Kenya Annual Malaria Report

July 2013–June 2014

Ministry of Health
National Malaria Control Program

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Kenya Annual Malaria Report 2013/2014

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ABBREVIATIONS

ACSM	advocacy, communication and social mobilization
ACT	artemisinin combination therapy
AL	Artemether-lumefantrine
AMFm	Affordable Medicines Facility-malaria
AMREF	African Medical Research Foundation
ASAL	arid and semi-arid lands
BCC	behavior change communication
CHEW	Community Health Extension Worker
CHW	Community Health Worker
DFID	Department for International Development
DHIS	District Health Information Software
DHIS-2	District Health Information Software-2
EPR	Epidemic Preparedness and Response
FY	Fiscal Year
Global Fund	the Global Fund to fight AIDS, Tuberculosis, and Malaria
HMIS	Health Management Information System
IEC	information, education, and communication
IPTp	intermittent preventive treatment in pregnancy
IRS	indoor residual spraying
KEMRI	Kenya Medical Research Institute
KEMSA	Kenya Medical Supplies Agency
LLIN	long-lasting insecticide-treated net
M&E	monitoring and evaluation
MDG	Millennium Development Goals
MIAS	Malaria Information Acquisition System
MiP	malaria in pregnancy
NMCP	National Malaria Control Program
NMS	National Malaria Strategy
PMI	President's Malaria Initiative
QoC	Quality of Care
RDT	rapid diagnostic test
TPR	test positivity rate
TWG	technical working group
USAID	United States Agency for International Development
WHO	World Health Organization

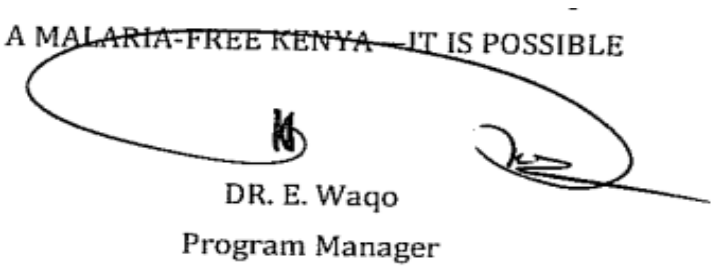
FOREWORD

The successful eradication of malaria is one of the major contributory factors toward the meeting of Kenya's Millennium Development Goals—whose implementation deadline is the end of 2015—as it remains one of the highest causes of outpatient visits to Kenya's health facilities. To address this debilitating scourge, the National Malaria Strategy (NMS 2009–2017) was formulated with the goal of reducing the morbidity and mortality of malaria by two-thirds of the 2007–2008 baseline level by 2017. This report will enumerate the achievements of fiscal year 2013–2014 toward NMS 2009–2017.

In light of the devolution of public health services to the 47 counties under the Constitution of Kenya 2010, the National Malaria Control Program is conducting a mid-term review of NMS 2009–2017 to align it with the new delivery model. The ongoing transition has, however, not hindered the progress toward the vision of a malaria-free Kenya, as the proportion of patients who were recorded with suspected malaria, out of the country's total outpatient cases, declined from 21% reported during the 2012–2013 period to 17.7% during the 2013–2014 period. According to quality of care 7, there was also a rise in the use of rapid diagnostic tests (RDTs) or microscopy to confirm the malaria cases, from 34.6% of suspected malaria cases in the 2012–2013 period to 41.7% in the 2013–2014 period, as a result of the rollout of the RDTs countrywide. A total of 7.5 million artemisinin combination therapy doses of Artemether lumefantrine and 8.5 million RDTs were also procured and delivered. In addition, 3 million long-lasting insecticide-treated nets (LLINs) were also procured and delivered, in preparation for the next mass net distribution campaign. The campaign is to be rolled out during the next reporting period in order to meet the stated target for universal coverage, with at least one LLIN for every two vulnerable people. With the development of the curriculum under the Community Health Strategy, 284 Community Health Extension Workers were trained on the case management of malaria, who in turn were able to train an additional 2,883 Community Health Workers.

Despite the notable progress achieved during the reporting period, an analysis of the financial commitments and disbursements indicates that the implementation of some of the planned NMS activities may be unattainable, primarily due to resource constraints occasioned by either resource gaps, delays in the disbursement of already committed resources, or delayed deliveries of the required commodities. There have also been challenges associated with change behavior even in instances where activities have been implemented, like the use of LLINs, indicating a need to continue strengthening the advocacy and change behavior communication.

Finally, I would like to extend our sincere gratitude to all our partners who continue to support us in the implementation of the NMS activities and program management in various ways, such as through funding, technical assistance, research, training, and other forms of support. I look forward to working with you in the endeavor to eradicate malaria from Kenya.



DR. E. Waqo

Program Manager

EXECUTIVE SUMMARY

The United Nations is preparing to take stock of the global achievements of the eight Millennium Development Goals (MDG) that run during the 2000–2015 period, and it is set to unveil the updated goals later in 2015. The eradication of malaria in Kenya has been an essential component toward the achievement of many of these goals, such as MDG 6(to combat HIV/AIDS, malaria and other diseases) of which in part was to have halted by the year 2015 and started to reverse the incidence of malaria and other major diseases, the attainment of MDG 4 (to achieve a two-thirds reduction in the mortality rate among children under 5 years of age), contribute toward achieving MDG 1 (to eradicate extreme poverty and hunger), the reaching of MDG 2 (to achieve universal primary education), the realization of MDG 3 (the promotion of gender equality and to empower women), the advancement of MDG 5 (to improve maternal health), and the eventual actualization of MDG 8 (to develop a global partnership for development).

The blueprint of the Kenya National Malaria Program has been the National Malaria Strategy (NMS) 2009–2017, which envisioned a country free of malaria, achieved through a combination of globally recommended interventions. This report enumerates the achievements of these interventions in the period between July 1, 2013, and June 30, 2014.

The key measurable for the NMS 2009–2017 progress for the various interventions is the routine malaria mortality and morbidity surveillance data obtained from the District Health Information Software-2 (DHIS-2). Based on the available data, malaria remains the single largest source of the incidences of both disease and death in Kenya. Of the country's reported total of 54.9 million outpatient cases from the July 2013 to June 2014 period, 9.7 million cases (17.7%) of suspected malaria were recorded. This contrasts with the previous July 2012 to June 2013 period, where of the reported total of 41.8 million outpatient cases, 8.8 million cases (21%) were recorded to be of suspected malaria. An increased reporting rate saw the average reported suspected monthly malaria cases rising by 9.9%, from 735,364 in the 2012–2013 period to 808,207 in the 2013–2014 period. The average reported confirmed monthly malaria cases as a proportion of the suspected malaria cases also increased by 32.7%, from 254,294 cases (34.6%) during the 2012–2013 period to 337,422 (41.7%) during the 2013–2014 period.

It should be noted that the recording of the these cases during the 2012–2013 period suffered a greater underreporting effect due to the 3-month health workers strike between November 2012 and January 2013, compared to the succeeding 2013–2014 period, when there was also a 12-day health workers strike in February 2014. Of particular note, however, is the fall in the proportion of suspected malaria cases out of the total outpatient cases in the country between the two periods, from 21% in 2012–2013 to 17.7% in 2013–2014, as well as the rise in the use of rapid diagnostic tests (RDTs) or microscopy to confirm the malaria cases, from 34.6% of suspected malaria cases in the 2012–2013 period to 41.7% in the 2013–2014 period. In addition, the District Health Information Software (DHIS) has recorded an improvement in the compilation of morbidity data on confirmed and clinical malaria cases with the introduction of the online platform of the DHIS-2, with reporting rates reaching 79% of the patient morbidity data.

In line with the universal coverage goal of having one long-lasting insecticide-treated net (LLIN) for every two people at risk, the next mass distribution of LLINs in the country was scheduled to be conducted during 2014–2015 to the focus counties. In preparation of this exercise, 3 million LLINs were procured from the Global Fund to fight AIDS, Tuberculosis, and Malaria (Global Fund), and microplanning meetings were conducted in the participating counties of Migori, Homa Bay, Kisumu, Siaya, and Vihiga.

The routine distribution of LLINs, conducted through the antenatal clinics (ANC) and child welfare clinics (CWC), that were distributed to pregnant women and children of less than 1 year during this period was 1,858,362 nets, funded by the United Kingdom's Department for International Development (DFID) and the U.S. President's Malaria Initiative (PMI). An additional DFID-funded 747,891 social marketing LLINs were sold at subsidized prices through community

based organizations. During this period, a pilot project on continuous community-based net distribution was also carried out in the Samia sub-county of Busia County, with the aim of sustaining universal coverage levels through community distribution channels and exploring alternatives to the resource-heavy mass net distribution, which is conducted every 3 years.

Preparations for the resumption of indoor residual spraying (IRS) in the country continued during this period, with the National Malaria Control Program (NMCP) incorporating the revised Insecticide Resistance Management Plan onto the updated IRS Business Plan, due to the much higher cost of using the recommended carbamate class of insecticides from the previously used pyrethroid class of insecticides. These changes were necessitated by the findings of the emergence and spread of insecticide resistance to the pyrethroid class during the 2012 to 2013 period, which would have adversely affected the impact of IRS. Capacity building for entomological surveillance was carried out and conducted in two training sessions during the reporting period, with attendance by two vector-borne representatives and one environmental health representative each from the first 10 counties.

Under the World Health Organization's (WHO) testing, treating, and tracking (3T) policy, NMCP adopted the universal diagnostic coverage of all age groups and conducted the accelerated rollout of RDTs to 3,000 health centers and dispensaries countrywide, coupled with the strengthening of quality of assurance in microscopy. Efforts toward the continuous availability of malaria medicines countrywide saw the conducting of the seventh biannual quantification and supply planning exercise in February 2014. This facility survey was based on the new county boundaries instead of the previously used provinces, with the additional inclusion of counties from the North Eastern region as well as Nairobi County, which were not captured in the prior surveys.

The findings showed a significant improvement trend in the testing and treating of febrile patients in accordance with the national guidelines compared to the 2010 baseline survey, although a declining trend was observed during the latest survey round compared to the June 2013 results. The latest results showed that 20% of facilities had total stockouts, while 56% experienced a stockout of at least one Artemether-lumefantrine (AL) pack over the period of 7 or more consecutive days during the 3 months prior to the survey. To address the stock situation, 7.5 million out of the required 10.4 million artemisinin combination therapy doses of AL were procured and delivered to the public and private nonprofit health facilities during the 2013–2014 period, under funding from PMI. An additional 8.5 million out of the required 13.4 million RDTs were also procured and delivered with funding from the Global Fund (Round 10, Phase 2) and PMI. A post-market surveillance of antimalarial drugs and diagnostics was conducted in December 2013, and the results will be compiled and disseminated during the next financial year.

The programs to prevent malaria in pregnancy, which include the implementation of the comprehensive ANC package of the administration of at least two doses of intermittent preventive treatment in pregnancy, distribution of LLINs, and the providing of a prompt and effective diagnosis and treatment of suspected malaria cases using RDTs or microscopy, continued through the conducting of a baseline assessment of the Standard Based Management and Recognition (SBMR) documentation in 230 health facilities, which were spread across the 14 malaria focus counties. In addition, a total of 1,212 facility in-charges and 100 supervisors were oriented into SBMR, who in turn were able to reach an additional 2,441 service providers in charge of ANC facilities. With the support of the Global Fund, the curriculum and Trainer of Trainers (TOT) materials were completed under the Community Health Strategy, thereby enabling 284 Community Health Extension Workers to be trained in the case management of malaria, who in turn were able to train an additional 2,883 Community Health Workers in the endemic regions of Nyanza and Western Kenya.

