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

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U.S. PRESIDENT'S MALARIA INITIATIVE

BURUNDI

Malaria Operational Plan FY 2018

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ABBREVIATIONS and ACRONYMS

ACT	Artemisinin-based combination therapy
ANC	Antenatal care
AL	Artemether-lumefantrine
AS/AQ	Artesunate-amodiaquine
CAMEBU	*Centrale d'Achat de Médicaments Essentiels du Burundi*
DHS	Demographic and Health Survey
EUV	End use verification
RDQA	Routine data quality assurance
FY	Fiscal year
iCCM	Integrated childhood case Management
GFATM	Global Fund to Fight AIDS, Tuberculosis and Malaria
GoB	Government of Burundi
IEC	Information, education, communication
IPTp	Intermittent preventive treatment for pregnant women
IRS	Indoor residual spraying
ISTEEBU	*Institut National de la Statistique du Burundi*
ITN	Insecticide-treated mosquito net
MCH	Maternal and child health
M&E	Monitoring and evaluation
MIP	Malaria in pregnancy
MIS	Malaria indicator survey
MoH	Ministry of Health
MOP	Malaria operational plan
NMCP	National malaria control program
NMCSP	National malaria control strategic plan
PBF	Performance based financing
PBO	Pyrethroid insecticide/piperonyl butoxide
PMI	President's Malaria Initiative
RBM	Roll Back Malaria
RDT	Rapid diagnostic test
SBCC	Social behavior change communication
SMC	Seasonal malaria chemoprevention
SM&E	Surveillance, monitoring, and evaluation
SP	Sulfadoxine-pyrimethamine
SP AQ	Sulfadoxine-pyrimethamine/amodiaquine
SMCP	Strategic malaria control Plan
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
WHO	World Health Organization

I. EXECUTIVE SUMMARY

The Republic of Burundi, located in the Great Lakes region of Central Africa, has an estimated population of 11.18 million (2008 census projection). It is bordered by Rwanda to the north, Tanzania to the east and south, and the Democratic Republic of the Congo to the west, and the southwestern border is adjacent to Lake Tanganyika. Burundi's capital is Bujumbura.

Gross National Income per capita is $691, with a ranking of 184 out of 188 on the Human Development Index (2016) and an average life expectancy of 50.1 years[1]. In 2000 the country emerged from over a decade of protracted civil war, with the signing of the Arusha Peace Accord. Burundi's first democratic election after the civil war was held in 2005. However, in the last couple of years the political climate in Burundi has been unstable following a disputed presidential election results in 2015, a controversial movement to change the Burundi Constitution and reported human rights abuses. This led to an out flow of Burundians to neighboring countries including refugee camps, and the withdrawal of both development assistance from several key donors and general investment. However, in May 2017, the United States Government revised the security advice for Burundi thus allowing Non Essential Adult Family Members to join their spouses in post.

The United States Agency for International Development (USAID) Health Team was fully staffed in the first half of 2017 with a Senior Malaria Adviser, a Reproductive and Child Health Adviser, and Health Team Lead with support from an International Acquisition and Accounting Officer.

The health profile of Burundi, as indicated in the final results of the Demographic and Health Survey (DHS) 2016, shows Infant Mortality Rate has decreased from 59 in 2010 to 47 per 1000 live births and Total Fertility Rate has dropped from 6.4 to 5.5. The use of services indicates access (geographical, cultural and financial) is high: The proportion of women delivering at a health facility is 81% and 85% of children under one year of age are fully vaccinated. However, the health status remains poor with over 50% children under 5 years of age stunted with 5 % with severe malnutrition and 29% underweight.

Malaria is considered the most serious public health problem in Burundi. In March 2017, the Burundi Ministry of Health declared a malaria epidemic. Malaria cases increased from 2.6 million in 2013 to 8.3 million in 2016 with a further increase of 18% from 2016 levels in the first half of 2017.Currently overall health districts charts show malaria levels under alert threshold and by end of 26th week 2.5 millions of cases have been reported in Burundi confirming a reduction of 44% compared to the same period in 2017. Of these cases 99.5% were confirmed by microscopy or rapid diagnostic test with positivity rates of 66.7% nationwide. Increase of malaria cases had been reported in neighboring countries but not to the incidence rates found in Burundi. Case fatality has reduced from 0.1% (2012) to 0.04% (2016)[2] in spite of the increase in caseloads due to early diagnosis at community level and prompt referral upwards for complicated malaria. Final DHS 2016-17 results report shows insecticide-treated mosquito net (ITN) use is low while reports from the USAID supported entomological sentinel sites indicate an increase in the number of mosquitoes in and around the houses sampled, reaching over 4,000 at some households during a 12 hour period. Since March 2017, 11 health districts conducted IRS with support from World Vision and GFATM.

[1] www.isteebn.bi/index.php/economie-en-bref
[2] HMIS

Between (FY) 2009-2016 USAID and GFATM contributed 80% of the funding for malaria control in Burundi. In 2017, in response to the declaration of a malaria epidemic by the Ministry of Health on 13th March 2017 on the recommendation of World Health Organization (WHO), new partners provided financial, logistical and technical support. The proportion of USAID funding for malaria control in 2017 was 33% of total funding, while 63% was combined funds from USAID and GFATM (including the mass ITN distribution campaign). Coordination efforts were improved with the establishment of an epidemic response task force chaired by the Minister of Health and co-chaired by WHO. The epidemic response plan comprised case management, preventative interventions, surveillance and social mobilization as well as planning and coordination components.

This Malaria Operational Plan (MOP) was developed in line with the priorities of the Ministry of Health, and takes into account the most recent epidemiological and entomological data. It provides a detailed implementation plan for Burundi based on PMI supported and Burundi's National Malaria Control Program (NMCP) strategies. Following a visit from the USAID Malaria Technical Backstop from USAID/Washington, the USAID/Burundi malaria team elaborated this MOP in consultation with the NMCP and contributions from implementing partners and various stakeholders involved in malaria control in the country. The activities that USAID supports are in line with the priorities outlined in the Burundi National Malaria Control Strategic Plan (2013-2017). They build on investments made by USAID, the Global Fund and other partners to improve and expand malaria control services in Burundi. This document briefly reviews the current status of malaria control policies and interventions in Burundi, describes progress to date, identifies challenges and unmet needs to achieving the targets of the NMCP and USAID, and provides a description of activities planned for 2018.

The FY 2018 USAID Malaria budget for Burundi is $9 million. With these funds, USAID will support the following intervention areas:

Entomologic monitoring and insecticide resistance management:
Burundi's country strategy for entomological monitoring and insecticide resistance management, as described in the National Malaria Control Strategic Plan (NMCSP) 2013-2017 includes increasing national capacity to collect, analyze and use entomologic data to inform the country's national malaria control strategy and to monitor vector control activities in Burundi. Since the start of the USAID malaria program in Burundi, USAID focused its efforts on increasing the national capacity to collect, analyze, and use entomological data to inform the country's malaria prevention and control program. The support includes the establishment of a functioning insectary in 2013, and the opening of eight sentinel sites[3]. These sites generate entomological data reported monthly which is used to influence national policy and guide decision making. USAID supports training in entomology to ensure proper management of the insectary and sentinel sites, and to build capacity in use of entomological date to inform program implementation at the NMCP. Out of the eight sites, six have now the capacity to collect and report monthly data with very minimal central level supervision.

In FY 2018, USAID will continue to support the operation of the sentinel sites and insectary. However, USAID will divide the sentinel sites into three categories according to the level of support deemed necessary:

1) Devolution of six sites with only bi-annual monitoring visits from central level (NMCP)

[3] Mpanda, Mabayi, Kiremba, Vumbi, Cankuzo, Matana, Gihofi and Nyanza-Lac

2) Full package of support in two of the existing sentinel sites (Vumbi and Gihofi)
3) Establishment of one additional site that will receive training, equipment, and close supervision by the NMCP central level technicians. The new site will be established in Gitega, in central Burundi, which is an area of the country not currently covered by any of the existing eight sites.

Insecticide-treated nets (ITNs):
The NMCP recognizes distribution of ITNs as one of the two principal vector control interventions in Burundi. The NMCSP (2013-2017) recommended mass distribution of ITNs to the entire population on a three year basis and continuous distribution to vulnerable groups such as pregnant women, children under one year of age, hospital in-patients, and those residing in institutions (boarding schools, prisons, hospitals, and orphanages). GFATM and USAID have together procured over 9.5 million ITNs since 2009 to cover the needs for both mass campaigns and routine distribution. Routine distribution via antenatal care clinics (ANC) to pregnant women and to children during immunization services continued in FY 2017. USAID also provided technical assistance and back-up logistical support nationwide for mass campaigns in 2009, 2011, 2014, and 2017.

With FY 2018 funding USAID will continue to support routine distribution of ITNs this year targeting 635,606 pregnant women via antenatal care clinics (ANC) and to children under one year of age during immunization services. USAID will also support the planning, monitoring and evaluation of the GFATM funded mass distribution campaign planned for 2020.

Indoor residual spraying (IRS):
The NMCSP includes Indoor Residual Spraying (IRS) as a key vector control strategy. In 2017 World Vision and the Global Fund supported the spraying of households in eleven Health Districts (four and seven respectively). USAID provided support for insecticide resistance monitoring and evaluation of the impact of IRS on mosquito density and behavior. FY 2018 funding will continue to support the NMCP in entomological monitoring and will provide technical assistance for IRS campaigns conducted by other partners.

Malaria in pregnancy (MIP):
In March 2015, following several years of extensive support from USAID and United Nations Children's Fund (UNICEF) Burundi launched the intermittent preventive treatment of pregnant women (IPTp) as a national policy, adding it to the package of services available through ANCs. Prevention of malaria in pregnancy is now a key intervention in the NMCSP (2013-2017). Sulfadoxine-pyrimethamine (SP) is procured through the GFATM grants and is provided at all health centers. Burundi introduced the distribution of ITNs to pregnant women in 2009 and IPTp was scaled up nationwide in 2016 with support from USAID for the roll out in high burden areas. With FY 2018 funding USAID will continue to support the distribution of ITNs for pregnant women and the implementation of IPTp, with a particular focus on reinforcing the provision of SP in presence of the health care attendant.

Case management:
The national policy on malaria case management recommends confirmed diagnosis of all suspected cases through either microscopy or rapid diagnostic tests (RDTs), and prompt treatment with an efficacious antimalarial drug for all confirmed cases. The current guidelines, which USAID helped to

revise and update, recommend the use of RDT in 80% of all suspected cases. About 90% (89.7%) of all health centers are equipped with a microscope, of which 77.4% are in working order[4]. For treatment, a fixed-dose of artesunate-amodiaquine (AS-AQ) is used to treat uncomplicated cases of malaria, while injectable artesunate is used as first line treatment of severe malaria. Community case management of malaria has been scaled-up to 32 out of 47 health districts since its introduction in 2012.

With FY 2017 funding, USAID procured 2,000,000 RDTs and 2,200,000 ACTs. While there were delays in delivering USAID-procured ACTs in Burundi, the contribution of UNICEF (12,000,000 RDTs and 8,000,000 ACTs) secured the stocks at central and district level. In FY 2018, USAID will procure a further 640,000 RDTs, 717,324 artesunate injectable and 2,589,850 ACTs to fill the identified gaps, taking into account commodities to be procured by Global Fund. USAID will provide support to NMCP to increase access to malaria testing and treatment services through routine healthcare services, active community case finding (*outreach test and treat)* during periods of high incidence, and integrated community case management (iCCM) in high malaria burden health districts.

Social and Behavior Change Communication:
Social and behavior change communication (SBCC) is a cross-cutting intervention in the NMCSP (2013-2017). The SBCC sub-unit in the NMCP is within the Monitoring and Evaluation (M&E) unit although not included in the official organigram. USAID currently supports SBCC through radio messages, theatre groups, leaflets and routine health service provision in collaboration with the NMCP M&E unit. Key messages include utilization of insecticide treated nets, prompt care seeking behavior, and correct measures to prevent the transmission of malaria and mitigate its impact during pregnancy. However, in spite of ad hoc reports of high knowledge level in the community the translation of knowledge into practice is poor in some high burden malaria areas. Utilization of the *provided* ITNs is as low as 25.3% in high malaria burden areas[5]. USAID is funding a Knowledge, Attitudes and Practice study with FY 2017 funds. With FY 2018 funding, based on the results of this study, USAID will support SBCC activities that aim to increase perceived susceptibility, perceived risk, response efficacy, self- efficacy, descriptive norms about malaria in general and key malaria related behaviors.

Surveillance, monitoring, and evaluation (SM&E):
USAID facilitated the development of a national surveillance, monitoring and evaluation (SM&E) plan for the NMSP (2013-17). USAID has also been supporting the periodic gathering of additional malaria related data through the end-use verification (EUV) survey (biannual) and supported the DHS (2016). Preliminary results were released in May 2017 with final results published in March 2018. USAID has also been training NMCP, district and facility-level staff to improve data collection and analysis. With FY 2018 funding, USAID will conduct biannual EUV surveys and provide additional support to enhance data completeness and quality. In accordance with PMI recommendations, USAID will fund a Malaria Indicator Survey (MIS) using FY 2018 funds to provide updated information on malaria prevalence and utilization of malaria services.

