure activities are coordinated. These materials are developed under the leadership of the NMCP with support from malaria partners.

Figure 1. Distribution of PMI and Global Fund Target Zones in Guinea



The NMCP has also developed partnerships with other various organizations and institutions involved in the fight against malaria, including Roll Back Malaria (RBM), Research Triangle Institute, Plan Guinea, Population Services International, Catholic Relief Services, German Development Cooperation, *Médecins sans Frontières*, Helen Keller International, Rio Tinto, Islamic Development Bank (IDB), World Health Organization (WHO), United Nations Children's Fund (UNICEF), World Bank, *Organisation pour la Mise en Valeur du Fleuve Senegal* (OMVS), and Japan International Cooperation Agency. This partnership reinforces the collaboration and coordination between malaria stakeholders for the benefit of the Guinean population and will be strengthened by the establishment of a Coordinating Committee of technical and financial partners.

Through various interventions aimed at children and pregnant women, PMI and UNICEF activities are coordinated through a single mechanism, to support the Integrated Management of Newborn and Childhood Illnesses (IMNCI) program. Through this coordination, 17 national trainers were trained, including staff from the regional and district levels in PMI-supported zones. Through the same mechanism, with funding from Alcoa Foundation, hygiene kits were procured and distributed to 68 trained CHWs performing malaria prevention and case management activities to re-enforce infection control and prevention in the prefecture of Boké.

The NMCP has integrated private faith-based health structures into the national program's activities, albeit on a limited scale in and around Conakry (roughly 37 facilities), to increase efficiency and

coordinate the participation of partners in order to reduce malaria mortality and morbidity, particularly among children and pregnant women. The Conakry Health Directorate has estimated a 60% utilization rate of faith-based facilities in the capital. As a result, collaboration between private and faith-based facilities with the national program and its partners has improved, however there are still some challenges related to private sector data reporting. Support is focused on training, supervision, and providing appropriate tools for proper case management and reporting.

In an effort to develop mechanisms for integration and effective coordination at national, regional, and district levels, the NMCP holds quarterly RBM coordination meetings at the national level, and has recently established regional RBM coordination committees.

Strengthening community participation in the planning and delivery of health services to the people is a challenge requiring active involvement of community networks, structured groups, and opinion leaders in all villages. The MOH, including the NMCP and partners continue to work at the community level, building capacity, in order to ensure outreach of key, life-saving activities, both in the community and at the local health facility.

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

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

1. Reduce malaria mortality by one-third from 2015 levels in PMI-supported countries, achieving a greater than 80% reduction from PMI's original 2000 baseline levels.
2. Reduce malaria morbidity in PMI-supported countries by 40% from 2015 levels.
3. Assist at least five PMI-supported countries to meet the World Health Organization's (WHO) criteria for national or sub-national pre-elimination.[9]

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 old who slept under an ITN the previous night
- Proportion of pregnant women who slept under an ITN the previous night

[9] http://whqlibdoc.who.int/publications/2007/9789241596084_eng.pdf

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

8. Progress on coverage/impact indicators to date

Table 1. Evolution of Key Malaria Indicators in Guinea from 2005 to 2012

Indicator	DHS 2005	MICS 2007	National Coverage Survey		DHS 2012
			2009	2010	
% Households with at least one ITN	3.5	12.5	23.4	78.8	47.4
% Households with at least one ITN for every two people	-	-	-	-	9.7
% Children under five who slept under an ITN the previous night	1.4	6.7	12.0	60.4	26.1
% Pregnant women who slept under an ITN the previous night	1.4	5.1	24.7[1]	46.8[1]	28.3
% Households in targeted districts protected by IRS (national-level indicator; IRS is not a key intervention)	-	-	-	-	1.7
% Children under five years old with fever in the last two weeks for whom advice or treatment was sought	-	-	-	-	37.1
% Children under five with fever in the last two weeks who had a finger or heel stick	-	-	-	-	8.5
% Children receiving an ACT among children under five years old with fever in the last two weeks who received any antimalarial drugs[2]	-	-	-	-	4.8
% Women who received two or more doses of IPTp during their last pregnancy in the last two years	2.7	-	35.9[3]	41.0[3]	22
% Children age 6-59 months with severe anemia (Hgb <8g/dl)[10]	14.5	-	-	-	15.9
% Children age 6-59 months with parasitemia according to microscopy	-	-	-	-	43.9

[1] The 2009 survey report specifies use of long-lasting ITNs by pregnant women while the 2010 survey report does not (i.e., it includes any treated nets).
[2] ACTs were not the first-line treatment at the time of the DHS and MICS surveys; the 2010 coverage survey report did not provide adequate data to calculate this indicator in the standard format (i.e., the denominator could not be determined).
[3] The 2009 and 2010 coverage surveys include a five-year look-back period instead of a two-year period and do not specify that at least one dose was taken at an ANC visit.

[10] A measure of hemoglobin <8g/dl is the value typically used as an indirect indicator of anemia associated with malaria.

9. Other relevant evidence on progress

As PMI begins its sixth year of program implementation, additional recent evidence of progress includes:

- The monthly malaria reporting system has reached near universal reporting from all health districts (e.g., February 2016 bulletin shows 36 of 38 districts reporting all data with district-level completeness ranging from 76% to 100%). The monthly bulletins are disseminated widely by the NMCP and the PMI team has observed examples of district and national level data use to inform activity implementation.
- The monthly reporting system also includes commodity consumption reporting which is being used at the district and regional levels to roll out a decentralized "pull" system.
- Preliminary results from the PMI-supported therapeutic efficacy study, implemented by the Maferinyah Training and Research Center, have shown greater than 90% uncorrected efficacy of AS-AQ and AL in Forécariah and Labé Prefectures.
- Results from bioassays conducted in 2015 on nets distributed during the 2013-2014 mass campaign showed that only 1 of 58 nets sampled did not meet WHO standards; additional nets have been collected in 2016 and will be tested.
- The Service Availability and Readiness Assessment showed that 79% of facilities had malaria diagnostic capacity, 85% had personnel trained in malaria case management, 59% had personnel trained in IPTp, 67% had ACTs available, and 76% had SP available.
- A Global Fund-supported National Household Coverage Survey was implemented in December 2015 which put ownership of at least one mosquito insecticide-treated net at 71%.
- Collaboration between the NMCP and the Gamal Abdel Nasser University of Conakry has resulted in the renovation of an insectary and laboratory space. Once the space is fully equipped, the facilities can be used for analysis of mosquitoes collected in the entomological sentinel sites and for bioassays on nets collected from the field.

III. OPERATIONAL PLAN

PMI contributes to the country's overall malaria strategy and focuses support in strategic areas where it can have the most impact. Of note, PMI does not currently support:

- IRS activities – planned in a limited number of districts when funding is secured; launch date to be determined.
- Larval source management – this is not currently an activity implemented by the program and the national strategy acknowledges that it is only appropriate under certain conditions.
- Seasonal malaria chemoprevention – SMC has been implemented in northern districts in 2015 as part of the UNITAID-funded ACCESS-SMC project; existing funding will carry the activity through the 2017 transmission season. PMI support to date has been limited to withdrawing supplies of AS-AQ to replace with AL in target districts. PMI proposes supporting SMC in 2018 in the areas meeting eligibility criteria if other funding is not secured.

PMI's geographic focus is limited to roughly half of the country (including Conakry) with the rest of the country targeted by Global Fund; though many activities do have a national scope (additional information on this division, including a map, is provided in the Strategy section (Integration, collaboration, and coordination).

1. Vector monitoring and control

NMCP/PMI objectives

The current objective is 100% coverage of the population at risk of malaria with insecticide-treated nets (ITNs) by the end of 2017. The strategy for reaching this objective includes universal campaigns and routine distribution for pregnant women and children less than one year old through antenatal care (ANC) and the Expanded Program on Immunization (EPI), respectively. After a first universal coverage campaign in 2013/2014, the second universal coverage campaign will take place in 2016. The definition of universal coverage is one ITN per two persons. The 2013-2017 National Malaria Control Strategy does not include indoor residual spraying (IRS) as a major method of vector control, but notes that it has been used in emergency situations, including use in refugee camps between 2001 and 2005. IRS is also used by some mining companies in limited areas throughout the country. Currently, the Islamic Development Bank is granting funds to conduct IRS in two districts, namely Faranah and Dabola, to protect an estimated 448,120 people (Faranah: 255,226; Dabola: 192,894). The target date for launching the spray program will depend upon when funds are made available, but will be before the start of the rainy season in 2017.

a. Entomological monitoring and insecticide resistance management

Progress since PMI was launched

In July 2012 PMI funded a ten-day training course for entomology personnel including entomologists from the MOH (four at the NMCP, one at the National Public Health Laboratory, one at the National Directorate of Public Hygiene, and three at the center for research in Maferinyah) and two entomological technicians from each of seven prefectures. Mosquito surveys and limited insecticide susceptibility assays were carried out in September 2012 in Boffa. In 2015, three NMCP staff were sent to the *Centre de Recherche Entomologique de Cotonou* (CREC) for training on mosquito collection,

laboratory analysis of specimens, and simultaneously determined species and resistance mechanisms of *Anopheles* mosquitoes collected in Guinea in 2014.

Progress during the last 12-18 months

In the past 12-18 months, entomological monitoring has been conducted in all four entomological surveillance sites (Boké, Labé, Kankan, Kissidougou), which includes pyrethrum spray catches, human landing catches, and light trap collections. Both *An. gambiae s.s.* and *An. coluzzii* were found in all sites, and generally with a high frequency of the kdr-west mutation. In addition, insecticide susceptibility tests were conducted in three of four sites. DDT resistance was detected in all three sites, with permethrin, deltamethrin, and bendiocarb resistance in certain sites. Although no IRS activities are currently underway, the resistance status of malaria vectors is important for understanding the role of resistance in relation to the use of ITNs. It will also provide useful information for upcoming IRS activities.

Table 2. Insecticide susceptibility tests conducted in sentinel sites with *Anopheles gambiae s.l.* in 2015

Site*	Month	Insecticide	Number tested	Mortality (%)
Boké	Dec-15	Permethrin	97	100
		Deltamethrin	100	100
		Bendiocarb	98	100
		DDT	95	75
Kankan	Sep-15	Permethrin	70	89
		Deltamethrin	70	100
		Bendiocarb	67	100
		DDT	64	63
Kissidougou	Oct-15	Permethrin	20	70
		Deltamethrin	20	90
		Bendiocarb	20	95
		DDT	20	35

**Insufficient mosquitoes were collected in Labé for susceptibility tests in 2015*

Beginning in November 2015, the Maferinyah Research and Training Centre has been performing monthly collections of malaria vectors in Maferinyah sub-prefecture, with the aim of improving understanding of the vector species in this area, their seasonality, and insecticide resistance status.

An agreement has been reached with the Gamal Abdel Nasser University of Conakry to use rooms in the Biology Department for a laboratory and insectary. The refurbishment of the rooms is complete and now the equipment is being purchased and installed.

Plans and justification

The plan for FY 2017 funding is the continued collection of entomological data from sentinel sites that began in January 2014. These data will provide information on the species of malaria vectors, infection rates, biting times, and resistance status (including resistance intensity bioassays). Insecticide resistance tests will be done once per year in each site, while other data will be collected at three times during the year to allow for estimation of seasonal effects. The training of locally based entomological technicians

will allow for improved seasonal monitoring of malaria vectors, and will build capacity for future studies.

Proposed activities with FY 2017 funding: ***($483,000****)*

1. *Entomological monitoring and capacity building:* Support for vector surveillance and insecticide resistance monitoring in each of the four ecological zones, including transport and analysis of samples; capacity building for entomologists and support for NMCP staff supervision *($350,000)*.
2. *Advanced training for entomological technicians*: Four regional technicians based in the sentinel sites will be trained at the Centre Muraz in Bobo-Dioulasso, Burkina Faso, to allow collections of mosquitoes and insecticide resistance tests to be done in Guinea with reduced supervision from the NMCP *($40,000).*
3. *Support for the insectary and laboratory*: Operational support for the insectary and associated laboratory to include, electricity, internet, general maintenance, security, and support for the biological specimens (mosquitoes and animal blood sources) *($64,000).*
4. *Technical assistance for entomological capacity building:* Funding for two technical assistance visits from CDC to help develop entomological capacity at the national and prefectural level *($29,000)*.

b. Insecticide-treated nets

Progress since PMI was launched

The 2012 DHS indicated that 47% of households had at least one ITN. The percentages of those reported as sleeping under an ITN the previous night was 26% for children under the age of five, and 28% for pregnant women. When only those with access to a net were considered, 51% of children under the age of five and 59% of pregnant women slept under an ITN the previous night. These data were collected between June and October 2012, which was three years after the first distribution of ITNs in 2009 that targeted children under the age of five and pregnant women.

The second mass distribution campaign happened in three phases using a voucher scheme, beginning in May 2013 and completed in May 2014. During the May 2013 campaign, targeting the Global Fund zones, over 3.2 million ITNs were distributed in 19 prefectures with over 98% of campaign coupons recovered. Approximately 237,000 PMI-procured nets were used to cover the gap in nets needed in this first phase. The second phase targeted PMI zones, and took place in October-November 2013 (14 prefectures) in which 2,061,584 ITNs were distributed. PMI supplied 1,353,000 nets, and the remainder was provided by other partners including the Islamic Development Bank, Japan International Cooperation Agency, and UNICEF. In addition, PMI supported the transportation of these nets to distribution sites, as well as planning, training, supervision, and social mobilization/communication for the campaign's second phase. The third phase of the mass distribution was completed by the end of May 2014 in the five communes of Conakry (also a PMI zone), which has the lowest malaria prevalence throughout the country (3% based on the 2012 DHS).

Routine distribution of nets began in late 2014 for pregnant women attending ANC and children under the age of one coming to health centers for EPI (see below for additional details on routine distribution).

Progress during the last 12-18 months

The NMCP originally planned to use the 2014 Malaria Indicator Survey (MIS) to get post-campaign coverage estimates, but this was postponed due to the Ebola outbreak, and is now planned for 2016 via the Multiple Indicator Cluster Survey (MICS).

Bioassays were conducted on mosquito nets distributed in 2013 to ensure that the insecticidal effect was still present in 2015. Of the 58 nets tested from a convenience sample in villages near Boké and Labé, only one did not meet WHO standards (but was not subjected to a tunnel test, which may have allowed it to meet the standards). Sixty nets were collected in early 2016 and bioassays will be conducted on these to ensure the bioefficacy of the nets.

The launch date for the next universal coverage campaign is May 11, 2016. Planning has been underway for several months with consultants from the Alliance for Malaria Prevention providing key technical assistance in the process. The planned approach is similar to the 2013/2014 campaign with a phased implementation and use of campaign coupons/vouchers. One additional aspect that will be implemented based on lessons learned from the previous campaign is a rapid monitoring tool for household registration. The objective is to correct any systematic errors made in registering households during the census process itself rather than uncovering problems during the distribution. Nets have already been positioned based on the registration data. The PMI team has worked with the Alliance for Malaria Prevention to help the NMCP and partners develop tools and procedures for the rapid monitoring. Partner contributions for ITNs indicate that the entire campaign gap is covered; however, there are concerns about delays in ITN arrival in country in time to complete the nationwide distribution before the rains begin. Once again, the distribution will take place in phases with all districts and Conakry completed by mid-June 2016. PMI is contributing 1 million ITNs for the campaign and will cover the distribution costs of over 3 million ITNs targeted for PMI zones.

Finally, PMI contributed 235,000 ITNs that were distributed via routine channels, including via ANC and EPI. This support included promotion of ITN ownership and use as part of a comprehensive social behavior change and communication (SBCC) program for prevention of malaria. A post distribution evaluation showed that this activity had a number of positive outcomes. Some of the key results of the introduction of this channel are that; 1) most providers (ANC, EPI, and staff distribution points) were trained and health facility staff are now knowledgeable and master the targeted population, the eligibility of beneficiaries and the precautions to take before, during and after delivery of long-lasting ITNs; 2) key messages around the importance and proper use of long-lasting ITNs were conveyed and communication materials have been provided to all health facilities. The main challenges were incomplete vouchers (e.g. some information such as phone numbers of beneficiaries was missing on some vouchers) and the lack of and/or improper management of tools at the DPS level.

