

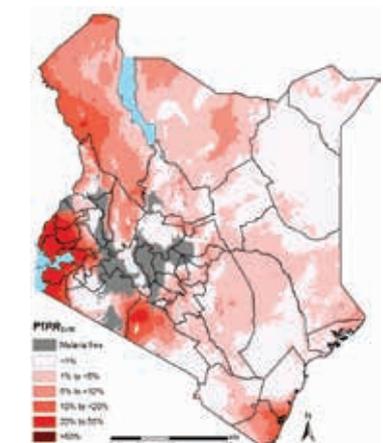
REPUBLIC OF KENYA



MINISTRY OF HEALTH



January 2019



# KENYA MALARIA PROGRAMME REVIEW 2018



# Kenya Malaria Programme Review 2018

National Malaria Control Programme  
Ministry of Health  
January 2019

TR-19-319





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**Kenya Malaria Programme Review 2018**

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## FOREWORD

The Malaria Programme Review (MPR) 2018 was undertaken at the end of the Kenya Malaria Strategy 2009–2018 (2014 revision) using the World Health Organization’s guidance for conducting such reviews. MPR is a periodic joint programme management process for reviewing progress and performance of a malaria programme in the context of national health and development plans. It is aimed at improving performance and/or redefining the programme’s strategic direction and focus. The objective of the Kenya MPR 2018 was to assess the malaria situation; conduct a comprehensive performance review of the Kenya Malaria Strategy (KMS) 2009–2018, and to make recommendations for the next KMS.

The Kenya MPR 2018 was done in three phases: preparation and planning; thematic desk review; and external and field validation. Additionally a Kenya National Malaria Forum (KNMF) bringing together stakeholders from national and county levels was held. The forum was multi-disciplinary and provided an important avenue for the stakeholders to present and discuss emerging issues concerning malaria control, which further informed the review process.

This report is a reflection of the malaria situation in Kenya since 2014 when the KMS was revised. It provides detailed findings which highlight the achievements, challenges, and recommendations per each objective area of the KMS 2009–2018 (2014 revision). Based on these findings, the report then provides recommendations for future strategic direction, the platform upon which the next Kenya Malaria Strategy will be developed.

As a Ministry we encourage evidence-based policy and strategy formulation. The evidence gathered during the MPR process and documented in this report will help in formulation of a new Malaria Strategy that will propel the programme towards malaria elimination. We urge all stakeholders to internalize the contents of this report and incorporate the recommendations as part of their malaria control efforts.

We would like to appreciate all who took their time, energy, and passion to come up with this report and reiterate that “A Malaria Free Kenya is possible.”



**Dr. Kioko Jackson K., OGW, MBS**

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# ACKNOWLEDGMENTS

The Malaria Programme Review (MPR) report is an effort of the malaria programme and its stakeholders, with the Ministry of Health providing leadership in the process. The Ministry appreciates all those who participated in various ways during the MPR process.

We appreciate the commitment, technical support, and overall stewardship from members of the Malaria Interagency Coordinating Committee, the MPR Taskforce, the World Health Organization (WHO) (headquarters, Africa Regional Office, Inter-country Support Team, and the Kenya Country Office), the Global Fund Country Support Team, development partners and implementing partners in malaria control.

We sincerely thank our partners and members of the various technical working groups for their inputs, comments, and commitment during the entire review process. We also acknowledge the technical guidance provided by the local and the external thematic consultants. The review would not have been complete without the much appreciated participation, inputs and feedback from the county governments.

Our sincere gratitude to the U.S. President's Malaria Initiative and the United States Agency for International Development and the United Kingdom Department for International Development for providing financial support for the MPR process.

We note the contribution of the entire national malaria control programme staff led by Dr. Waqo Ejersa, and in particular acknowledge the committed coordination and oversight by the Malaria Programme Review Secretariat. Lastly, we acknowledge the dedication of all other individuals who participated at various levels of the review process and in the finalization of this report.

The full lists of participants in the different phases of the review are found in the annexes.