Operational research (OR):

[4] *Enquete sur la qualite de las prise en charge des cas de paludisme dans les structures de soins au Burundi 2017*
[5] DHS 2016

Operational research, while currently minimal, is conducted on an ad hoc basis in Burundi, and usually driven by donor interest. In 2018, USAID will provide technical assistance to NMCP for the inclusion of and operations research agenda in the NMCSP (2018-2022).

Other health systems strengthening:
Areas of health systems strengthening (HSS) covered in the NMCSP (2013-2017) include workplace improvement (national), human resource development, operational level capacity building, partnerships, resource mobilization, and supply chain management. Performance based financing (PBF) has been scaled up nationally and provides incentives, on a fee-for-service basis to health facilities. Funds are used to purchase drugs, improve infrastructure, maintain referral systems, motivate personnel, and support community activities. Burundi will introduce community PBF in three Provinces in 2018.

USAID is committed to providing the NMCP support to strengthen and sustain the program and national strategy, while emphasizing increased capacity development and key policy and structural reforms.

In the past year, USAID has focused its support to the NMCP to manage and coordinate partners through quarterly coordination meetings. With FY 2018 funding, USAID will continue to support for coordination meetings and activities and the dissemination of the NMCSP (2018-2022). In addition, with FY 2018 funding USAID will support existing long term in-country technical assistance to strengthen leadership and governance of the NMCP.

II. STRATEGY

1. Introduction

The Republic of Burundi started receiving USAID malaria funding with FY 2009. This financial support is designed to complement funding from the Government of Burundi, The Global Fund, and other donors. USAID and Global Fund funding comprise together over 80% of malaria control financing in support of Burundi's malaria strategy. A comprehensive package of malaria control activities including case management, entomological screening, mass distribution of insecticide treated nets (ITNs), and routine distribution of (ITNs) to pregnant women and children, behavior change communication, and indoor residual spraying (IRS). However, since 2013 the number of cases of malaria has increased significantly rising from 2.6 million cases (2013) to 8.2 million cases in 2016[6]. A malaria epidemic was announced by the Minister of Health on March 13th 2017. This announcement was made per the World Health Organization criteria for determining an epidemic, and was supported by all development partners in Burundi. Malaria caseloads continued to increase in 2017, at a rate of 11.7% higher than the same period in 2016, until mid-October 2017. The decrease in caseloads compared with 2016 coincided with a nationwide mass distribution of ITNs. The relative decrease continued into 2018 at a rate of 60% 2016 caseloads.

Burundi emerged from over a decade of protracted civil war in 2000, with the signing of the Arusha Peace Accord. Burundi's first democratic election after the civil war was held in 2005. However, Burundi is facing a new upsurge of political instability and violence brought about when the President sought and won, a third term in office, in a disputed election in 2015.

Until May 2017, USAID Burundi was designated as a post limited to adult dependents over 21 years of age who are employed at the US Embassy. Despite the restrictions, a Senior Health Team Lead, a Reproductive and Maternal Child Health Specialist, and a Senior Malaria Adviser were recruited in the first half of 2017 to support the existing health team in country. Additional support to the team included a newly recruited international Acquisition and Assistance Specialist and Monitoring and Evaluation (M&E) Specialist. However, international non-governmental organizations (NGOs) have expressed challenges in recruiting senior international positions in country. The remaining challenges in Burundi pertain to new governmental directives imposed on NGOs, high turnover of key senior government officials, and delays in implementation. Change in implementing partners always causes disruption, but this is exacerbated in an unstable political climate in which obtaining NGO registration and acquiring visas for international experts hamper implementation of activities.

The activities that USAID is supporting in FY 2018 are in line with the new priorities of the Burundian Ministry of Health and complement funding from other donors, with the goal of reducing malaria incidence to pre-2013 levels. This MOP was developed in coordination with UNDP, the new Global Fund implementing partner, in consultation with the NMCP, and with the participation of national and international partners involved in malaria control in Burundi. The document highlights the changing environment in terms of factors contributing to the epidemiological and entomological evidence, changes in health related behaviors, and new strategic responses developed collaboratively by government and development partners.

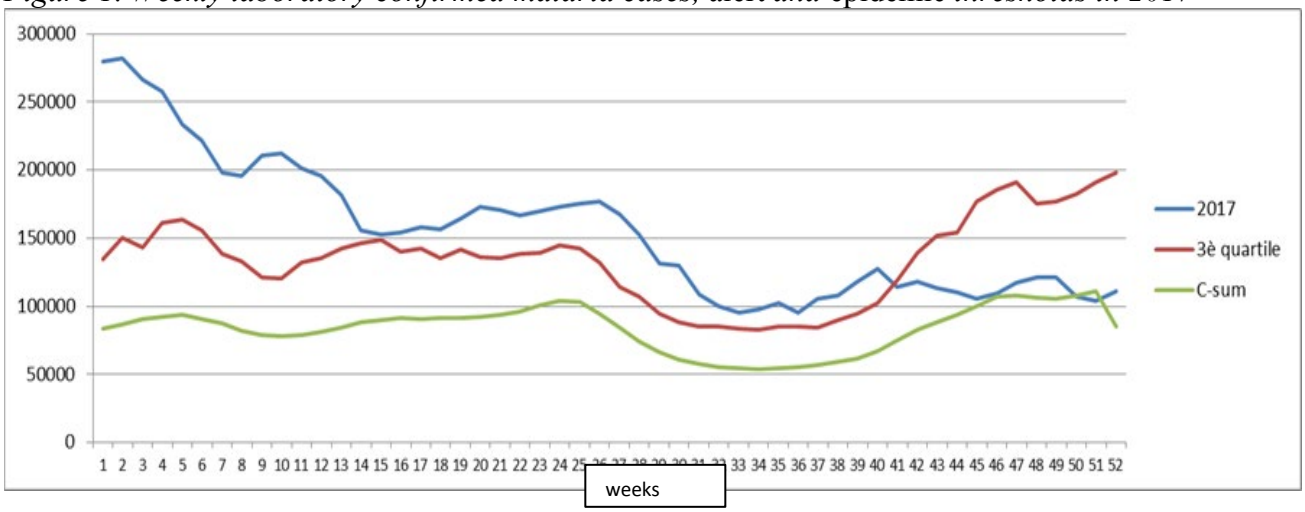
[6] Weekly Malaria Epidemic Threshold (HMIS)

Burundi is not a PMI focus country, but receives support for malaria control from USAID since 2009. The total amount of USAID malaria funding for FY 2018 is $8 million.

2. Malaria situation in Burundi

Malaria has been considered a major public health problem in Burundi for many years and places a heavy burden on the health system and Burundi's economy. The number of malaria cases in 2016 reached epidemic levels rising from 2.6 million (2012) through 5.3 million (2015) to a high of 8.2 million in 2016[7]. On March 13, 2017 the Ministry of Health declared a malaria epidemic based on two World Health Organization (WHO) measures: First, cases above the 3rd quartile of the same period in the past five years (*epidemic status*), and secondly the sum of a given period (plus the period before and after) for the past five years divided by 1.5 *(alert status*). The national average remained above the epidemic threshold in 2017 until two weeks after the mass distribution of ITNs in September 2017 (Figure 1).

Figure 1. Weekly laboratory confirmed malaria cases, alert *and* epidemic *thresholds in 2017*

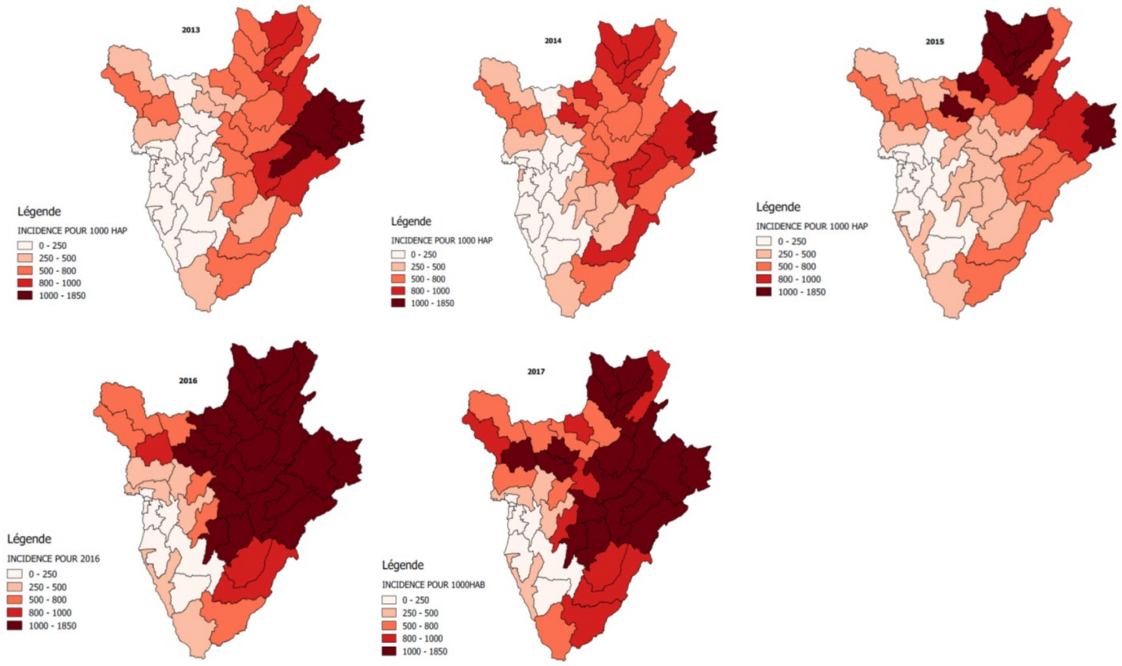


**3rd quartile of the same week in the past five years.*
***C-sum: sum of the week described plus the week before and after for the past five years divided by 15.*

The malaria epidemic burden was highest in the high altitude areas of Burundi (Figure 2). Before 2012, reported cases in the highlands were below 50 per 1000 population, since then there have been increasing trends of epidemic outbreaks in the central highlands - exposing non-immune populations in eight provinces (average altitude 1,756 meters) (Gitega (1,601m), Karuzi (1,662m) , Kayanza (1,957m), Muramvya (1,925), Muyinga (1,731m), Mwaro (1,808m), Ngozi (1,820m) and Cankuzo (1,540m) compared with 750 meters on the shores of Lake Tangyanika. The provinces of Karusi, Ngozi, Gitega, Muramvya, Mwaro and Kayanza experienced malaria case increases of over 100% from 2013 levels.

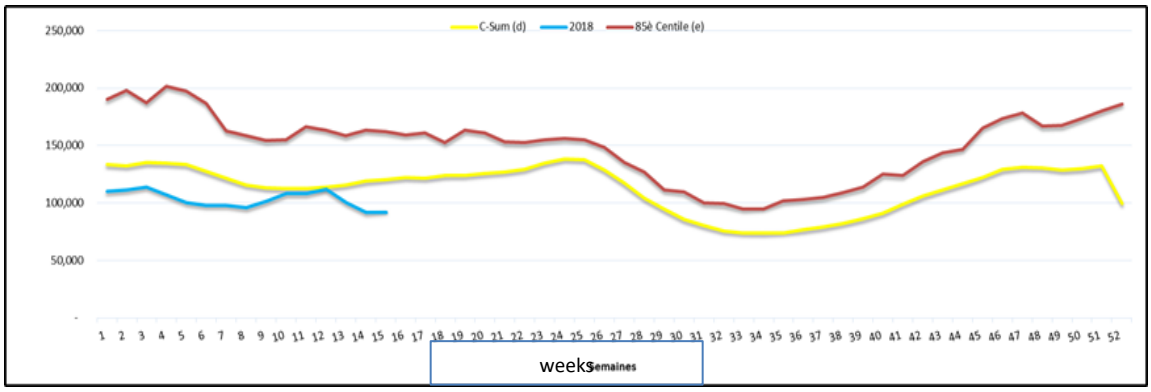
[7] Burundi DHIS2

Figure 2. Laboratory confirmed malaria caseloads in Burundi by District (2013-2017)[8]



In 2018, to date, caseloads have remained below alert and epidemic thresholds nationally (Figure3). A few health districts caseloads reached alert and epidemic levels in March 2018, but quickly reverted to below alert levels by April 2018 following active case finding Outreach Test and Treat activities9.