Commodity gap analysis

Table 3. ITN Gap Analysis

Calendar Year	2016	2017	2018
Total Targeted Population	12,508,912	12,896,688	13,296,485
Continuous Distribution Needs			
Channel #1: ANC	450,321	580,351	598,342
Channel #2: EPI	400,285	515,868	531,859
Estimated Total Need for Continuous	850,606	1,096,219	1,130,201
Mass Distribution Needs			
2016 mass distribution campaign	6,949,396	0	0
Estimated Total Need for Campaigns	6,949,396	0	0
Total ITN Need: Routine and Campaign	**7,800,002**	**1,096,219**	**1,130,201**
Partner Contributions			
ITNs carried over from previous year	151,522	0	0
ITNs from MOH	100,000	0	0
ITNs from Global Fund NFM	5,378,178	325,619	745,201
ITNs from Other Donors (OMVS)	600,000	0	0
ITNs planned with PMI funding	1,000,000	770,600	1,085,000*
Total ITNs Available	7,229,700	1,096,219	1,830,201
Total ITN Surplus (Gap)	(570,302)	0	700,000

Assumptions: Pregnant women are 4.5% of the total population. Children under 1 are 4% of the total population. Coverage of pregnant women by ANC (i.e., first visit) is 80% in 2016, and 100% in 2017 and 2018. Children covered under EPI is 80% in 2016 and 100% in 2017 and 2018. The universal campaign need is the total population divided by 1.8.
**700,000 of the 2018 ITNs will be carried over into 2019 for the mass distribution campaign.*

Plans and justification

With FY 2017 funds, PMI proposes to procure and distribute 385,000 ITNs for routine distribution. Due to several factors including uncertainties about Global Fund resources beyond 2017, ITN order lag-times, and competing priorities for resources, PMI will procure 700,000 ITNs in anticipation of the 2019 universal coverage campaign. . PMI will work with the NMCP and partners to improve the routine system to ensure delivery of ITNs to facilities as they need them, as well as support training around a package of services provided during routine visits. With funds available in the coming year, PMI and Global Fund will collaborate to support focused technical assistance for strategic planning and strengthening of routine ITN distribution channels. FY 2017 activities will build on these strategic plans including training of new health facility and health post staff in routine ITN distribution; supervision for routine distribution will be carried out as part of case management supervision activities.

The durability of ITNs distributed in the mass campaign in 2016 will be monitored. Durability monitoring will follow PMI guidelines and will include bioassays on net samples.

Proposed activities with FY 2017 funding: ***($4,082,500)***

1. *Procurement and delivery of ITNs:* Procure 385,000 ITNs for routine distribution in 2018 with Global Fund procuring the remainder to fill the gap. Also, procurement of 700,000 ITNs for the next national mass distribution campaign in 2019 *($3,617,500)*.
2. *Distribution of routine ITNs:* PMI will be responsible for covering distribution costs in the PMI target zones, which covers approximately half of the country; thus approximately 565,000 routine nets (half of national need) *($290,000)*.
3. *Training/refresher training for routine ITN distribution:* Provide training to new health facility and health post staff in the management and distribution of routine ITN for pregnant women and children less than one year old *($75,000)*.
4. *SBCC for ITN use:* SBCC for ITN use will be part of an integrated communication package including MIP and case management, following national standards and coordinated with what other donors are doing in their respective target areas. *(Costs covered in SBCC section)*.
5. *ITN durability monitoring*: Prospective ITN monitoring will continue to follow ITNs distributed during the 2016 universal coverage campaign, and will provide data on: 1) net survivorship and physical integrity; 2) bioefficacy of insecticides; and 3) insecticidal content *($100,000)*.

c. Indoor residual spraying

There is no PMI support for IRS in Guinea at this time.

2. Malaria in pregnancy

NMCP/PMI objectives

In 2013, the NMCP presented their new strategy (2013-2017) with a revised version adopted in February 2014. The NMCP and the National Safe Motherhood Program (which oversees ANC services nationwide) worked together to develop the national malaria strategy and protocols. The strategy contains guidance on standard WHO recommended practices for the prevention of malaria in pregnancy (MIP) including the administration of intermittent preventive treatment during pregnancy (IPTp) with sulfadoxine-pyrimethamine (SP) under the direct observation of an antenatal care (ANC) attendant, at four-week intervals, starting in the second trimester (from week 13), with at least three treatments given before delivery, and the provision of an insecticide-treated net (ITN) at the time of the first visit. Iron/folate is provided free of charge at ANC, and each pregnant woman receives 30 tablets (60mg/0.25mg per tablet) per month, taking one per day. Regarding case management of MIP, pregnant women who are diagnosed with uncomplicated malaria should receive quinine in the first trimester and an artemisinin-based combination therapy (ACT) in the second and third trimesters. Treatment for those diagnosed with severe malaria follow national protocols (see section on Treatment). The strategy also follows WHO guidance regarding pregnant women who are HIV positive.

Community health workers (CHWs) conduct home visits to encourage pregnant women to attend ANC to receive IPTp (among other things), and to use ITNs every night to protect themselves from malaria. There are no data available on the number of CHW interactions with pregnant women.

According to the national strategy, pregnant women represent an estimated 4.5% of the population, which is the percentage that the NMCP uses to quantify needs for SP and routine ITN distribution through ANC.

The national strategy articulates a 2017 target of 80% of pregnant women receiving at least three SP treatments (IPTp3) throughout their pregnancy. For commodity planning purposes and gap analyses, including the Global Fund proposal, the NMCP uses the following targets for IPTp3 coverage: 90% in 2016 and 2017, and 95% in 2018. The national strategy defines a target of 80% ITN use by pregnant women (same target in all years). In addition, by 2017 and beyond, 100% of pregnant women will receive an ITN during an ANC visit. PMI will work with the NMCP and partners to achieve progress towards IPTp uptake and ITN distribution targets.

Progress since PMI was launched

Since the launch of PMI in Guinea in FY 2011, PMI assisted the NMCP to revise its national strategy to reflect current WHO recommendations for IPTp uptake. Also, PMI procured and distributed nationwide over one million SP treatments; trained over 1,728 health facility workers and over 700 CHWs in MIP in PMI-supported zones as part of integrated refresher training courses; and reached over 200,000 people via home visits and community-level activities such as group discussions. Communication messages were disseminated throughout PMI target zones promoting IPTp uptake at ANC and sleeping under ITNs every night (see SBCC section for more details).

The data from the 2012 DHS show that while 85% of pregnant women make at least one ANC visit, only 22% receive two or more doses of IPTp (up from 3% in the 2005 DHS). DHS data also show that 28% of pregnant women slept under an ITN the previous night, up from 1.4% in the 2005 DHS. It should be noted that implementation of IPTp was hampered by stockouts of SP for the first two years of PMI in Guinea, and ITNs only began appearing at ANC in 2014.

Progress during the last 12-18 months

The last 12-18 months have been a difficult time for Guinea, with the health system severely rattled by the effects of the Ebola epidemic. Health facility attendance has just returned to pre-Ebola levels, and many new personnel have come on board, all of whom need training, while refresher training is needed for existing staff.

During the last 12-18 months PMI procured 620,000 SP treatments. Within the last 12 months, PMI reprogrammed funds that were originally planned for purchasing SP, which would have been ordered in October 2015. Recently, though, it was noted that the country only has a five-month supply of SP, so PMI, using an existing pipeline for commodities, plans to order enough SP to reach the end of the first quarter of the 2017 calendar year. While the plan to reprogram SP funds appeared sound at the time, it is clear that the upsurge in facility attendance following the end of the Ebola epidemic, including attendance at ANC, has led to increased consumption of SP, thus increasing the need to resupply sooner rather than later.

In addition to SP procurement, PMI purchased 235,000 ITNs for distribution at ANC. The PMI contribution along with the Global Fund contribution covered the entire projected gap for ITNs; however, the interruption in regular ANC attendance due to the Ebola epidemic affected routine distribution so ITN supplies remain high.

Table 4. Status of IPTp policy in Guinea

WHO policy updated to reflect 2012 guidance	Updated in 2013
Status of training on updated IPTp policy	Completed
Number of health care workers trained on new policy in the last year	353
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

Table 5. SP Gap Analysis for Malaria in Pregnancy

Calendar Year	2016	2017	2018
Total Population	12,508,912	12,896,688	13,296,485
SP Needs			
Total number of pregnant women attending ANC	506,611	522,316	568,425
Total SP Need (in treatments)	**1,519,833**	**1,566,948**	**1,705,274**
Partner Contributions			
SP carried over from previous year	445,900	0	0
SP from MOH	0	0	0
SP from Global Fund	255,418	0	0
SP from Other Donors	0	0	0
SP planned with PMI funding	333,333	1,566,948*	1,705,274
Total SP Available	1,034,651	1,566,948	1,705,274
Total SP Surplus (Gap)	(485,182)	0	0

Assumptions: Pregnant women are approximately 4.5% of the population. Target for ANC attendance is 90% in 2016 and 2017, and 95% in 2018. Needs are based on NMCP targets for ANC attendance and IPTp coverage.
**PMI will purchase 100% of SP need starting in 2017.*

Plans and justification

Using FY 2017 funding, PMI will continue to support activities aimed at enhancing the provision of effective MIP services in public health facilities in Guinea. As per agreement with the NMCP, PMI will procure enough SP to cover 100% of the estimated need nationwide (based on 95% attendance at ANC), as well as a portion of the ITN need for routine distribution during ANC visits (see ITN section). Work is ongoing and will continue with FY 2017 funding to streamline quantification exercises so that gap analyses more accurately reflect consumption. Also, as health services continue to recover from the Ebola epidemic, PMI will support laboratory diagnosis and appropriate treatment of malaria to reinforce the implementation of MIP services, including support for training (both of new staff and refresher training for existing staff) and supervision of IPTp service delivery along with other aspects of effective

case management, and promotion of IPTp uptake and use of ITNs among communities throughout Guinea.

Proposed activities with FY 2017 funding: ***($810,000)***

1. *Procurement of SP*: Procure approximately 1,705,275 doses to ensure an adequate supply for pregnant women to receive three doses throughout their pregnancy. PMI will cover the entire estimated national need for SP (based on NMCP targets for ANC attendance and IPTp coverage) (*$204,000*).
2. *Procurement of quinine tablets*: Procure quinine tablets to treat pregnant women in their first trimester of pregnancy *($15,000*).
3. *Training/refresher training for MIP*: Provide training and refresher training for public and private health facility midwives and nurses to correctly deliver SP and MIP services in the context of the focused antenatal care approach. Training will be provided for two health workers from every health center and one from every health post *($591,000*).
4. *Supervision for health workers providing MIP services, including IPTp*: On-site supervision for public health facility midwives and nurses to provide MIP services in the context of the focused antenatal care approach. MIP supervision will continue to be part of an integrated approach for supervision at health facilities (*Costs covered under Case Management section*).
5. *SBCC for MIP*: Support SBCC to promote ANC clinic attendance and educate pregnant women and communities on the benefits of IPTp. This activity will include support for community-level approaches, such as training of community-based workers as well as mass media (including local radio stations). This will be part of a larger integrated SBCC activity to satisfy needs for case management, ITNs, and IPTp (*Costs covered under the SBCC section*).

3. Case management

a. Diagnosis and treatment

NMCP/PMI objectives

Prior to the scale-up of RDTs, national malaria case management guidelines allowed for clinical diagnosis of malaria. However, with increasing RDT availability, PMI supported the revision of the NMCP guidelines to reflect WHO recommendations on laboratory confirmation of all suspect malaria cases prior to treatment. According to NMCP policy, laboratory confirmation of cases could be done either by RDTs, provided free of charge and widely used at public health facilities and by CHWs, or by microscopy, a paid service at health facilities. This requirement applies to both forms of malaria (uncomplicated and severe) and at all levels of the health system, including the community level.

Diagnosis

According to Guinea's health services package, all hospitals and health centers should provide microscopy services. However, a Global Fund-financed health facility survey of hospitals and health centers in 2010 showed that fewer than half the facilities in Guinea had a microscope (approximately 100% of hospitals but only 40% of health centers).[11] During the 2015 Service Availability and Readiness Assessment (SARA) health facility survey, 71% of national-level hospitals, 93% of provincial and regional hospitals, and 34% of health centers offered microscopy for malaria. Staff from the NMCP

[11]This was a nationally-representative survey with a sample of 129 health facilities.

and the National Laboratory, which is part of the National Institute of Public Health, are responsible for supervision of microscopy, although no comprehensive quality assurance/quality control program has been developed for malaria microscopy.

Given the limitations of microscopy services in Guinea, the NMCP supported the introduction of RDTs for malaria diagnosis at all levels of the health care system. In addition to ensuring RDT availability in health facilities, the NMCP also aimed for continuous supply of RDTs at the community level for use by CHWs.

Treatment

In Guinea, two ACTs are used for treatment of uncomplicated malaria: artesunate-amodiaquine (AS-AQ) and artemether-lumefantrine (AL). While the 2012 DHS showed relatively high use of non-ACTs at the time, this data point came before intensive rollout of case management activities, and was also during a time when there were major challenges with ACT availability. The 2016 MICS Palu will provide current data on ACT use that can help further guide programming. Until 2016, AS-AQ was the predominant ACT used throughout the country, with use of AL limited to health districts in the SMC zone. However, starting in 2016, NMCP has decided to prioritize AL throughout the country, and has asked donors to exclusively procure AL. Both drugs are known to be efficacious for the treatment of uncomplicated *P. falciparum* malaria. A 2011–2012 therapeutic efficacy study showed 97% efficacy for AS-AQ in children and adults in Forécariah Prefecture. Preliminary data from the 2015 round of therapeutic efficacy monitoring in Forécariah and Labé Prefectures show uncorrected 28-day efficacies for AS-AQ and AL above 90%, with PCR correction and K13 monitoring results pending.

Per national policy, pregnant women in their first trimester with uncomplicated malaria are to be treated with oral quinine; in the second and third trimesters, they are to be treated with an ACT. While RDTs and ACTs are free for adults and children, patients have to pay for other drugs received such as paracetamol (systematically prescribed), as well as for microscopy tests.

According to the national strategy, the first choice for treatment of severe malaria is injectable artesunate. Other acceptable treatments include injectable artemether or injectable quinine. The management of severe malaria should be carried out in health facilities with the capacity required for proper treatment. All cases of severe malaria in pregnant women should be treated with parenteral quinine during the first trimester of pregnancy, and intramuscular injection of artemisinin derivatives or parenteral quinine from the second trimester onward. Per national policy, treatment for severe malaria is free.

The national case management strategy for CHWs includes the use of RDTs, recognition of danger signs of severe malaria, and pre-referral treatment with rectal artesunate of identified severe cases. All cases of severe malaria seen in the community or at health facilities without the capacity to treat severe cases should receive pre-referral treatment with artemisinin derivatives (intramuscularly or suppository) before referral. Pre-referral treatment is a relatively new intervention and prior to its early-2014 adoption as a national policy, the use of rectal artesunate by CHWs was piloted by *Médecins sans Frontières* (MSF) for three years in Guéckédou Prefecture. Rectal artesunate has been added to the list of drugs that CHWs are permitted to use and it is now part of CHW routine training. In theory, appropriate case management tools, including algorithms, protocols, communications materials, and necessary commodities are provided to CHWs and they are supervised by staff from the health center to which they are linked. In reality, no donors have procured rectal artesunate since the MSF pilot and this

intervention has not yet been brought to scale. However, with PMI support, Guinea has recently received 13,749 blisters of rectal artesunate.

Training
All health providers are to be trained in the diagnosis and treatment of uncomplicated and severe malaria cases. Nationwide there are about 170 laboratory technicians, 11,530 health facility workers, and 5,870 CHWs (approximately 10 per health center). The goal is to eventually train all staff in RDT use and overall case management. Training will be based on the revised and recently distributed training manuals for health providers on case management and malaria in pregnancy, which includes new algorithms for case management. This refers to pre-Ebola manuals and guidance; additional details on the impact of Ebola on case management are below. Health workers, including CHWs, will be retrained every two years on appropriate case management, including for pre-referral of severe cases, and supervised regularly according to the national supervision strategy.

Supervision
A national supervision plan exists, and is based on a specific guidance document focusing on case management and data quality supervision at three levels:

- Central/National level to regional (DRS) levels – Activities at the national level are led by the NMCP and supported by implementing partners – PMI's malaria bilateral and Catholic Relief Services (Global Fund principal recipient). Supervision is scheduled to occur every six months to eight DRS.
- Regional (DRS) to district (DPS) levels – Supervision is organized by DRS and is done with implementing partners. Each DRS typically has 3-6 DPS. Supervision is scheduled to occur every 3 months to 38 DPS.
- District (DPS) to health facilities (963 health posts, 413 health centers, 6 commune health centers, 26 prefecture hospitals, 7 regional hospitals, 3 national hospitals) – Supervision of health facilities is done by the DPS and implementing partners. Supervision is scheduled to occur every two months.

Ebola context
The West Africa Ebola epidemic, which began in Guinea in December 2013, greatly impacted case management in Guinea, driven partly by the overlap between Ebola virus disease (EVD) and malaria symptoms. Amidst concerns of possible healthcare worker exposure to EVD during blood draws for malaria laboratory confirmation, the WHO released new recommendations for malaria testing and treatment in Ebola-affected zones in late 2014.[12] The guidelines recommended suspension of all RDT testing at the community level, and suspension of RDT and microscopy testing at health facilities without appropriate personal protective equipment. Instead, in these settings, all fever cases should be treated presumptively with an ACT. All patients not responding appropriately to treatment with ACTs within 48 hours should be evaluated for possible EVD.

The NMCP adopted these temporary guidelines in December 2014, creating a new testing and treatment algorithm for use in Ebola-affected zones. However, even prior to the adoption of the algorithm, malaria diagnosis practices had already changed in Guinea due to the Ebola epidemic. The December 2014 health facility survey found that while laboratory confirmation rates had dramatically gone up between 2013 and 2014 in prefectures not affected by EVD, they did not significantly change from 2013 to 2014 in prefectures affected by EVD, despite increasing RDT availability. Moreover, RDT use by CHWs

[12]World Health Organization. Guidance on temporary malaria control measures in Ebola-affected countries. 2014.

decreased in prefectures affected by EVD, with only 30% of CHWs reporting using RDTs since the start of the epidemic compared to 70% prior to the start of the epidemic.