INTRODUCTION

BACKGROUND

According to the Economic Survey 2014, malaria was the single leading cause of registered death in Kenya in the calendar year 2013, with a total of 23,789 (12.2% of total recorded deaths); although this was a reduction from the previous year's single leading figure of 24,772 (13.2% of total recorded deaths). According to the same survey, malaria was also the single leading cause of incidence of disease in Kenya in the calendar year 2013, with 8,808,471 cases (20% of total recorded incidences), although again reduced from the previous calendar year's single leading figure of 9,445,107 cases (24% of total recorded incidences). While these notable trends indicate that malaria is on the retreat in Kenya, it continues to be one of the most debilitating diseases and a key cause of poverty for the majority of the country's population that lives within its reach. To address this scourge, the National Malaria Strategy 2009–2017 was developed and is currently being implemented by the Ministry of Health (MOH), with a vision of a malaria-free Kenya. This report summarizes the achievements of the fourth implementation year under NMS 2009–2017.

JUSTIFICATION OF THE REPORT

The Kenya Vision 2030 is the national long-term development plan that guides the country's overall development, including the health component. Under the Kenya Vision 2030 Second Medium Term Plan (2013–2017), the selected targets of the health sector were set as follows:

Table 1: Selected targets for the health sector

Indicator	Baseline (2012)	Mid Term (2015)	End Term (2017)
Maternal mortality rate	488/100,000	300/100,000	150/100,000
Under 5 mortality rate	74/1,000	50/1,000	35/1,000
Infant mortality rate	52/1,000	45/1,000	30/1,000
Under 1 immunization coverage	83%	88%	90%
Malaria inpatient case fatality	15%	8%	5%

Source: Kenya Vision 2030 Second Medium Term Plan (2013–2017).

As the eradication of malaria will be one of the major factors contributing to the attainment of these targets, this report will enumerate the specific measures taken toward this goal, in line with the Annual Malaria Business Plan of Fiscal Year (FY) 2013–2014, as derived from the NMS 2009–2017.

PURPOSE OF THE REPORT

The globally recommended interventions to control malaria that the NMS has set out are as follows:

- Vector control using integrated vector management; includes the use of long-lasting insecticide-treated nets, indoor residual spraying, larval control, and environment management.
- Prompt diagnosis and treatment with effective medicines at all levels of the health system.
- Prevention and treatment of malaria in pregnancy.
- Public health education aimed at enhancing the uptake and appropriate use of interventions.
- Surveillance, monitoring, evaluation, and operation research.
- Malaria program management.

For each of the above interventions, this report sets out to record the policy, reporting period targets, and the main activities, outputs, outcomes, challenges, and issues, in consideration of the activities of the fiscal year.

METHODOLOGY OF THE REPORT

This report reviews the progress in malaria control for the period of July 1, 2013, to June 30, 2014 (FY 2013–2014). The information sources in this report are a mixture of document review; review of relevant routine malaria data available in the Logistics Management Information System; the District Health Information Software and the Disease Surveillance and Response Unit datasets; and key informant interviews with the focal points of the National Malaria Control Program and selected partners, on progress, challenges and lessons learned in the review period.

This report will outline the historical milestones achieved in malaria control, discuss the epidemiology of malaria in Kenya, show the morbidity and mortality trends of FY 2013–2014, and highlight program performance by thematic areas. It will also highlight the lessons learned from selected counties, as well as the financing and expenditure of the malaria program, and provide recommendations on the way forward.

CONTEXT OF MALARIA CONTROL

HISTORICAL MILESTONES IN MALARIA CONTROL

In 2000 the United Nations outlined the eight Millennium Development Goals (MDG). Part of the goal of MDG 6 was to have halted by the year 2015 and begun to reverse the incidence of malaria and other major diseases (UN, 2000), with the Member States proclaiming the "UN Decade to Roll Back Malaria" at the 2001 General Assembly. Roll Back Malaria (RBM) also targeted a goal of near-zero preventable deaths by 2015. Working toward the attainment of this goal, Kenya launched the first National Malaria Strategy (NMS) 2001–2010 in April 2001. Good progress was noted during the 2009 Malaria Program Performance Review, from which the NMS 2009–2017 was developed based on NMS accomplishments. As shown in Table 2, both the morbidity and mortality of malaria, as a proportion of the overall statistics of Kenya's incidence of disease and death, have been observed to be on a steady decrease over the last four years of the NMS 2009–2017 strategy.

Table 2: Registered incidence of disease and death caused by malaria in Kenya

Calendar Year	2010		2011		2012		2013	
Malaria morbidity and mortality figures	**Number**	**% of Total**	**Number**	**% of Total**	**Number**	**% of Total**	**Number**	**% of Total**
Incidence of disease	11,371,889	29.7	11,150,223	26.4	9,445,107	24.0	8,808,471	20.2
Deaths	30,505	16.5	26,652	14.6	24,772	13.2	23,789	12.2

Source: Economic Survey 2014

ORGANIZATION OF THE NATIONAL MALARIA CONTROL PROGRAM

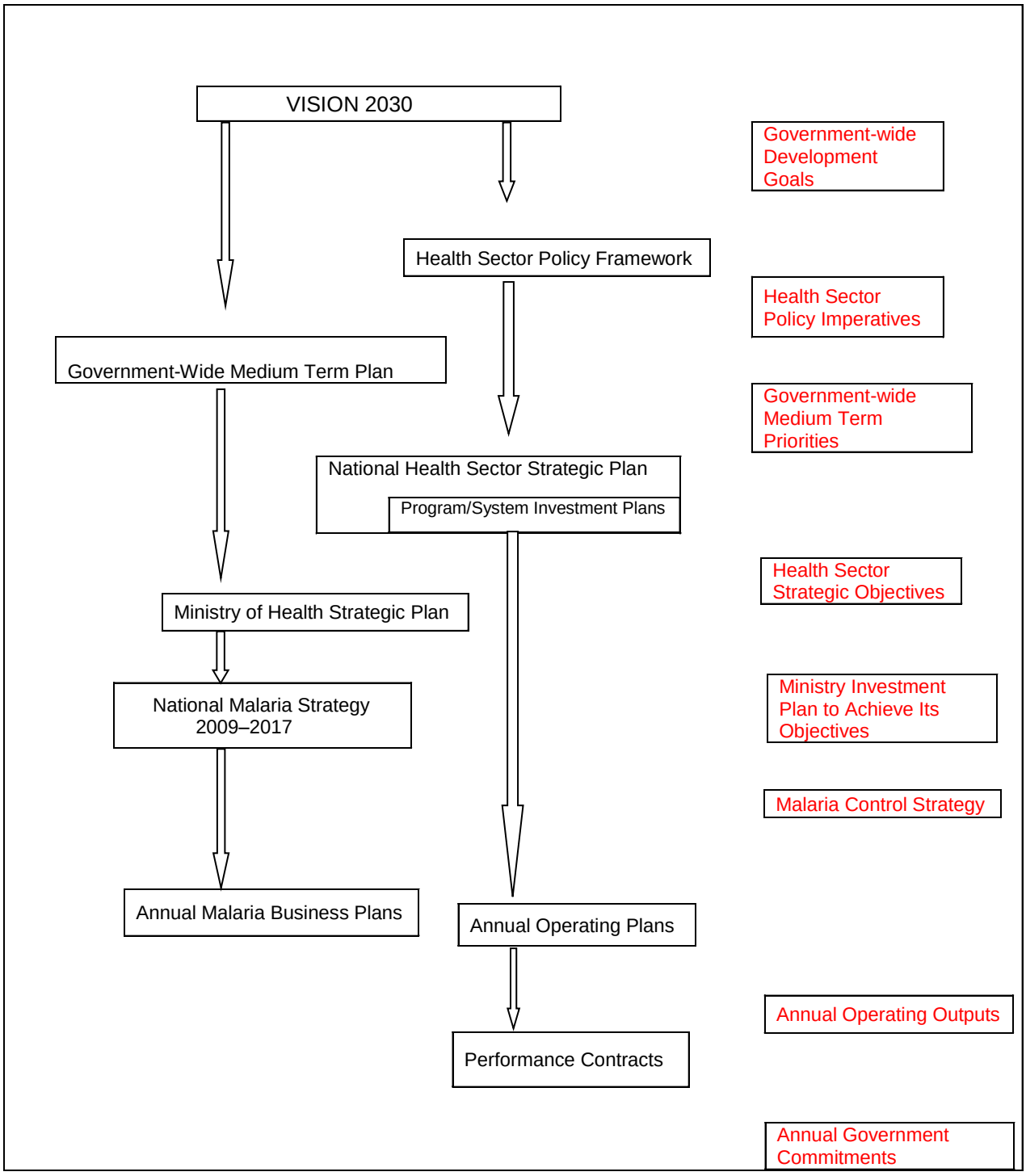
The vision of the National Malaria Control Program (NMCP) is "a concerted effort towards a malaria free Kenya," while its mission is "to direct and co-ordinate efforts towards a malaria free Kenya through effective partnerships." The core values of NMCP are "effectiveness, efficiency, courtesy, transparency, and technical excellence" (NMS, 2009). The role of NMCP is to develop and disseminate policy and strategies regarding malaria.

The program produces and disseminates national guidelines for all components of NMS, and it monitors and evaluates the implementation and impact of malaria. The unit is also charged with building capacity through training and advocating for malaria as a priority disease. To implement activities and achieve its goals, the unit works with other key units of the Ministry of Health (MOH). NMCP reports to the Division of Communicable Diseases, Prevention and Control and is composed of six technical subunits: vector control; diagnosis and case management; malaria in pregnancy; epidemic preparedness and response; advocacy, communication and social mobilization; and surveillance, monitoring, evaluation, and operations research. Each subunit has a focal point with one or more technical officers. NMCP has six primary technical working groups that are aligned with the six technical subunits, which in turn can form subcommittees for working on a specific issue.

As part of the implementation of the devolution process to the 47 counties in Kenya that were created by the Constitution of Kenya 2010, functions important to malaria control programs that have been transferred to the counties include health services management, communicable and vector-borne disease control and management, and environmental services. The health financing, health information systems, and the monitoring and evaluation functions are shared functions between the national and county levels. The county structure is composed of a Chief Officer of Health who oversees a department of health consisting of four primary units, including the Division of Communicable Diseases, Prevention and Control.

LINKAGES AND COORDINATION

Figure 1: Linkages across government-specific, health sector, and national malaria control planning processes.



Source: National Malaria Strategy 2009–2017

EPIDEMIOLOGY IN KENYA

The epidemiology of malaria in Kenya has evolved over recent years, with a decline in the endemic areas coupled with an increase in the low-risk areas. Currently, 62% of the population resides in areas where the prevalence of the malaria parasite is less than 5%. While there has been a decline in parasite transmission in the endemic areas, there has also been an increase in the prevalent age group, where children under age 5 years as well as children between ages 5 and 10 years have the highest prevalence.