Figure 3 Malaria confirmed cases and epidemic monitoring (January 1- May 2, 2018)[10]

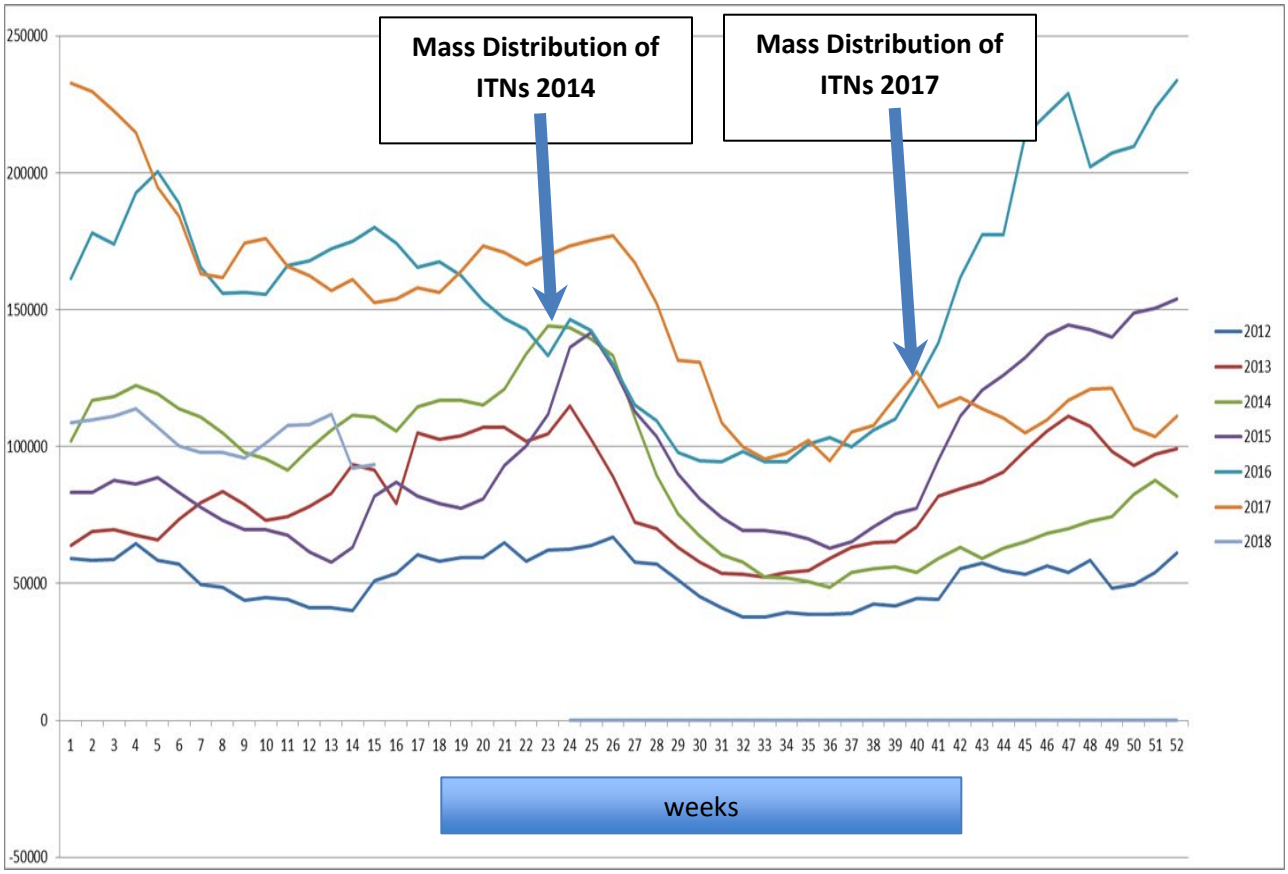


Until mid-October 2017, caseloads were 18.7% higher than they were in 2016 thereafter there was a reduction of 45.8% compared with the same period in 2016. This decrease occurred two weeks after the mass distribution of ITNs nationwide, which took place September 18th-23rd, 2017. The effects of this campaign became evident on October 8th. In the 42 weeks leading up to the mass distribution of

[8] Burundi DHIS2
[9] Burundi DHIS2
[10] Burundi DHIS2

mosquito nets, caseloads were on average 11.5% higher than the same period in 2016. In the remaining 11 weeks of 2017, a reduction of 45.8% cases were reported compared to the same period in 2016. Based on the assumption that the upward trend in malaria cases would have continued at 11.5% above 2016 levels, the estimated number of cases for 2017 was 9,053,932. So far, caseloads in 2018 (January-April) are 38% lower than the same period in 2017. Reporting from health centers have included community agents confirmed cases and *Outreach Test and Treat* activities. The NMPC reported no other change in policy or practice during this time. The vast majority were clinically confirmed cases (99.7%) (Figure 4).

Figure 4. Reported confirmed malaria cases in Burundi (2012-April 2018)



Burundi's case fatality rate for malaria has decreased from 0.1% (2012) to 0.04% (2017)11. Despite the increase in cases, malaria case fatality rate has decreased in the past five years. This decrease occurred under conditions of high patient to health worker ratios, heightened food insecurity and economic hardship, challenging operating environment for USG and its implementing partners, and stock-outs of artesunate injectable from February to July 2017. A recent data quality review estimated less than 70% reported malaria deaths were confirmed by laboratory tests. The number of malaria deaths in hospitals may therefore be over-estimated; however deaths in the community are not reported.

[11] Number of health facility deaths/number of confirmed malaria cases x100

3. Country Health System and Ministry of Health Organization

The Republic of Burundi is a small, densely populated country in the Great Lakes region of Central Africa bordered by Rwanda to the north, Tanzania to the south and east, and the Democratic Republic of the Congo to the west. Although the country is landlocked, it borders Lake Tanganyika to the southwest. Burundi is a member state of the East Africa Community, which is comprised of Burundi, Kenya, Rwanda, Tanzania and Uganda. The country is divided into 18 provinces, 129 *communes* and 3,061 *collines*. Provincial administrations are structured upon these boundaries. Under the 18 Provinces there are 47 Health Districts with and average population of 150,000 each. Bujumbura is divided into two provinces, Bujumbura and Bujumbura Mairie, consisting of three urban *communes*.

A new health policy was developed and approved in 2016. This policy covers a five-year period from 2016 to 2020. The National Health Strategic Plan (*Plan National de Développement Sanitaire II 2011-2015)* was designed to implement the national health policies and specifically to address the Millennium Development Goals. The plan was extended after expiration in 2015 for a three-year period until 2018, without any review or revisions to adapt to the changing circumstances. The primary goals outlined in the Burundian health strategic plan (*Plan National de Développement Sanitaire II 2011-2015)* were to: reduce maternal and neonatal mortality; reduce infant and child mortality; reduce mortality from communicable diseases; and strengthen the health system. The current National Health Policy places malaria control as first among eight strategies aiming to meet these goals and achieve the new Sustainable Development Goals.

The Ministry of Health (MoH) is organized into three levels with well-defined roles and responsibilities to implement the ambitious national health strategy. The central level is comprised of the Minister and the Heads of Departments and Services who are tasked with setting policies and guidelines. The intermediate level is comprised of 18 health provinces, each administered by a provincial bureau headed by a chief medical officer. The tertiary level is composed of 47 health districts that are managed by health district teams. Each health district team is typically led by a physician, and composed of three supervisors, including a health information system or data manager, an administrative officer, a supply chain manager, an accountant, an administrative assistant, a driver, and up to three clerks.

Decentralization to the provincial and district levels is in effect as of 2014. Under the decentralization plan, the provincial health departments oversee the health districts, which are responsible for the delivery of healthcare services at the health center and community levels. Each district has a district hospital and peripheral health centers. The primary level is composed of district-based health centers, staffed by nurses who provide preventive and curative services.

The epidemic response selected eleven districts[12] of the northern and eastern provinces of the country most affected by the increase in malaria cases for intensified interventions. One of the interventions is the identification of locations for additional treatment sites attached to each health center. These are at settings convenient to the public (e.g. schools and other public buildings) from where health workers provide treatment to those who have fever or report to have had fever in the past 24 hours. The MoH was considering presumptive treatment (using the current first line treatment AS-AQ) in

[12] Ngozi, Cankuzo, Muyinga, Ruigi, Kirundo ,Karusi,,Gitega, Kayanza. Rutana, Cibitoke and Bubanza.

sites where the positivity rate is currently over 70%, but ended up testing, and treating only confirmed malaria cases.

Burundi also supports integrated community case management (iCCM) where community agents appointed by their communities have been trained in treatment of malaria, pneumonia and diarrhea for children under 5 years of age. USAID technical and financial support resulted in a set of tools including: treatment algorithm, data reporting register, referral note template, and stock-management reporting cards. These tools were developed in collaboration with other development partners and adopted by the MoH. All implementing partners supporting iCCM use these tools.

The MoH adopted performance-based financing (PBF) countrywide in 2010 to strengthen the health system with the aim of improving quality of care and retaining key personnel. The next PBF project (Health Systems Support Project) due to commence in 2018 includes community PBF based on the pilot in three districts[13]. This will transition the current ad hoc payments to community agents to payments based on workload and quality of services. The Burundi PBF was the second country in Africa to scale up nationwide with good results[14]. In 2017 key donors continue to support PBF even as government funding was reduced. A key new donor proposing to co-fund the PBF is The Vaccine Alliance (GAVI) for both the health center PBF and the proposed community PBF.

The economic situation in Burundi has deteriorated as international aid and investments dwindled, businesses closed, and key exports (e.g. coffee) declined. The allocation of national budget to health in 2016 and 2017 was 6.3% a decrease from 11% in 2012-14[15]. The most recent National Health Accounts was conducted in 2014. At this time, donor, GoB and private expenditure on health were each one quarter of total expenditure on health while out of pocket expenditure was 11% and NGO expenditure 13%[16] (Figure 5). As of 2014 National Health Accounts and Public Expenditure Reviews were not conducted. The shrinking national budget and reduced allocation to health has compromised the quality of health services. Furthermore, Burundi has been classified by the Global Fund as a country that is in a *High Risk Environment* and falls under the *Additional Safeguard Policy* strengthening fiscal control and oversight of the grant.

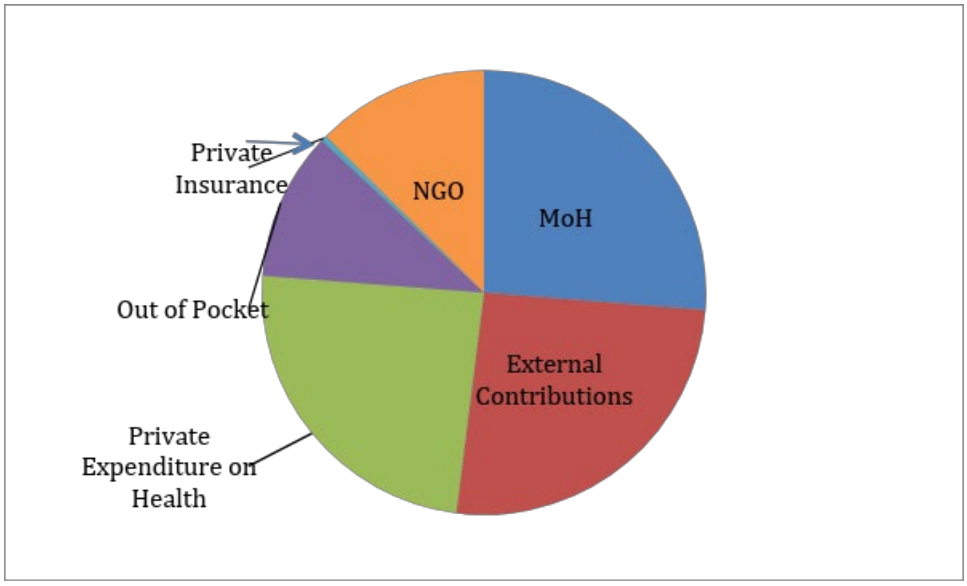
[13] *Evaluation final du projet pilote FBP Communautaire au Burundi. Rapport Final*, December 2005

[14] Improving Health System Efficiency: Reforms for improving the efficiency of Health Systems: lessons from 10 country cases (2015) Yip, Hafez.

[15] Budget law 2012-2017

[16] Burundi NHA 1995-2014

Figure 5. Burundi Expenditure on Health, by category of organization in 2014[17].



Other than personnel emoluments, the majority of funding for malaria control interventions comes from external donors such as USAID (26%), GFATM (44%), with additional epidemic resources being provided by WHO (1%), UNICEF (13%), World Vision (6%), World Bank (3%) and NGOs (7%). This excludes technical assistance provided by WHO. In addition, support to community agents and health centers to facilitate malaria case management and prevention is provided through the World Bank, Belgium Bilateral, European Union (EU) and GAVI through PBF.

4. National malaria control strategy

Burundi is in the process of developing the National Malaria Control Strategic Plan (NMCSP) (2018-2022) under which the interventions outlined in this MOP FY 2018 will be implemented. The major change in policy between the NMCSP (2013-2017) and the new plan is the continuation of and heightened interest in *active Test and Treat outreach* activities to address high caseloads in the most affected districts. This policy evolved from the Epidemic Response introduced in January 2017.

Burundi did not achieve the stated goal to reduce malaria morbidity and mortality by 75% from 2013 levels by 2017. Instead, cases increased from 2.3 to 8.0 million by 2016 and continued to increase by a further 11.7% before the mass distribution of ITNs in September 2017[18]. The strategy is comprised of seven thematic areas: 1) case management, 2) malaria in pregnancy, 3) integrated vector control management, 4) epidemic surveillance, 5) communication, 6) monitoring and evaluation and operational research, and 7) capacity building of the national program. Each area has its own specific goals and objectives. The format of the new NMCSP (2018-2022) has yet to be finalized.

[17] *National Health Accounts 2014*

[18] Burundi DHIS2

Case Management
The principal objectives of malaria case management are to minimize severity and complications from malaria infections, thus reducing morbidity and mortality among vulnerable populations, and to increase access to appropriate, timely diagnosis and prompt treatment for people with malaria. The key requirements to achieve these objectives are to have an efficacious first line treatment administered within 24 hours of onset of symptoms of confirmed uncomplicated cases, and prompt referral of severe malaria cases to a hospital. In order to achieve high coverage of timely diagnosis and treatment the Ministry of Health introduced *Outreach Test and Treat* activities in high burden areas.