The data collected through the routine malaria information system showed that the temporary guidelines were never fully implemented nationwide, with continued RDT use by CHWs in certain areas throughout 2015 and the first quarter of 2016. Although EVD cases continued to be detected into the first quarter of 2016, the NMCP retracted the temporary Ebola-specific guidelines on April 1, 2016, reinstituting RDT use by CHWs.

Seasonal malaria chemoprevention

Starting in 2015, Guinea began implementing SMC in six health districts in the northern part of the country, representing a total population of 2.2 million. The activity is part of the UNITAID-funded ACCESS-SMC project, led by Malaria Consortium in partnership with CRS and national programs in seven countries (Burkina Faso, Chad, Guinea, Mali, Niger, Nigeria, and The Gambia). Existing funding through the Global Fund will carry the activity through 2017 but there is currently no partner designated to fund it once the current Global Fund grant ends. The NMCP is planning an expansion of SMC to two additional districts in 2018, contingent on their meeting the WHO criteria for inclusion in SMC.

The activity comprises four rounds of distribution of amodiaquine and sulfadoxine-pyrimethamine (AQ+SP) to all children 3-59 months old. The target population comprises roughly 210,000 children in the six health districts. The distributions last between four and five days and are done on a monthly basis between July and October, representing the highest transmission period in the area. The distributions are carried out by 1,261 CHWs, based at one of 55 health centers in the districts.

Administrative coverage data and post-campaign household surveys provide monitoring data for campaign coverage. The latest round of SMC was reported to have reached 210,448 eligible children out of 210,107 targeted (over 100% coverage). Assessing impact of the SMC activity will be done through analysis of trends of malaria cases reported by health facilities in target districts, compared to previous years and neighboring districts.

Because AS-AQ cannot be used for treatment in areas with AQ+SP SMC, stocks of AS-AQ were withdrawn and replaced with AL in the six target districts. To monitor for declining amodiaquine susceptibility, one of the TES sites was chosen to be in Labé, a non-SMC district that borders four of the SMC districts.

Progress since PMI was launched

When PMI started in 2011 the country was completely stocked out of RDTs and there were almost no functioning microscopes anywhere in the country. Since then, PMI has purchased and distributed over 5 million RDTs and purchased 48 microscopes as well as related supplies (reagents, gloves, disposal boxes, and slides).

PMI has also supported supervision of RDT use at both the health facility and community levels. Eighteen laboratory technicians have been recruited and trained to serve as supervisors for the Outreach Training and Support Supervision program.

PMI supported the initial update of the national malaria strategy and policy, which included important revisions on the use of diagnostics to confirm suspected malaria cases before treatment, following WHO

recommendations. Previously, the strategy and policy did not require biologic confirmation of malaria in order to prescribe treatment for children less than five years of age.

Building on a PMI-supported rapid laboratory assessment, in March 2012 PMI supported the evaluation of an additional 19 zonal health facilities and found that some facilities did not have a functional microscope, and of the ones that did, all the microscopes were in poor condition. The assessment findings were used to inform activities including a nationwide training of 25 trainers of laboratory technicians in malaria diagnosis, microscopy maintenance, supply management, and RDT use. Additionally, 680 CHWs were trained in RDT use following the assessment.

PMI supported the development of an RDT utilization sheet to help CHWs track RDT use and better determine when they should request stock replenishment. PMI also supported training on quantification in PMI target zones so that health facility personnel and regional warehouse managers understand the process and have the tools for calculating supply needs based on use.

PMI helped support 18 national trainers who were trained on malaria diagnosis. Concurrently, 74 hospital laboratory technicians were trained on malaria diagnosis (RDT and microscopy). A total of 1,805 CHWs (31% of all CHWs nationwide) were trained or received refresher training on community case management, including on ACT use, RDT use, and recording and reporting of malaria cases using data collection tools. At health facilities, including both public and private facilities, 2,413 healthcare staff (33% of all health workers nationwide) were trained on updated case management protocols and training curricula.

Upon the release of the new WHO guidelines for malaria case management in Ebola-affected zones in late 2014, PMI supported the adaptation of the existing NMCP malaria guidelines to conform to the new, EVD-specific guidelines. This included the creation of a new treatment algorithm, which incorporates presumptive treatment of fever cases by CHWs and healthcare workers in health facilities without appropriate personal protective equipment. The new treatment guidelines were introduced in December 2014, and PMI supported the training of CHWs on these new guidelines.

With respect to treatment, PMI has provided ACT treatments for all age groups and has procured and distributed injectable quinine and injectable artesunate for the treatment of severe cases. Commodity distributions have served as an opportunity to introduce the new monthly malaria reporting template and process.

PMI supported the development of a checklist for supervision, to be utilized as part of an integrated supervision visit, ensuring that malaria diagnostics are performed correctly along with other health worker functions. PMI helped sponsor monthly meetings at the DPS and DRS levels, with focus on malaria case management and data quality.

PMI, together with partners including the NMCP, have introduced monthly reporting forms and tools to ensure a more consistent flow of information from the health facility to the district level and up to the central level. (Additional details in the SM&E section.)

Table 6. Case Management Training Targets and Activities

Training Summary	Project target (annual)	PMI launch Year 1 (FY 2013)	Year 2 (FY 2014)	Year 3 (FY 2015)
Health facility workers trained in RDTs and case management	455	20	995	203 (ACTs & RDTs) 1,195 (RDTs)
CHWs trained in RDTs and case management	680	0	680	1,125*
Lab staff trained in microscopy and RDTs	60	64	25	60

**256 CHWs trained on comprehensive case management (ACT and RDTs) and 869 trained on new malaria case management guidelines in context of Ebola epidemic (case management without RDTs)*

Progress during the last 12-18 months

In the last year, PMI has procured approximately 3 million ACTs for uncomplicated malaria. PMI also trained 2,064 healthcare workers in treatment with ACTs and infection control per WHO recommendation in the Ebola context as well as 459 facility-based health workers and 1,125 CHWs in malaria case management, during the post-Ebola period, in order to resume normal malaria case management practices. PMI has continued to support supervision of health workers for case management at the hospital, health center, and health post levels, as well as CHWs at the community level. The past year marked the first full year of implementation of the combined, comprehensive malaria supervision checklist, developed with PMI support. The last EUV, conducted in November 2015, found that over 96% of surveyed health facilities in the PMI zones had received supervision on case management or drug management in the previous six months. While there were some challenges at the national level in conducting supervision to the regional level due to competing priorities, the supervision calendar for district and facility-level supervision was successfully implemented. This supervision at the health facility level has been particularly critical over the past year to reinforce infection prevention and control measures and ensure that health workers adhere to recommended fever case management guidelines.

In addition to commodities stock data, the Guinea EUV collects limited case management data through register review. The November 2015 survey found that malaria accounted for 43% of total patient records examined; of these 31% were in children under five years. Of all fever cases recorded, 77% were diagnosed as malaria, with 80% of them receiving laboratory confirmation through RDT or microscopy. Of diagnosed malaria cases in children under five years (clinical and confirmed), 67% were treated with an ACT.

As the Ebola epidemic entered its second year, PMI continued to support the retraining of CHWs on the new, temporary case management guidelines which excluded RDT use by CHWs.

Commodity gap analysis

Calendar year 2015 marks the first full year with the monthly malaria reporting system functioning throughout the entire country, thus allowing for more accurate, data-driven commodity gap analyses.

Previously, quantification exercises were based on fever and malaria case estimates derived from population-based models, which in practice greatly overestimated RDT and ACT need.

As of the beginning of 2016, Guinea had roughly 2.7 million RDTs and 3.4 million ACTs throughout the country, as reported by the national medical stores, regional depots, and health facilities (data source: RMIS [Routine Malaria Information System or monthly malaria reporting system]). Data reported by health facilities through the RMIS, adjusted for incomplete reporting, show annual consumption of approximately 2 million RDTs and 1.8 million ACTs in 2015, whereas the country had previously forecast needs of 8.3 million RDTs and 5 million ACTs for 2015 (both significantly larger than even the reported total number of all-cause health facility and CHW patient visits). As a result, PMI has cancelled its ACT and RDT orders for FY 2015, and will buy reduced quantities in FY 2016 and FY 2017 to avoid an overstock and potential expiry of existing supply.

The tables below present RDT, ACT, and severe malaria needs and expected partner contributions for 2016, 2017, and 2018. Because the current Global Fund round of funding ends in 2017, Global Fund contributions for 2018 are kept at 0. The PMI Guinea team (in-country and HQ backstop) are in regular communication with Global Fund and their principal recipient to coordinate procurement decisions.

Needs for ACTs and RDTs were estimated from projections of the consumption data from RMIS, assuming a post-Ebola increase in healthcare demand. Consumption data as reported by health facilities are significantly larger than the reported total number of suspect malaria cases tested and malaria cases treated. This discrepancy likely reflects data quality issues with RMIS, and the more conservative consumption data were used for forecasting demand.

Needs for injectable artesunate and artemether could not be estimated from consumption data because most severe malaria cases in 2015 were still being treated with injectable quinine and relatively small quantities of injectable artesunate were reported to be consumed. Instead, injectable artesunate needs were estimated from the number of reported severe malaria cases treated, with the goal of procuring enough injectable artesunate for all cases of severe malaria.

Table 7. RDT Gap Analysis

Calendar Year	2016	2017	2018
RDT Needs			
All cause patient consultations[1]	3,716,452	4,088,097	4,496,907
Number of suspect malaria cases[2]	2,015,375	2,216,912	2,438,603
Number of RDTs consumed[3]	2,988,702	3,287,572	3,616,329
Total RDT Needs [4]	**3,287,572**	**3,616,329**	**3,977,962**
Partner Contributions			
RDTs carried over from previous year[5]	2,698,164	3,522,977	2,906,579
RDTs from MOH	0	0	0
RDTs from Global Fund	4,112,386	1,999,931	0
RDTs from Other Donors	0	0	0
RDTs planned with PMI funding	0	1,000,000	1,000,000
Total RDTs Available	6,810,550	6,522,908	3,906,579
Total RDT Surplus (Gap)	3,522,977	2,906,579	(71,384)

[1] Projections from total number of outpatient visits as reported through RMIS in 2015, assumes 25% increase from 2015 to 2016 from post-Ebola recovery, 10% annual increase afterwards.
[2] Projections from total number of suspect malaria cases as reported through RMIS in 2015, assumes 50% increase from 2015 to 2016 from post-Ebola recovery, 10% annual increase afterwards.
[3] Projections from total number of RDTs consumed as reported through RMIS in 2015, assumes 50% increase from 2015 to 2016 from post-Ebola recovery, 10% annual increase afterwards.
[4] Total number of RDTs consumed plus an additional 10% buffer.
[5] Stocks at beginning of 2016 calculated as sum of stocks at health facilities (from RMIS data) and levels at PCG and regional depots.

Table 8. ACT Gap Analysis

Calendar Year	2016	2017	2018
ACT Needs			
All cause patient consultations[1]	3,716,452	4,088,097	4,496,907
Number of uncomplicated malaria cases[2]	1,030,170	1,133,188	1,246,506
Number of ACTs consumed[3]	2,330,843	2,563,927	2,820,320
Total ACT Needs[4]	**2,563,927**	**2,820,320**	**3,102,351**
Partner Contributions			
ACTs carried over from previous year[5]	3,416,378	3,254,337	2,671,477
ACTs from MOH	0	0	0
ACTs from Global Fund	2,401,886	1,737,460	0
ACTs from Other Donors	0	0	0
ACTs planned with PMI funding	0	500,000	500,000
Total ACTs Available	5,818,264	5,491,797	3,171,477
Total ACT Surplus (Gap)	3,254,337	2,671,477	69,126

[1] *Projections from total number of outpatient visits as reported through RMIS in 2015, assumes 25% increase from 2015 to 2016 from post-Ebola recovery, 10% annual increase afterwards.*
[2] *Projections from total number of uncomplicated malaria cases as reported through RMIS in 2015, assumes 25% increase from 2015 to 2016 from post-Ebola recovery, 10% annual increase afterwards.*
[3] *Projections from total number of ACTs consumed as reported through RMIS in 2015, assumes 25% increase from 2015 to 2016 from post-Ebola recovery, 10% annual increase afterwards.*
[4] *Total number of ACTs consumed plus an additional 10% buffer.*
[5] *Stocks at beginning of 2016 calculated as sum of stocks at health facilities (from RMIS data) and levels at PCG and regional depots.*

Table 9. Severe Malaria Treatment Gap Analysis

Calendar Year	2016	2017	2018
Severe Malaria Treatment Needs			
All cause patient consultations[1]	3,716,452	4,088,097	4,496,907
Number of severe malaria cases[2]	152,796	137,517	123,765
Total Injectable Artesunate Needs[3]	**403,382**	**363,044**	**326,740**
Total Injectable Artemether Needs[4]	**100,846**	**90,761**	**81,685**
Partner Contributions			
Injectable Artesunate carried over from previous year[5]	30,000	0	2,630
Injectable Artemether carried over from previous year[5]	38,000	0	4,189
Injectable Artesunate from MOH	0	0	0
Injectable Artemether from MOH	0	0	0
Injectable Artesunate from Global Fund	267,052	90,674	0
Injectable Artemether from Global Fund	26,411	14,950	0
Injectable Artesunate from Other Donors	0	0	0
Injectable Artemether from Other Donors	0	0	0
Injectable Artesunate planned with PMI funding	76,100	275,000	163,700
Injectable Artemether planned with PMI funding	20,000	80,000	80,000
Total Injectable Artesunate Available	373,152	365,674	166,330
Total Injectable Artemether Available	84,411	94,950	84,189
Total Injectable Artesunate Surplus (Gap)	(30,230)	2,630	(160,410)
Total Injectable Artemether Surplus (Gap)	(16,435)	4,189	2,504

[1] *Projections from total number of outpatient visits as reported through RMIS in 2015, assumes 50% increase from 2015 to 2016 from post-Ebola recovery, 10% annual increase afterwards.*
[2] *Projections from total number of severe malaria cases as reported through RMIS in 2015, assumes 25% increase from 2015 to 2016 from post-Ebola recovery, and then 10% decrease afterwards due to expansion of access to early diagnosis and treatment.*
[3] *Eighty percent of number of severe malaria cases times 3 ampules per treatment with a 10% buffer; NMCP forecasts that 80% of severe malaria cases will be treated with injectable artesunate.*
[4] *Twenty percent of number of severe malaria cases times 3 ampules per treatment with a 10% buffer; NMCP forecasts that 20% of severe malaria cases will be treated with injectable artemether.*
[5] *Stocks at beginning of 2016 calculated as sum of stocks at health facilities (from RMIS data) and levels at PCG and regional depots.*

Plans and justification

PMI will continue to support the NMCP's national policy of malaria case management based on diagnostic confirmation by supporting RDT use and strengthening microscopy through provision of

commodities, as well as training and supervision at the health facility and community levels. PMI coordinates with other partners to support the entire country with commodity procurement to meet existing needs rather than differentiating between zones. This will reduce stockouts of commodities and increase access to treatment. However, in light of current information on oversupply of case management commodities due to non-use by health facilities, which have been functioning at reduced levels due to the Ebola epidemic, PMI will continue to closely monitor supplies and make adjustments as needed to ensure that commodities do not expire. To facilitate the distribution of commodities, PMI will procure and deliver to the lowest level necessary to ensure they reach beneficiaries.

PMI will continue to support universal confirmation of malaria cases in Guinea through procurement of single-species *Pf* RDTs. This will be combined with efforts from Global Fund to make available 100 microscopes: 63 from PMI and 37 from Global Fund. This will ensure that each of the 36 hospitals nationwide, as well as about 28 health centers will be fully equipped: two microscopes per hospital, and one microscope in each of 28 selected health centers. At the NMCP's request, PMI will be procuring AL in FY 2017 rather than AS-AQ as in previous years. Because of current high levels of stocks and large Global Fund orders planned for FY 2015 and FY 2016, PMI will be able to cover the entire ACT and RDT gaps with FY 2017 funding. PMI will also be able to cover the entire severe malaria treatment need through procurement of injectable artesunate and artemether.

PMI will procure rectal artesunate to ensure full access to this pre-referral treatment at the CHW level. As described above, the NMCP adopted pre-referral treatment with rectal artesunate in 2014 after a successful MSF pilot in Guéckédou Prefecture. PMI will continue to support CHW training and supervision in referral and pre-referral treatment along with the necessary commodities needed to successfully scale up and implement this life-saving intervention.

Since UNITAID and Global Fund funding for SMC will not be available for FY 2017, PMI will support SMC in the original six health districts, with expansion to a further two districts per the NMCP SMC strategy, assuming that two additional districts will meet WHO criteria for SMC by 2018. Currently, there are three districts that are close to meeting the criteria of 60% of all malaria cases occurring in a four-month period; the PMI team will continue to monitor this through the RMIS data, but will only support expansion if districts meet all necessary criteria. The two most likely candidate health districts for expansion are Labé and Boké; both are contiguous to the current SMC zone and have highly seasonal transmission. PMI support for SMC will include procurement of AQ+SP to cover four months of SMC in the eight SMC districts, representing a target population of 280,000 children 3-59 months, for a total of 1,120,000 treatments. PMI will also support the transport and storage of the AQ+SP, retraining of distribution agents, supervision of distribution agents, SBCC activities, advocacy, and other costs associated with the SMC campaigns. PMI will also support M&E activities to evaluate the continued impact of SMC. Note that all current and potential future SMC districts are in the PMI target zone.