MALARIA PARASITES

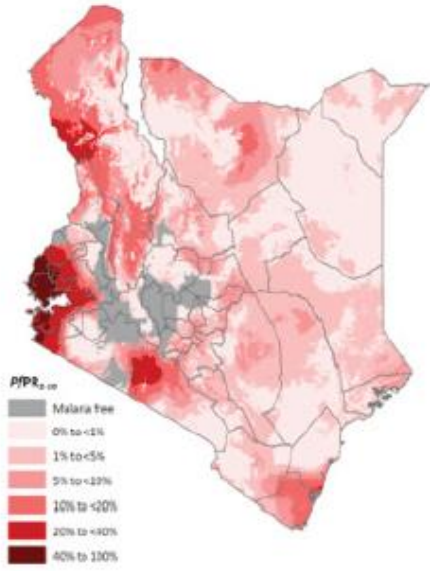
All four species of human *Plasmodium* occur in Kenya: *Plasmodium falciparum, Plasmodium malariae, Plasmodium ovale,* and *Plasmodium vivax*. *Plasmodium falciparum* causes the severest form of the disease and accounts for 98 percent of all malaria infections in the country.

MALARIA PREVALENCE

Geographically, the country falls into two main regions: lowland areas, both coastal and around lake basins, and highland areas on both sides of the Great Rift Valley. There are four malaria epidemiological zones, with diversity in risk determined largely by altitude, rainfall patterns, and temperature. The zones are as follows:

- ***Endemic:*** Areas of stable malaria transmission around Lake Victoria in western Kenya and in the coastal regions. Rainfall, temperature, and humidity are the determinants of the perennial transmission of malaria. The vector life cycle is usually short, and survival rates are high because of the suitable climatic conditions. Transmission is intense throughout the year.
- ***Seasonal transmission:*** Arid and semi-arid areas of the northern and southeastern parts of the country experience short periods of intense malaria transmission during the rainfall seasons. Temperatures are usually high, and water pools created during the rainy season provide breeding sites for the malaria vectors. Extreme climatic conditions like the *El Niño* southern oscillation lead to flooding in these areas, resulting in epidemic outbreaks with high morbidity rates owing to the low immune status of the population.
- ***Epidemic-prone areas of the western highlands of Kenya:*** Malaria transmission in the western highlands of Kenya is seasonal, with considerable year-to-year variation. Epidemics are experienced when climatic conditions favor sustainability of minimum temperatures around 18 degrees centigrade. This increase in minimum temperature during the long rains favors and sustains vector breeding, resulting in increased intensity of malaria transmission. The whole population is vulnerable, and case fatality rates during an epidemic can be up to 10 times greater than those experienced in regions where malaria occurs regularly.
- ***Low-risk malaria areas:*** This zone covers the central highlands of Kenya, including Nairobi. The temperatures are usually too low for the malaria parasite to thrive in the vector. However, the increasing temperatures and changes in the hydrological cycle associated with climate change are likely to increase the areas suitable for malaria vector breeding, leading to the introduction of malaria transmission in areas where it had not existed before.

Figure 2: Malaria prevalence versus the Kenyan population



PfPR (Plasmodium falciparum parasite rate)	Population (N)	Population (percent)
Malaria free	3,137,303	7.7
< 1% $PfPR_{2-10}$	2,848,584	7.0
1% to < 5% $PfPR_{2-10}$	19,194,900	47.3
5% to < 10% $PfPR_{2-10}$	2,901,342	7.1
10% to < 20% $PfPR_{2-10}$	3,702,957	9.1
20% to < 40% $PfPR_{2-10}$	7,211,807	17.8
≥ 40% $PfPR_{2-10}$	1,606,866	4.0

MALARIA VECTORS

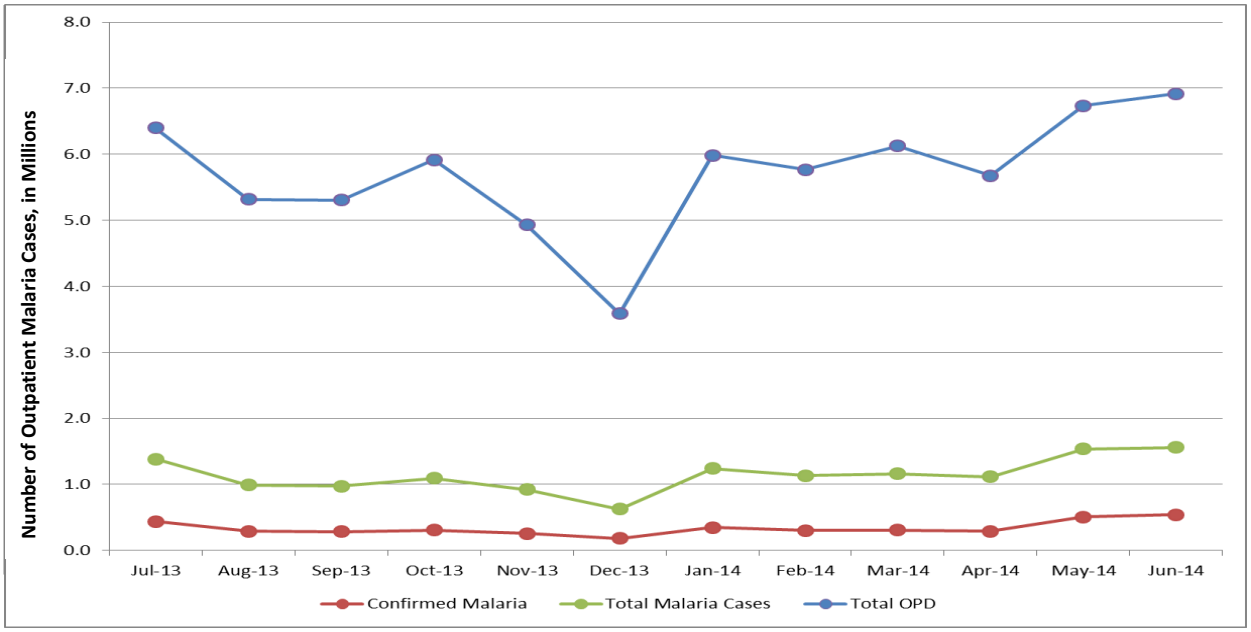
Malaria is spread from one person to the other through the bite of female mosquitos of the genus *Anopheles.* There are about 400 different species of *Anopheles* mosquitos, but only 30 of these are vectors of importance in the transmission of malaria. The major malaria vectors in Kenya are *An. gambae* complex (*An. gambiaesis, An. arabiensis, An. merus)* and *An. funestus.* The malaria vector distribution in Kenya is affected by climatic factors, especially temperature and rainfall.

MALARIA MORBIDITY AND MORTALITY

Symptoms of severe chills, headaches, and high fever can ultimately progress to coma and death if malaria goes undiagnosed and unaddressed. Malaria mortality primarily affects children under age 5 years. Kenya's 2013 population was estimated to be 41.8 million, with children under age 5 years accounting for about 16% of that total. The mortality rate in children under age 5 years has fallen from 115 deaths per 1,000 live births in the 2003 Kenya Demographic and Health Survey (DHS) to 74 deaths per 1,000 live births recorded in the 2008–2009 DHS. These reductions have substantially contributed to the achievement of the MDG 4 target of reducing by two-thirds the under-5 mortality rate between the years 1990 and 2015, when the next set of MDGs is anticipated to be launched.

MALARIA OUTPATIENT CASES

Figure 3: Outpatient visits and malaria cases, July 2013–June 2014



Source: District Health Information Software (DHIS)

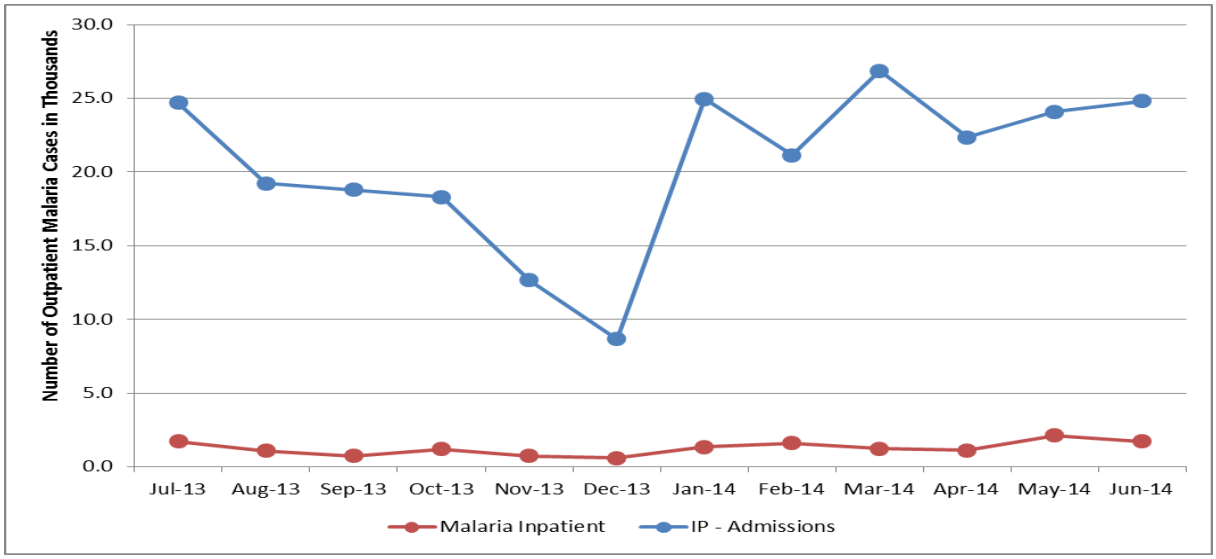
Through District Health Information Software-2 (DHIS-2), the country reported a total of 54.9 million outpatient cases from July 2013 to June 2014, 9.7 million cases (17.7% of total) of which were recorded to be suspected malaria. This contrasts with the previous period, July 2012 to June 2013, where out of the reported total of 41.8 million outpatient cases, 8.8 million cases (21% of total) were recorded to be suspected malaria. An increased reporting rate saw the average number of reported suspected monthly malaria cases rising by 9.9%, from 735,364 in the 2012–2013 period to 808,207 in the 2013–2014 period. The average number of reported confirmed monthly malaria cases, as a proportion of the suspected malaria cases, also increased by 32.7%, from 254,294 cases (34.6%) during the 2012–2013 period to 337,422 (41.7%) during the 2013–2014 period.[1]

It should be noted that the recording of the these cases during the 2012–2013 period suffered a greater underreporting effect, due to the 3-month health workers strike between November 2012 and January 2013, than during the succeeding 2013–2014 period when there was also a 12-day health workers strike in February 2014. The 31.3% increase in the reported outpatient cases, from 41.8 million during the 2012–2013 period to 54.9 million in the 2013–2014 period, can be attributed to the higher recording rate through DHIS-2. Of particular note, however, is the decrease in the proportion of suspected malaria cases out of the total outpatient cases in the country between the two periods, from 21% in 2012–2013 to 17.7% in 2013–2014, as well as the rise in the use of rapid diagnostic tests (RDTs) or microscopy to confirm the malaria cases, from 34.6% of suspected malaria cases in the 2012–2013 period to 41.7% in the 2013–2014 period.[1]