Malaria in Pregnancy
Since it was launched in 2015, IPTp has been progressively scaled up to new provinces. This intervention complements the distribution of ITNs to pregnant women, providing a more comprehensive package of malaria prevention tools to this vulnerable population. The aim is for all pregnant women to receive at least three doses of SP during antenatal care visits, administered under direct observation therapy at monthly intervals, and starting with the second trimester up to time of delivery.

While IPTp was not included in the Epidemic Response Plan, an increased target from four to six doses of SP for pregnant women, in line with the new WHO recommendation is currently under discussion. The final decision will be made during development of the revised National Treatment Guidelines.

Integrated Malaria Vector Control
Burundi's objectives for integrated vector control are: 1) ensure universal coverage of ITNs with at least 80% use, 2) maintain 100% coverage of households in targeted epidemic-risk districts receiving indoor residual spraying, and 3) establish and operationalize an entomologic surveillance system.

Epidemic Surveillance
Under epidemic surveillance the main objective is for the program to develop a surveillance, detection and alert system including mapped high-risk zones, with the goal of detecting 100% of epidemics.

Communication
The primary objective of the communications strategy is to ensure that at least 90% of the population is aware of and adopt the proven malaria prevention and treatment measures.

Monitoring and Evaluation
The NMCSP (2013-2017) recognized the need to strengthen monitoring and evaluation of malaria control interventions, activities, policies and strategies and ensure that at least 80% of decisions are made using available evidence.

Capacity Building
NMCSP (2013-2017) includes capacity building to strengthen abilities and skills in program management, resource mobilization and coordination at all levels.

Updates in the Strategy Section

Burundi is developing a new National Malaria Control Strategic Plan 2018-2022 simultaneously with the MOP FY 2018. The Epidemic Response Plan (developed in January 2017), the review of the NMCSP (2013-2017), and epidemiological and entomological data are the drivers of the process. All key interventions set out in the NMCSP (2013-2017) are expected to be included in the new version of the NMCSP.

Integration, collaboration, and coordination

The establishment of the Epidemic Response Task Force in January 2017 provided an effective forum for government, donors, and implementing partners to identify the financial and programmatic barriers to reducing the malaria epidemic. The key actors are WHO, UNICEF, USAID and its including implementing partners, GFATM, the World Bank, World Relief, Medecins Sans Frontière Belgium, and World Vision. The task force was coordinated by the United Nations Organization for Coordination of Humanitarian Affairs (OCHA). The European Union, Global Alliance for Vaccine Initiative (GAVI) and World Bank support the health systems, mostly through Performance-Based Financing (PBF) , while USAID and WHO provide technical assistance to the NMCP. In 2018 this improved collaboration between partners has continued for the design of the NMCSP (2018-22).

The GFATM new funding model 2015-2017 came to an end in December 2017. The continuation proposal (2018-2020) has a total budget for malaria activities of $32 million a reduction from $36 million from 2015-2017 and covers case management, (procurement of ACTs, RDTs and injectable artesunate) and mass distribution of ITNs in 2019. Health system strengthening activities include support to CAMEBU (*Centrale d'Achat de Médicaments Essentiels du Burundi),* health management information systems and laboratory capacity building. An 'above allocation' concept paper is under development to address the critical gaps not funded by USAID and includes IRS in eleven districts as per national strategy. The United Nations Development Program (UNDP) is the principal recipient (PR) and two civil society organizations (CSOs) are the sub-recipients. The Chair and terms of reference for the reformed Country Coordinating Committee (CCM) are under discussion. The grants are under additional safeguards under the revised GFATM policy.

5. **Progress on coverage/impact indicators to date**

Table 1: Evolution of Key Malaria Indicators in Burundi 2005 to 2016

Indicator	2005 MICS	2010 DHS	2012 MIS	2016 DHS	2017 Other sources
% Households with at least one ITN	8%	52%*	63%	46%	
% Households with at least one ITN for every two people				17%	

% Children under five who slept under an ITN the previous night	8%	46%	53%	40%	
% Pregnant women who slept under an ITN the previous night	N/A	50%	56%	44%	
% Households in targeted districts protected by IRS **					78%
% Children under five years old with fever in the last two weeks for whom advice or treatment was sought				69%	
% Children under five with fever in the last two weeks who had a finger or heel stick				66%	
% Children receiving an ACT among children under five years old with fever in the last two weeks	N/A	12%		11%	
% Women who received two or more doses of SP during their last pregnancy in the last two years *	N/A	N/A	N/A	21%	

** IPTp was not policy in Burundi until 2014.*

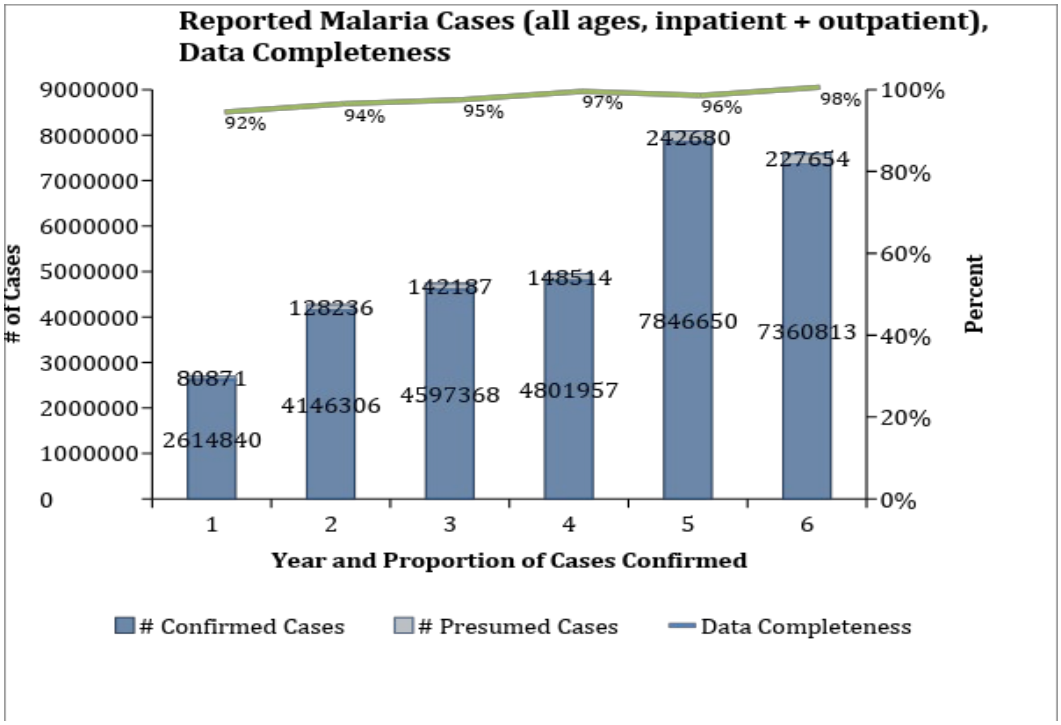
***WHO Weekly Malaria Bulletin/ Burundi April 2017*

Table 2: Evolution of Key Malaria Indicators Reported through Routine Surveillance Systems in Burundi from 2012 to 2017

	2012	2013	2014	2015	2016	2017
Total # Cases (Confirmed and Presumed)	2,695,711	4,274,542	4,739,555	4,950,471	8,089,330	7,588,467
# Confirmed Cases[19]	2,614,840	4,146,306	4,597,368	4,801,957	7,846,650	7,360,813
# Presumed Cases	80,871	128,236	142,187	148,514	242,680	227,654
Total # <5 Cases	107,828	170,982	189,592	198,019	323,572	303,548
Total # Malaria Deaths	2,609	3,347	2,365	2,346	3,826	3,417
Data Completeness (%)	92%	94%	95%	97%	96%	98%
Test Positivity Rate (TPR)					67%	67%

[19] DHIS2 reports 97.7% are laboratory confirmed, however a study conducted in 2017 indicated that 33% deaths attributed to malaria in hospitals were not laboratory confirmed. Figures will be revised on validation of the study findings.

Figure 6. Trends in Key Malaria Indicators Reported in Routine Surveillance Systems



III. OPERATIONAL PLAN

1. Vector control

NMCP/USAID objectives

According to the National Malaria Control Strategy for Burundi, vector control interventions include the distribution and promotion of the use of insecticide-treated nets (ITNs) and indoor residual spraying (IRS). The strategy also recommends larviciding, but only in specific, well-defined situations. USAID supports the strategy by focusing on the procurement and distribution of ITNs via routine distribution through antenatal care clinics and child vaccination services, as well as in building capacity in entomologic monitoring and surveillance.

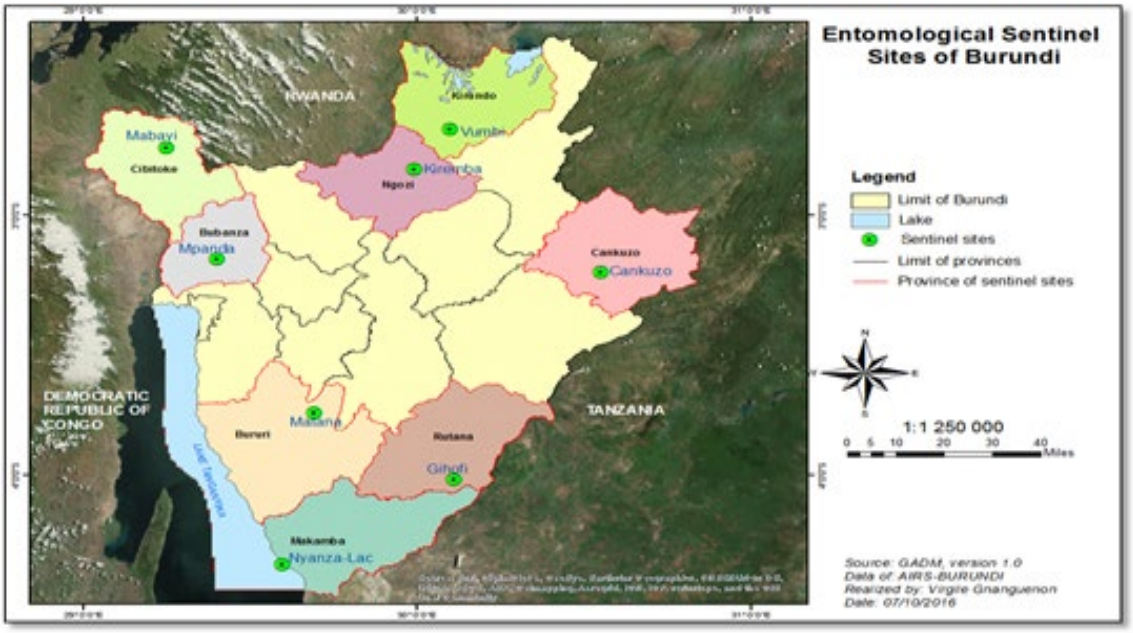
a. Entomologic monitoring and insecticide resistance management

Progress since USAID malaria program was launched

Since the start of the USAID malaria program in Burundi effort has focused on increasing the national capacity to collect, analyze, and use entomologic data to inform the country's malaria prevention and control program. The support includes the establishment of a functioning insectary since 2013, and the opening of eight sentinel sites over the years which, due to instability, have operated at varying capacity. USAID support over this period includes training in entomology in order to ensure proper management of the insectary as well as the sentinel sites, and to build capacity at the NMCP to use information to inform program implementation. USAID supports eight sentinel sites for entomological data collection. These are situated in Kirundo, Cibitoke, Bubanza, Cankuzo,

Ngozi, Rutana, Makamba and Bururi Provinces. Figure 7 below shows the distribution of USAID supported sentinel sites in Burundi.

Figure 7. Distribution of entomological sentinel sites in Burundi



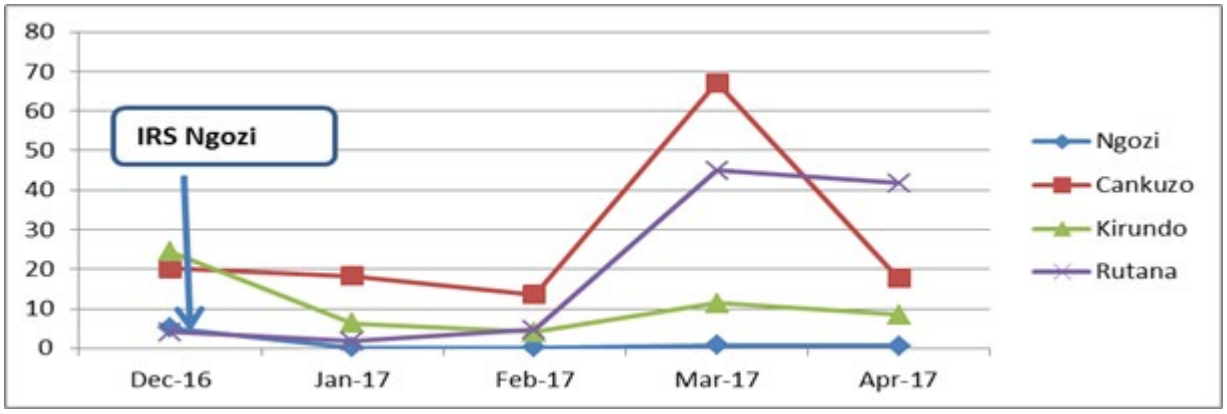
<u>*Progress during the last 12-18 months*</u>

USAID support continued to focus on building and maintaining improved capacity in entomology with the aim of enhancing vector control interventions in the past 12-18 months. Physical improvements to the insectary were made to prevent contamination and to secure existing equipment. All eight sentinel sites submitted reports. The surveys used three different collection methods including pyrethrum spray catches, light traps and human landing catches.