Training and supervision will continue to provide long-term, ongoing support to strengthen diagnostic services at all levels of the health care system by identifying areas that require improvement and providing on-site feedback and technical advice and support to the front-line clinicians and laboratory staff in peripheral health facilities and at community levels. PMI will support regional and district-level malaria focal persons to carry out supervision activities using the recently revised supervision checklist to observe patient consultations, diagnostic testing procedures, and ensure an effective feedback loop between supervisors and practitioners. PMI will continue to help maintain microscopy capacity in hospitals and certain health centers.

Training and supervision for diagnostics and treatment will be integrated with community case management as well as other malaria prevention and care activities, and will focus on PMI intervention zones (14 prefectures and five communes of Conakry; roughly half of the country) as Global Fund provides support for training and supervision in their designated zones. PMI training targets with FY 2017 support includes over 1,500 health facility and community health workers, as well as 60 laboratorians (microscopy). One specific component of diagnostic strengthening will be investment in the development of a comprehensive quality assurance and quality control system for microscopy. This will ensure sustainable gains and country capacity building in diagnostic practices. PMI will support the participation of private health facilities in training and supervision activities.

PMI will continue to support the CHW program in Guinea as a cornerstone intervention to increase the population's access to RDTs and ACTs. PMI will support the recruitment and training of new CHWs for a target of 1,310 in PMI target zones. In addition to providing supervision and training, PMI will support development and implementation of a mobile platform designed to guide CHWs through the integrated case management algorithm and to facilitate rapid reporting into the routine system (i.e., HMIS). PMI support for this activity will build on and expand a current UNICEF model being implemented in three districts and will include mobile phones and solar panel chargers to enable electronic data reporting. While there are multiple examples from other countries of this type of CHW mobile platform, this activity in Guinea will provide valuable lessons learned that could apply to other PMI focus countries. To that end, a robust M&E plan will be incorporated into this activity.

PMI plans to support integrated SBCC activities to promote appropriate treatment-seeking behavior among community members, with particular attention to increasing healthcare-seeking rates in the post-Ebola recovery period. Human capacity building will continue to be a part of this intervention through clinical and refresher training in malaria case management for all age groups and vulnerable populations, and supervision of health workers and CHWs.

Proposed activities with FY 2017 funding: ***($4,863,000****)*

1. *Procurement of rapid diagnostic tests (RDTs):* Procure 1,000,000 single-species RDTs to cover 100% of the existing national need predicted in 2018 for use in communities and health facilities *($530,000)*.
2. *Procurement of artemisinin-based combination therapies (ACTs):* Procure 500,000 treatments of AL to cover 100% of the existing national need predicted in 2018 for use in communities and health facilities *($475,000).*
3. *Procurement of injectable artesunate for treatment of severe malaria:* Procure about 163,700 vials of injectable artesunate to cover the national need (80%) for severe malaria treatments (*$170,000).*
4. *Procurement of injectable artemether for treatment of severe malaria:* Procure 80,000 ampules of injectable artemether to cover the national need (20%) for severe malaria treatments (*$36,000).*
5. *Procurement of rectal artesunate:* Procure approximately 12,000 capsules of rectal artesunate for community health workers to administer as pre-referral treatment for severe malaria cases in children *($10,000)*.
6. *Procurement of medications for SMC*: Procure 1,120,000 doses of co-blistered AQ+SP, representing monthly doses for approximately 280,000 children (ages 3-59 months), administered by community volunteers for four months during the high transmission season *($560,000).*

7. *Support implementation of SMC*: Implement SMC in eight health districts in northern Guinea including four administrations from July to October, with costs covering planning, training, implementation, supervision, monitoring, SBCC, and advocacy *($700,000).*
8. *Microscope consumables*: Procure reagents, slides, and repair materials for previously purchased microscopes *($100,000)*.
9. *Training for microscope maintenance:* Train laboratory staff in basic microscope maintenance to ensure functionality of existing microscopes that have already been procured *($50,000).*
10. *Strengthen malaria diagnostics:* Work with the NMCP and National Laboratory to develop and support a comprehensive quality assurance and quality control plan for malaria diagnostics, primarily microscopy, at all levels of the health system. This will include refresher training for laboratory technicians (and training on malaria microscopy for new laboratory technicians) and regular supervision of microscopy performance in health facilities, including systematic review of a predetermined number of positive and negative blood smears. QA/QC for RDTs, based on observation and supportive supervision of health workers and CHWs, will take place during regular supervision (activities 12 and 13) *($100,000).*
11. *Training/refresher training for malaria case management (diagnostics, treatment):* Training in RDT use and malaria case management for health workers at hospitals, health centers, and health posts. Private health facilities will also be implicated in training. Training of CHWs not yet trained in RDT use, in treatment of uncomplicated malaria and referral for patients with severe malaria, as well as referral of pregnant women to ANCs. Continue implementation of a comprehensive refresher training schedule for health workers and CHWs who have already received initial training *($558,000).*
12. *Supervision of health workers and CHWs in case management (long-lasting ITNs, diagnostics, treatment, and MIP)*: Enhanced clinical supervision at all levels of the health care system, including hospitals, health centers, health posts, and CHWs using comprehensive malaria-specific supervision tool. District Health Team staff and regional health team staff will be actively involved in supervision activities, along with health center staff for supervision of CHWs. Supervision visits will include observation of patient consultations and feedback to providers *($592,000)*.
13. *Community case management*: Support the continued scale-up of community case management in PMI target areas, including expansion of the number of CHWs to 1,965. Support costs include transport, data collection tools, equipment (boots, gloves, flashlights), supervision, and mobile phones equipped with software to facilitate improved case management (i.e., guided case management algorithm) and reporting, as well as solar-powered chargers *($882,000)*.
14. *Therapeutic efficacy monitoring*: Efficacy monitoring of Guinea's first-line ACT will take place in four sites every two years (two sites in one year and the remaining two sites the following year). The activity will follow WHO's standard protocol. Funds are meant to cover monitoring activities in two sites *($100,000).*
15. *SBCC for case management*: Support integrated SBCC at the community level to improve behaviors related to malaria prevention and treatment, including use of ITNs, IPTp, and care-seeking for fever. SBCC activities will also be targeted to health workers at all levels of the healthcare system, including health centers/hospitals, health posts, and community health agents *(Costs covered under SBCC section).*

b. Pharmaceutical management

NMCP/PMI objectives

The objective set forth in the national strategic plan for the pharmaceutical system is to provide access to malaria diagnosis and treatment to 100% of patients at health facilities and the community level. This overall objective implies supplying quality drugs to health facilities and community workers nationwide in sufficient quantities and on a regular basis.

As the main institution in charge of implementing the GOG policy in the pharmaceutical sector, the central medical store (*Pharmacie Centrale de Guinée-PCG)* was created in 1992 to supply health facilities nationwide with quality drugs in appropriate quantities and in a timely manner. PCG operates under the administrative oversight of the National Directorate of Pharmacies and Laboratories (DNPL). PCG has established pharmaceutical depots in five of the eight regions in Guinea. This institution has also played a role as sub-recipient of Global Fund grants to store and distribute drugs for the three priority diseases (HIV, tuberculosis, and malaria).

In June 2015, PCG signed an agreement with the GOG articulating the mission for the PCG regarding the procurement of public health needs such as drugs and vaccines, medical and surgical instruments and products, medical consumables, medical equipment, and laboratory reagents. The mission of the PCG aims to improve accessibility to quality health commodities that are affordable to the people while ensuring stable internal revenue. The PCG may make partial or total local imports or purchases on the local market of health products, especially essential generic medicines.

In support of NMCP efforts to assure effective donor coordination, PMI and Global Fund – as the main malaria commodity donors in country – distribute commodities in their respective focus areas of the country regardless of which donor purchased the commodities. This increases efficiency and ensures the whole country is covered. In practice this means that if a depot located in a designated PMI zone is requesting resupply of ACTs, then the PMI implementing partner would ensure the delivery of these ACTs to the depot. The ACTs would be delivered irrespective of which donor paid for them; so, the PMI implementing partner could deliver Global Fund-procured ACTs and vice versa but the cost of the delivery is covered by the implementing partner in the focus area. Neither the PMI partner nor Global Fund partner distribute exclusively the commodities that they purchase.

Progress since PMI was launched

Since its launch in FY 2011, PMI has clearly identified the PCG as the main institution to strengthen in order to ensure a smooth distribution of drugs to end users. To assist the pharmaceutical system (mainly PCG and the DNPL) in meeting the challenges of appropriate and timely distribution of quality drugs to the health facilities, PMI efforts have the objective of reinforcing each of the critical functions of these entities (storage, distribution, logistic management information system, and development and enforcement of policies and regulations).

According to the national pharmaceutical policy, the national essential drugs list should be revised every two years. With PMI's support, the DNPL has revised the drugs list systematizing the revision process and allowing the DNPL to take responsibility for this activity on a regular basis.

PMI has continued to work with PCG officials to implement recommendations from a 2012 assessment conducted by PMI and a 2013 assessment by the European Union. PMI has supported the development of key regulatory documents to improve transparency of the DNLP; the improvement of governance and transparency of the PCG; training of health workers on pharmaceutical management; design and implementation of a functional Logistics Management Information System (LMIS) for pharmaceutical products; and improvement of the availability and use of malaria commodities in health facilities.

Pharmaceutical management in Guinea has been strongly influenced by the PMI-supported implementation of the RMIS (monthly malaria reporting system), which from conception has allowed for the simultaneous collection of epidemiological data and commodity data, including consumption and stock levels, at the health facility level. This has allowed the NMCP and its partners to triangulate consumption data, epidemiological data, and data on stock levels to guide quantification and procurement decisions.

Progress during the last 12-18 months

In response to the negative impact on the health system of the Ebola epidemic over the course of the last two years, PMI's contribution to pharmaceutical management has focused on providing appropriate support to the PCG to perform its responsibilities, while improving governance of the supply chain and the pharmaceutical system. PMI worked with its key partners including the DNPL, NMCP, and PCG to continue to implement the planned activities to better support the MOH.

Support to the DNPL:
Following PMI support for the development and validation of a new National Pharmaceutical Policy with a five-year master plan for its implementation, DNPL has progressively improved governance and transparency of pharmaceutical management. The National Essential Medicines List and therapeutic flow charts to promote rational medicine have been revised. PMI has provided sound leadership in the development of the first draft of a pharmaceutical law in Guinea.

As part of the "Medicines for All" program initiated by the MOH to improve access to medicines and provide comprehensive pharmaceutical management training to health workers, PMI contributed to the establishment of a committee responsible for revising the training modules and for developing a new module specific to Ebola commodities.

In addition, PMI has continued to support the DNPL in the development of the LMIS for commodities including antimalarials and commodities for integrated management of childhood illness and family planning. PMI has continued to strengthen decentralized logistics and pharmaceutical management capacity by placing pharmacists at the regional level who will be working at the regional and prefectural levels to improve pharmaceutical management and LMIS.

Support to the NMCP:
PMI supported the collection of epidemiological and consumption data via the RMIS. Accomplishments include substantial improvements in reporting rates (see SM&E section for additional details). Implementation of EUV surveys, and training sessions for the commodities technical working group to perform quantification, consumption management, and development of annual work plans are additional accomplishments. Support also included introducing integrated supervision using a comprehensive, malaria-specific supervision checklist and data verification as well as regional quarterly malaria reviews. Overall, PMI contributed to strengthening coordination capacity of the NMCP with other partners, which resulted in the development of an integrated work plan.

PMI supported the decentralization of storage, management, and distribution of malaria commodities in the regional depots of the PCG which allow health centers to easily get commodities at the regional level to refill orders. In the new model, health centers prepare their orders and submit them to the prefectural health authorities (DPS), where they are compiled and submitted to the regional pharmacist. Subsequently, the commodities are transported from the regional depot to the DPS, and transportation fees are provided to health centers to retrieve the commodities at DPS. Previously, health centers submitted commodities orders directly to PCG, resulting in long delays and inefficiencies.

During the first year of SMC, PMI contributed to the withdrawal of artesunate-amodiaquine (AS-AQ) and its replacement with artemether-lumefantrine (AL) in the six SMC districts of Guinea. In addition, PMI supported the establishment of an *ad hoc* committee in collaboration with WHO for the integration of Ebola-related commodities into the current quality control system at the PCG. Going forward, all commodities, including those specific for emergency response, are now quality assured, alongside other commodities at the PCG to streamline and enhance central supply management procedures

Support to PCG:
Given the challenges identified in past years, which prompted the development of a work plan agreed upon by PCG officials, PMI has continued to support the development of good pharmaceuticals distribution practices, training of staff on these practices, and revision of a standard procedures manual for decentralized levels.

PMI also collaborated in updating 13 standard operating procedures in light of WHO guidelines and supported PCG's first competitive tender for procurement of essential medicines and prequalification of products and suppliers. Support also included the adaptation of the PCG's five-year strategic plan to the Ebola context and the development of a budget for the plan. This activity was carried out in collaboration with WHO, UNICEF, UNFPA, and other partners. PMI supported also the acquisition and installation of the LMIS software SAGE 100®, and trained 747 staff at the central and regional depots on inventory and distribution of infection protection control kits.

PMI supported the implementation of the pharmaceutical component of the health sector revival plan, a reference document designed to reinforce service provision and help the health system recover from the Ebola epidemic. PMI also worked jointly with CRS (the Global Fund principal recipient) to establish a common basket for all malaria commodities and developed a Memorandum of Understanding. This common basket has helped the NMCP to distribute commodities to different parts of the country based on need.

Plans and justification

With FY 2017 funding, PMI will continue its role as a catalyst in creating the conditions necessary to improve the management of Guinea's pharmaceutical system. Given the remaining challenges at DNPL and PCG, PMI will increase its support to the supply chain and the pharmaceutical sector. PMI support will mainly focus on improving supply chain management at the decentralized levels to ensure that the storage and distribution of commodities from regional depots to health centers is done efficiently. In addition, PMI will continue to support the development of the LMIS, which is still in initial stages of planning and development, and its future integration with the DHIS2 platform. Together with other donors, PMI will capitalize on momentum behind DHIS2 rollout in the coming year, and once the LMIS is functional, FY 2017 support will focus more on contributing to general maintenance of the system.

Efforts will also continue, in collaboration with PCG,the DNPL, the broader USAID Mission, and other donors to strengthen the pharmaceutical sector through reforms of pharmaceutical law to enable the supply chain to perform its core duties of storing and distributing commodities on a regular basis to health facilities in accordance with international norms and standards. Without the appropriate laws and mechanisms to control medicine importation and best pharmaceutical management practices, Guinea will continue to have a weak pharmaceutical system, which negatively impacts malaria partners' ability to effectively implement life-saving prevention and control activities. PMI will continue to strengthen the drug regulatory capacity of the DNPL to improve control over the pharmaceutical sector by properly trained staff. In addition, PMI will support the DNPL and the national laboratory to build capacity for in-country monitoring of drug quality. A major component of this support is to facilitate establishment of the appropriate administrative status of the PCG from a commercial entity to a non-profit entity. Development partners in Guinea, including PMI, are united in their support for this transition and will continue to push for this reform.

Finally, support to pharmaceutical supplies management will be the centerpiece of PMI support in the coming year to significantly reduce recurrent drug stockouts and oversupply at health facility and community levels due to inefficient distribution and poor management of drug stocks. PMI will continue its support for supervision at the regional medical stores as well as supervision of malaria commodity management in health facilities.

The PMI implementing partner will support the PCG to store and distribute malaria commodities from the central level to regional depots, and then to health facilities. The budget is based on the estimate proposed by the NMCP and the PCG, whereby PMI agrees to pay 5% of the commodity cost to cover storage, handling, and distribution. PMI will closely monitor the management and distribution costs in conjunction with its implementing partner.

Proposed activities with FY 2017 funding: ***($891,000****)*

1. *Strengthen Logistic Management Information System:* Support to strengthen the LMIS to enable the pharmaceutical system to collect, compile, and process consumption data to improve forecasting, procurement, and distribution of commodities. Includes support for internet connectivity and capacity building for quantification at the central (PCG, DNPL), regional, and prefectural levels. Support also includes integration of LMIS into the DHIS2 as well as quarterly malaria reviews *($100,000).*
2. *Pharmaceutical systems reform*: Support reform of regulations governing the supply chain management system including improvement of PCG governance (renewal and functioning of the board, information sharing, civil society and private sector's participation, etc.). Support will include the enforcement of laws and regulations that have been developed to improve the use of pharmaceutical products and is part of a larger donor effort, including PMI, to help promote reform *($158,000).*
3. *Improve drug regulatory capacity*: Support improvement of the regulatory and oversight capacities of the DNPL, revision of the national list of essential drugs, and enhanced control of compliance to the pharmaceutical policy and regulations by PCG and the private pharmacies network. Support will also include the development of drug quality assurance tools *($100,000).*
4. *Management of pharmaceutical supplies*: Manage the distribution of PMI commodities down to the health facility level, including warehousing, transportation, storage and distribution as well as providing commodities assurance *($200,000).*

5. *Strengthen pharmaceutical storage capacity*: Support the PCG to improve infrastructure necessary to adequately store and manage commodities at the central and regional levels *($233,000).*
6. *Strengthen DNPL and national laboratory for drug quality monitoring:* Support the DNLP and national laboratories to build capacity for in-country drug quality monitoring *($100,000)*.