[1] Kenya Annual Malaria Report: July 2012–June 2013 MOH Division of Malaria Control and DHIS-2

MALARIA INPATIENT CASES

Figure 4: Inpatient admissions and malaria cases, July 2013–June 2014

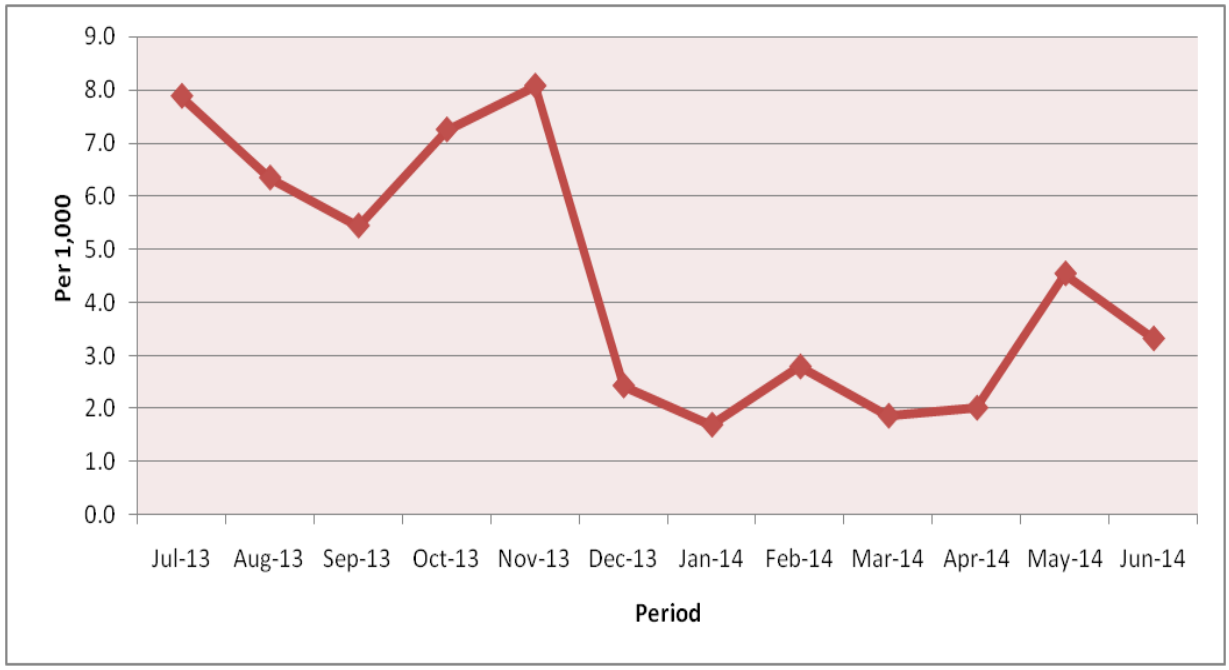


Source: DHIS

The noted increase in the use of RDTs, coupled with a higher recording of the reported inpatient cases through DHIS-2, can be attributed to the more accurate reporting of malaria cases. The trend towards a lower malaria footprint out of the overall inpatient cases is noted in Figure 4. However the inpatient reporting rates are very low at 11.6%.

MALARIA COMMUNITY CASES —AFRICAN MEDICAL RESEARCH FOUNDATION (AMREF)

Figure 5: Seasonal trend in malaria community cases



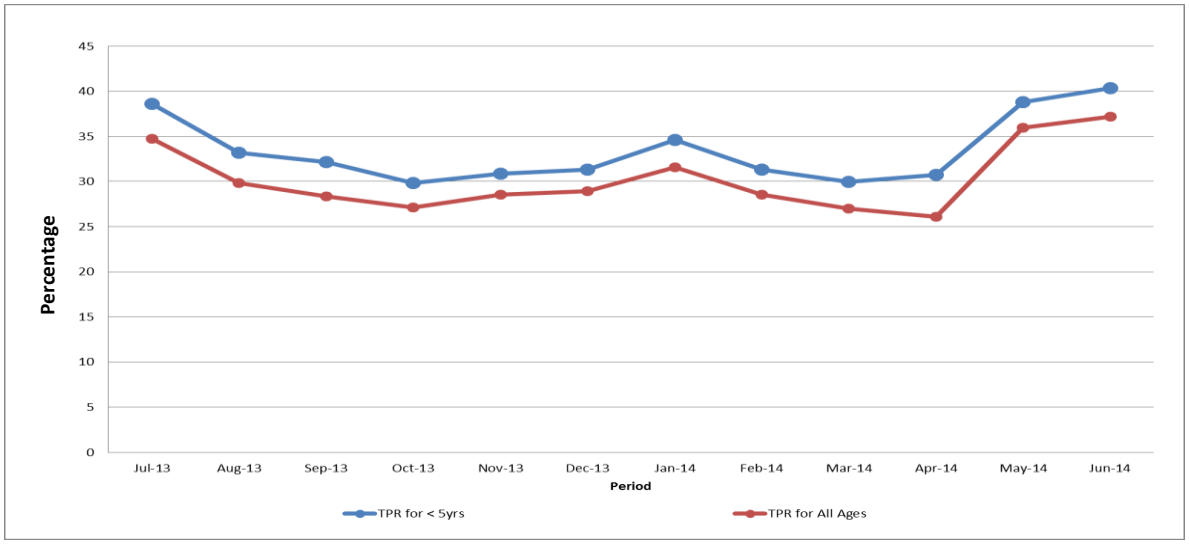
Source: AMREF

The downward trend in community cases, as noted in Figure 5, can be attributed to the increased training and sensitization of the Community Health Workers (CHWs) through the Community Case Management of Malaria Project. The purpose of this project was to scale up access to prompt

and effective treatment through 1) the provision of artemisinin combination therapy (ACT), improving the capacity of CHWs to manage malaria cases, and 2) the strengthening of diagnostics and rollout of community case management in order to achieve 100% of diagnosed malaria cases receiving the appropriate treatment.

MALARIA POSITIVITY RATE

Figure 6: Outpatient test positivity rate for < 5 years and all ages

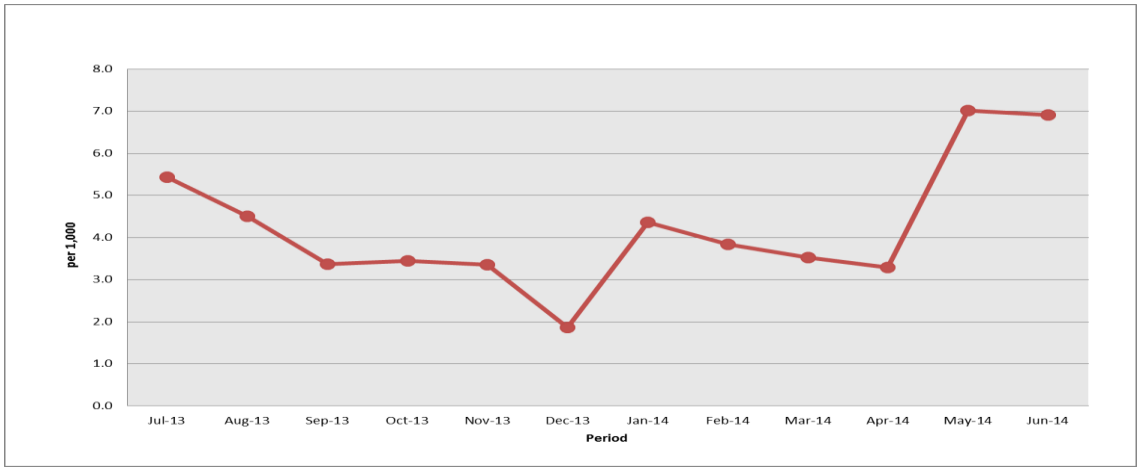


Source: DHIS

The test positivity rate (TPR) of outpatients under age 5 years continues to consistently trend higher than the TPR of all ages, as noted in Figure 6, signifying that the targeting of the malaria interventions to pregnant women and mothers with children under age 5 years needs to be strengthened.

MALARIA SEASONAL TRENDS

Figure 7: Number of outpatient-confirmed malaria cases per 1,000 people



Sources: Disease Surveillance and Response Unit, KNBS Projection 2009 Census

The trend toward a more accurate recording of malaria cases through the increased use of the DHIS-2 data entry, coupled with the increased usage of RDTs, is resulting in an increase in the number of outpatient-confirmed malaria cases per 1,000 people, as noted in Figure 7.

PERSPECTIVE

The Division of Health Information System has recorded an improvement in the compilation of morbidity data on confirmed and clinical malaria cases with the introduction of the online platform of the DHIS-2, with reporting rates reaching 79% of the patient morbidity data. While this improvement has led to an increase in the total number of malaria cases being recorded, the trend toward a lower incidence of malaria as a percentage of the overall morbidity data indicates that the various interventions are having the desired effect.

PROGRAM PERFORMANCE BY THEMATIC AREAS

Each of the six objectives contained in the National Malaria Strategy (NMS) 2009–2017 has a detailed planning and implementation matrix that shows the different strategies with the corresponding activities and timelines. The monitoring and evaluation (M&E) framework is also incorporated, with clear targets, indicators, responsibility, and recommendations.

MALARIA VECTOR CONTROL

Objective One

By 2016, to have at least 80% of people living in malaria risk areas using appropriate malaria preventive interventions.

Strategies

- Conduct a mass long-lasting insecticide-treated net (LLIN) distribution campaign to households for universal access (one LLIN for every two people at risk, every 3 years).
- Conduct routine LLIN distribution through antenatal care (ANC) clinics and child welfare clinics (CWCs).
- Conduct indoor residual spraying (IRS) in endemic and epidemic-prone counties.
- Support malaria-free school initiative.
- Provide intermittent preventive treatment in pregnancy (IPTp) for women at ANC clinics and at the community level.

Planned Activities

The key activities planned for the period were:

- Procurement of the LLINs for the mass campaign, distribution of LLINS through ANC clinics, CWCs, and social marketing campaigns, as well as the pilot of other LLIN routine distribution channels.
- IRS in targeted areas.
- Development of malaria content for school curriculum, as well as the dissemination and adoption of the developed content by the stakeholders.
- Capacity building for IPTp, as well as the progression of the malaria in pregnancy (MiP) implementation and best practices.

Table 3: Targets and indicators for vector control

Indicator	Target	Achieved (%)	Comment
At least one LLIN for every two people in a household.	100% of targeted households own at least two or more LLINs.	32%	6,371,000 LLINs procured and received from the Global Fund to Fight AIDS, Tuberculosis, and Malaria, ready for both routine distribution and mass net distribution in the next reporting period.
Proportion of households in targeted areas sprayed with IRS in the last 12 months.	555,473 structures and 1,995,149 people will be reached in each of the two planned rounds.	0%	Planning process for the spraying of carbamate class of insecticides yet to be completed.
Proportion of population in targeted areas of people who slept under an LLIN on the night before a survey.	80% of the targeted children under age 5 years and pregnant women.	42% (children) and 41% (women)	Follow-up mass net distribution exercise scheduled for September 2014.