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# ABBREVIATIONS

<b>ACSM</b>	advocacy, communication, and social mobilisation
<b>ACT</b>	artemisinin-based combination therapy
<b>AL</b>	artemether-lumefantrine
<b>AMFm</b>	Affordable Medicines Facility for malaria
<b>ANC</b>	antenatal care
<b>CCM</b>	community case management
<b>CHV</b>	community health volunteer
<b>CMCC</b>	county malaria control coordinator
<b>CSO</b>	civil society organisation
<b>DFID</b>	United Kingdom Department for International Development
<b>DMSC</b>	Drug Management Subcommittee
<b>DQA</b>	data quality audit
<b>DSRU</b>	Disease Surveillance and Response Unit
<b>EPR</b>	epidemic preparedness and response
<b>ETAT+</b>	emergency triage, assessment, and treatment plus admission care
<b>FBO</b>	faith-based organisation
<b>FY</b>	fiscal year
<b>HIS</b>	health information system
<b>HCW</b>	healthcare worker
<b>IDSR</b>	integrated disease surveillance and response
<b>IPTp</b>	intermittent preventive treatment in pregnancy
<b>IRS</b>	indoor residual spraying
<b>ITN</b>	insecticide-treated net
<b>IVM</b>	integrated vector management
<b>KEMSA</b>	Kenya medical supplies Authority
<b>KEPH</b>	Kenya Essential Package for Health
<b>KHSSP</b>	Kenya Health Sector Strategic Plan
<b>KMHFL</b>	Kenya Master Health Facility List
<b>KMIS</b>	Kenya Malaria Indicator Survey
<b>KMS</b>	Kenya Malaria Strategy
<b>KNMF</b>	Kenya National Malaria Forum
<b>LLIN</b>	long-lasting insecticidal net
<b>LMIS</b>	logistics management information system
<b>M&amp;E</b>	monitoring and evaluation
<b>MIAS</b>	Malaria Information Acquisition System
<b>MICC</b>	Malaria Interagency Coordinating Committee



<b>MIP</b>	malaria in pregnancy
<b>MIS</b>	Malaria Indicator Survey
<b>MOH</b>	Ministry of Health
<b>MPR</b>	Malaria Programme Review
<b>mRDT</b>	malaria Rapid Diagnostic Test
<b>MSP</b>	Malaria Strategic Plan
<b>MTR</b>	mid-term review
<b>NGO</b>	nongovernmental organisation
<b>NMCP</b>	National Malaria Control Programme
<b>NMS</b>	National Malaria Strategy
<b>PfPR</b>	Plasmodium falciparum parasite rate
<b>PMI</b>	United States President’s Malaria Initiative
<b>PMS</b>	post-market surveillance
<b>PPB</b>	Pharmacy and Poisons Board
<b>PSM</b>	procurement and supply management
<b>QA</b>	quality assurance
<b>RDT</b>	rapid diagnostic test
<b>SMEOR</b>	surveillance, monitoring, evaluation and operational research
<b>SP</b>	sulphadoxine-pyrimethamine
<b>TWG</b>	technical working group
<b>UHC</b>	Universal Health Coverage
<b>USAID</b>	United States Agency for International Development
<b>WHO</b>	World Health Organization

## Introduction

The Malaria Programme Review (MPR) is a periodic joint programme management process for reviewing the progress and performance of a malaria programme in the context of national health and development plans. It is aimed at improving performance or redefining the programme's strategic direction and focus. In 2009, Kenya conducted a comprehensive MPR of the National Malaria Strategy (NMS) 2001–2010. The ensuing recommendations led to the development of the NMS 2009–2017 with its goal set as the reduction of morbidity and mortality caused by malaria by two-thirds of the 2007/2008 levels by 2017. Subsequently in 2014, a mid-term review of the NMS 2009–2017 was done and this led to some key modifications. First, the initial period of the strategy was extended by one year to 2018 as part of the alignment to the health sector strategy 2013–2018. Secondly, the strategy was renamed Kenya Malaria Strategy (KMS) 2009–2018 in line with the devolution of health service delivery roles and responsibilities from national to county governments. Finally, the KMS objectives and strategies were amended for better performance and to align to the devolved status of the health services. The period of the revised KMS 2009–2018 ends in 2018. The strategy was hence due for an end-term review, which was undertaken in the MPR 2018.

## Objectives of the MPR

The overall objective of the MPR was to undertake an evidence-based review of the country malaria situation and a comprehensive performance review of the KMS against its set targets. Specifically, the review sought to achieve the following:

- Assess the progress of the National Malaria Control Programme towards the epidemiological and entomological impact targets of the KMS and make appropriate recommendations towards enhanced impact.
- Review the level of financing of the National Malaria Control Programme and make appropriate recommendations towards optimal financing.
- Review the capacity of the National Malaria Control Programme to implement planned activities and make appropriate recommendations towards optimal capacity for programme implementation.
- Review the attainment of programme outcome targets and make appropriate recommendations for optimal delivery of malaria services.
- Define the programming implications of the lessons learned to inform the development of the next strategic plan.