4. Health system strengthening and capacity building

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

NMCP/PMI objectives

The national strategic plan aims at controlling malaria to promote sustainable social and economic development. Hence, the MOH has assigned the NMCP the mission of providing the Guinean population with universal access to quality malaria care in accordance with the national health policy. The national health policy also recommends that universal access to malaria care for the people of Guinea should be supported by values such as social justice, solidarity, equity, ethics, probity, and quality.

Moreover, the malaria strategic plan endorses good governance principles, gender equality, consideration for evidence-based practices, and recommendations provided by international institutions in charge of malaria control, mainly the WHO. Those principles are reflected in various documents adopted by regional organizations including the African Union and the Economic Community of West African States and adhered to by the GOG, and include the following:

- Promote the national malaria control policy based on the Roll Back Malaria (RBM) partnership principles;
- Reinforce the epidemiological surveillance system for malaria control through data collection and analysis for decision-making;
- Strengthen behavior change communication among the population in order to promote extensive use of malaria prevention measures and treatment products;
- Elaborate, monitor, and evaluate implementation of the national malaria strategic plan on an annual basis;
- Mobilize and manage human, financial and material resources necessary for the implementation of the national malaria strategic plan; and
- Promote and develop partnerships with all stakeholders in the control of malaria.

The achievement of the goal set forth by the malaria strategic plan calls for the following specific objectives:

- Ensure protection of at least 80% of the population with effective malaria prevention measures;
- Ensure biological confirmation of 90% of malaria cases;
- Provide an early and correct treatment of 90% of malaria cases;
- Reinforce the monitoring and evaluation system at all levels, in accordance with the monitoring and evaluation plan; and
- Strengthen the management (planning and coordination) capabilities of the NMCP.

Progress since PMI was launched

The Guinean health system, already weakened by an insufficient number of qualified staff in health facilities, is slowly recovering from further damages resulting from the recent Ebola epidemic. After the country was declared Ebola free in December 2015, the GOG embarked on a health system recovery plan that was developed jointly with development partners including PMI. The plan was designed not only to strengthen the health system and allow it to meet the needs of the population, but most importantly, to convince the population to return to health facilities to seek care. The GOG continues to mobilize internal and external resources for rolling out the health system recovery plan, but much remains to be done if this plan is to yield the intended results, the cornerstones of which will be CHWs and rebuilding trust among patients. A rapid survey conducted in December 2014 to assess the impact of EVD on malaria service provision revealed that use of malaria services significantly decreased in Ebola-affected zones. However, with the end of the epidemic, the delivery of health services at different levels of the health system has progressively resumed, and malaria services are slowly being restored to their pre-Ebola levels. At the same time, the fear of EVD contamination at the health facilities as well as at the community level has decreased due to SBCC efforts by the government and development partners.

Despite the contextual challenges of the Ebola epidemic, PMI continued its support of the NMCP to build coordination and leadership capacity. In addition to providing support to address operational and technical weaknesses, PMI has supported a Malaria Advisor to the NMCP through the Leadership and Management Grant mechanism since October 2013. The contribution of this expertise to the improvement of NMCP day-to-day and prospective operations, such as activity planning and development of appropriate documents required by the Global Fund, have been unanimously appreciated by the NMCP's leadership. Through the same expertise support, the NMCP's leadership in coordinating partners for activities such as the quarterly RBM coordination meetings has significantly improved.

As part of the lessons learned from the Ebola outbreak, one of them being the importance of engaging the community and strengthening the role of CHWs in case management and sensitization activities, the NMCP is re-orienting its focus to reinforce capacity of the decentralized levels (region and district). In line with this renewed focus, the NMCP has established regional RBM coordination committees and the Global Fund has recruited malaria focal persons in all of its 19 supported health districts. The malaria focal persons will be part of the district health technical team. Their primary role will be to build the capacity of the district staff and also serve as catalysts for the efficient management and implementation of malaria activities. In addition, the Global Fund, in collaboration with PMI, has continued to pursue capacity building efforts, allowing the NMCP to work toward the day when it could again become a principal recipient of Global Fund grant monies. As a result, the Global Fund is currently funding some key positions within the NMCP, including those related to financial management, accounting, communication, supply chain management, and monitoring and evaluation.

Progress during the last 12-18 months

During the past 12-18 months, PMI supported malaria donors' coordination through the RBM partnership framework. Meetings were held on a quarterly basis and support for dissemination of meeting outcomes to malaria stakeholders was provided. These meetings offered an opportunity to present the malaria control activities implemented in the quarter and discuss any major issues, such as stockout of commodities, gaps and other bottlenecks to implementation. Dialogue with the NMCP, the Global Fund, and other partners continued to build the management capacity of the NMCP. As indicated

in the pharmaceutical management section, PMI has provided catalytic support during the past twelve months to the supply chain and pharmaceutical system to play the roles they are assigned by the GOG. Most importantly, the PCG's operations have considerably improved due to PMI's support and the DNPL has also engaged in strengthening its regulatory framework to conform to international norms. The PCG and the GOG have signed an agreement which articulates the mission for the PCG regarding the procurement of drugs and pharmaceutical products for the public's health. While there has been considerable improvement in PCG operations, one area that needs to be prioritized is the LMIS, which is still in initial stages of planning and development (see Pharmaceutical Strengthening section).

PMI provides technical support to the National Commission for Public Procurement for the review of bids for the first international procurement under the new mandate and supported the commission during the pre-qualification process. This PMI support allowed PCG to noticeably improve its medicines procurement process in terms of transparency, equity, and supplier competition. PMI has visibly broadened its scope of work to aid in managing the drugs and pharmaceutical products in Guinea and, more generally, to expand the logistics management information system to other key disease programs.

Support to technical working groups (TWGs) continued throughout the past year, mainly diagnosis and treatment, supply chain, behavior change communication, and monitoring and evaluation. With PMI and Global Fund support, each TWG develops an annual work plan that includes all partners' activities. The TWGs meet with partners on a regular basis to monitor progress in the implementation of these plans and to discuss and find solutions to any bottlenecks.

PMI support has also included the dissemination of annual reports, organization of the midterm review of the national strategic framework (2013–2017), revision of the national malaria communication plan, and support for supervision activities nationwide. Furthermore, the weekly, monthly, quarterly, and annual work plans of the NMCP were developed with the support of the PMI-funded technical advisor with the objective of monitoring the implementation of all interventions. This technical support is followed by regular coaching sessions with NMCP staff – particularly new hires – to strengthen their capacity and commitment; a result of this support has been improved internal communication within the NMCP.

PMI continued building the entomological capacity of the NMCP. Support was provided to establish an insectary, procure laboratory equipment, conduct entomological surveillance, and sponsor entomological training for two NMCP staff at the *Centre de Recherche Entomologique de Cotonou* (CREC) in Benin.

Efforts to assist the NMCP to build a reliable malaria database continue with support from various partners including the Global Fund and PMI. This database has improved malaria program performance metrics and enabled timely decision-making. Eventually, the vision is for this database to be integrated with the national HMIS, which is currently undergoing significant revisions and revitalization. In addition, the development of a monitoring and evaluation manual was finalized and disseminated to all stakeholders.

To support the NMCP's day-to-day operations, PMI continued to provide internet connection, support the program's web site, and provide office equipment such as computers and USB keys.

Plans and justification

Given the challenges on the health system due to the Ebola epidemic and the political commitment shown by the GOG in rebuilding the health system, PMI will continue supporting key activities designed to strengthen the health system and create the conditions to increase access and use of malaria services. PMI will continue emphasizing capacity building at the NMCP, in coordination with its partners and other donors such as the Global Fund. Actions will include advocacy with high-level MOH officials to implement the health system recovery plan that will have a direct impact on increasing access and use of malaria services in health facilities and communities. The health recovery plan (2015-2017), which is part of the national health development plan (2015-2024), was developed in consultation with stakeholders and integrates resources from other priority prevention and disease control programs such as HIV, MCH, reproductive health and family planning, and focuses on three main priority areas: 1) elimination and control of EVD; 2) strengthening of the health district system; and 3) improved governance in the health sector.

With FY 2017 funding, PMI will continue supporting the NMCP to conduct supervision and provide logistics support including office materials, communication capacity through internet connectivity, and M&E system strengthening. In line with the NMCP's plan to strengthen decentralized levels of the health system, PMI will support district-level malaria focal points in each of the PMI-supported health districts, complementing a structure that has already been implemented with Global Fund support in the remaining prefectures. Malaria focal points will be embedded in the district health offices and serve as the liaison with the national program. Specifically, they will support commodity supply chain and logistics management, facility and community-level supervision, data collection and reporting, and assist with M&E and implementation of activities such as surveys, net distribution, and SBCC.

PMI will also continue its partnership with Peace Corps Guinea to support malaria interventions in volunteers' communities. Peace Corps Response Volunteers are usually third-year volunteers or volunteers who have previously completed their service and have applied for a Response Volunteer position, generally with an NGO or to coordinate and lead other volunteers' activities related to a specific health project. Peace Corps' *Stomp out Malaria* program is active in Guinea and PMI partnered with Peace Corps before the Ebola crisis until volunteers were evacuated. Given that volunteers are now back in country, PMI will resume support for two malaria response volunteers as well as small project grants that volunteers will apply for.

*Proposed activities with FY 2017 funding: (**$1,094,000**)*

1. *Management support for NMCP*: Support to the NMCP to assist them in team building, logistics and supervision, office management including communication capacity/connectivity, and M&E systems strengthening *($314,000).*
2. *Training and capacity building of NMCP staff*: Support to the NMCP to build capacity via conference and workshop attendance, both national and international, and to improve program management in M&E as well as SBCC *($50,000).*
3. *Support health district-level malaria focal points*: Support 19 health district-level malaria focal points in each of the PMI-supported health districts, complementing a structure that has already been implemented with GF support in the remaining health districts. Malaria focal points will be embedded in the DPS and serve as the liaison with the national program. Specifically, they will support commodity/logistics management activities, facility and community-level supervision,

data collection and reporting, and assist with M&E and implementation activities (e.g., surveys, net distribution, SBCC) *($700,000).*

4. *Peace Corps Response Volunteer and Small Projects grants:* Support to maintain two Response Volunteers: one in Conakry and one in a regional hub (Boké, Labé, or Kankan) to coordinate and support volunteers' malaria activities throughout the country; one volunteer may be embedded with a PMI implementing partner at national or regional level ($20,000). Support small project grants ($10,000) for which volunteers can submit applications *($30,000).*

Table 10. Health Systems Strengthening Activities

HSS Building Block	Technical Area	Description of Activity
Health Services	Case management	Training in case management for health facility staff and CHWs. Supervision of health facility workers and CHWs to ensure quality health services are provided. Quality Assurance and Quality Control systems to monitor the quality of laboratory diagnostic services.
	Health systems strengthening	Support to maintain two Peace Corps Response Volunteers to coordinate and support volunteers' malaria activities throughout the country; support small project grants for which volunteers can submit applications.
Health Workforce	Entomological monitoring	Capacity building for entomologists and support for NMCP staff. Advanced training for the four regional sentinel site technicians to be trained at the Centre Muraz in Bobo-Dioulasso, Burkina Faso, to allow collections of mosquitoes and insecticide resistance tests with reduced supervision from the NMCP.
	Health systems strengthening	Support malaria focal points in each of the 19 PMI-supported health districts to serve as the liaison with the national program. They will support commodity/logistics management activities, facility and community-level supervision, data collection and reporting, and assist with M&E and implementation activities.
Health Information	Surveillance, monitoring and evaluation	Strengthen disease surveillance systems to improve decision-making, planning, forecasting and program management
	Entomological monitoring	Support for vector surveillance and insecticide resistance monitoring in each of the four ecological zones, including transport and analysis of samples.
	Logistics Management Information System	Support for the design and the implementation of logistics management Information System (LMIS) and its integration into the national DHIS2 platform.
Essential Medical Products, Vaccines, and Technologies	Pharmaceutical management	Support improved forecasting, procurement, quality control, storage and distribution of malaria commodities.
	ITNs, MIP, case management	Procurement of 700,000 ITNs for the next national mass distribution campaign in 2019 and 250,000 for routine distribution. Procurement of 1,000,000 RDTs and 500,000 ACTs.

		Procurement of 1,705,275 doses of SP to ensure an adequate supply for pregnant women to receive three doses throughout their pregnancy.
Health Finance	Health systems strengthening	Provide technical assistance to leverage financial contributions and services from private sector partners (i.e., extractive industries) for malaria prevention and control. Advocacy with the government to increase the health budget.
Leadership and Governance	Health systems strengthening Management support for NMCP	Strengthen national coordinating and regulatory bodies to direct and manage malaria resources, develop guidelines, and improve quality of services. Support to the NMCP in team building, logistics and supervision, office management including communication capacity/connectivity, and M&E systems strengthening Support to NMCP to build capacity via conference and workshop attendance, both national and international, and to improve program management in M&E as well as SBCC

5. Social and behavior change communication

NMCP/PMI objectives

In the updated national strategic plan, the NMCP highlights the important role of social and behavior change communication (SBCC) across interventions by specifying an objective related to adoption of target behaviors for malaria control and prevention. The first target for the objective is to develop and disseminate a coordinated communication plan for all relevant partners in Guinea. The strategy also highlights the important role of a partnership to coordinate SBCC messages, tools, and processes, including pre-testing, validation, and distribution of support materials.

The NMCP's communication plan was first developed in 2009 and later revised with PMI support in March 2012 (to cover the period 2012-2015). Again with PMI support, the communication plan was further revised in May 2015 to cover the period 2015-2017 (to match the National Malaria Control Strategy) and to incorporate the latest findings from the PMI-supported Knowledge, Attitudes, and Practices (KAP) survey (September 2014). The plan emphasizes comprehensive communication activities: for each malaria control strategy, the revised plan includes key findings, the desired behaviors, the target population, the proposed activities, and messages. This document will be further updated following the adoption of the new Malaria Strategic Plan, 2018-2022.

The NMCP's SBCC unit oversees and convenes a national SBCC technical working group (TWG). This TWG is composed of representatives from other MOH divisions and from technical and financial partners working in malaria control in Guinea. The TWG's role is to assist the SBCC unit to better coordinate and harmonize SBCC tools, approaches and methodologies. In addition to PMI, the Global Fund provides support for SBCC activities related to malaria prevention and case management. While donor efforts are coordinated at the national level, PMI and Global Fund each have geographical areas (zones) which they support as part of the geographical distribution of roles and responsibilities between PMI and Global Fund. PMI supports SBCC activities in PMI zones and Global Fund supports activities

in the remainder of the country. The NMCP's updated communication plan provides strategic guidance for SBCC activities in all areas.

Progress since PMI was launched

PMI progress on SBCC to date has included revising the NMCP's national communication plan and training manual used by animators for SBCC techniques related to malaria prevention and treatment. The national communication plan, training materials, and tools are used not only in PMI target areas, but also by the Global Fund implementers in the remaining areas of the country. PMI has also supported training of non-governmental organization (NGO) animators on SBCC related to malaria prevention, and supported Peace Corps volunteers to work with local NGOs on implementing malaria SBCC activities in the regions of Boké and Conakry.

Early PMI-supported activities for SBCC primarily focused on increasing ANC attendance and IPTp uptake, as well as increasing early care-seeking for fever. Since PMI was launched in Guinea, about 1,458,808 home visits and interpersonal communication sessions have been conducted. These PMI activities were part of an integrated mechanism for family and child health in PMI zones, and included both interpersonal communication through peer discussion groups, as well as mass media through radio, television, and pamphlet distribution. At the beginning of the PMI bilateral program, SBCC focused almost exclusively on the ITN universal coverage campaign to ensure ITN hang-up and continuing use post-campaign. Following that, PMI expanded its scope to again focus on case management, malaria in pregnancy, as well as use of ITNs through routine distribution channels.

Case management training for health workers and CHWs included an SBCC component and CHWs were given job aid posters and storyboards to conduct sensitization sessions on malaria prevention and treatment in their communities. In order to improve the population's knowledge on malaria treatment, PMI, in collaboration with the NMCP, produced and disseminated pamphlets and malaria prevention TV and radio spots in French and local languages. PMI also supported interpersonal communication through home visits and group discussions. PMI trained members of health and hygiene committees and facilitators to conduct group discussions and mass awareness talks on the prevention and treatment of malaria. During these discussions, CHW and NGO facilitators emphasized key messages to the population including the importance of seeking health care in case of fever, and the availability of free malaria testing and treatment.

The Ebola epidemic forced PMI to revise its SBCC approach to address malaria in the context of the epidemic. This included special efforts to expand training to the existing cadre of health facility workers, community health workers, and members of health and hygiene committees to focus special messaging during the Ebola crisis on the importance of using ITNs and seeking treatment for fever, in addition to the standard package of SBCC activities such as radio spots, posters, and CHW mobilization that have been used (and continue to be used) in settings where Ebola is not an overriding health concern.