Indicator	Target	Achieved (%)	Comment
Achieve malaria-free status for schools in the target areas.	Malaria content for school curriculum developed and disseminated.	0%	As funding was not received, it could not be implemented.
Proportion of health care workers trained in IPTp.	One-day training of 1,280 facility in-charges from 64 subcounties as mentors on MiP and ANC data management.	1,212 facility in-charges trained (95%)	Trainings carried out during the case management trainings.

With the next mass LLIN distribution scheduled for September 2014, pockets of distribution were carried out. For example, 10,477 nets were distributed in November 2013 by Population Services Kenya in Mwea as part of the 2011–2012 mass net distribution exercise. During the reporting period, 1,858,362 LLINs were distributed to pregnant women and infants through the ANC clinics and CWCs. A total of 568,385 President's Malaria Initiative-supported LLINs and another 1,289,977 nets, supported by the UK Department for International Development (DFID), were also distributed to vulnerable populations during this period in 36 counties.

A health worker issuing free nets to mothers and children.

Through DFID funding, 747,891 social marketing nets were sold to rural endemic populations through community-based organizations. Kenya is also conducting a pilot on continuous community-based net distribution in the Samia subcounty of Busia County, which seeks to sustain universal coverage levels through community distribution channels and explore viable alternatives to the resource-heavy mass net distribution that is scheduled to be conducted every 3 years.

Under the IRS strategy, preparations for the resumption of the spraying activities continued with the National Malaria Control Program (NMCP) incorporating the revised Insecticide Resistance Management Plan into the updated IRS Business Plan, which was brought about by the costlier utilization of the recommended carbamate class of insecticides.

Capacity building for entomological surveillance was carried out during the reporting period, with the conducting of two training sessions with two vector-borne representatives and one environmental health representative each from the first 10 counties.

The training in IPTp of 1,212 facility in-charges was also conducted during the case management trainings.

Activities planned under the malaria-free schools initiative through the development and dissemination of malaria content could not be carried out due to a lack of funding.

MALARIA DIAGNOSIS AND TREATMENT, INCLUDING MALARIA IN PREGNANCY

Objective Two

To have 80% of all suspected malaria cases who present to health workers managed according to national treatment guidelines by 2017 (at least 80% receive a parasitological diagnosis, and of these, 100% of positives receive artemisinin combination therapy [ACT]).

Strategies

- Capacity building for malaria diagnosis and treatment at health facilities.
- Access to affordable malaria medicines through the private sector.
- Strengthening the community case management of malaria using the community strategy through Community Health Workers (CHWs).
- Ensure commodity security of antimalarial and diagnostics in the public and private sector.
- Quality assurance of diagnosis and treatment of malaria.

Planned Activities

The planned activities during this period were to:

- Update health workers on malaria diagnosis and treatment.
- Conduct integrated case management training for health workers.
- Develop the private-sector strategy for malaria case management while providing technical support for private-sector activities.
- Train health workers on community case management of malaria.
- Ensure the commodity security of antimalarial and diagnostics in the public and private sector.
- Ensure the quality assurance of diagnosis and treatment of malaria.

Malaria case management based on confirmed parasitological diagnosis and ACTs is one the interventions used by the malaria control program. The national guideline for malaria diagnosis and treatment outlines the ways of treating malaria and is aligned with the World Health Organization Global Malaria Program's T3 (Test, Treat, and Track) initiative. To monitor the policy progress, NMCP has been undertaking biannual national health facility surveys to monitor the quality of outpatient malaria case management as outlined by policy. The baseline survey was carried out in January and February 2010, and the sixth follow-up survey was conducted in February 2014. A total of seven national health surveys have thus been undertaken. The following summarizes the results from the survey conducted in February 2014.

Table 4: Malaria diagnosis and treatment indicators and targets

Indicator	Target	Achieved (%)	Comment
Any malaria diagnostics in health facilities.	100%	77%	Decline in the rapid diagnostic test (RDT) availability resulted in stockouts.
Supervision of RDT use.	100%	12%	Transition of roles from the national to the county led to challenges in implementing this activity.
No stockout of all Artemether-lumefantrine (AL) packs of at least 7 consecutive days in 3 months prior to the survey.	100%	80%	Missed cycle of commodity distribution during transition to the county-level health commodity supply chain management system.

Indicator	Target	Achieved (%)	Comment
Health facilities with valid malaria case management guidelines.	100%	47%	Old guidelines and wall charts still widely available at health facilities.
Health workers who received any supervisory visit.	100%	42%	Lack of disbursement funds for supportive supervision during transition process.

Comparing the baseline results with the results of the fifth follow-up survey undertaken in June 2013, significant declining trends in AL stocksouts were observed. In this period, stockouts steadily declined, resulting in only 7% of facilities experiencing total AL stockout and 22% being stocked out of one or more AL packs. A declining trend in AL stockouts was, however, observed prior to the last survey in February 2014. The latest results showed that 20% of facilities had total stockout, while 56% experienced stockout of at least one AL pack over the period of 7 or more consecutive days.

Similarly, until the June 2013 survey, significant improvements were observed in parasitological capacities of health facilities. Compared to the baseline survey, the availability of at least one malaria diagnostic service increased from 55% to 90%, mainly due to an increase in the availability of rapid diagnostic test (RDT) kits (8% vs 70%). However, as found for the first-line therapy, a declining trend in the availability of diagnostics was observed between June 2013 and the latest survey in February 2014. In this period, RDT availability declined from 70% to 40%, resulting in an overall decline to 77% of facilities providing parasitological diagnosis of malaria.

With respect to the policy for the second-line therapy and for severe malaria, the availability of injectable artesunate reached 50% of facilities during the last survey, while Dihydroartemesinin-Piperaquine was still rarely available. During all surveys, more than three-quarters of facilities had various drug inventory materials, which also include RDTs. However, the quality of recording and reporting was substantially lower, with some worsening trends observed during the latest survey.

In December 2012, NMCP ran a countrywide initiative to have health facilities report their consumption of malaria commodities via the DHIS-2. This upgrade to the new reporting platform saw the reporting rates of malaria commodities rise from an average of approximately 40% achieved through the old Logistic Information Management System to approximately 70%. While the malaria program aims for even higher reporting rates in the future, the Drug Supply Management Sub Committee (DSMSC) considered a reporting rate of 70% to be sufficient for providing viable country representative consumption data. Since there had been no recent consumption data for RDTs, the malaria cases were thus extrapolated from the ACT consumption data, and this was used to formulate the RDT gap analysis.

While the DSMSC had carried out a quantification exercise in June 2013, it was also found necessary to carry out a second exercise in September 2013, which took into account the results of the Quality of Care Survey as well as some revised assumptions, namely the compliance to diagnostics and the revision of country targets for diagnostic coverage. In conducting the forecast for ACTs and RDTs, the gap analysis template used during the Global Fund to Fight AIDS, Tuberculosis, and Malaria (Global Fund) Round 10 Phase 2 Application was used.

The results of the quantification exercise are illustrated in the table on the following page.

Table 5: Summary of malaria commodities requirements for FY 2013/2014

Product	Unit	Net Requirement	AMC	Stock at KEMSA	MOS KEMSA	Available from PMI/USAID	Available from GFATM	Total in Pipeline	MOS Pipeline
		A	B	C	D	E	F	G	H
Artemether-lumefantrine (AL) 6s	Pack of 6s	3,150,000	262,500	1,569,890	6	-	904,400	904,400	3
AL 12s	Pack of 12s	2,100,000	175,000	267,090	2	1,200,600	780,400	1,981,000	11
AL 18s	Pack of 18s	1,050,000	87,500	390	0	560,640	800,000	1,360,640	16
AL 24s	Pack of 24s	4,200,000	350,000	1,620,870	5	1,940,640	1,910,000	3,850,640	11
Quinine dihydrochloride inj	Amps	1,382,827	115,236	1,000	0			-	-
Quinine sulphate 200mg	Tabs	3,719,805	309,984	1,989,000	6			-	-
Sulphadoxine/Pyrimethamine	Tin of 1000s	4,729,000	394,083	20,546,000	52	-	-	-	-
Dihydroartemesinin/Piperaquine 160mg	Tabs	577,500	48,125	-	-			-	-
Dihydroartemesinin/Piperaquine 320mg	Tabs	945,000	78,750	-	-			-	-
Artesunate rectal caps 50mg	caps	207,424	17,285	-	-			-	-
Artesunate rectal caps 200mg	caps	23,047	1,921	-	-			-	-
Artesunate injection	60 mg vials	1,871,426	155,952	701,075	4			-	-
Rapid diagnostic tests	Tests	14,195,969	1,182,997	1,810,680	2	4,500,000	14,730,746	19,230,746	16

Source: Malaria commodities quantification and supply planning review for FY 2013/14: Technical report
Note: GFATM = Global Fund to Fight AIDS, Tuberculosis, and Malaria; KEMSA = Kenya Medical Supplies Agency

African Medical Research Foundation (AMREF) Kenya, as the principal recipient of Global Fund Malaria Round 10 under the civil society component, has been implementing the Community Case Management of Malaria (CCMM) Project during the reporting period, through 17 sub recipients spread across the 10 counties of the Nyanza and Western regions. The project's purpose was to scale up access to prompt and effective treatment through the provision of ACTs, improving the capacity of CHWs to manage malaria cases, and strengthen the diagnostics and rollout of community case management in order to achieve 100% of diagnosed malaria cases receiving the appropriate treatment.

The activities implemented during the reporting period contributing to the CCMM are as follows:

Table 6: CCMM Project Activities

Indicator	Achievement	Remarks
Number of CHWs trained in CCMM.	2,883	To enhance efforts on reducing the morbidity and mortality attributable to malaria, CHWs trained in CCMM cascaded the same knowledge to CHWs in respective intervention areas. The knowledge on CCMM, which includes testing for the malaria parasite using RDT kits, and the treatment of RDT positive cases with AL, will enhance management of malaria at the household level.
Community units (CUs) established and made functional community units for the delivery of home-based management of malaria and other integrated disease prevention and care.	135	In line with the guidelines on formation of CUs, the project facilitated establishment of CUs in the intervention areas.
Number of people with uncomplicated malaria receiving ACT treatment as per national treatment guidelines at the community under CCMM in Western and Nyanza regions	53,650	As one of the indicators for AMREF Kenya, managing malaria at the community level has been a challenge for most CHWs trained on CCMM, with the observed stockouts of RDT kits together with AL drugs at the link health facilities.

Under the Affordable Medicines Facility-malaria (AMFm), a public-private financing mechanism which is hosted by the Global Fund, Kenya is one of the nine countries where the cost of quality-assured ACTs is subsidized for both the public and the private sector players in endemic countries. The objectives of the AMFm subsidy scheme are to increase the affordability, availability, usage (especially among the vulnerable groups) of ACTs, as well as to reduce the sale and use of ineffective artemisinin monotherapies, by gaining market share of the quality-assured ACTs. In Kenya, 70% of the subsidy is supported by DFID, while the importer pays the balance.

In conjunction with the Clinton Health Access Initiative (CHAI), the plan was to train a total of 1,200 health workers from the private clinics, hospitals, and laboratories on the use of RDTs. However, only 40 health workers were trained during the reporting period due to the requirement to first ensure that the course was approved by the Kenya Medical Laboratory Training and Technical Board. Meanwhile, awareness materials on the correct use of RDTs by the health workers were distributed through the networks established by CHAI.