The review was undertaken in three phases from June – September 2018. First was the planning phase which defined the concept, timelines and resource requirements. The next was the desk review and the performance assessment against implementation targets. Final phases included the external validation, field visits and the Kenya malaria forum. The MPR process was led by the NMCP and had a wide range of stakeholder engagement.

## Key Findings, Conclusions, and Recommendations

### Epidemiological and Entomological Impact

The goal of the KMS 2009–2018 was to reduce morbidity and mortality caused by malaria in the various epidemiological zones by two-thirds of the 2007/2008 levels by 2017. The review found that nationally, the prevalence (by microscopy) of malaria among children under five increased, from 3.5 percent in 2007 to 5 percent in 2015. The annual parasite incidence for confirmed outpatient malaria decreased, from 57 per 1,000 population in 2013 to 36 per 1,000 population in 2017. The report concluded that the available malaria mortality data was not reliable enough to gauge the impact made in malaria control during this period because of challenges with classifying and determining the cause of death within the broader Kenya health system.

With regard to entomological impact, the KMS 2009–2018 did not contain any impact-level entomological indicators. Vector species composition remains heterogeneous, but in many areas, *An. arabiensis* has replaced *An. gambiae* as the



major malaria vector. This has important implications for malaria epidemiology and control, given that this vector predominantly rests and feeds on humans outdoors. There was evidence of reduction in vector densities and sporozoite rates of *An. Funestus* in some areas where indoor residual spraying (IRS) was implemented. Resistance to pyrethroids was observed, and few non-pyrethroids were registered for use in IRS due to regulatory processes involved in registering new insecticides for public health use.

### **Financing of the National Malaria Programme**

The review noted that the allocation to health in the county budget increased steadily, from an average of 21.5 percent in 2014/15 to 27 percent in 2017/18. The aggregate total allocation to health increased, from 7.5 percent in 2014/15 to 8.2 percent in 2017/18, and the Government directly contributed towards malaria control through counterpart funding and salaries of health workers. The household contribution to malaria spending was 25 percent in fiscal year (FY) 2016/17, a reduction from a high of 47 percent in FY 2009/10 and 39 percent in FY 2012/13.

The above notwithstanding, county budgetary allocation has been inadequate, with the lack of a specific malaria sub-programme under the programme-based budget in most county budget frameworks. The review found the lack of a mechanism to track financial data at all levels. There was also high out-of-pocket expenditure, which impacted access to care, and households were at risk of catastrophic health spending. At programmatic level, the review showed low absorption capacities across all levels, with an inability to link programmatic targets to funding and financing to outcomes.

The review recommends the following:

- Ensure that county governments include malaria in their annual programme-based budgets as a sub-programme in the preventive and promotive health services programme.
- Increase budgetary allocations and actual disbursements by national and county governments, and ensure efficient use of resources.
- Advocate more resources from all sources, including the Government's Universal Health Coverage initiative and the private sector, to move towards financial sustainability.
- Finalize the current draft domestic resource mobilisation strategy, incorporating innovative financing mechanisms, through a consultative process.
- Prepare programme-based budgets and conduct expenditure reviews and analyses that can be used as advocacy and resource mobilisation tools at high levels.
- Develop a sustainable financing framework for malaria control interventions, especially as the country starts to consider malaria elimination.
- Provide technical assistance to county health management teams for planning and budgeting and advocacy for resource allocation.
- Government at national and county levels should promote the expansion of existing pre-payment mechanisms (e.g., the National Hospital Insurance Fund) and support the establishment of new pre-payment mechanisms to reduce the financial burden of and barriers to malaria services.
- Systematically and routinely track financial data pertaining to allocation and spending on malaria at national and county levels to provide information on indicators, including the proportion of the malaria budget to the total health budget and the proportion of the total malaria budget contributed by partners.
- Generate evidence for resource mobilisation purposes that is appropriately packaged for targeted audiences.