Progress during the last 12-18 months

With the Ebola epidemic winding down, and in addition to supporting the traditional preventive and care-seeking behaviors, PMI used interactive radio programs and roundtable discussions in the prefectures covered by PMI to promote attendance at health facilities and to inform people about the need to fight malaria in the context of the Ebola outbreak through the use of preventive measures. At the strategic level, PMI assisted the NMCP and other partners, including the MOH's Health Promotion Division, to revise the national communication plan based in part on the results of the PMI-supported

KAP survey. The National Malaria Control Communication Plan 2015-2017 supports the revised National Malaria Strategy (2013-2017): for each malaria control strategy, the revised plan includes key findings, the desired behaviors, the target population, the proposed activities, and messages.

PMI promoted the use of ITNs through two channels. To support routine distribution, PMI supported radio and television spots promoting correct use and maintenance of ITNs. During FY 2015, 2,153 radio spots were broadcast through 18 radio stations, and 280 television spots were broadcast by two television stations. PMI is currently working closely with the Global Fund to support all aspects, including SBCC, of the mass distribution campaign scheduled for May-June 2016.

For the other key behaviors of ANC attendance and IPTp uptake, as well as care-seeking for fever, PMI also supported a variety of strategies and activities including interpersonal approaches (e.g., home visits), memory aids for beneficiaries (e.g., reminders to pregnant women for ANC visits), and job aids for health workers. These efforts often included messages on ITN use as well.

A number of channels were used to promote preventive and health care-seeking behaviors with PMI support:

- 3,497 radio spots and 478 television spots were aired giving information on regular and correct use of ITNs and ACTs;
- 44 roundtable discussions and 27 interactive radio programs were held on routine ITN distribution and ACT use;
- 878,110 people (486,510 women) were reached through 119,986 home visits by CHWs that focused on correct net use and care-seeking behavior, and on ANC attendance for pregnant women;
- 79,317 people (45,734 women) were reached through 4,783 group discussions held in health centers and public places such as soccer fields, market places, hairdressing salons, and sewing salons focusing on promoting the use of malaria prevention services and products to reduce the risk of fever; and
- 2,000 calendars for 2015 for health facilities were distributed with messages to promote routine ITN distribution at both ANC and EPI visits, as well as regular and correct use of ITNs as the best way to prevent malaria.

In addition, PMI worked through NGO and community-based organizations to organize social mobilization activities to promote early care-seeking and attendance at health facilities. To further influence community support for malaria control activities, PMI trained 151 members of local Health and Hygiene Committees on health center management and advocacy techniques.

Plans and justification

PMI will continue to support the NMCP's revised communication plan with implementation of SBCC activities in PMI target zones reflecting NMCP priorities and national policies, including ITN use, ANC attendance and IPTp uptake, and case management, including RDT and ACT use. Communication activities will also continue to focus on increasing use of health facilities following the decline in attendance during the Ebola epidemic. Proposed activities will continue to reflect a mix of interpersonal communication approaches and mass media.

The first several years of PMI's work in Guinea were focused on scaling up basic interventions from very low levels (access to ITNs and treatments, improved case management, MIP services), with the

Ebola crisis creating some major barriers to progress. With the initial focus on scaling up access to key interventions, PMI, the NMCP, and partners now need to think more strategically about increasing and maintaining uptake of these interventions (especially in the wake of Ebola). There is an opportunity to elevate the role of well-designed SBCC, including robust M&E, in order to encourage beneficiary use of malaria products and services, which may include service provider behaviors. The availability of several new data points in the next year, as well as development of the new national malaria strategy (2018-2022) provides an opportunity to design evidence-based, strategic SBCC interventions.

The MIS that was scheduled for 2014 but postponed due to Ebola has been canceled indefinitely in favor of adding malaria biomarkers to an already-planned MICS (field work July-September 2016). The MICS-Palu will collect information on key behavior and knowledge indicators, including many that were measured during the 2014 KAP survey. The survey may also be able to provide greater clarity on the perceptions, knowledge levels, behaviors, social and economic barriers, and behavior determinants of target populations, especially pregnant women and young children, to understand factors underlying uptake and use of ITNs and malaria services. These results will feed directly into the update of the new communications plan (in FY 2016 and tied to the new malaria strategy) as well as provide a baseline for the new strategy. PMI will continue to provide support to the NMCP to implement and, importantly, to evaluate the new strategy. Targeted technical assistance will strengthen the capacity of the NMCP to use survey and routine data to further refine its communication strategy, identify remaining questions, and develop promising new strategies and activities.

As part of PMI's support to SMC implementation in targeted districts, SBCC will be a key component to facilitate community acceptance of the intervention for their children, as well as adherence to the preventive treatment regimen. The design of the SBCC strategy for SMC will be informed by successes as well as lessons learned from the previous three years' of implementation. Specific activities will likely include a mix of local radio (in local language) and interpersonal communications including home visits and community discussions. These activities will be part of the household visits to distribute treatments during the four treatment cycles, as well as initial preparations in the community, and post-visit communications to encourage treatment adherence. SMC SBCC activities will also be used to encourage consistent net use and care-seeking for fever.

Proposed activities with FY 2017 funding: ***($700,000)***

1. *SBCC for ITNs, IPTp, and case management:* SBCC will be part of a communication package including ITN use, IPTp uptake, and case management at the health facility and community levels. Activities will be focused in PMI target zones but will be consistent with the NMCP's national communication plan and national policies, and coordinated with SBCC activities in the rest of the country *($625,000).*
2. *Support for the implementation and evaluation of the new communications strategy:* PMI will provide technical assistance to the NMCP and the SBCC TWG to implement and evaluate the new communications strategy derived from the new national malaria strategy and based on the results of the MICS-Palu *($75,000).*
3. *SBCC for SMC:* Implement a focused SBCC campaign to prepare targeted communities for SMC implementation to encourage acceptance of and adherence to treatment on the part of the community. Lessons learned from the previous years' campaigns will inform the specific activities which will be a mix of local radio and interpersonal communications *(Costs covered under Case Management [Other costs for SMC]).*

6. Surveillance, monitoring, and evaluation

NMCP/PMI objectives

Monitoring and evaluation is a key component of Guinea's malaria program. The NMCP's national M&E plan, complementing the national strategy, covers the period 2013-2017. A Malaria Program Review in late 2017 will inform the next strategy and M&E plan.

The current plan identifies indicators, targets, and data sources and emphasizes data collection, data quality assurance, and dissemination and use of data.[13] Specific M&E priorities reflected in the updated plan include revising and maintaining the national malaria database, including the health management information system (HMIS) and supervision data; creating and disseminating malaria bulletins; building M&E capacity at regional and district levels; and strengthening relationships with partners collecting malaria data, including HMIS and the Integrated Disease Surveillance and Response system. A technical committee for M&E at the national level is led by the NMCP and made up of donor and partner representatives including PMI and its partners, Catholic Relief Services (for Global Fund), and WHO, among others.

Currently, the following data sources collect malaria data in Guinea:

Monthly malaria reporting tool: Starting in late 2013 the NMCP, with the support of the MOH unit responsible for the HMIS, implemented a new monthly reporting tool to collect malaria commodity and epidemiological data on the same form. First rolled out in PMI zones, the monthly reporting tool was expanded to the Global Fund zones starting in mid-2014. Since the annual HMIS report is not perceived as a timely or valid data source (the most recent report is from 2011), and the HMIS was nonfunctional during the Ebola crisis, the monthly malaria reporting system is the primary source of data for the NMCP. Currently, 36 of 38 districts are consistently reporting all data with district-level completeness ranging from 76% to 100%. The reporting tools are filled out at health centers and report data on malaria case management, including the number of total consultations and the number of suspect cases and confirmed cases seen at health centers and their affiliated health posts and community health workers, as well as data on stock and monthly consumption of malaria commodities. The monthly reports are then digitized at the health district level and sent electronically to the NMCP. The NMCP produces and disseminates a monthly malaria bulletin summarizing the data.

Integrated Disease Surveillance and Response system: Supported by WHO, Guinea's weekly Integrated Disease Surveillance and Response system is based at the Division of Prevention and Disease Control at the MOH. It consists of weekly, telephone-based reporting on ten diseases, including malaria. While a timely tool for routine malaria data, it lacks key indicators, does not stratify by age, does not include data on completeness, and does not generally include data from health posts and community health workers.

Household surveys: Guinea has implemented a DHS in 2005 and 2012, a Multiple Indicator Cluster Survey (MICS) in 2007, and Global Fund-supported national coverage surveys in 2009 and 2010 to measure population coverage with basic interventions (ITNs, IPTp, and ACTs); the 2009 and 2010 coverage surveys also included a health facility component assessing commodity availability and case management practices.[14] The 2012 DHS provides the first national estimates of malaria parasitemia. A

[13] A full indicator table is available in Annex 6 of the National Strategic Plan.
[14] The 2007 MICS results are not maintained by UNICEF headquarters.

KAP survey was implemented in PMI target areas in August-September 2014 to provide formative data on malaria-related behaviors including ITN use and treatment-seeking practices. The Global Fund supported a national household coverage survey in December 2015 (results pending). A MICS, including the addition of malaria biomarkers (i.e., MICS-Palu), will be implemented from July-October 2016, providing post-ITN campaign net coverage/use estimates. The next DHS is planned for 2017.

Health facility surveys: Several surveys have provided data on malaria case management in health facilities. These data collection activities are closely coordinated to ensure complementary data capture and avoid duplication of efforts. PMI-funded, semi-annual (originally quarterly) EUV surveys have been implemented since 2013 to provide data on malaria commodity availability and case management based on a convenience sample of health facilities. In December 2014, a health facility survey based on random sampling provided detailed, representative, national-level data on healthcare worker performance regarding malaria case management in the context of Ebola. Results were used to guide national healthcare worker training strategies. The Service Availability and Readiness Assessment (SARA) survey is a standardized health facility survey that covers a broad range of healthcare delivery services. In Guinea, a SARA survey was implemented in September 2015 with support from the Global Fund, the Global Alliance for Vaccines and Immunizations, WHO, and PMI. Though not a malaria-specific survey, the standard module includes indicators on health facility readiness to provide malaria services, including health worker training, supervision, and malaria commodity availability. In Guinea, the SARA included a "Malaria Module," consisting of a patient exit interview to assess the quality of malaria case management services. Preliminary results of the SARA are available (see below), but the malaria module results are still pending.

Progress since PMI was launched

Routine data and HMIS strengthening: The *Bureau de Stratégie et de Développement (BSD)* and the NMCP have collaborated, with the support of PMI, to revise monthly malaria reporting (derived from the existing HMIS tool) to capture key epidemiological and stock management data on one form. The revised form includes the following indicators: number of suspect malaria cases (stratified by uncomplicated and severe), cases tested (stratified by microscopy and RDT), cases confirmed positive (stratified by microscopy and RDT), cases treated with ACT, severe cases treated, cases referred, and deaths among severe cases. Numbers are reported for the health facility and for CHWs, as well as by age groups (under five years and five and older). Data are also included from ANC including total women seen in ANC, number receiving first dose of SP, number receiving at least three doses of SP, and number of women sensitized at ANC. The revised forms have been introduced throughout the country as of mid-2014. In addition to epidemiological and case management data elements, the forms also collect commodity management data for RDTs, ACTs, SP, treatments for severe malaria, quinine, and ITNs. Data elements include beginning-of-month stock, quantities received, quantities delivered to CHWs and health posts, quantities consumed, quantities expired, quantities near expiry, stockouts, and end-of-month stock. A copy of the malaria monthly report is sent to the district, where it is aggregated before being transmitted to the NMCP and national HMIS office. The NMCP then produces a monthly bulletin that is disseminated to regions, districts, and partners.

While the NMCP benefits from the scale-up of the routine malaria information system, there have also been more recent efforts to revitalize the integrated HMIS (housed under the BSD). Though no national HMIS reports have been produced since 2011, a coordinated donor effort (e.g., USAID, CDC, EU, GAVI, WB, Global Fund and UNICEF) is working with the MOH to strengthen the HMIS. The

expectation is that once the HMIS is functioning, disease programs, like malaria, will no longer need to maintain their parallel systems.

Household surveys: The 2012 DHS was implemented from June-October 2012 and provided the first nationally representative estimates of malaria parasitemia, as well as standard malaria intervention coverage indicators, including baseline estimates for ITN coverage prior to the 2013 mass ITN distribution campaign. These estimates will be comparable to follow-up household surveys implemented in the high transmission season. Subsequent surveys, including a 2014 MIS and 2015 national household coverage survey had to be postponed due to the Ebola outbreak.

Health facility surveys: Plans to conduct a health facility survey to assess case management practices after the rollout of RDTs were also delayed due to the Ebola crisis. Instead, in December 2014, a survey was implemented to assess the impact of the Ebola epidemic on malaria case management in Guinea. It found substantial disruptions in malaria care delivery, including decreases in health facility attendance and in the number of patients treated with antimalarials, and reduced community malaria case management. A follow-up survey in late 2016 will determine the extent to which malaria services have resumed. In the interim, the malaria module of the SARA will provide data on malaria case management practices (results pending). Preliminary health service readiness results are summarized in the next section.

Logistics/commodity monitoring: Currently, commodity reporting data come from multiple complementary (but not duplicative) reporting systems. As described above, the monthly malaria reporting tool provides regular data from health facility registers. The EUV survey (see below) provides more in-depth cross-sectional commodity availability data for a convenience sample of health facilities in the country at two points during the year. The PCG complements these two data collection efforts with quarterly commodity inventories to assess commodity ordering and distribution practices in the field (see Table 11, below).

Table 11. Commodity Data Collection Activities

Data source	Method of collection	Frequency	Method of reporting
Monthly malaria reporting system	Patient registers and commodity dispensing registers	Monthly	Paper-based at the health center, digitalized and compiled at the health district and electronically sent to the NMCP and the HMIS
End-use verification survey	Patient registers, commodity orders, and distribution registers; inspection of condition of commodities and storage space	Semi-annually	Paper-based at the health facilities, digitalized at the central level
PCG inventory	Questionnaires used by a team of pharmacists from the central and regional levels to review commodity ordering and distribution registers	Quarterly	Paper-based at the decentralized level but digitalized and compiled at the central level

In summary, the monthly malaria reporting system provides regular commodity consumption and epidemiological data at the health facility level. The PCG conducts quarterly inventories at the central

and regional warehouses to ensure commodity availability to facilities. There is no overlap of these two data sources. The EUV provides data on availability of commodities at facilities and regional warehouses based on a convenience sample. As the monthly malaria reporting becomes more complete, the PMI team will monitor how these data align with EUV data.

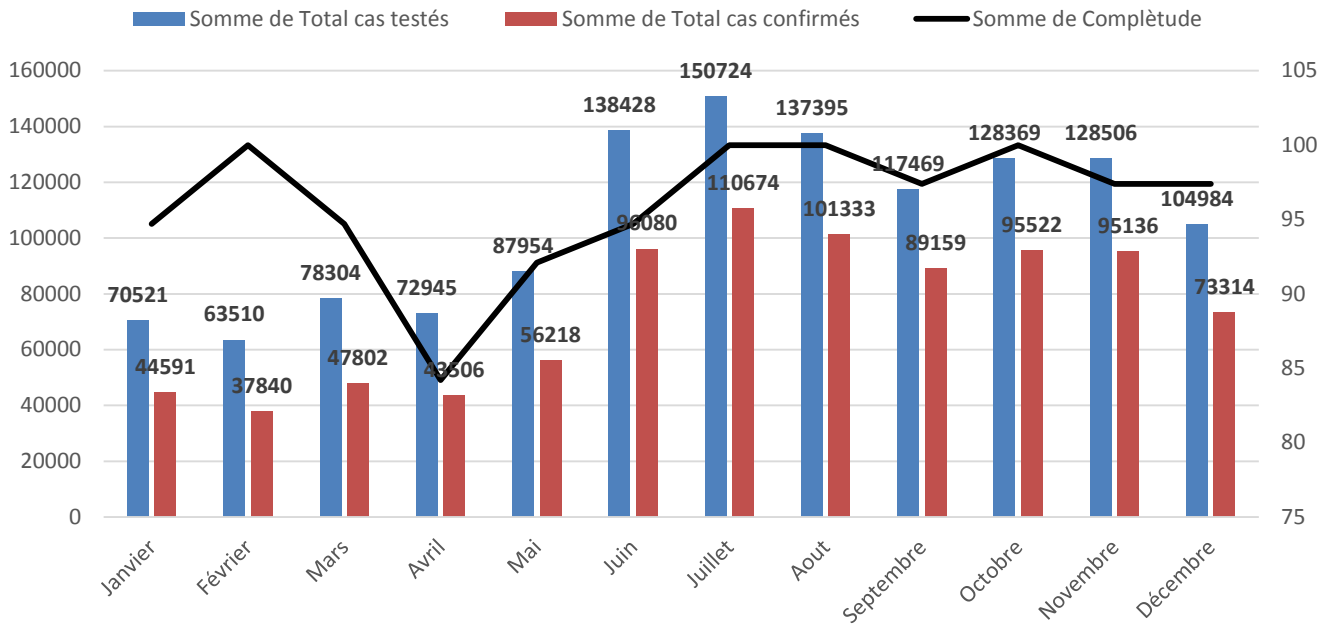
EUV survey: Regular EUV surveys have been conducted since January 2013. While the first three EUV surveys were carried out exclusively in PMI zones, subsequent surveys were expanded to include health facilities in Global Fund zones. The first survey reflected relatively high levels of ACT stockouts in the previous three months (50-100% of facilities sampled), but showed better results for ACT stocks on the day of the survey due to a recent PMI emergency procurement and distribution. Additional results showed that only 36% of staff were trained in case management; roughly half of all malaria cases were diagnosed based on clinical symptoms alone; and one-third of these cases did not receive an appropriate antimalarial. Subsequent surveys showed improvements in stock availability but suggested that there were still gaps in case management practices. As the Ebola outbreak gained momentum, the EUV reflected low rates of stockouts of RDTs and ACTs, but continued issues with case management.