The majority of parasites are *P. falciparum* although 3% of mosquitoes are found with *P. vivax*. From a sample of 40,000 mosquitoes 22 species were identified from six genra (Anopheles, Culex, Aedes, Mansonia, Coquilletidia & Eretmapodites). A total of 2,197 vectors were tested between March and July 2017, of which 41 were positive for either *P. falciparum* or *P. vivax*. The surveys did not detect vector resistance to pirimiphos methyl, malathion or bendiocarb; they confirmed resistance to deltamethrin.

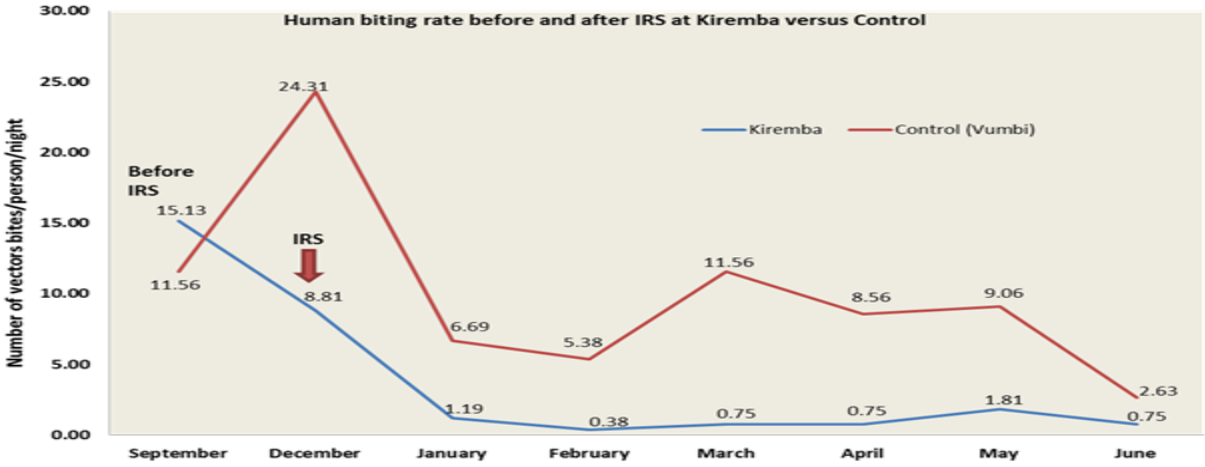
Human biting rates during the low transmission months averaged 7.5 bites per person per night rising to 41.1 bites per person per night in the high transmission months of December and March. In Ngozi, where IRS had been conducted, a decrease from 5.13 bites per person per night to 0.13 bites per person per night was reported (Figure 8).

Figure 8: Human biting rate per person per night in four epidemic-prone districts, An. gambiae (Dec 2016-April 2017)



A second analysis compared two health districts, including one where IRS was implemented and one which served as a control. The health district where IRS was conducted showed a decrease in human biting rates that was sustained for five months following the spraying campaign (Figure 9).

Figure 9: Human biting rate before and after IRS at Kiremba compared with control District (September 2016- June 2017).



Ngozi and Muyinga Health Districts showed a decrease in the number of cases per week after the implementation of IRS. Caseloads fell below epidemic level in these health districts while the national caseloads remained above the epidemic threshold.

The entomological situation, illustrates that vector density and activity is a key driver of the malaria epidemic. In Burundi the major vectors transmitting malaria are *An. gambiae* and *An. funestus*. These species account for just over 10% of the mosquito population found in and around the homes[20]. Entomological reports from eight sentinel sites from November 2014 to March 2017[21] describe vector behavior and density.

Plans and justification for proposed activities with FY 2018 funding:
Using FY 2018 funding, USAID will continue to provide support for the operation of sentinel sites, surveys, and the insectary. Out of the eight sites, six have now the capacity to collect and report monthly data with very minimal central level supervision. NMCP and Vectorlink considers six sites semi-autonomous requiring just basic inputs and no longer requiring central level monthly monitoring visits. They instead recommend the opening of an additional site in the middle of the country at no additional cost, given the savings made through the reduction of monitoring visits from NMCP entomologists. The site is in Gitega, Central Burundi. In this area there have been intensive vector control activities, including indoor residual spraying conducted by two international NGOs. The current sentinel sites do not provide entomological data in this area.

The sentinel sites are thus divided into three categories according to the level of support deemed necessary:

1) Devolution of six current sites needing only bi-annual monitoring visits from NMCP
2) Full package of support in two of the existing sentinel sites (Vumbi and Gihofi) still needing central level supervision

3 One new site (Gitega) that will receive training, equipment, and close supervision by the NMCP central level technicians. In FY 2018, USAID will support the NMCP in insecticide resistance monitoring and evaluation of vector control programs in addition to technical assistance for IRS activities implemented by other partners.

b. Insecticide-treated nets

Progress since PMI was launched
Since the beginning of USAID funding for malaria in 2009, Global Fund and USAID have together procured over 9.5 million ITNs for mass campaigns and routine distribution respectively. Also, USAID provided technical assistance for the nationwide campaigns in 2009-2011, 2014, and 2017. NMCP introduced social marketing in 2009 with over 10,000 ITNs sold but this has been discontinued in 2015 since it was observed that no vendor imported ITNs during the pilot period, raising the question of sustainability of the intervention.

Progress during the last 12-18 months
During this period, USAID support continued to focus on the procurement and distribution of ITNs to pregnant women at ANC clinics and to children during routine immunization services. Using FY

[20] The other species are anopheles.brochieri, anopheles maculipalpi, anopheles marshali, anopheles rufipes, anopheles squamosis, anopheles ziemanni, anopheles culicines
[21] Field work was not possible January and April to December 2015 and January to November 2016.

2017 funds, 863,750 ITNs were procured and distribution is ongoing. A lower-than-expected distribution is due to a lower utilization of ANC and EPI services (6.3% and 1.9% decrease respectively in 2016 and 2017). There were no stock outs of ITNs at the national level in 2017. Coverage rates of ITN distribution were 80% for pregnant women attending ANC and 86% for children attending EPI clinics[22]. USAID funds provided technical assistance for macro and micro planning of mass distribution of ITNs in September 2017. The post campaign evaluation reported 96.8% had received ITNs[23] Furthermore, USAID supported the warehousing and distribution of ITNs to fill gaps that resulted from unforeseen delays in arrival of mass distribution ITNs and an excess of ITNs following the campaign.

Commodity gap analysis

Table 3. ITN Gap Analysis

Calendar Year	2017	2018	2019
Total Targeted Population [1]	10,400,938	10,681,186	10,953,317
Continuous Distribution Needs			
Channel #1: ANC [2]	447,094	417,152	447,093
Channel #2: EPI [3]	335,257	325,199	335,257
Estimated Total Need for Continuous Channels	782,351	742,351	782,350
Mass Campaign Distribution Needs			
2017/2020 mass distribution campaign(s)[4]			6,693,694
Estimated Total Need for Campaigns	6,471,695	0	6,693,694
Special Groups (institutions) [8]		312,902	
Total ITN Need: Routine and Campaign[7]	**7,254,046**	**1,055,253**	**7,476,044**
Partner Contributions			
ITNs carried over from previous year [5]	785,600	1,215,864	1,060,611
ITNs from MOH			
ITNs from Global Fund [6]	6,471,695	0	6,247,694
ITNs from other donors (UNICEF)	5,000		
ITNs planned with USAID funding	867,500	900,000	646,600
Total ITNs Available	8,129,795	2,115,864	7,954,905
Total ITN Surplus (Gap)	875,749	1,060,611	478,861

[1]Population data is obtained from projections by ISTEEBU 2013.

[2] Number of pregnant women in ANC in 2017 (there was a decrease 0f 6% Jan to April 2018 from 2017 attendances) (DHIS2). ANC attendance in 2019 to be revised in December 2018

22 DHIS2

23 *Evaluation Post Campagne MILDA 2017*

[3]Number of children 9 months receiving LLINs in 2017 (DHIS2). Decrease of 3.2% Jan-April 2018 from 2017 attendances. EPI attendances for 2019 to be revised in December 2018

[4] ITNs needs for mass distribution campain in 2019 was calculate based on total population and with proportion of 1 ITN for 1.8 persons. This includes 10% buffer

[5]Actual number in stock on 31st December 2017. This figure includes ITNs remaining from 2017 (312,901) mass distribution campaign and 73,000 from previous campaigns.

[6] There is a 446,000 gap in GFATM ITNs for mass distribution 2020

[7] Only 97% pregnant women received ITN (Etude Qualite Prise en Charge)

8 There was a one off distribution of ITNs using the remaining ITNs from the Mass Distribution in 2017

NB The difference of 27,213 between the expected and real stock levels on 31st December 2017 is likely to be due to the source of data for the expected proportion of pregnant women receiving nets. This data is derived from a sample.

Plans and justification for proposed activities with FY 2019 funding:

In FY 2018, USAID will continue to support distribution of ITNs to 685,212 pregnant women and children under one year of age through the routine MCH clinics. The quantification exercise estimated that 1,060,611 ITNs will be in country by the end of calendar year 2018. There is a surplus of ITNs for routine distribution through MCH clinics for two reasons. Firstly, there has been an overestimation of beneficiaries. Antenatal attendance and measles vaccine uptake has declined since 2016 while assumptions for quantification were based on a stable attendance rates. Secondly , the late arrival of ITNs in 2016 resulted in a stock-out of ITNs for three months (July-September 2016), thus, fewer ITNs were distributed. The majority (97%) pregnant women receive an ITN during first visit[24]. There is concern in the use of ITNs distributed routinely. This will be addressed in malaria in pregnancy and SBCC sections. USAID is in the process of procuring 900,000 ITNs and expected delivery date is by December 2018. In addition, USAID will procure 446,600 ITNs for the mass distribution campaign to be conducted in 2020 to allow full national coverage.

Please see Table 2 for a detailed list of proposed activities with FY 2018 funding.

2. Malaria in pregnancy

NMCP/PMI objectives

According to the Burundi National Malaria Control Strategy, the objectives of the malaria in pregnancy (MIP) program are to ensure that every pregnant woman receives at least three doses of SP for IPTp, with each treatment being administered under direct observation therapy (DOT) during ANC visits, starting in the second trimester, at one-month intervals, and up to the day of delivery. Additionally, each pregnant woman will receive an ITN at her first ANC visit. Uncomplicated malaria in pregnant women within their first trimester are treated with oral quinine, while women in their second and third trimesters are treated using an artemisinin-based combination therapy (ACT). USAID supports the full package of MIP activities in the national strategy.

Progress since PMI was launched

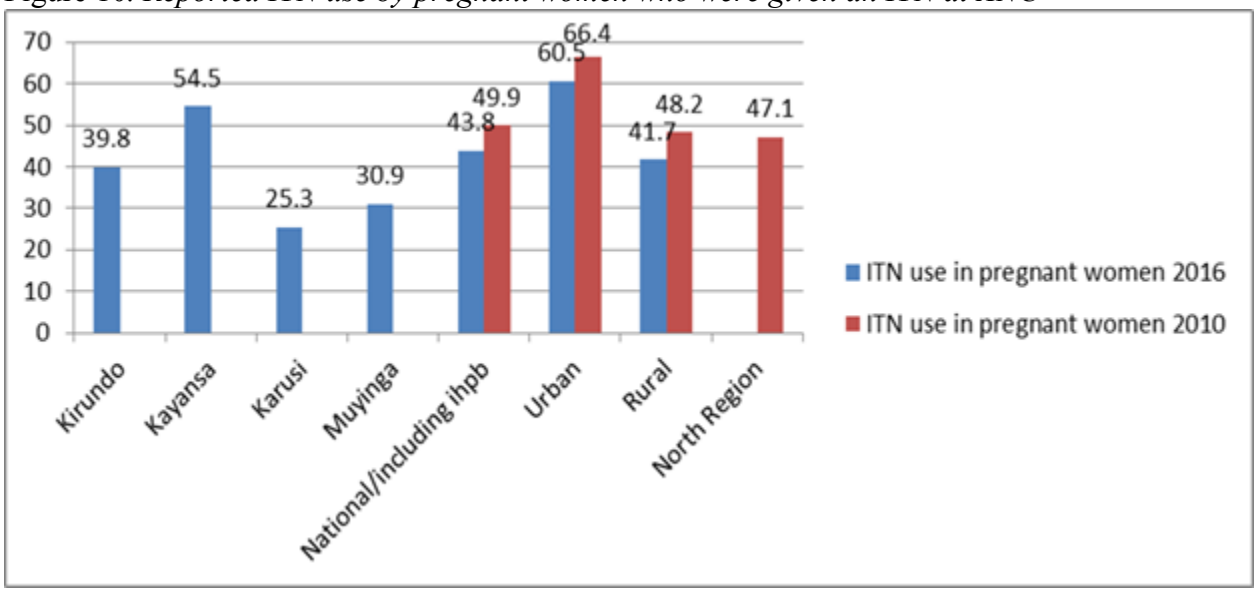
[24] *Enquete sur la qualite de las prise en charge des cas de paludisme dans les structures de soins au Burundi 2017*

In 2009, USAID and other key partners began advocating that the MoH revise its policy on SP, which had been removed from the MoH essential drug list in 2002. In 2014, Burundi adopted IPTp for its updated MIP policy guidance, which initially included only distribution of ITNs at ANC and treatment guidelines for both uncomplicated and severe malaria (2002). In preparation for the launching of the new IPTp policy, USAID purchased 1,860,000 does of SP, and identified target districts in which IPTp roll out would start. Working closely with UNICEF, USAID helped spearhead the IPTp launch in March of 2015, which was followed by training of health workers and development of communication materials to raise public awareness on the new policy.