EPIDEMIC PREPAREDNESS AND RESPONSE

Objective Three

Ensure that all malaria epidemic-prone counties have the capacity to detect and respond to malaria epidemics by 2015.

Strategies

- Capacity building for epidemic preparedness and response (EPR).
- Disease surveillance capacity strengthening.

Planned Activities

The planned activities during this period were to build on the EPR activities in both the highland epidemic-prone counties, as well as the counties in arid and semi-arid lands (ASAL) that had started during the previous year.

The key activities for this period were to:

- Review the EPR plans for the county teams.
- Establish and train the CHWs in EPR at the county and subcounty level located in ASAL.
- Build the malaria surveillance capacity for the county and subcounty teams.
- Develop malaria surveillance guidelines and tools.
- Train CHWs on malaria surveillance in EPR and low-transmission areas.
- Support the communication of disease surveillance in the epidemic-prone and low-transmission areas.
- Establish EPR teams at the county and subcounty levels.
- Revise malaria epidemic threshold parameters for health facilities annually.
- Ensure that weekly surveillance meetings are held at the county and subcounty level during the malaria season.
- Conduct epidemic post-mortems or audits for all epidemic-prone counties.
- Collate and analyze outbreak reports at the county and national levels.
- Maintain the malaria epidemic kits, including buffer stocks for malaria epidemic management.

Table 7: Epidemic preparedness and response (EPR) indicators and targets

Indicator	Target	Achieved N (%)	Comment
Review of the EPR plans for the county teams.	47 counties	50%	Although EPR plans were conducted at the individual county level, no meeting was held to review their effectiveness.
Establish and train the CHWs in EPR at the county and subcounty levels located in ASAL.	ASAL counties	100%	EPR training was conducted at both the county and subcounty levels.
Build the malaria surveillance capacity for the county and subcounty teams.	47 counties	60%	Training of Trainers training was conducted in 28 counties, and the counties in turn conducted trainings at the subcounty level.

Indicator	Target	Achieved N (%)	Comment
Develop the malaria surveillance guidelines and tools.	7 modules	100%	Guidelines and tools developed with the assistance of the World Health Organization.
Train the CHWs on malaria surveillance in EPR.	47 counties	60%	Trainings conducted in 28 counties.
Establish epidemic preparedness teams at the county and subcounty levels.	47 counties	N/A	High staff turnover observed at county level, thereby necessitating a further retraining program.
Revise the malaria epidemic threshold parameters for health facilities annually.	47 counties	N/A	Comprehensive review of threshold parameters needed to ensure that only confirmed data is used to set and monitor thresholds.
Ensure that weekly surveillance meetings are held at the county and subcounty levels during the malaria season.	47 counties	N/A	No data was available from the counties.
Conduct epidemic post-mortems or audits for all epidemic-prone counties.	14 counties	N/A	No epidemics reported during the year.
Collate and analyze outbreak reports at the county and national levels.	47 counties	N/A	No epidemics reported during the year.
Maintain the malaria epidemic kits, including buffer stocks for malaria epidemic management.	47 counties	50%	Second line artesunate for severe cases in stock in 50% of clinics.

Surveillance, Monitoring, and Evaluation Operations Research

Objective Four

To strengthen surveillance, monitoring, and evaluation systems so that key malaria indicators are routinely monitored and evaluated in all counties by 2015, and sustain the systems thereafter.

Strategies

- Strengthen capacity for malaria surveillance.
- Strengthen facility- and school-based malaria sentinel surveillance.
- Strengthening malaria data management systems.
- Conduct and support community surveys.
- Conduct and facilitate health facility surveys.
- Conduct operational research and translation.
- Conduct human resource capacity building in surveillance and M&E.

Planned Activities

The planned activities during this period were to:

- Update and disseminate the M&E framework and plan.
- Support the M&E technical working group (TWG).
- Support the scale up of malaria surveillance in collaboration with Integrated Disease Surveillance and Response and the Health Management Information System (HMIS).
- Develop malaria surveillance guideline tools.

- Ensure malaria surveillance monitoring and supervision.
- Conduct data quality audits in selected health facilities in collaboration with HMIS and the Division of Diseases Surveillance and Response (DDSR).
- Conduct malaria-metric surveys.
- Support the monitoring of the quality of malaria case management in health facility sentinel sites.
- Update the Malaria Information Acquisition System (MIAS).
- Support the Pharmacy and Poisons Board to undertake pharmacovigilance for malaria medicines.
- Conduct the biennial malaria drug efficacy monitoring and entomological surveillance studies, as well as the susceptibility of insecticides, malaria indicators, and the malaria vector surveys.
- Develop data analysis and presentation guideline, as well as a national data use plan.

Table 8: Surveillance, monitoring, evaluation, and operational research indicators and targets

Indicator	Target	Achieved	Comments
Proportion of target groups trained on M&E guidelines.	100%	50%	A malaria surveillance curriculum package was completed and is being disseminated.
Proportion of scheduled surveys/studies successfully conducted.	100%	50%	1 Quality of Care (QoC) survey completed.
Proportion of scheduled operational research studies successfully conducted.	100%	100%	Drug efficacy, vector susceptibility, and entomological studies done.
Proportion of surveys for which results were printed and disseminated within 6 months of survey completion.	100%	100%	Results for QoC Survey 7 were disseminated.
Proportion of target counties reporting on malaria disease surveillance.	100%	90%	This was the average reporting rate for DHIS, the main source of malaria routine data.
Number of NMCP staff trained in surveillance, GIS, and data management.	2	100%	Various staff were trained on SPSS, STATA, DD&U, and M&E.
Proportion of planned Surveillance, Monitoring and Evaluation, and Operations Research technical working group meetings held.	4	3 (75%)	Three of the four planned meetings held.
Annual research-to-policy conference held.	1	N/A	It was agreed that this task will be undertaken once every 2 years, not annually.

Three M&E workshops were held, although the plan to train the facility health workers could not be accomplished due to delays in the disbursement of donor funds to the counties. The stakeholder meeting with the Health Management Information System, to ensure that more data sets (such as those for the IP and lab data) are incorporated in the mainstream DHIS system, was carried out. The ICD-10 classification is set to be harmonized with MEASURE Evaluation PIMA by April 2015. The printing of the Community Health Information System tools are set to be completed in the next financial year. The curriculum required to mobilize the stakeholders to improve IP and lab data reporting was being harmonized and is set to also be completed during the next financial year.

As a follow-up to the previous reporting period, when a workshop had been held to develop the National Malaria Surveillance curriculum, as well as the corresponding modules for the facilitators and participants, the draft documents were reviewed by the Malaria M&E TWG.

Subsequent to the incorporation of feedback comments from internal and external reviewers into the curriculum package, the documents were finalized and submitted to the Director of Public Health and approved for issuance for training at the county level. The 5-day course for the county health teams included presentations, group exercises, and practicums. With the support of the World Health Organization (WHO) and DFID, the following National Malaria Surveillance curriculum was printed:

- The comprehensive curriculum and implementation guide (1,000 copies)
- The comprehensive curriculum and implementation guide: Participant's Manual (3,000 copies) and Trainer's Manual (1,000 copies)

Training of three pilot counties, Marsabit, Isiolo, and Meru, was then carried out during the reporting period. In addition, Malaria Surveillance Training of Trainer trainings were cascaded to 25 counties, with a total of 85 County Health Management Teams (CHMTs) being trained. The malaria surveillance monitoring and supervision exercise was completed in June 2014.

The institutionalizing of the use of MIAS as a knowledge management tool at NMCP has been ongoing, with the base template having been worked on in the course of the year and the surveillance bulletin being issued quarterly. The consultancy for the conduct of therapeutic efficacy testing of antimalarial drugs at the Coast Region is being arranged with Kenya Medical Research Institute (KEMRI), who are to provide a principle investigator during the next financial year. The monitoring of vector susceptibility of insecticides is to be conducted in Busia and Bungoma counties, with the results anticipated to be issued in the next financial year.

Entomology equipment (susceptibility testing kits, testing papers, and collecting equipment) were procured during the reporting period through the Global Fund Round 4 funds, as well as the WHO/Bill and Melinda Gates Foundation's projects. Additional equipment procured included a deep freezer, Elisa plate reader, barcode scanner and printers, dissecting microscopes, light microscopes, computers.

Support for the procurement of consumables and specialized reagents through the WHO/Bill and Melinda Gates Foundation's projects were availed to the National Reference Unit (NRU), which in Kenya's case is KEMRI. Support for the field activities, including mosquito sampling and testing, was also given through these projects.

Through the Global Fund Round 10 support, 30 health personnel from 10 counties (Embu, Machakos, Kitui, Isiolo, Kirinyaga, Kiambu, Nyeri, Murang'a, Nairobi, and Nyandarua) have been trained in basic entomological techniques, including mosquito sampling, identification, and susceptibility testing. An additional four health personnel have been trained at the national level. For specialized resistance mechanisms analysis, two health personnel from KEMRI have received specialized training in the United Kingdom and in South Africa. This specialized training has been supported through the WHO/Bill and Melinda Gates Foundation projects.

Support to the Pharmacy and Poisons Board to undertake pharmacovigilance for malaria medicines was provided, with the data entry being finalized and the final report expected to be issued in the next financial year. The planned Malaria Indicator Survey could not be carried out until the finalization of the Kenya Demographic Indicator Survey, which commenced in April 2014 with a scheduled end date of August 2014. Three meetings of the Operations Research TWG to define the malaria agenda and coordinate malaria research activities were held, with the conference scheduled to be held during the next reporting period. In addition, two members of NMCP staff were sponsored to attend M&E courses. The national data use plan was developed, with the analysis and presentation guidelines scheduled to be developed during the next reporting period.

ADVOCACY, COMMUNICATION AND SOCIAL MOBILIZATION

Objective Five

To increase uptake/utilization of targeted malaria control interventions by people in Kenya to at least 80% by 2017.

Strategies

- Capacity strengthening for advocacy, communication and social mobilization (ACSM).
- Multi-sector information, education, and communication (IEC)/behavior change communication (BCC) for malaria control.
- Develop appropriate advocacy, IEC, and BCC packages for uptake of all malaria interventions.
- Develop measurable evidence based, community focused net use interventions/initiatives.

Planned Activities

The planned activities during this period were to:

- Develop or revise and disseminate the advocacy, communication and social mobilization (ACSM) policy and guidelines.
- Build capacity for health workers and other service providers on malaria ACSM.
- Hold quarterly meetings of malaria ACSM working groups at the national and county levels.
- Support through IEC/BCC to priority ACSM implementing partners.
- Document malaria control best practices.
- Identify and support activities by the Kenya Malaria Goodwill Ambassador and community malaria champions.
- Commemorate World Malaria Day.
- Ensure the publication of the quarterly and annual advocacy bulletins.
- Hold biannual malaria ACSM forums at the national and county levels.
- Support IEC/BCC for all LLIN distribution and continuous net use as well as IRS campaigns in targeted counties and localities.
- Ensure that the advocacy, social mobilization, and BCC for MiP in targeted counties is done.
- Ensure that the advocacy, IEC and BCC for appropriate malaria case management in the public and private sector as well as for EPR in at risk counties is carried out.
- Develop measurable evidence-based and community-focused net use interventions/ initiatives.