Progress during the last 12-18 months

Routine data and HMIS strengthening: The monthly malaria reporting system has substantially improved its reporting completeness since it was scaled up in 2014. Completeness of data entered at the district level increased from 66% in November 2014, to 82% by March 2015, to 97% in January 2016. For the 2015 calendar year, health facility-level reporting completeness (defined as number of health facility reports received/number of reports expected) was 92%. These improvements reflect intense efforts by the NMCP, district and regional health authorities, and implementing partners in both the PMI and Global Fund target areas. An integral part of these efforts are regular regional and district-level meetings to review data, discuss challenges, and promote best practices for data collection and management. In 2015, roughly 225 of these monthly monitoring meetings were supported by PMI at the district and commune level. Data analysis, interpretation, and use are areas needing further improvement now that data are flowing consistently.

Figure 2 below reflects data collected by the monthly malaria reporting system from January-December 2015. Specific data elements included are the total number of suspect malaria cases tested by either microscopy or RDT (blue), the total number of malaria cases diagnostically confirmed positive (red), and the proportion of districts (out of 38) that completed reports each month (black line).

Figure 2. Total Tested and Confirmed Malaria Cases, 2015



Concurrent efforts are also underway to revitalize coordination among existing program information systems (e.g., malaria, HIV/AIDS, EPI, TB, and the Ebola Coordination) for the national HMIS. Part of this revitalization will be a transition to the open source DHIS2 platform adopted by the Global Fund, USAID, PEPFAR, and the Economic Community of West African States (ECOWAS) member states. The vision for the Guinea HMIS on the DHIS2 platform will be the integration of not only epidemiological data across health programs, but also the inclusion of related health information systems for personnel management, inventory control, procurement, accounting, and finances. USAID has been spearheading these efforts with the MOH and partners, including a needs assessment, stakeholders meeting, and strategic planning process initiated in 2014. The national HMIS strategy has been completed and at the time of MOP writing was awaiting the Minister of Health's signature. The national indicators list is still being negotiated; once it is finalized, the data collection tools will be revised, the DHIS2 software will be updated, and the whole system will be piloted in Conakry and N'Zerekore with a target timeline of July 2016. After subsequent adjustments and revisions, national rollout is anticipated by the end of 2016. Currently, a TWG led by the MOH and comprised of 16 national experts that have been selected from health programs (including the NMCP's M&E lead) are leading DHIS2 implementation. This team is supported by global technical experts. While PMI support to date has been focused on the malaria reporting system, the NMCP has been involved in indicator selection for the HMIS. As HMIS efforts gain momentum, PMI will ensure it is contributing to a robust integrated national system that will provide the data needed to inform malaria programming.

In addition to these efforts, PMI supported the NMCP to develop an M&E manual to more clearly define roles and responsibilities for malaria data collection, quality control, and data use. In FY 2015 PMI supported training on the new manual for NMCP staff and 46 statistics officers from the regions of Conakry, Boké, Kindia, and Labé (PMI target zones).

Household surveys: No national household survey data are available since the 2012 DHS. PMI planned to fund an MIS in 2016 but when it became apparent that a UNICEF MICS would be implemented in

the same year, all stakeholders negotiated to coordinate resources for a single survey. The standard MICS includes all malaria coverage indicators for comparability with the DHS, and all parties agreed to include a malaria biomarkers component to capture parasitemia and anemia measures that would normally be captured in the MIS. Survey timing was planned to coincide with the peak malaria transmission season (July-October). Timing will also capture post-campaign long-lasting ITN coverage levels. Though coordination efforts have been challenging, the MICS-Palu is on track for timely implementation beginning in July 2016. The Global Fund also supported a national household coverage survey implemented in December 2015; results – which will include pre-campaign ITN coverage levels – are pending.

Health facility surveys: The SARA survey was implemented in September 2015 in 154 facilities across the country.

Table 12. SARA Survey Facility Summary, September 2015

Type of facility	Number of facilities
National reference hospital	7
Regional or district hospital	29
Health center	118
Government/public	130
NGO	9
Private	10
Faith-based	1
Other	4
Urban	81
Rural	73
TOTAL	**154**

Summary of preliminary results related to malaria service provision:

- 85% of facilities had personnel trained in malaria case management, but only 43% had national malaria case management guidelines available in the facility.
- 79% of facilities had the capacity to perform diagnostics (RDT or microscopy) for malaria.
- 67% of facilities had first-line ACTs available on the day of the survey.
- 59% of facilities had personnel trained in IPTp, and 76% had SP available on the day of the survey.
- 62% of facilities had ITNs available on the day of the survey.

Results from the malaria module exit interviews will provide additional insight on actual malaria case management practices.

The sixth EUV, conducted in November 2015, continued to include both PMI and Global Fund target zones with Global Fund financing the data collection in its own target zones. The sample of health facilities and warehouses increased to 45 and 7, respectively (from 31 and 5 in 2014). National-level results of the survey are summarized below:

Supervision:

- 87% of facilities received supervision on drug management (92% for PMI zones).

- 67% of facilities received supervision on case management (96% for PMI zones).

Availability of guidelines:

- 84% of facilities had the latest malaria treatment guidelines, issued in 2014 (96% for PMI zones).
- 53% of facilities had reference guides for stock management (64% for PMI zones).

Availability of commodities:

- Individual AS-AQ presentation stockouts ranged from 3-11% of facilities.
- RDT stockouts were observed in 18% of facilities.
- SP stockouts were observed in 9% of facilities.

Case management:

- Testing practices continue to improve given increased RDT availability, with only 20% of patients receiving a clinical diagnosis.
- Treatment practices show need for improvement with 33% of malaria cases under age five not treated with an ACT.

Therapeutic efficacy monitoring: Preliminary data from the 2015 round of therapeutic efficacy monitoring in Forécariah and Labé Prefectures show uncorrected 28-day efficacies for AS-AQ and AL above 90%, with PCR correction and K13 monitoring results pending.

ITN durability monitoring: Results from bioassays conducted in 2015 on nets distributed during the 2013-2014 mass campaign showed that only 1 of 58 nets sampled did not meet WHO standards; additional nets have been collected in 2016 and will be tested.

Table 13. Surveillance, Monitoring and Evaluation Data Sources

Data Source	SM&E Activity	YEAR								
		2010	2011	2012	2013	2014	2015	2016	2017	2018
Household surveys	Demographic Health Survey (DHS)			X					(X)	
	MICS-Palu (includes malaria biomarkers)							(X)		
	Global Fund National Coverage Survey	X*					X*			
	KAP survey					X				
Health facility surveys	Health facility survey					X		(X)		(X)
	SARA survey						X			
	EUV survey				3X	2X	2X	2X	(2X)	(2X)
Malaria surveillance and routine system support	Support to malaria surveillance system				X	X	X	X	(X)	(X)
	Support to HMIS								(X)	(X)
Therapeutic efficacy	*In vivo* efficacy testing			X*			X	(X)	(X)	(X)
Entomology	Entomological surveillance and resistance monitoring				X	X	X	X	(X)	(X)
Other	Long-lasting ITN durability monitoring						X	X	(X)	(X)

** Not PMI funded*

Table 14. Routine Surveillance Indicators, January-December 2015

Indicators [Data source for all indicators is RMIS (monthly malaria reporting system)]	**Value**	**Comments**
Total number of reported malaria cases	918,412	
Total diagnostically confirmed cases	891,175	"Diagnostically confirmed cases" are estimated based on the total number of reported malaria cases minus the total number of clinical/presumed/unconfirmed

		cases reported by the NMCP
Total clinical/presumed/unconfirmed cases	27,237	"Cases treated, not confirmed" (cases treated-confirmed cases)
If available, report separately for outpatients and inpatients		Not reported by outpatient/inpatient but by uncomplicated and severe cases
Number of reported uncomplicated malaria cases	800,314	
Diagnostically confirmed	N/A	Diagnostic confirmation information is not captured for uncomplicated versus severe malaria on the current NMCP reporting form
Clinical/presumed/unconfirmed	N/A	Not captured on report form
Number of reported severe malaria cases	118,098	
Diagnostically confirmed	N/A	Diagnostic confirmation information is not captured for uncomplicated versus severe malaria on the current NMCP reporting form
Clinical/presumed/unconfirmed	N/A	Not captured on report form
Total number of reported malaria deaths	846	
Diagnostically confirmed	846	
Clinical/presumed/unconfirmed	N/A	Not captured on report form
Malaria test positivity rate (outpatients)	70%	
Numerator: Number of outpatient confirmed malaria cases	891,175	
Denominator: Number of outpatients receiving a diagnostic test for malaria (RDT or microscopy)	1,279,109	
Completeness of monthly health facility reporting	92% (Jan-Dec)	District level: 98% complete
Numerator: Number of monthly reports received from health facilities	5,070	District level: 447
Denominator: Number of health facility reports expected (i.e., number of facilities expected to report multiplied by the number of months considered)	5,496	District level: 456 (38 districts x 12 months) Out of 426 missing health facility reports, 182 were from hospitals (43%)

Plans and justification

PMI will continue to collaborate with the NMCP, implementing partners, donors, and other stakeholders to support surveillance, monitoring, and evaluation for Guinea's national strategic plan. The Malaria

Program Review will be held in 2017 and PMI will play an active role to ensure a sound SM&E plan is articulated to complement the new strategy.

PMI, together with Global Fund, the NMCP, and regional and district health authorities, will continue to support the monthly malaria reporting system, while at the same time beginning to shift some resources to strengthen the integrated HMIS. To date, PMI has focused support only on the malaria reporting system because the HMIS was non-functional and malaria data (for both epidemiologic surveillance and commodity management) were urgently needed. Scale up of this system has been very successful in terms of completeness of reporting, regular feedback to districts and facilities, and circulation of data via a monthly malaria bulletin. The bulletins are important because they serve as a feedback mechanism to the districts, partners, and those within the NMCP who are not regularly working with the RMIS data. While the initial focus was on generating any data and publishing a bulletin, the current focus is on improving reporting and data quality. Future focus will be on using the data to identify hotspots, monitor trends, and identify areas that may warrant focused attention. The commodity consumption data together with the epidemiologic data are being used to roll out a decentralized "pull" system for commodity orders from the facilities and health districts to the regional warehouses. In addition, other donors, including USAID (non-PMI funds) and Global Fund have been channeling substantial resources to HMIS strengthening.

As the Ebola crisis has stabilized and focus shifts to health system strengthening, HMIS activities have intensified and it has become apparent that the malaria program will need to actively engage in HMIS activities to promote the malaria program's needs. PMI proposes to continue to support the routine malaria information system to ensure important gains in availability, accessibility, and use of critical malaria data are not lost. At the same time, PMI recognizes the need to support HMIS strengthening efforts with the medium-to-long term vision that a separate malaria information system will not be needed when the integrated HMIS is collecting key malaria data and making those data available to malaria decision-makers at national, regional, and district levels. PMI, together with the NMCP and partners will focus HMIS strengthening efforts on supporting inclusion of key malaria data elements, assessments to monitor quality of HMIS malaria data in comparison to the routine malaria reporting system data, and ensuring timely access to data. PMI support to the monthly malaria reporting system will continue to focus on ensuring reporting completeness, and other dimensions of data quality (timeliness, accuracy), as well as data use for decision-making – particularly at the district level.

In terms of integrating support for the two systems, the plan is to support the RMIS until the HMIS is collecting the key malaria data needed by the program, those data are of adequate quality (completeness, timeliness, validity, etc.), and those data are accessible by the program at national, regional, and district levels. Operationalization of these plans have not yet been articulated but HMIS strengthening activities in the coming year will include development of a routine surveillance strategy to outline how support for these two systems can eventually be integrated.

The 2016 MICS-Palu will provide long-awaited household coverage estimates for key indicators, as well as parasitemia measures. These data will contribute to a broad perspective of how successful the national program and partners have been in scaling up interventions, and where additional efforts or new approaches may be needed. No new support for national-level household surveys is proposed in this MOP. PMI will work with USAID and partners to support planning and implementation of the upcoming DHS, but is cognizant that the 2017 DHS may be implemented within roughly one year of the 2016 MICS – two surveys that collect similar data. The proposed PMI contribution to the DHS (in FY 2016 MOP) represents only a small proportion of the overall cost (total survey costs and other donor

contributions are not yet known). If the GOG pushes strongly for the DHS in 2017 and other donors pledge their support (including those that have also contributed to the 2016 MIS), PMI proposes to maintain its contribution to maximize availability of nationally representative data in the context of post-Ebola recovery.

The 2014 health facility survey highlighted several important impacts of the Ebola crisis on health facility attendance, malaria case management at health facilities, and malaria treatment at the community level.[15] The 2015 SARA provided additional data on availability of key malaria services and it is anticipated that the malaria case management module (the first ever pilot of this tool) will provide data on actual malaria services provided to patients. A survey to assess improvements in health facility attendance and provision of malaria services – particularly resumption of universal testing for fever cases – in the rapidly changing health service delivery landscape in post-Ebola Guinea is planned for late 2016/early 2017 (approved in FY 2015). This survey will use experience from Angola and Malawi to implement a more standardized data collection methodology and indicators. A health facility survey in 2018 (proposed in this MOP) will continue to inform the national program on the status of service provision at health facilities. The EUV will continue to assess the degree to which commodities are reaching the end user; these surveys will continue unless it becomes clear that existing LMIS systems are providing adequate data and the two data sources are duplicative.

As the malaria program in Guinea matures, local capacity continues to increase, and important malaria research is carried out, the NMCP has recognized the need to ensure that research efforts are well-coordinated. It proposes to establish a national malaria research committee housed within the NMCP. This committee will serve to strengthen coordination of research activities by various individuals and institutions, promote collaboration, identify research priorities, and facilitate dissemination of research findings. PMI proposes to support these efforts through logistical support and technical engagement.

PMI will also support standard monitoring activities, including ITN durability monitoring and therapeutic efficacy monitoring. These activities will be initiated in the coming year per PMI guidance and continue in the next fiscal year.

Proposed activities with FY 2017 funding: ***($854,000)***

1. *End-use verification survey*: The semiannual EUV surveys will monitor the availability and use of key malaria control commodities at the health facility, regional, and national levels *($150,000).*
2. *Health facility survey*: Assess provision of malaria case management services in health facilities. Specific dimensions include health facility readiness to provide services, health worker training and supervision, and health worker performance. The survey will be used to continue to monitor progress in patient access to quality malaria care services (follow-up to 2016/2017 health facility survey) *($200,000).*
3. *Support RMIS*: Support the monthly routine malaria information system to ensure quality data on malaria commodities and epidemiological trends are available and accessible for national and prefecture-level decision-making while the HMIS continues to be scaled up (see below). Activities will focus on monitoring quality of malaria data (completeness, timeliness, and accuracy) - particularly in comparison with HMIS data, maximizing data use for decision-

[15] Plucinski, M., Guilavogui, T., Sidikiba, S., et al. Effect of the Ebola-virus-disease epidemic on malaria case management in Guinea, 2014: a cross-sectional survey of health facilities. *Lancet Infectious Disease* 2015; published online June 24, 2015. http://dx.doi.org/10.1016/S1473-3099 (15)00061-4.

making, monthly meetings at prefecture level, dissemination of monthly malaria bulletins, and support of the M&E technical group *($380,000).*

4. *Support HMIS*: Support efforts to strengthen the broader integrated HMIS to ensure appropriate malaria data are included in the system, data are of adequate quality, and data are accessible to the NMCP and health district-level focal points *($100,000).*
5. *ITN durability monitoring*: Prospective ITN monitoring will continue to follow ITNs distributed during the 2016 universal coverage campaign, and will provide data on: 1) net survivorship and physical integrity, 2) bioefficacy of insecticides, and 3) insecticidal content *(see ITN section for description and budget).*
6. *Therapeutic efficacy monitoring*: Efficacy monitoring of Guinea's first-line ACT will take place in four sites every two years (two sites in one year and the remaining two sites the following year). The activity will follow WHO's standard protocol. Funds are meant to cover monitoring activities in two sites *(see Case Management section for description and budget).*
7. *Support NMCP Research Committee*: Support a national malaria research committee housed within the NMCP to strengthen coordination of research activities by various individuals and institutions, promote collaboration, identify research priorities, and facilitate dissemination of research findings *($4,000).*
8. *Technical assistance for SM&E*: Support for two SM&E visits to provide technical assistance for ongoing SM&E activities including routine system strengthening, the health facility survey, and therapeutic efficacy monitoring. The country team and USAID Mission will help define the priority objectives for these visits *($20,000).*

7. Operational research

No PMI-supported OR has been completed, is ongoing or planned. However, recent discussions between the NMCP and its partners has led to the formation of a research committee within the NMCP to lead and coordinate research activities. The recent NMCP mid-term review and next year's Malaria Program Review present opportunities to think critically about operational research needs in Guinea that PMI could support.