## Effectiveness of the Health System in Delivering Malaria Services

### ***KMS Objective 1: To have at least 80 percent of people living in malaria risk areas using appropriate malaria preventive interventions by 2018***

The review found that in 2015, 40 percent of households surveyed owned at least one long-lasting insecticidal net (LLIN) for every two persons who stayed in the household the night before the survey (universal coverage). Close to 37 million LLINs were distributed to people at risk of malaria in the targeted counties between 2014 and 2018 using various channels. In spite of the massive numbers of LLINs distributed, universal coverage remained low (48%) in 2017. In the areas where IRS was implemented, high levels of coverage (94%) were achieved, but the scope was limited to only two counties in the lake endemic zone. IRS had a significant impact in reducing the indoor resting densities (97 percent) and sporozoites prevalence in *An. funestus*, a major vector in Western Kenya.

Resistance to pyrethroids among the major malaria vectors is widespread across the country. Larval source management was not implemented, although a few small-scale trials were conducted. Integrated Vector Management (IVM) was well articulated in the policy documents, but it was not systematically implemented during the period under review. Fifty-eight percent of pregnant women ages 15–49 slept under an LLIN the night before the survey, an increase from 36 percent reported in the 2010 Kenya Malaria Indicator Survey (KMIS).

With regard to intermittent preventive treatment in pregnancy (IPTp), additional efforts are needed to fully attain national and global targets. The Kenya malaria programme achieved IPTp2 of 56 percent in 2015, an increase from 12.5 percent in 2010, and IPTp3 increased from 11 percent (KMIS, 2010) to 38 percent (2015). The review noted that subcounties bordering lake endemic counties were not implementing IPTp, and generally, there was late first presentation to antenatal care, leading to suboptimal IPTp coverage in the eligible areas.

The review recommends the following:

- Improve coverage of LLINs to achieve universal coverage through continued mass distribution campaigns and scale-up of continuous net distribution (through maternal and child health initiatives and community initiatives such as community health volunteers).
- Maintain IRS in the counties where it is currently ongoing but target future implementation of IRS to areas where it can more effectively interrupt transmission.
- Strengthen the implementation of insecticide resistance management according to the existing Insecticide Resistance Management strategy.
- Fully embrace IVM approaches for vector control.
- Increase uptake of IPTp at antenatal care by promoting it through community health structures, evidenced by pilot studies conducted in four lake endemic counties.
- Scale up malaria in pregnancy activities currently done in four counties to all the targeted areas.
- Revise data capture systems to include capture of IPTp3+ doses.
- Align sulphadoxine-pyrimethamine (SP) and LLIN provision with the current Division of Reproductive Health guidelines.
- Strengthen the partnership between the NMCP and the National Reproductive Health Programme for ease of scaling up and sustainability of malaria in pregnancy interventions.

***KMS Objective 2: To have 100 percent of all suspected malaria cases presenting to a health provider managed according to the National Malaria Treatment Guidelines by 2018***

The review found that there has been an increase in the testing rate of suspected malaria cases in public health facilities, from 24 percent (2010) to 64 percent (2017), with 89 percent of all confirmed malaria cases presenting to public health facilities being treated with artemisinin-based combination therapies (ACTs). The review also noted increased adherence to national treatment guidelines in public health facilities, from 16 percent (2010) to 59 percent (2017), and 7,350 community health volunteers were trained on community case management for malaria between 2014 and 2017 in 10 counties.

The key issues identified included suboptimal adherence to national guidelines among healthcare workers in the public and private sectors and inadequate implementation of community case management for malaria due to regulatory bottlenecks in the area of malaria diagnosis at the community level. The review also noted weak coordination for community case management and its limited coverage at the county level.

The review recommends the following:

- Enhance capacity building in case management at both the national and county levels, including pre- and in-service training. Incorporate evidence-based behaviour change components in the curriculum and improve tracking of trained health workers.
- Intensify monitoring of the quality of care for improvement of malaria case management at the national and county levels, both in the public and private sectors.
- Strengthen private sector engagement involved in malaria case management to sustain the achievements realised under the ACTs co-payment mechanism.
- Strengthen engagement with counties in low transmission zones to ensure prioritisation of malaria control activities, including surveillance through strengthening of county reference laboratories and quality assurance of malaria diagnosis.
- Ensure the use of the approved guidelines for malaria case management and parasitological diagnosis throughout the country to ensure safe, evidence-based, and harmonised practice in the public and private sectors and at the community level.
- Scale up community case management for malaria in priority areas, and integrate it with other community-level interventions.