Intermittent preventive treatment for pregnant women increased from 0.3% in 2010 to 39.6% in 2016[25] . This increase is explained by the late adoption of the IPTp policy. The case management survey of 2017[26] reported that 100% of healthcare workers provided IPTp to pregnant women but not necessarily according to the DOT strategy. The 2016 DHS results showed that 30% of pregnant women received one dose of SP, 21% received two doses and only 13% received all three recommended doses. The proportion of women attending an antenatal clinic four times was only 49%.

ITN use among pregnant women was 43.8% countrywide and rates varied in the four USAID supported provinces, with 39.8%, 54.5%, 25.3% and 30.9% respectively (DHS 2016). This was a decrease by 6% since 2010 (Figure 10)[27].

Figure 10. *Reported ITN use by pregnant women who were given an ITN at ANC*



Of those women who attended a prenatal check-up, received and *still possessed* an ITN at the time of the interview, 84.4% slept under an ITN. The urban average was higher at 88.9% than the rural

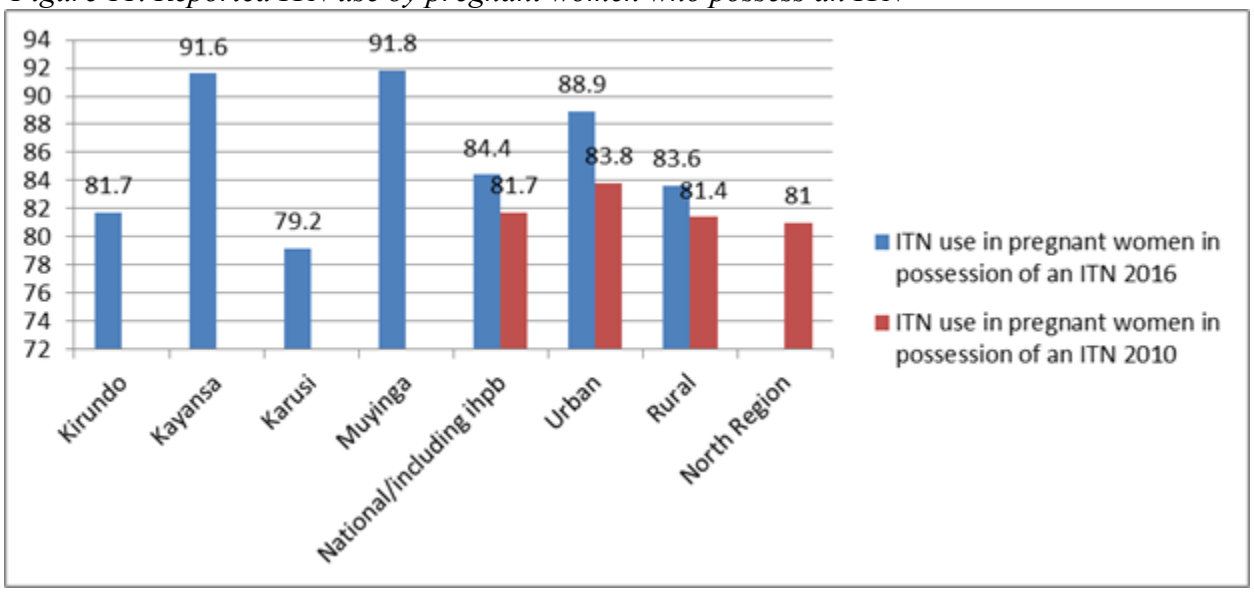
[25] DHS 2010 and 2016

[26] *Enquete sur la qualite de las prise en charge des cas de paludisme dans les structures de soins au Burundi 2017*

[27] There are anecdotal reports of pregnant women in desperate need of cash selling their nets for a small token to clients who are interested in repurposing the nets for multiple uses.

average (83.6%). In two of the USAID supported provinces the rate is reported to be higher than the national average (Figure 11).

Figure 11. Reported ITN use by pregnant women who possess an ITN



Progress during the last 12-18 months

The Case Management Quality survey (*Enquete sur la Qualite de la Prise en Charge des cas de paludise dans les structures de soins au Burundi*) was conducted in 2017. The assessors observed health workers during ANC clinics in the randomly selected health facilities. During direct observation by the assessing team 97% of healthcare workers gave out ITNs and 100% provide SP to pregnant women attending ANC. However, even under observation the SP was not always taken under direct observation of the health worker. Table 4 shows the status of IPTp policy in Burundi.

Table 4. Status of IPTp policy in Burundi

Status of training on updated IPTp policy		**Number and proportion of HCW trained on new policy in the last year if training on new policy is not yet completed**	**Are the updated IPTp guidelines available at the facility level?**	**ANC register updated to capture 3 doses of IPTp-SP**	**HMIS/ DHIS2 updated to capture 3 doses of IPTp-SP**
Completed/Not Completed	**Date (If training completed, when, if not completed, when expected)**				
Completed	2016	0	Yes	Yes	Yes

Table 6. Status of ANC guidelines in Burundi

Status of 2016 WHO ANC guidelines adoption		Number and proportion of HCWs trained in new ANC guidelines in the last year	Are the updated adopted ANC Guidelines available at the facility level?	Additional IPTp contact added to ANC schedule at 13 weeks?	ANC register updated to capture 8-9 ANC contacts?	HMIS/DHIS2 updated to capture 8-9 ANC contacts
Started/Completed/Not completed	Date completed (or expected to be completed)					
NO	N/A	0	NO	NO	NO	NO

Commodity gap analysis

Table 5. SP Gap Analysis for Malaria in Pregnancy

Calendar Year	2018	2019	2020

Calendar Year	2017	2018	2019
Total Population [1]	10,400,938	10,681,186	10,953,317
SP Needs			
Total number of pregnant women attending ANC [2]	1,282,185	1,131,449	1,161,935
Total SP Need (in treatments) [3]	**923,173**	**905,159**	**987,645**
Partner Contributions			
SP carried over from previous years [4]	4,707,000	4,927,000	2,211,523
SP from Government			
SP from Global Fund	2,730,000		
SP from Other Donors			
SP planned with USAID funding			
Total SP Available	**7,437,000**	**4,927,000**	**2,211,523**
Total SP Surplus (Gap)	**4,667,480**	**2,211,523**	**-751,411**

[1]Population data is obtained from projections from ISTEEBU 2013.

[2] The 2017 figure is number of ANC visits (DHIS2) minus 33% women attending first visit in first trimester. 2018 and 2019 are based on target population for ANC visits is 85.6%; 69.5%; 56.0% and 35.0% respectively for ANC1, ANC2 ANC3 and ANC4 expected pregnant women. Then cumulative projected pregnant women attending ANC are calculated based on 5% of general population and the proportions of ANC visits, assuming that 1/3 of pregnant women visiting ANC in the first trimester of pregnancy are not eligible to IPT. Only 72% recieved SP

[3] The projected pregnant women look high according to demography method look high compared with number of pregnant women in visit according to DHIS2 repports in 2013-2017, thus the National quantification committee decided to use actual consumption data as reported in DHIS2, with adjustment to the reporting rate (95.3%), assuming that the consumption trend will remain the same throughout 2018 - 2020. The forecasts will be reviewed on annually basis.

[4] Actual number in stock on 31st December 2016 and 2017

NB The number of women attending ANC for more than three visits are not included in the DHIS2. The shortfall of 259,520 treatments are expected to be linked to this deficit in data reporting.

Plans and justification for proposed activities with FY 2018 funding:

The Case Management Quality survey suggests that while there is good uptake for this new intervention, IPTp still requires additional support at the health facility level to ensure compliance with the direct observation therapy strategy. Increasing ownership and use of ITNs to prevent malaria transmission remains a high priority. With FY 2018 funds USAID will procure 200,000 ITNs for routine distribution, and support the distribution of existing ITNs targeting 447,093 pregnant women at ANC visits. USAID will also support the supervision of health workers to improve implementation of the DOT strategy for SP during ANC visits.

Please see Table 2 for a detailed list of proposed activities with FY 2018 funding.

3. Case management

NMCP/USAID objectives

Burundi's malaria treatment guidelines require diagnostic confirmation of all fever cases before treatment with an artemisinin-based combination therapy (ACT), either by rapid diagnostic test (RDT) or microscopy.

Burundi's policies, guidelines, and practices are consistent with WHO recommendations. The national malaria treatment guidelines (*Directives Nationales de Traitement du Paludisme 2012*) recommend the use of RDTs for 100% cases at community level and 80% at health center level. Microscopy testing is recommended in 20% cases at health center level and all cases in hospitals. Health centers refer severe cases to the hospitals[28].

Community level testing and treatment of malaria for children under five years of age was introduced in 2013. USAID supported the development of the job aid for use by community health workers. This tool is nationally adopted and used by all partners supporting integrated community case management (iCCM) in Burundi. There are currently 12,000 community health workers in 32 districts with financial and logistical support from UNICEF, USAID, World Vision, Global Fund, MSF Belgium, and World Relief. The majority of these community health workers are trained in iCCM, but the package (training and other inputs) varies by donor. The PBF program provides countrywide funding at the health center level, of which at least 10% is intended for community

[28] There are cases of simple malaria in patients admitted to hospital for other conditions. These patients are treated with first line drugs for simple malaria.

based activities, including support for community health workers. A scale up of a community PBF program to three provinces is due to start in July 2018. This will provide direct incentives on a fee for service basis similar to the health centers program.

Outreach Test and Treat activities were introduced as a component of the epidemic response plan covering the 11most affected districts. These are held at locations convenient to the public (e.g. schools and other public buildings) from where healthcare workers provide testing and treatment to those who have fever or report to have had fever in the past 48 hours.

Private hospitals use injectable artesunate for the treatment of severe malaria cases and 34 of them as well as 15 faith based hospitals are submitting hospital data on malaria cases to the DHIS2. However, private dispensaries, pharmacies and shops provide malaria treatment to an unknown number of cases as regulation is inadequate. Data on malaria cases is not reported from those places.

Table 6. Status of Case Management Policy and Implementation in Burundi

Status of Case Management Policy in Burundi according to national guidelines		Currently being implemented (yes/no)? Are there plans to modify the recommendations?
What is the first-line treatment for uncomplicated *P. falciparum* malaria*?	Artesunate - Amodiaquine (AS-AQ)	Yes. AL may be also adopted as stated by a MoH ordinance allowing AL importation
What is the second-line treatment for uncomplicated *P.falciparum* malaria*?	Quinine+Clindamycine	NMCP failed to implement this policy. Arthemether-Lumefantin has been recommended as second line treatment for uncomplicated malaria
What is the first-line treatment for severe malaria?	Artesunate Injection	Yes
In pregnancy, what is the first-line treatment for uncomplicated *P. falciparum* malaria in the first trimester?	Oral quinine	Yes
In pregnancy, what is the first-line treatment for uncomplicated *P. falciparum* malaria in the second and third trimesters*?	AS-AQ	Yes
In pregnancy, what is the first-line treatment for severe malaria?	Quinine Injection in first trimester. Thereafter artesunate injection	Yes
Is pre-referral treatment of severe disease recommended at peripheral health facilities? If so, with what drug(s)?	Yes. Artesunate injectable (one pre referral injection)	Discussions are underway to include administration of pre-referral rectal artesunate for children under five from health centers
Is pre-referral treatment of severe disease recommended for community health workers? If so, with what drug(s)?	No	Discussions are underway to include administration of pre-referral rectal artesunate for children under five in the NMCSP 2018-22
If pre-referral rectal artesunate is recommended, for what age group? (note: current international guidelines do not recommend administrating to those ≥ 6 years)	Under discussion for children under 5 years of age	Discussions are underway to include administration of pre-referral rectal artesunate for children under five

Progress since PMI was launched

Since the USAID Malaria program began in 2009, Burundi was able to review the malaria treatment guidelines, roll out and scale up the use of RDTs, and introduce and scale up integrated community-case management (iCCM). RDTs are used nationwide, including at community level. Children under

five years of age with fever are taken for treatment in 69% cases and 66.4% of these are tested by RDT compared with only 27% in 2010.[29]
There were stockouts of artesunate injectable from December 2016 to April 2017, in addition to stockouts at the service delivery point of ACTs and RDTs, exacerbating gaps in proper testing and treatment for malaria.

Progress during the last 12-18 months
On average 64.3% of malaria cases were diagnosed at health centers using RDTs[30]. Over 97.7% of reported malaria cases were confirmed by diagnostic test compared with 62.7% in 2011[31]. Microscopes are available in 89.5% health facilities, of which 77.4% were working properly in 2017[32]. All health facilities have at least one staff trained in malaria testing and 100% of health workers knew symptoms of simple and severe malaria. Hospital laboratories are linked with hospitals in other countries for slide exchanges.