8. Staffing and administration

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

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

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

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

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

Proposed activities with FY 2017 funding: ***($1,222,500)***

1. *CDC technical staff*: Support one Resident Advisor to support malaria activities and administration costs *($460,000).*
2. *USAID technical staff*: Support one Resident Advisor and one Foreign Service national to support malaria activities and administration costs *($762,500)*.

Table 1: Budget Breakdown by Mechanism

President's Malaria Initiative – GUINEA
Planned Obligations for FY 2017

Mechanism	Geographic Area	Activity	Budget ($)	%
GHSC - PSM	National	Commodity Procurement of ITNs, SP, RDTs, ACTs	5,717,500	38.1%
GHSC - PSM	National	Supply chain TA	941,000	6.3%
Bilateral - TBD	PMI Target Zones	Training, entomological monitoring, supervision, SBCC, capacity building, SMC, CCM, Malaria Focal points, diagnostics, ITN distribution, surveillance, monitoring & evaluation	6,840,000	45.6%
MEASURE Evaluation	National	HMIS strengthening	100,000	0.7%
PQM - USP	National	TA for pharmaceutical QA	100,000	0.7%
Peace Corps	National	Malaria Volunteers and SPA grants	30,000	0.2%
CDC IAA	National	TA and staff	509,000	3.4%
USAID	National	Staff	762,500	5.1%
Total			**15,000,000**	100.0%

Table 2: Budget Breakdown by Activity

President's Malaria Initiative – GUINEA
Planned 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 monitoring and capacity building	Bilateral - TBD	350,000	0	National	Support for vector surveillance and insecticide resistance monitoring in each of the four ecological zones, including transport and analysis of samples; capacity building for entomologists and support for NMCP staff supervision.
Advanced training for entomological technicians	Bilateral - TBD	40,000	0	National	Four regional technicians based in the sentinel sites will be trained at the Centre Muraz in Bobo-Dioulasso, Burkina Faso, to allow collections of mosquitoes and insecticide resistance tests to be done in Guinea with reduced supervision from the NMCP.
Support for the insectary and laboratory	Bilateral - TBD	64,000	0	National	Operational support for the insectary and associated laboratory to include, electricity, internet, general maintenance, security, and support for the biological specimens (mosquitoes and animal blood sources).
Technical assistance for entomological capacity building	CDC IAA	29,000	0	National	Funding for two technical assistance visits from CDC to help develop entomological capacity at the national and prefectural level.
Subtotal Ento monitoring		483,000	0		

Insecticide-treated Nets					
Procurement and delivery of ITNs	GHSC - PSM	3,617,500	3,617,500	National	The total need for routine ITNs projected for 2018 (pregnant women at ANC and children <1 at EPI) is 1,130,200. PMI will procure 385,000 of needed ITNs with Global Fund procuring the remainder to fill the gap. Also, PMI will procure 700,000 ITNs for the next national, mass distribution campaign in 2019. Estimated cost per ITN: $3.32
Distribution of routine ITNs	Bilateral - TBD	290,000	0	PMI Target Zones	PMI will be responsible for covering distribution costs in the PMI target zones, which covers approximately half of the country; thus approximately 565,000 routine nets (half of national need). Estimated distribution cost per ITN: $0.51
Training/refresher training for routine ITN distribution	Bilateral - TBD	75,000	0	PMI Target Zones	Provide training to new health facility and health post staff in the management and distribution of routine ITN for pregnant women and children less than 1 year old.
ITN durability monitoring	Bilateral - TBD	100,000	0	National	Prospective ITN monitoring will continue to follow ITNs distributed during the 2016 universal coverage campaign, and will provide data on: 1) net survivorship and physical integrity; 2) bioefficacy of insecticides; and 3) insecticidal content.
Subtotal ITNs		4,082,500	3,617,500		
Indoor Residual Spraying					
Subtotal IRS		0	0		
SUBTOTAL VECTOR MONITORING AND CONTROL		4,565,500	3,617,500		
Malaria in Pregnancy					
Procurement of SP	GHSC - PSM	204,000	204,000	National	Procure approximately 1,705,274 doses to ensure an adequate supply for pregnant women to receive 3 doses throughout their pregnancy. PMI will cover the entire national need for SP.
Procurement of quinine tablets	GHSC - PSM	15,000	15,000	National	Procure quinine tablets to treat pregnant women in their first trimester of pregnancy.

Training/refresher training for malaria in pregnancy	Bilateral - TBD	591,000	0	PMI Target Zones	Provide training and refresher training for public and private health facility midwives and nurses to correctly deliver SP and MIP services in the context of the focused antenatal care approach. Training will be provided for two health workers from every health center and one from every health post.
Supervision for health workers providing MIP services, including IPTp	Bilateral - TBD	Cost covered under case management	0	PMI Target Zones	On-site supervision for public health facility midwives and nurses to provide MIP services in the context of the focused antenatal care approach. Supervision will continue to be part of an integrated approach for supervision at health facilities.
SBCC for MIP	Bilateral - TBD	Cost covered under SBCC	0	PMI Target Zones	Support SBCC to promote ANC clinic attendance and educate pregnant women and communities on the benefits of IPTp. This activity will include support for community-level approaches, such as training of community-based workers as well as mass media (including local radio stations). This will be part of a larger integrated BCC activity to satisfy needs for case management, ITNs, and IPTp.
Subtotal Malaria in Pregnancy		810,000	219,000		
SUBTOTAL PREVENTIVE		**5,375,500**	**3,836,500**		
CASE MANAGEMENT					
Diagnosis and Treatment					
Procurement of RDTs	GHSC - PSM	530,000	530,000	National	Procure approximately 1 million RDTs to cover 100% of the existing national need predicted in 2018 for use in communities and health facilities
Procurement of ACTs	GHSC - PSM	475,000	475,000	National	Procure approximately 500,000 treatments of AL to cover 100% of the existing national need predicted in 2018 for use in communities and health facilities.
Procurement of injectable artesunate for treatment of severe malaria	GHSC - PSM	170,000	170,000	National	Procure approximately 163,700 vials of injectable artesunate to treat approximately 55,000 severe malaria cases referred to the hospital or health center level (80% of severe cases).

Procurement of injectable artemether for treatment of severe malaria	GHSC - PSM	36,000	36,000	National	Procure approximately 80,000 ampules of injectable artemether to treat approximately 25,000 severe malaria cases referred to the hospital or health center level (20% of severe cases).
Procurement of rectal artesunate	GHSC - PSM	10,000	10,000	National	Procure approximately 12,000 capsules of rectal artesunate for community health agents to administer as pre-referral treatment for severe malaria cases in children.
Procurement of medications for SMC	GHSC - PSM	560,000	560,000	8 Prefectures in northern Guinea	Procure 1,120,000 doses of co-blister AQ+SP, representing monthly doses for approximately 280,000 children (ages 3-59 months), administered by community volunteers for 4 months during the high transmission season.
Other costs for SMC	Bilateral - TBD	700,000	0	8 Prefectures in northern Guinea	Implement SMC in 8 prefectures in northern Guinea including 4 administrations from July to October (costs to cover planning, training, implementation, supervision, monitoring, BCC, and advocacy).
Microscope consumables	GHSC - PSM	100,000	100,000	PMI Target Zones	Procure reagents, slides, and repair materials for previously purchased microscopes.
Training for microscope maintenance	Bilateral - TBD	50,000	0	PMI Target Zones	Train laboratory staff in basic microscope maintenance to ensure functionality of existing microscopes that have already been procured.
Strengthen malaria diagnostics	Bilateral - TBD	100,000	0	National	Work with the NMCP and National Laboratory to develop and support a comprehensive quality assurance and quality control plan for malaria diagnostics, primarily microscopy, at all levels of the health system. This will include refresher training for lab technicians (and training on malaria microscopy for new laboratory technicians) and regular supervision of microscopy performance, including systematic review of a predetermined number of positive and negative blood smears. QA/QC for RDTs, based on observation and supportive supervision of health workers and CHWs, will take place during regular supervision (activities 12 and 13).

Training/refresher training for malaria case management (diagnostics, treatment)	Bilateral - TBD	558,000	0	PMI Target Zones	Training in RDT use and malaria case management for health workers at hospitals, health centers, and health posts. Private health facilities will also be implicated in training. Training of CHWs not yet trained in RDT use, in treatment of uncomplicated malaria and referral for patients with severe malaria, as well as referral of pregnant women to ANCs. Continue implementation of a comprehensive refresher training schedule for health workers and CHWs who have already received initial training.
Supervision of health workers and CHWs in case management (diagnostics, treatment, MIP)	Bilateral - TBD	592,000	0	PMI Target Zones	Enhanced clinical supervision at all levels of the health care system, including hospitals, health centers, health posts, and CHWs. District Health Team staff (*Département Préfectoral de Santé*) and regional health team staff (*Département Régional de Santé*) will be actively involved in supervision activities, along with health center staff for supervision of CHWs. Supervision visits will include observation of patient consultations and feedback to providers.
Community case management	Bilateral - TBD	882,000	0	PMI Target Zones	Support the continued scale-up of community case management in PMI target areas, including expansion of the number of community health agents to 1,965. Support costs include transport, data collection tools, equipment (boots, gloves, flashlights), supervision, and mobile phones equipped with software to facilitate improved case management (i.e., guided case management algorithm) and reporting, as well as solar-powered chargers.
Therapeutic efficacy monitoring	Bilateral - TBD	100,000	0	National	Efficacy monitoring of Guinea's first-line ACT will take place in four sites every two years (two sites in one year and the remaining two sites the following year). The activity will follow WHO's standard protocol. Funds are meant to cover monitoring activities in two sites.

SBCC for case management	Bilateral - TBD	Cost covered under SBCC	0	PMI Target Zones	Support integrated SBCC at the community level to improve behaviors related to malaria prevention and treatment, including use of ITNs, IPTp, and care-seeking for fever. SBCC activities will also be targeted to health workers at all levels of the health care system, including health centers/hospitals, health posts, and community health agents.
Subtotal Diagnosis and Treatment		4,863,000	1,881,000		
Pharmaceutical Management					
Strengthen Logistic Mangament Information System	GHSC - PSM	100,000	0	National	Support to strengthen the LMIS to enable the pharmaceutical system collect, compile, and process consumption data to improve forecasting, procurement, and distribution of commodities. Includes support for internet connectivity, and capacity building for quantification at the central (PCG, DNPL),regional, and prefecture levels. Support also includes integration of LMIS into the DHIS2 as well as malaria quarterly reviews.
Pharmaceutical systems reform	GHSC - PSM	158,000	0	National	Support reform of regulations governing the supply chain management system including improvement of PCG governance (renewal and functioning of the board, information sharing, civil society and private sector's participation, etc.). Support will include the enforcement of laws and regulations that have been developed to improve the use of pharmaceutical products.
Improve drug regulatory capacity	GHSC - PSM	100,000	0	National	Support improvement of the regulatory and oversight capacities of the DNPL, revision of national list of essential drugs, and enhanced control of compliance to the pharmaceutical policy and regulations by PCG and the private pharmacies network. Support will also include the development of drug quality assurance tools.
Management of pharmaceutical supplies	GHSC - PSM	200,000	0	National	Manage the distribution of PMI commodities down to the health facility level, including warehousing, transportation, storage and distribution as well as providing commodities assurance.

Strengthen pharmaceutical storage capacity	GHSC - PSM	233,000	0	National	Support the PCG to improve infrastructure necessary to adequately store and manage commodities at the central and regional levels.
Strengthen DNPL and national laboratory for drug quality monitoring	PQM - USP	100,000	0	National	Support the DNLP and national laboratories to build capacity for in-country drug quality monitoring.
Subtotal Pharmaceutical Management		891,000	0		
SUBTOTAL CASE MANAGEMENT		**5,754,000**	**1,881,000**		
HEALTH SYSTEM STRENGTHENING / CAPACITY BUILDING					
Management support for NMCP	Bilateral - TBD	314,000	0	National	Support to NMCP to assist them in logistics, supervision, office management including communication capacity/connectivity, and M&E systems strengthening.
Training and capacity building of NMCP staff	Bilateral - TBD	50,000	0	National	Support to NMCP to build capacity via conference and workshop attendance, both national and international, to improve program management in M&E and BCC.
Support health district-level Malaria Focal Points	Bilateral - TBD	700,000	0	PMI Target Zones	Support 19 health district-level malaria focal points in each of the PMI-supported health districts, complementing a structure that has already been implemented with GF support in the remaining health districts. Malaria focal points will be embedded in the DPS and serve as the liaison with the national program. Specifically, they will support commodity/logistics management activities, facility and community-level supervision, data collection and reporting, and assist with M&E and implementation activities (e.g., surveys, net distribution, BCC).

Peace Corps Response Volunteer and Small Projects grants	Peace Corps/SPA	30,000	0	National	Support to maintain two Response Volunteers: one in Conakry and one in a regional hub (Boké, Labé, or Kankan) to coordinate and support volunteers' malaria activities throughout the country; one volunteer may be embedded with a PMI implementing partner at national or regional level ($20,000). Support small project grants for which volunteers can submit applications ($10,000).
SUBTOTAL HSS & CAPACITY BUILDING		**1,094,000**	**0**		
SOCIAL AND BEHAVIOR CHANGE COMMUNICATION					
SBCC for ITNs, MIP, and case management	Bilateral - TBD	625,000	0	PMI Target Zones	SBCC will be part of an integrated communication package including ITN use, MIP, and case management. MIP and case management activities will focus on both the facility and community levels. Activities will be focused in PMI target zones but will be consistent with the NMCP's national communication plan and national policies, and coordinated with SBCC activities in the rest of the country.
Support for the implementation and evaluation of the new communications strategy	Bilateral - TBD	75,000	0	National	PMI will provide technical assistance to the NMCP and the SBCC TWG to implement and evaluate the new communications strategy derived from the new national malaria strategy and based on the results of the MICS-Palu.
SBCC for SMC	Bilateral - TBD	Costs covered under Case Management (Other costs for SMC)	0	8 Prefectures in northern Guinea	Implement a focused SBCC campaign to prepare targeted communities for SMC implementation to encourage acceptance of and adherence to treatment on the part of the community. Lessons learned from the previous years' campaigns will inform the specific activities which will be a mix of local radio and interpersonal communications.
SUBTOTAL SBCC		700,000	0		
SURVEILLANCE, MONITORING, AND EVALUATION					

End-Use Verification survey	GHSC - PSM	150,000	0	National	The semiannual EUV surveys will monitor the availability and use of key malaria control commodities at the health facility, regional, and national levels on a national scale.
Health facility survey	Bilateral - TBD	200,000	0	National	Assess provision of malaria case management services in health facilities. Specific dimensions include health facility readiness to provide services, health worker training and supervision, and health worker performance. The survey will be used to continue to monitor progress in patient access to quality malaria care services (follow-up to 2016/2017 HFS).
Support RMIS	Bilateral - TBD	380,000	0	National	Support the monthly routine malaria information system to ensure quality data on malaria commodities and epidemiological trends are available and accessible for national and prefecture-level decision-making while the HMIS continues to be scaled up (see below). Activities will focus on monitoring quality of malaria data (completeness, timeliness, and accuracy) - particularly in comparison with HMIS data, maximizing data use for decision-making, monthly meetings at prefecture level, dissemination of monthly malaria bulletins, and support of the M&E technical group.
Support HMIS	MEASURE Evaluation	100,000	0	National	Support efforts to strengthen the broader integrated HMIS to ensure appropriate malaria data are included in the system, data are of adequate quality, and data are accessible to the NMCP and health district-level focal points.
ITN durability monitoring	Bilateral - TBD	0	0	National	See ITN section for description and budget
Therapeutic efficacy monitoring	Bilateral - TBD	0	0	National	See Case Management section for description and budget

Support NMCP Research Committee	Bilateral - TBD	4,000	0	National	Support a national malaria research committee housed within the NMCP to strengthen coordination of research activities by various individuals and institutions, promote collaboration, identify research priorities, and facilitate dissemination of research findings.
Technical assistance for SM&E	CDC IAA	20,000	0	National	Support for two SM&E visits will provide technical assistance for ongoing SM&E activities including routine system strengthening, health facility survey, and therapeutic efficacy monitoring. The country team and USAID Mission will help define the priority objectives for the visits.
SUBTOTAL SM&E		854,000	0		
OPERATIONAL RESEARCH					
SUBTOTAL OR		0	0		
IN-COUNTRY STAFFING AND ADMINISTRATION					
CDC	CDC IAA	460,000	0		Support for one CDC PMI Advisor [May need to plan for change of station]
USAID	USAID	762,500	0		Support for one USAID PMI Advisor and one USAID locally-hired senior malaria specialist, as well as related local costs for the CDC PMI Advisor sitting in the USAID Mission
SUBTOTAL IN-COUNTRY STAFFING		1,222,500	0		
GRAND TOTAL		**15,000,000**	**5,717,500**		