***KMS Objective 3: To ensure that 100 percent of the malaria epidemic-prone and seasonal transmission subcounties have the capacity to detect and timely respond to malaria epidemics by 2018***

The review found that all the seven reported malaria outbreaks were responded to within 2 weeks as recommended in the guidelines, and all the 26 targeted counties (100%) were trained and developed epidemic preparedness and response plans. However, EPR activities have not been effectively integrated with surveillance activities. It was also noted that there was inadequate coordination at all levels to undertake effective EPR activities. EPR did not have a stand-alone TWG as it was anticipated that EPR technical issues would be addressed in the other relevant TWGs. The review noted that there was limited capacity for malaria EPR at county and sub-county levels, and there was limited funding and low prioritisation of malaria EPR at all levels. However, the functionality of malaria epidemic detection sentinel health facilities in the highland epidemic prone zones improved.

The review recommends the following:

- Integrate malaria epidemic preparedness and response with surveillance at the national, county, and subcounty levels.
- Revise SMEOR TWG terms of reference, surveillance manuals, and guidelines to include epidemic preparedness and response functions.
- Strengthen the capacity of the sentinel health facilities to improve functionality and to be able to routinely provide timely, accurate, and reliable information, including threshold monitoring.
- Include SMEOR and epidemic preparedness and response activities in all national, county, and subcounty annual work plans.

***KMS Objective 4: Ensure that all malaria indicators are routinely monitored, reported and evaluated in all counties by 2018***

The review found that the reporting rates of malaria cases improved from 70 percent during the mid-term review in 2013–2014 to 88 percent in 2017. The routine use of surveillance data and development of malaria monitoring and evaluation products at the national level and in select counties was achieved. Entomological surveillance was conducted in more than 80 percent of the counties in 2016 and 2017. Community-level reporting through the health information system has been implemented.

The review also found that not all malaria cases were counted for both inpatient and outpatient services. In general, there was sub-optimal quality of health information for improved malaria programming. There is inadequate surveillance, monitoring, evaluation, and operational research capacity at the county and sub-county levels. The review found that there was weak collaboration between the programme and research community in terms of sharing of findings for use in public health decision making, as well as inadequate programme implementation reporting and feedback to and from the counties and the central level.

The review recommends the following:

- Regularly conduct epidemiological and entomological stratification to guide targeting of intervention deployment.
- Strengthen malaria surveillance, including the development of guidelines and revision of available health information system tools, to guide implementation in the context of changing epidemiology.
- Advocate for increased investments in surveillance at both the national and county levels to achieve better quality information for decision making.
- Enhance data ownership and use of information for decision making at the national and subnational levels.
- Establish a network of health facilities to enhance the availability of inpatient morbidity and mortality data.
- Strengthen the collaboration between the programme and the research community to allow for the sharing of research findings for public health use.
- Develop capacity at the national and subnational levels for data demand and use to inform programmatic decisions.

***KMS Objective 5: To increase utilisation of all malaria control interventions by communities in Kenya to at least 80 percent by 2018***

The review found that the use of key malaria interventions remained below the target of 80 percent, despite the availability of malaria commodities and services at no cost to communities. The KMIS 2010 and 2015 reported that the ownership of LLINs increased, from 57 percent in 2010 to 63 percent in 2015. LLIN use increased, from 32 percent in 2010 to 48 percent in 2015. The percentage of children aged below five years with fever for whom treatment was sought within 24 hours of onset improved, from 59 percent in 2010 to 72 percent in 2015. In addition, the proportion of women receiving



three or more doses of IPTp increased, from 11 percent in 2010 to 38 percent in 2015. However, the communities were not adequately using malaria control interventions due to various socio-cultural reasons. There was also poor healthcare provider-client communication and low investment in advocacy, communication, and social mobilisation as well as inadequate budget allocations to these activities at all levels.

The review recommends the following:

- Scale up malaria advocacy at national and county levels for increased use of malaria interventions.
- Strengthen county-specific social and behaviour change communication planning and implementation.
- Build capacity of healthcare providers in social and behaviour change communication at all levels to improve their interpersonal communication skills with the clients.
- Leverage the community strategy to deliver community-based malaria control activities.
- Update provider knowledge on new guidelines at all levels, while rolling out interpersonal communication to address behavioural barriers for attainment of national targets.
- Develop standard messages for adaptation and contextualisation by the counties and other stakeholders.
- Enhance the engagement of private and non-health sectors to undertake advocacy communication and social mobilisation for malaria with a clear mandate and guidelines.
- Support community engagement for social accountability for malaria.