There were stock outs of AS-AQ (any age group) in 0-22.6% facilities on day of data collection and 8.3% - 77.4% for three days in the past three months. RDTs were out of stock on the day of visit with 26.2% having stock outs for three days over the past three months. Minimum stock levels were not respected for AS-AQ (35%-53%) and RDT (65.5%).

The Ministry of Health, through the epidemic response task force, introduced *Outreach Test and Treat* activities in high burden areas. In 2017 189,524 patients were evaluated in six Provinces with 125,879 cases of malaria identified and treated through the *Outreach Test and Treat* activities with positivity rates ranging from 67% to 83%. In March 2018 USAID supported a swift response to an increase in malaria cases compared with 2017 in selected districts in three high burden health districts. Directed by the Ministry of Health, USAID re-commenced *Outreach Test and Treat* services in four health districts. Over 11,922 patients were evaluated with 7,769 malaria cases identified and treated. As a result caseloads reduced in the three health districts to below *alert* and *epidemic* levels as defined by WHO.

USAID continued to support iCCM in five health districts within USAID target provinces. Community health workers are trained to test and treat simple cases and refer all severe cases to the nearest health center. USAID supported quarterly supervision of 866 community health workers to ensure adherence to treatment guidelines and correct reporting of cases.

With FY 2017 funds USAID supported a review of reported malaria deaths and cases of malaria in pregnancy in select hospitals in Burundi. The results revealed over reporting of over one third cases[33]. USAID supported coaching and mentoring of clinicians in the correct diagnosis and reporting of malaria deaths and malaria in pregnancy in the worst affected hospitals following the results.

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[29] DHS 2016 and 2010
[30] Burundi DHIS2
[31] *Enquête sur la Qualité de la Prise en Charge des cas de paludisme dans les structures de soins au Burundi 2017*
[32] *Enquête sur la qualité de la prise en charge des cas de paludisme dans les structures de soins au Burundi 2017*
[33] The diagnosis was not supported by a laboratory confirmation and in some cases the signs and symptoms did not indicate a diagnosis of malaria.

Table 9. PMI-funded TES

Completed TESs			
Year	**Site name**	**Treatment arm(s)**	**Plans for k13 genotyping**
2001	Kigobe, Buhiga, Buringa	SP, Cholorquine, AS-AQ, AL	
2007	Kigobe, Buhiga, Buringa	AS-AQ, AL	
Ongoing TES			
Year	**Site name**	**Treatment arm(s)**	
2017	Burundi	AS-AQ, AL	
Planned TESs (funded with previous or current MOP)			
Year	**Site name**	**Treatment arm(s)**	
2018	TBD	AS-AQ, AL	

Commodity gap analysis

Table 10: RDT Gap Analysis

Calendar Year	**2017**	**2018**	**2019**
RDT Needs			
Total country population	10,400,938	10,681,186	10,953,317
Population at risk for malaria [1]	10,400,938	10,681,186	10,953,317
USAID-targeted at-risk population	10,400,938	10,681,186	10,953,317
Total number of projected fever cases [2]	10,092,661	6,650,000	9,975,000
Percent of fever cases tested with an RDT[5]	68%	80%	80%
Total RDT Needs [3]	**8,011,909**	**5,320,000**	**7,980,000**
Partner Contributions (to PMI target population if not entire area at risk)*			
RDTs carried over from previous year [4]	1,320,475	5,737,050	5,786,075
RDTs from Government	833400	845,625	
RDTs from Global Fund	4,770,850	1,160,900	2,204,095

RDTs from other donors (UNICEF, WV, MSF Belg)	3,770,250	0	
RDTs planned with USAID funding [6]	5,122,350	3,362,500	640,000
Total RDTs Available	**15,817,325**	**11,106,075**	**8,630,170**
Total RDT Surplus (Gap)	**7,805,416**	**5,786,075**	**650,170**

[1]Population data is obtained from projections from ISTEEBU 2013. The population growth rate (2.4%) was also applied for 2019 and 2020.

[2] The total projected fever cases for 2017 were determined using the confirmed malaria cases in 2017 and the average positivity rate of 67% (DHIS2) For 2018 an estimated 5m cases based on a decrease of 56% on 2017 caseloads.. 2019 projected fever cases to be revised in December 2018.

[3] RDT use in 2017 is the actual number of RDT used according to positive and negative RDT tests (DHIS2). RDT requirements were calculated using # ofprojected fever cases*RDTs usage rate according to National Malaria Diagnosis standard guidelines (80% with RDT, 20% for microscopy).

[4] Actual number in stock on 31st December 2016 and 2017 (2019 estimated).

[5] 2017 from EUV study (% tested with RDT not microscopy). 2018 and 2019 % according to Treatment Guidelines

[6] RDTs procured in 2017 and RDT planned procurement in 2018.

NB Explanations are being sought for the difference between the estimated number of RDTs and the actual stock on 31st December 2017.

Table 11: ACT Gap Analysis

Calendar Year	2017	2018	2019
ACT Needs			
Total country population	10,400,938	10,681,186	10,953,317
Population at risk for malaria	10,400,938	10,681,186	10,953,317
PMI-targeted at-risk population [1]	10,400,938	10,681,186	10,953,317
Total projected number of malaria cases [2]	7,588,467	5,000,000	7,500,000
Total ACT Needs [2]	**7588467**	5,000,000	7,500,000
Partner Contributions (to PMI target population if not entire area at risk)[1]			
ACTs carried over from previous year [3]	995,524	4,414,525	5,935,455
ACTs from Government		0	
ACTs from Global Fund	3,360,575	662,080	1,625,019
ACTs from other donors (UNICEF, MSF B, WV)	5,330,494	0	
ACTs planned with USAID funding	2,431,675	5,858,850	2,589,850
Total ACTs Available	12,118,268	10,935,455	10,150,324
Total ACT Surplus (Gap)	4,529,801	5,935,455	2,650,324

[1]Population data is obtained from projections from ISTEEBU 2013.

[2] 2017 actual cases (DHIS2.) 2018 calculated using first 6 months of 2018 as guide. 2019 to be revised in December 2018.

[3] Actual number in stock on 31st December of previous year for 2017 and 2018

NB Explanations are being sought for the difference of 115,276 between the estimated stock levels and actual stocks on December 31st 2017.

Table 12. Quantification Artesunate Injectable (AI)

Calendar Year	2017	2018	2019
Total Population [1]	10,400,938	10,681,186	10,953,317
Total fever cases[2]	10,092,661	6,650,000	9,975,000
Total confirmed malaria cases [6]	7,588,467	5,000,000	7,500,000
Total number of severe malaria cases[3]	295,950	195,000	292,500
Pregnant women malaria cases first trimester [4]	75,464	49,723	74,584
Total number of severe malaria cases treated with artesunate inj	251,986	166,032	249,048
Total artesunate injectable (AI) Need (ampoules)	**1,007,944**	**664,129**	**996,194**
Partner Contributions			
AI carried over from previous years [5]	36,598	335,815	278,870
AI from Government			
AI from Global Fund	591,494	100,000	
AI from Other Donors			
AI planned with USAID funding [8]		507,184	717,324
Total artesunate injectable Available	**628,092**	**942,999**	**1,078,870**
Total artesunate infectable Surplus (Gap) [7]	**-379,852**	**278,870**	**82,676**

[1]Population data is obtained from projections from ISTEEBU 2013.

[2] 2017 actual cases (DHIS2.) 2018 calculated using first 6 months of 2018 as guide. 2019 to be revised in December 2018.

[3] Complicated malaria is estimated 3.9% of total malaria cases

[4] Pregnant women first trimester estimated 28.7%

[5] The total projected fever cases were determined using the confirmed malaria cases in 2017 and the average positivity rate of 67% : DHS 2016-2017.

[6] 2017 actual cases (DHIS2.) 2018 calculated using first 6 months of 2018 as guide. 2019 to be revised in December 2018.

[7] AI was out of stock from February to June 2017. During this time Quinine inj was used as replacement. No adverse affect

on cfr during these month.

[8] 262,480 to be purchased with MOP 2018 funds the remaining treatments to be procured using pipeline

Plans and justification for proposed activities with FY 2018 funding:
With FY 2018 funding USAID will procure 640,000 RDTs, 2,589,850 ACTs and 717,324 artesunate injectable vials to meet the estimated needs taking into account commodities to be procured by Global Fund. USAID will provide support the NMCP to enhance access to malaria testing and treatment services through routine health services, *Outreach Test and Treat* activities during periods of high incidence, and increase of the number of community agents providing iCCM in targeted high malaria burden health districts. In FY 2018 USAID will continue to provide coaching and mentoring to clinicians in hospitals in the correct diagnosis, treatment and reporting of severe malaria and malaria in pregnancy with the aim of further reducing malaria deaths and increase accuracy of hospital malaria death reports. With FY 2018 funds USAID will continue to support the supervision of health workers in diagnosis and treatment of uncomplicated malaria and referral of complicated and severe malaria cases. It is anticipated that these case management interventions, along with the mass distribution of ITNs planned for 2019, will further reduce the malaria case load.

Please see Table 2 for a detailed list of proposed activities with FY 2018 funding.

4. Cross-cutting and other health systems strengthening

In order to successfully implement the aforementioned activities, USAID Burundi supports a number of activities that cut across and benefit entomological, drug-based prevention (IPTp), and case management activities. For example, availability of high-quality commodities is necessary to ensure high ITN coverage and effective case management, and appropriate healthcare seeking behaviors of individuals and communities is necessary to improve coverage with all interventions. In addition, the gains achieved in malaria control in Burundi can only be sustained if there are strong health systems and local capacity. Hence, systems strengthening and capacity building are intrinsic in all USAID interventions and include but are not limited to training and supervision of health workers, technical assistance for planning and monitoring interventions, and non-intervention specific or cross-cutting health systems strengthening activities described below.

a. Pharmaceutical management

NMCP/PMI objectives

The NMCSP (2013-2017) highlights the objective of ensuring a functioning national supply chain system and ensuring the availability of quality-assured malaria medicines and diagnostics. Achieving the case management objectives outlined in the NMCSP (2013-2017) hinge on guaranteeing a strengthened supply chain system and the sustained availability of malaria commodities.

The Department of Pharmacies, Medicine, and Laboratories (DPML) is the division of the MOH charged with the provision of regulations and oversight to the pharmaceutical sector. The DPML also

regulates the semi-autonomous central purchasing and warehousing agency, "*Centrale des Achats des Médicament Essentiels du Burundi* (CAMEBU) in line with national pharmaceutical policy.

CAMEBU is responsible for the procurement and management of public sector pharmaceuticals destined for public health and faith-based health facilities that follow GOB policies. CAMEBU is directly responsible for the management of malaria commodities on arrival at their central warehouse, including storage and distribution. The DPML updates the essential drugs list about every three years with CAMEBU issuing tenders, procuring, and managing the distribution of essential drugs to public sector facilities. With the income from performance-based financing and user fees, districts and hospitals may opt to purchase additional supplies and drugs from regulated agents in the private sector up to a ceiling of Burundi Franc 2,000,000. National disease control programs are responsible for the management of their respective commodities, including orders, procurement, distribution and general oversight to CAMEBU as it relates to their commodities, but does not currently manage ITNs within its warehouse due to limited space. CAMEBU shares distribution and inventory data on a monthly basis with the NMCP.

The MOH has been operating a pull pharmaceutical supply system based on health district orders. The usual practice is for the Health District Pharmacists to travel to Bujumbura to obtain approval for their monthly medicines request. With this authorization they then proceed to CAMEBU to collect the health commodities. Transport is usually managed by health districts, either with their own vehicle or through hiring. Quantification of pharmaceutical supplies is primarily based on health districts' requests intended to add monthly consumption to a security stock level of two months consumption as per guidelines. However, for some time health district requests ensure a security stock of only fourteen days. In case of stockouts of essential medicines, including malaria commodities, health districts can purchase from regulated private outlets using their own funds. With the assistance of Global Fund, UNICEF, and the GoB CAMEBU completed the expansion of its only central warehouse in 2014. The health centers collect their supplies from the health district.

Although CAMEBU functions fairly well, there are still many constraints in the pharmaceutical management and supply chain system throughout the country. Some hospitals and districts have computers and logistics management information systems, but the systems are neither linked to each other or to CAMEBU's system to facilitate quick, automated national quantification and ordering. Currently, hospitals, which are autonomous bodies, can order directly from CAMEBU and immediately receive malaria-related medicines, while health districts, government institutions, must go through an indirect process of approvals.

Progress since USAID/Malaria progam was launched

Since the beginning of the USAID malaria program in Burundi, malaria commodity delivery has improved due to better coordination with donors and partners, increased training and supervision, better standard operating procedures (SOPs) in pharmaceutical management, and improved practices for delivering commodities. When the USAID malaria program began, stockouts were the norm and it took months for malaria commodity orders to be delivered and distributed. USAID supported the formation of a coordination body for the management of medicine stocks to enable regular meetings to be held among CAMEBU, NMCP and the Global Fund. As part of this coordination body, USAID facilitated a revised requisition process for the ordering and approval of ACT orders among all partners, which has greatly decreased request and delivery time of orders. New SOPs for

pharmaceutical management for the district and facility level with improved ACT requisition system were introduced in 2012.