Table 9: Advocacy, communication and social mobilization (ACSM) indicators and targets

Indicators	Target	Achieved	Comments
Proportion of targeted counties that were distributed with the updated ACSM policy and guideline materials.	100%	100%	Policy and guidelines materials produced and disseminated.
Proportion of targeted health workers and other service providers trained on updated ACSM guidelines.	100%	0%	Consultant to be engaged in the next reporting period.

Indicators	Target	Achieved	Comments
Quarterly meetings of malaria ACSM working groups at the national and county levels held.	100%	25%	Only one of the four scheduled meetings was carried out.
Support through IEC/BCC to priority ACSM implementing partners.	100%	100%	Partners were able to implement their respective projects.
Document malaria control best practices.	100%	50%	Documents currently being compiled for review.
Iidentify and support activities by the Kenya Malaria Goodwill Ambassador and community malaria champions.	100%	0%	The activity was not funded.
Commemorate World Malaria Day.	100%	100%	Main event held in Kisumu County.
Number of quarterly and annual advocacy bulletins produced.	4	1 (25%)	Funding for the balance 3 bulletins not secured.
Biannual malaria ACSM Forums at the national and county levels held.	2	0 (0%)	The activities were not funded.
MiP advocacy in the 14 focus counties.	14	14 (100%)	Advocacy carried out as planned.
Case management advocacy campaigns in the public and private sector.	3	1 (33%)	While the printed materials was carried out, the TV and radio was not supported.
Develop measurable evidence based and community focused net use interventions/initiatives.	1	50%	One project is currently being piloted in Busia County.

The ACSM policy guidelines were produced, with a meeting of the malaria ACSM working groups at national and county levels being held to disseminate these guidelines. The training of the County Health Promotion and Malaria Focal Persons on Malaria ACSM and their support to undertake the planning of the comprehensive County ACSM was, however, postponed to the next fiscal year. The consultant to document the best practices was recruited and the field work carried out, with the report due to be completed during the next fiscal year. However, the Malaria Goodwill Ambassador and the community malaria champions are yet to be recruited.

This year's World Malaria Day celebration was commemorated on April 25, 2014, with the national event being held at Obambo Primary School in Kisumu County. The theme of the day, which was graced by representatives from the Roll Back Malaria partner organizations, was "Invest in the Future: Defeat Malaria," chosen by WHO as the world prepares to take stock of the MDGs in 2015. In Cabinet Secretary for Health James Macharia's speech, which was read on his behalf by MOH Principal Secretary Professor Fred Segor, he urged the public to utilize the information and resources that the government and its partners had worked to put in place to combat malaria.

Chief Guest, Professor Fred Segor, MOH Principal Secretary, addressing the participants during World Malaria Day.

Population Services (PS) Kenya, in partnership with MOH, implemented a campaign dubbed "Msimu wowote," whose main objective is to address risk perception by increasing awareness for net use throughout the seasons; both dry and wet seasons targeting the Western, Nyanza and Coast regions. Channels used include national and regional radio stations, production and dissemination of IEC materials, TV, and SMS, as well as outdoor advertising.

Msimu wowote poster with mother and child under a net.

The "mRDT" communication campaign sought to improve fever management/services through increased access and use of RDTs for all fever cases suspected to be malaria through a two-pronged strategy. It targeted both providers for improved quality of malaria case management and patients to increase consumer awareness on the availability and use of RDTs before fever treatment.

Consumer and provider campaign posters available in the target region at the Coast region.

The campaign supported provider behavior change to improve compliance to diagnostic results and social mobilization to ensure that the public was aware of the need to test and demand for testing prior to treatment. This is done through household visits, IEC support materials, small group communication sessions, and community awareness activities, drama, and roadshows to increase demand for RDTs. However, the scheduled IEC/BCC support for the IRS campaigns in targeted counties and localities was not held, as no spraying took place during the period under review.

Household visit in Kakamega East Sub-county.

Under the activities to sensitize community health units by promoting the use of nets at the household level, PS Kenya engaged 43 community units in the door-to-door campaigns, both in Hamisi and Vihiga subcounties of Kakamega County. They were able to carry out 33,595 household visits reaching 130,646 beneficiaries with BCC messages at the household level. During this period, PS Kenya supported training of 968 out of an intended 990 Community Health Volunteers (CHVs) on social marketing and M&E. The trained CHVs subsequently carried out BCC sessions through door-to-door visits to pass malaria prevention messages.

Training session in Emuhaya subcounty.

PS Kenya supported both the Hamisi and Vihiga subcounties through 43 community units, to accomplish 8 dialogue days' meetings to review net use and collect household data from the door-to-door activities. PS Kenya also supported the training of 101 CHVs and 9 CHEWs as Trainer of Trainers (ToTs) during the review period. Subsequently, the ToTs also trained 88 community units with 762 CHVs and 72 CHEWs, from Kakamega North and East, Teso North, and Emuhaya subcounties of Kakamega County.

PROGRAM MANAGEMENT

Objective Six

Strengthen program management capacities at the national and county levels by 2017.

Strategies

- Capacity strengthening for performance management at the national and county levels.
- Strengthen partnership coordination and resource mobilization capacity.
- Strengthen procurement and supply management systems for malaria commodities.

Planned Activities

The planned activities during this period were to:

- Develop/update the risk management plan.
- Build the capacity in management and performance, as well as program management at the national and county levels.
- Recruit various NMCP personnel.
- Conduct a mid/end-term review of the strategic and M&E plan.
- Develop/update county malaria manual.
- Develop a resource mobilization strategy and structure.

Table 10: Program management indicators and targets

Indicators	Target	Achievement	Comments
Develop/update the risk management plan.	100%	0%	This activity is yet to be accomplished.
Build capacity in management and performance, as well as for program management at the national level.	100%	0%	The program was revising the strategic plan with some of the activities being accomplished in the process.
Build capacity in management and performance, as well as for program	100%	0%	This activity is yet to be carried out.

management at the county level.			
Recruitment of various NMCP personnel.	4	3(75%)	The recruitment exercises are yet to be completed.
Conduct mid/end-term review of the strategic and the M&E plan.	100%	50%	The various TWGs have yet to complete their review components.
Develop and update the county malaria manual.	100%	0%	This activity is yet to be accomplished.
Develop a resource mobilization strategy and structure.	100%	50%	This has been accomplished for some of the donors.

The mid-term review of the strategic and the M&E plan was conducted in early 2013, with the TWGs subsequently being mandated to review their respective thematic programs. The recruitment of the NMCP logistician and accountant was commenced but had not been completed by the end of the period. However, as MOH was to post an epidemiologist to NMCP, it was deemed unnecessary for NMCP to recruit another one per the plan. While the planned training of NMCP staff on program management was yet to be accomplished, the facilitation of office equipment, supplies, and transport was ongoing during the reporting period.

CONCLUSIONS

A mid-term review of the National Malaria Strategy (NMS) was conducted in 2013. The review was aimed at taking stock of performance against the goals and objectives to determine the extent to which key objectives, and the strategies and activities therein, remain appropriate. To achieve the NMS goal of reducing morbidity and mortality caused by malaria in the various epidemiological zones by two-thirds of the 2007–2008 level by 2017, the malaria program defined six objectives with very ambitious achievement targets. While significant progress in implementation of some of the planned activities over the years has been achieved, it is apparent that implementation of some other activities in the NMS may not be achieved, mostly because of the continued lack of resources, delays in disbursement of committed resources, and occasional delayed delivery of the required commodities, such as rapid diagnostic tests. Even where activities have been implemented, sometimes the targeted outcomes have not been achieved due to factors such as reluctance to change behavior among recipients of certain interventions, such as long-lasting insecticide-treated nets.

Monitoring and evaluation (M&E) of malaria interventions are essential for the measurement of performance against stated programmatic goals and quality data central to M&E. Routine monitoring data is collected through the national Health Management Information System (HMIS) and is thus subject to the challenges and limitations of the system. In-patient morbidity and mortality data still remains a challenge in the routine systems, with reporting rates remaining below 50 percent. Efforts to improve the availability of data and data quality were initiated, including meetings with HMIS and lab to address issues of in-patient and lab data. Approval and rollout of the malaria surveillance training will go a long way in improving the routine data submitted through the HIS and DDSU systems. Regular data quality audits aimed at improving the classification and reporting of severe malaria cases, quality and accuracy of malaria surveillance data, and the completeness and timeliness of morbidity and service delivery data in the DHIS-2 should continue.

Activities to strengthen program management capacity at the county level were not undertaken due to lack of funding. With the counties taking up more responsibility on malaria control, it is likely to negatively affect the planning and implementation of malaria control intervention if capacity to coordinate planning and implementation is lacking. Each of the 47 counties will require technical capacity to prioritize, plan for, and implement malaria activities based on the prevailing epidemiology.

A critical evaluation of the prioritization and allocation of resources for activities will need to be evaluated to ensure that key malaria activities in the strategy that have not received significant support are implemented. All in all, NMCP and partners will need to identify changes in strategy, if needed, to bridge gaps between the goals of the program and the actual status within the context of the global economic crisis and the need to sustain gains made with previous investments.

KEY RECOMMENDATIONS—MAJOR STRATEGIC DIRECTIONS

MALARIA VECTOR CONTROL

Various program evaluations have highlighted the low usage of LLINs, despite the heavy investment in the procurement and distribution of their respective commodities at the grassroots levels. It is imperative to continue strengthening and diversifying the existing channels to close the LLIN usage gap, while maintaining the more than 80% LLIN coverage between the mass net campaigns. It is also important to keep the strategies of mass net campaigns, the free net distribution to pregnant women and those with infants, and the distribution through social marketing to the target groups.

All the preparations toward the resumption of the IRS program using the recommended carbamate class of insecticides need to be expedited. The gaps in resourcing the malaria-free schools initiative need to be bridged to ensure that the project is launched during the next reporting period.

MALARIA DIAGNOSIS AND TREATMENT, INCLUDING MALARIA IN PREGNANCY

The drugs supply chain of the ACTs and RDTs needs to be strengthened to ensure that the stockouts observed in some outlets during the sixth Follow-up Survey conducted in February 2014 are reversed. This includes the streamlining of the lengthy government procurement procedures, coupled with the expedited disbursement of the donor funds allocated to the malaria commodities. Training and sensitizing the health workers on the updated treatment guidelines, as well as supervision of the accurate reporting of consumption of all malaria commodities via the DHIS-2, also needs to be cascaded to the counties.

Whereas the AMFm objectives of increasing access, affordability, availability, and increased use of ACTs and RDTs in the private sector has been achieved, the challenge is to ensure its sustainability going forward, in light of the inadequate enforcement and regulation infrastructure of the private health sector. Thus, a private sector case management strategy needs to be formulated through a public-private partnership structure for better accountability.

EPIDEMIC PREPAREDNESS AND RESPONSE

The capacity for the epidemic preparedness and response teams in the seasonal and low-risk transmission zones needs to be built up through malaria surveillance trainings, with emphasis on threshold setting. The buffer stocks of the second line artesunate for severe malaria cases also need to be made available throughout the country.