Progress during the last 12-18 months

In the past 12 months USAID continued to support the strengthening of the malaria pharmaceutical management system, including drug forecasting, procurement, storage, inventory, and transportation. USAID continued to support the coordination body for the management of medicine stocks led by the DPML and comprising CAMEBU, NMCP and the Global Fund. Monthly stock status reports are produced and meetings are still held in an effort to improve planning and coordination, and adherence to supply plans has improved. The National Quantification Committee for malaria commodities has been officially established and it serves as the platform for strengthening and supporting regular forecasting and supply planning exercises.

Over the course of 2017, stockouts of all malaria commodities were reported at health center and community levels. Injectable artesunate was out of stock from January to April 2017. Even though the malaria caseloads decreased and stock levels of first line treatment are health districts continue to delay in sending requests for commodities. Thus many health facilities did not follow the set minimum (two months) and maximum stock levels and were only requesting up to two weeks of stock.

Plans and justification for proposed activities with FY 2018 funding:

USAID will continue to support strengthening of the malaria supply chain and pharmaceutical management for malaria system at the national, district and facility levels. Enhanced supervision and capacity building at all levels will focus on enforcing use of SOPs and improving forecasting and supply planning particularly focused on timely ordering and maintenance of the recommended minimum stock level. USAID will continue coordination efforts with NMCP to improve stock availability at health center and community level. It will provide technical support to improve the logistics information management system and mode and system of transportation of commodities.

With FY 2018 funds USAID will continue to provide support for supply chain logistics and pharmaceutical management at the national level in collaboration with CAMEBU, including the organization of coordination planning committees. This investment will also strengthen the NMCP's capacity to quantify all malaria commodities, and improve the pharmaceutical management capacity in targeted districts. USAID covers the fee applied to the total cost of malaria commodities procured through USAID for the storage and management of drugs by CAMEBU

Please see Table 2 for a detailed list of proposed activities with FY 2018 funding.

b. Social and behavior change communication

NMCP/PMI objectives

Social and behavior change communication (SBCC) is an important component of malaria prevention and control activities and is crucial to achieving coverage and use objectives. A National Communication Strategy for Malaria was developed in 2014 and followed during the development of the GFATM concept note. In 2017, the strategy aimed to further raise awareness in the general population and increase acceptance and adoption of behaviors related to malaria prevention and treatment.

Progress since PMI was launched

USAID supported a KAP (Knowledge, Attitudes and Practice) study in 2011/2012 followed by support for NMCP to implement SBCC activities to promote positive behaviors and increase demand for services, especially by women and children under five years of age. USAID supported SBCC programs are using channels such as radio, printed material, theatre groups and community outreach and focus on increasing uptake of malaria services, including correct and consistent use of ITNs, prompt care seeking behavior for febrile illnesses, and ANC attendance to increase uptake of IPTp among pregnant women.

Behavior of individuals and within households in relation to malaria control activities is recognized as the main barrier to reducing malaria cases further[34]. Re-purposing of ITNs and delayed health seeking following onset of fever have undermined the efforts of USAID and other partners in the control of malaria in Burundi[35]. In spite of ad hoc reports of high knowledge level in the community the translation of knowledge into practice is poor in some high burden malaria areas. Utilization of the *provided* ITNs is as low as 25.3% in high malaria burden areas[36]. Prevailing rumors regarding the re-purposing of ITNs include poverty, the need for fabric to protect growing vegetables and as bundling netting for harvested produce, make into rope to tie up goats, use as rags for cleaning purposes and many other reasons.

Progress during the last 12-18 months

In 2017, USAID supported the Social Mobilization sub-group of the Malaria Task Force to improve the content and visualization of key messages. The members of this group include Ministry of Health, Civil Society, Humanitarian NGOs, UN organizations and USAID. Efforts were made to communicate the importance of ITN utilization following the mass distribution of ITNs campaign, with a focus on preventing selling of ITNs immediately following the campaign. The recognition of symptoms of malaria, prompt health seeking behavior and adherence to health worker advice were other areas of focus. This social mobilization subgroup jointly developed a visual toolkit. The toolkit is widely used by community agents as well as in schools and health centers. With FY 2017 funds USAID is funding another KAP study.

[34] Feedback during the MOP Stakeholders' meeting, from the Director of NMCP, re-iterated the futility of procuring ITNs for pregnant women and their infants if they are sold or used for other purposes. Feedback received during field trips including discussions with beneficiaries and community health workers. Results from focus group discussions supported by USAID.

[35] DHS 2010 and 2016

[36] DHS 2016

The DHS 2016, however, indicate a deterioration in key indicators from the baseline 2010 DHS. The reported use of ITNs among pregnant women the night before the survey decreased from 56% in 2010 to 44% in 2016. Among children under five years old, ITN reported use the night before the survey decreased from 54% in 2010 to 40% in 2016. Test positivity rates are at 67% on average. Furthermore, while 49% pregnant women attended antenatal clinics four times during their pregnancy only 13% were given three doses of SP. Superstitions and misconceptions regarding malaria, cost associated with access to treatment, repurposing of nets, etc. are all contributing to the slow progress in controlling the disease.

Plans and justification for proposed activities with FY 2018 funding:

With FY 2018 funding, USAID will support a formative research to inform the design and implementation of evidence based messages that address the barriers to uptake of preventive and curative malaria services. USAID will support the revision of the Malaria Control Communication Strategy in line with the findings of the KAP study and the formative research. USAID will more specifically support the implementation of the new strategy and mitigation of barriers to correct and consistent use of ITNs, prompt care seeking behavior, early and regular ANC attendance in the three high malaria burden Provinces of Karuzi, Kirundo and Muyinga. These SBCC activities will aim to increase perceived susceptibility, perceived risk, response efficacy, self- efficacy, descriptive norms about malaria in general and key malaria related behaviors.

Please see Table 2 for a detailed list of proposed activities with FY 2018 funding.

c. Surveillance, monitoring, and evaluation

NMCP/PMI objectives

The NMCP Monitoring and Evaluation (M&E) plan (2013-2017) is aligned with the NMCSP (2013-2017) covering the same period. It included use of data supervision sheets to verify if planned activities have been implemented according to the annual work plans, identifying gridlocks and proposing solutions. The plan also identifies key indicators linked to the malaria control database and describes mechanisms to provide feedback to peripheral levels so that local policy makers and partners can make informed decisions about future planning, using health data. The follow-on plan under which this MOP will be implemented is currently being developed.

Table 14. Surveillance, Monitoring, and Evaluation Data Sources

Data Source	Survey Activities	Year								
		2012	2013	2014	2015	2016	2017	2018	2019	2020

Household surveys	Demographic Health Survey (DHS)*					x				
	Malaria Indicator Survey (MIS)*	x							(x)	
	EPI survey						x	x	(x)	
Malaria Surveillance and Routine System Support	Support to HMIS			x	x	x	x	x	(x)	
Other Surveys	End Use Verification Survey					x	x	x	(x)	
	Quality of Malaria Case Management Survey for Health Facilities						x			
	Entomology surveillance and resistance monitoring*					x	x	x	(x)	
Therapeutic efficacy monitoring	In vivo efficacy testing								(x)	

Progress since PMI was launched

Since the USAID malaria program started in Burundi, support for M&E has included technical input into the development of the national M&E plan (2013-2017) for malaria, as well as associated training of M&E technical experts who subsequently assisted with the roll out of the M&E plan by

training local health officials, who, in turn, are responsible for supervising facilities and advising on data-driven decision-making at the local level. The USAID malaria program also supported the Malaria Indicator Survey (MIS) in 2012, which provided parasitemia rates for the first time in Burundi.

The HMIS in Burundi is supported by many donors comprising USAID, Global Fund and the Belgian Technical Cooperation. Malaria data is collected through the Burundi Department of Statistics (DSNIS) using the DHIS2 software. Data is collected from facilities, which are required to report each month the number of confirmed and treated cases. The Global Fund through the HSS component of the HIV concept note supported both provincial and district levels to install and train all teams on the District Health Information System II (DHIS-II) software that replaced the less performant GESIS[37] previously used. The USAID budget planned forHMIS takes into account all the existing partners' contributions to HMIS improvement (Global Fund and Belgian Technical Cooperation). A tool developed by WHO monitors the epidemic on a weekly basis at district level. Surveys conducted in 2017 included the Quality of Malaria Case Management Survey for Health Facilities (*Enquete sur la Qualite de la Prise en Charge des cas de Paludisme dans les structures de soins au Burundi*), the End-Use Verification survey, and the baseline and post mass distribution of ITNs access and utilization survey. In 2016 USAID supported the technical assistance of *Institute Statistique et d'Etudes Economique du Burundi* (ISTEEBU) for the DHS 2016-2017 data collection. The final report is now available.

Progress during the last 12-18 months

An End Use Verification Survey (EUV) highlighting the key observations and the status of pharmaceutical management and case management practices in country was conducted in August-September 2017. However, due to delays in getting approval to commence data collection from Ministry of Health only one study will be conducted in FY 2017. USAID supported NMCP to provide quarterly entomological reports from eight sentinel sites as well as the review of data from hospitals to check the accuracy of reporting of malaria deaths and malaria in pregnancy (December 2017). The report is expected to be released in June 2018.

Plans and justification for proposed activities with FY 2018 funding:

With FY 2018 funding USAID will support two EUVs as part of the overall supply chain and case management support. USAID will also provide funding for a Malaria Indicator Survey in 2019, and continue assistance to improve data quality, inclusiveness and interoperability between supply chain, service utilization and epidemiological data. In FY 2018
USAID will support the NMCP in strengthening data use and dissemination at all levels.

Please see Table 2 for a detailed list of proposed activities with FY 2018 funding.

d. Other health systems strengthening

NMCP/PMI objectives

[37] GESIS= gestion du Système d'Information Sanitaire (a software previously used in the HMIS)

The NMCP was established in January 2009 and is organized into four key program units including case management, vector control, monitoring and evaluation, and resources management. These program units are supported by 21 staff members, including two physicians, four biologists (who have received some training in entomology), several laboratory technicians, and an economist. A director and a deputy director lead the program.

Progress since PMI was launched

One of the four goals of the Burundi National Health Plan is to enhance the performance of the national health system. One of these goals is to devolve critical health system functions to the health districts by forming and empowering district health teams. The aim is to be able to better provide quality health services, including clinical and community malaria prevention and treatment services. There are however no malaria focal persons at the district or health facility levels; rather, health personnel are trained to provide and manage integrated health services, including those for malaria. USAID's health program fully supports this Burundi health goal and is funding activities to improve the health information system, drug management, supply chain, and human capacity development in an integrated fashion at the health district level. USAID supports the development of annual and strategic plans, ensuring USAID activities are an integral part of the NMCP annual operational plans.

Progress during the last 12-18 months

In FY 2017 USAID supported the review of the NMCSP (2013-2017). This led to the preparation of an Aide Memoir that sets out the basis for the NMCSP (2018-2022). NMCP, with support from USAID and other partners is in the process of finalizing the NMCSP (2018-2022). In addition, USAID continues to provide targeted support to the NMCP with the aim to improve critical operations of its office and the capacity of its staff. This support includes facilitation of quarterly coordination meetings with in-country RBM partners, and with FY 2017 funds USAID embedded a long term technical assistance position in the NMCP.

Plans and justification for proposed activities with FY 2018 funding:

With FY 2018 funding USAID will continue to support coordination meetings with key stakeholders in addition to providing continuous leadership and management support. USAID will provide technical guidance assistance in decision making to determine the appropriateness of new strategies in the Burundi context, while in line with WHO policies and the roll out of the new NMCSP. .

Please see Table 2 for a detailed list of proposed activities with FY 2018 funding.

5. Staffing and administration

Two health professionals oversee USAID Malaria activities in Burundi, including a Malaria Adviser and a Malaria Specialist. The USAID Malaria staff share responsibilities for the development and implementation of strategies and work plans, coordination with national authorities, managing implementing partners, and supervising day-to-day activities.

The USAID Country Representative for the USAID Burundi Office represents the USAID Malaria program in Burundi. The day-to-day lead for the USAID Malaria program is delegated to the USAID Senior Health Team Lead who supervises the Malaria Advisor and the Malaria Specialist. The USAID Burundi Office receives support services (FMO, OAA, EXO, and others) from the USAID

Mission in Kigali, Rwanda. The in-country team receives technical support from USAID/PMI HQ in Washington, DC.

The Malaria Adviser and Specialist are part of the USAID Burundi health office and they are expected to spend approximately half of their time providing TA to the NMCPs and implementing partners, including time in the field to monitor program implementation and impact.

Please see Table 2 for a detailed list of proposed activities with FY 2018 funding.

Table 1: Budget Breakdown by Mechanism
BURUNDI
Planned Malaria Obligations for FY 2018

Table 2: Budget Breakdown by Activity
BURUNDI
Planned Malaria Obligations for FY 2018

Table of Temporary Duty (TDY) Visits for FY 2018

USAID BURUNDI Malaria Program

Schedule of Temporary Duty (TDY) for Malaria Operational Plan FY 2018

Type of TDY	Number of TDYs	Name/Agency	Description	Dates	Cost/Source
MOP planning visit	2	USAID	MOP Planning visit	January 20-25	?
MOP activity-specific assistance	2	USAID	Formative research for SBCC	November 1st -14th	
General Program support	1	USAID	Support for work-plan development	August 20-25	