SURVEILLANCE, MONITORING AND EVALUATION OPERATIONS RESEARCH

In light of the observed resistance to pyrethriod-based insecticides which all the current LLINs are based on, the increased strengthening of the capacity for malaria surveillance is of critical importance, as delays to the disbursement of funds to the counties to train the facility health workers could not be accomplished during the reporting period.

As routine surveillance data is the only measure of program performance, a passive malaria surveillance infrastructure also needs to be established in all the regions. Continued rollout of the malaria surveillance trainings in all the 47 counties will improve the capacity for counties to use the surveillance data for decision making. Once the passive system is implemented, an active surveillance platform can be explored in areas with low and very low malaria transmission.

Capacity building for the county health management teams is needed to conduct quality of case surveys following the devolution of health care service delivery to the counties. School-based malaria metric surveys in epidemic prone and endemic prone areas to monitor the prevalence of malaria in the cohort of children aged 6–14 years needs to also be established.

ADVOCACY, COMMUNICATION AND SOCIAL MOBILIZATION

Further intensive advocacy and mobilization of the communities is required through all the available channels to close the observed gap between LLIN ownership and their use. In addition, community advocacy for intermittent preventive treatment in pregnancy in targeted areas ought to be intensified. The advocacy, communication and social mobilization guidelines and tools should incorporate expeditiously the results of the malaria control best practices, once the review is completed and adopted in the next reporting period.

PROGRAM MANAGEMENT

A focused and more frequent assessment of performance is required to compare with the targets and M&E indicators that are tracked annually. The primary activities at the national level would be to hold semi-annual reviews and planning meetings that build national capacity. The program at the county level would be to provide technical assistance and build capacity in performance management, as well as support the counties to be holding semi-annual review meetings. There is need for the Ministry and partners to support capacity strengthening of these structures to ensure that gains made so far are sustained and built upon by respective counties.

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ANNEX A: PARTNERS

- Division of Family Health- (including Reproductive Health, Child Health, Health Promotion and Communinty Health services)
- Division of Vector Borne Diseases
- Heath Information Services unit
- Ministry of Health M&E unit
- Disease Surveillance and Response Unit
- National Public Health Laboratory Services
- Kenya National Bureau of Statistics
- Pest Control Products Board
- Media Houses
- President's Malaria Initiative
- World Health Organization
- World Vision
- African Medical Research Foundation
- World Vision
- Clinton Health Access Initiative
- Management Sciences for Health
- Johns Hopkins Program for International Education in Gynecology and Obstetrics
- MEASURE Evaluation PIMA
- Malaria Control and Elimination Partnership in Africa
- Kenya NGOs Alliance against Malaria
- Populations Services Kenya

ANNEX B: INFORMATION SOURCES FOR THE 2013–2014 MALARIA REPORT

- National Malaria Strategy (2009–2017)
- National Malaria Monitoring and Evaluation Plan
- Program implementation reports
- Report on Evaluation of the 2011 Mass Long-Lasting Insecticide Treated Net Distribution Campaign
- Malaria Surveillance Bulletins
- Division of Disease Surveillance and Response data on clinical and confirmed malaria cases
- Health Management Information System data on clinical and confirmed malaria cases and service delivery indicators (antenatal clinic attendance, intermittent preventive treatment in pregnancy uptake, LLINs delivered to pregnant women and infants)
- Quality of Care Survey Report 7
- Malaria Epidemic Preparedness and Response Surveillance Data
- National Malaria Strategy Mid-Term Review Report (Draft, July 2013)

ANNEX C: ANALYSIS OF THE KENYA MALARIA PROGRAM PERFORMANCE, 2013–2014

NMS OBJECTIVES	NMS STRATEGIES	TECHNICAL PERFORMANCE			REMARKS
		Number of activities planned	Number of activities implemented	Technical performance (% of planned activities implemented)	
1. By 2013, to have at least 80% of people living in malaria risk areas using appropriate malaria preventive interventions.	1.1 Universal distribution of LLINs through appropriate channels (1 LLIN for 2 people)	2	2	100%	The two activities carried out were the preparations for the mass net distribution campaign in five counties scheduled for September 2014 and the routine LLIN distribution to the targeted groups.
	1.2 Indoor residual spraying in targeted areas	1	0	0	No spraying was conducted in the target areas, as the planning process of the change to the carbamate class of insecticides is yet to be completed.
	1.3 Support malaria-free schools initiative	1	0	0	This activity was not supported during FY 2013/2014.
	1.4 Intermittent preventive treatment in pregnancy (IPTp) at antenatal clinics and community levels	4	4	100%	All planned activities were funded and implemented.
	OBJECTIVE-LEVEL PERFORMANCE	**8**	**6**	**75%**	

NMS OBJECTIVES	NMS STRATEGIES	TECHNICAL PERFORMANCE			REMARKS
		Number of activities planned	Number of activities implemented	Technical performance (% of planned activities implemented)	
2. By 2013, to have 80% of all self-managed fever cases receive prompt and effective treatment and 100% of all fever cases that present to health workers receive parasitological diagnosis and effective treatment.	2.1 Capacity building for malaria diagnosis and treatment at health facilities	3	2	67%	The supervision of RDT use at the health facility level continues to be a challenge, coupled with a decline in the availability of RDTs during the reporting period. More case management guidelines are still required to be distributed.
	2.2 Access to affordable malaria medicines through the private sector	3	2	67%	Training of health workers from the private sector held, pending the approval of the course by the Kenya Medical Laboratory Training and Technical Board.
	2.3 Strengthening home management of malaria using the community strategy through Community Health Workers (CHWs)	2	2	100%	1,212 facility-in-charges trained on IPTp and 2,883 CHWs trained on CCMM. 135 CUs formed in the intervention areas.
	OBJECTIVE-LEVEL PERFORMANCE	**8**	**6**	**75%**	

NMS OBJECTIVES	NMS STRATEGIES	TECHNICAL PERFORMANCE			REMARKS
		Number of activities planned	Number of activities implemented	Technical performance (% of planned activities implemented)	
3. By 2010, to ensure that all malaria epidemic-prone districts have the capacity to detect and preparedness to respond to malaria epidemics annually.	3.1 Capacity building for epidemic preparedness and response (EPR)	3	2	67%	Training of health workers in 28 counties completed, although high staff turnover in some counties at the facility level may necessitate retraining programs. Review of the EPR plans is yet to be done.
	3.2 Disease surveillance capacity strengthening	8	7	88%	Guidelines and tools issued with the assistance of the World Health Organization and training is being cascaded across the counties. County surveillance meetings yet to be tracked.
	OBJECTIVE-LEVEL PERFORMANCE	**11**	**9**	**82%**	
4. By 2011, to strengthen surveillance, monitoring and evaluation systems so that key malaria indicators are routinely monitored and evaluated in all malaria prone counties.	4.1 Capacity building for malaria surveillance	4	3	75%	3 workshops held, although the plan to train the health facility workers could not be held due to delays in the disbursement of donor funds to the counties.
	4.2 Strengthen facility- and school-based malaria sentinel surveillance	2	1	50%	No financial support to conduct malaria-metric surveys.

NMS OBJECTIVES	NMS STRATEGIES	TECHNICAL PERFORMANCE			REMARKS
		Number of activities planned	Number of activities implemented	Technical performance (% of planned activities implemented)	
	4.3 Strengthening malaria data management systems	4	1	25%	The ICD-10 classification is set to be harmonized into MEASURE Evaluation; the printing of the HIS tools, as well as the curriculum required to mobilize the stakeholders to improve IP and lab data reporting are set to be completed during the next reporting period. Though the use of the Malaria Information Acquisition System has been increasing at NMCP, the challenge is now to cascade it to the county level.
	4.4 Conduct and support community surveys	2	2	100%	The therapeutic efficacy testing, as well as the monitoring of the vector susceptibility tests are set to be completed in the next reporting year.
	4.5 Conduct and facilitate health facility surveys	2	1	0%	Health facility operational assessment is yet to be done. The Malaria Indicator Survey is set to be conducted in the next reporting period.

NMS OBJECTIVES	NMS STRATEGIES	TECHNICAL PERFORMANCE			REMARKS
		Number of activities planned	Number of activities implemented	Technical performance (% of planned activities implemented)	
	4.6 Operational research and translation	4	4	100%	The Operations Research technical working group (TWG) held 3 meetings, with the conference scheduled for the next reporting period. The National Malaria Surveillance curriculum documents were finalized and submitted for approval.
	4.7 Human resource capacity building in surveillance monitoring and evaluation	1	1	100%	Malaria surveillance trainings held in 25 counties.
	OBJECTIVE-LEVEL PERFORMANCE	**19**	**13**	**68%**	
5. To strengthen advocacy, communication and social mobilization (ACSM) capacities for malaria control to ensure that at least 80% of people in malarious areas have knowledge on prevention and treatment of malaria by the year 2014.	5.1 Capacity strengthening for advocacy, communication and social mobilization	3	1	33%	Although the updated ACSM guidelines were distributed, training to the health workers is yet to be accomplished. The quarterly national and county ACSM working groups could only hold one meeting during the reporting period.
	5.2 Support priority implementing partners	6	3	50%	Due to the non-prioritization for the funding of the routine ACSM activities, a number of planned activities were not carried out during the reporting period.

NMS OBJECTIVES	NMS STRATEGIES	TECHNICAL PERFORMANCE			REMARKS
		Number of activities planned	Number of activities implemented	Technical performance (% of planned activities implemented)	
	5.3 Development of appropriate advocacy for uptake of specific malaria interventions	3	1	33%	Malaria control best practices review is set to be completed in the next reporting period.
	OBJECTIVE-LEVEL PERFORMANCE	**12**	**5**	**42%**	
6. By 2013, to strengthen capacity in program management to achieve malaria programmatic objectives at all levels of the health care system.	6.1 Strengthen capacity for planning, partnerships, and coordination at national level	1	1	100%	The mid-term review was conducted with the TWGs to report on their group work in the next reporting period.
	6.2 Strengthen malaria program management at the county level	1	0	0%	This activity was not funded during the reporting period.
	6.3 Strengthen infrastructure at the national and county levels	2	1	50%	Only national-level office equipment and operational support provided; funds were inadequate to achieve this activity at the county level.
	6.4 Strengthen activity and performance monitoring	7	1	14%	Most of the planned activities were only partially done due to funding constraints.
	6.5 Strengthen resource mobilization capacity to improve malaria control financing	7	4	57%	Though the roundtable with the development partners was not held, the resource mobilization proposal development (such as with Global Fund) was done.

NMS OBJECTIVES	NMS STRATEGIES	TECHNICAL PERFORMANCE			REMARKS
		Number of activities planned	Number of activities implemented	Technical performance (% of planned activities implemented)	
	6.6 Strengthen human resource capacities in malaria endemic areas	7	5	71%	The logistician, who is a key officer in this activity implementation, is yet to be recruited. MOH is to post an epidemiologist. Facilitation of the other team members is however ongoing.
	6.7 Strengthen procurement and supply management systems for malaria drugs and commodities	1	0	0%	The development and review of the guidelines and SOPs for Malaria Commodity Quantification, forecasting, and inventory management is yet to be accomplished.
	OBJECTIVE-LEVEL PERFORMANCE	**26**	**12**	**46%**	
OVERALL PERFORMANCE		**84**	**50**	**60%**	