***KMS Objective 6: To improve capacity in coordination, leadership, governance and resource mobilisation at all levels towards achievement of the malaria program objectives by 2018***

The review established the existence of legislative, policy and strategic guidance for the implementation of malaria control in Kenya. However the Malaria Prevention Act CAP 246 (1929 revised 2012) was noted to be outdated and needs to be reviewed. The review also found that the malaria programme is well integrated and aligned with the overall health sector plans, however it used to be a division but it is currently a unit in the Ministry of Health organogram with reduced powers. It was also established that the NMCP organogram is not function-based and it lacks job descriptions. There were undefined roles and responsibilities of country malaria control coordinators (CMCC), and partners' coordination at both national and county levels was inadequate. Additionally, there were inadequate skills sets and competencies for effective program management and inadequate information on activity monitoring.

The programme has continued to review and apply evidence to guide updates to strategy and targeting of interventions. KMS 2009–2018 was used as a reference document for all programmes and stakeholders in malaria control, along with a four-year costed business plan to guide investments and annual work planning. The review confirmed the availability of guidelines on different interventions, the existence of some county-level communication plans, the availability of consumption data for essential malaria commodities (LLINs, ACTs, and RDTs) in DHIS 2, and malariology training of county malaria control coordinators. However there was lack of defined mechanisms for dissemination of policy guidelines to the field and there is lack of clear national and county engagement mechanism to enhance collaboration between the two levels.

The KMS had envisaged a unified Procurement Supply Management (PSM) unit at national level to ensure better coordination of the broad procurement of all malaria commodities. However, this was not achieved and the PSM functions remained fragmented with disjointed oversight and coordination. Weak commodity management at the subnational level with weak inventory management, poor data management and use, and inadequate oversight of commodity management by county and subcounty teams was also noted. In addition, coordination and harmonisation of procurement for malaria commodities between the national and county levels was weak.



Despite the identified limitations, malaria commodities were available at facilities (ACTs, diagnostics and LLINs), with an increase in availability of artemether-lumefantrine, from 74 percent in 2013 to 82 percent in 2016, and an increase in rapid diagnostic tests, from 42 percent in 2013 to 66 percent in 2016. Stockout levels for all AL packs decreased from 22.2 percent of facilities in 2014 to 20.7 percent in 2017 while facilities without any malaria diagnostics (RDT or microscopy) decreased from 14.6 percent in 2014 to 10 percent in 2017.

The review recommends the following:

- Raise the visibility of the NMCP within the Ministry of Health organogram, and align coordination structures to constitutional mandates and core functions.
- Review the legislative, policy, and regulatory frameworks for malaria control in Kenya to align with current strategic interventions and emerging challenges.
- Advocate for county assemblies to enact appropriate by-laws to support strategic interventions for reduction of the malaria burden in Kenya.
- Review the mandate and membership of the Malaria Interagency Coordinating Committee and malaria TWGs to strengthen programme and partner coordination.
- Develop and implement guidelines for engagement between the programme implementation at the national and county levels.
- Develop and implement capacity-building, advocacy, and resource mobilisation strategies.
- Anchor the programme implementation monitoring and information repository tool at the programme management level for tracking the implementation of malaria activities.
- Ensure that malaria services are well articulated within the Ministry of Health standards and norms in the context of universal health coverage.
- Support gender mainstreaming and human rights approaches to malaria programming to ensure an inclusive reach that focuses on vulnerable and marginalized populations.
- Consolidate and strengthen malaria procurement and supply chain management at the national level for effective management of all commodities.
- Enhance existing systems for commodity data analysis and visualisation to ensure end-to-end visibility of the supply chain.
- Establish a malaria commodity logistics and inventory control system that is adaptable to the different endemicity zones.
- Build capacity in commodity management at the county and subcounty levels.

### ***Programming Implications of Lessons Learned in the Implementation of the KMS***

#### **Lessons Learned**

Despite several organisational challenges, Kenya has achieved significant strides in reducing the malaria burden. The annual parasite incidence for confirmed outpatient malaria cases decreased, from 57 per 1,000 population in 2013 to 36 per 1,000 population in 2017. This and other achievements are anchored on sound strategy and implementation framework. A number of issues, however, were identified such as inability to track inpatient malaria cases and malaria mortality, universal coverage of LLINs was not achieved, the growing powers of the counties in implementation of malaria activities, and weak advocacy efforts. These issues highlight the need for strengthening leadership, management, and coordination of efforts at all levels. These issues also highlight the need for increasing investments in malaria from domestic resources, investing in strengthening surveillance systems, ensuring universal coverage of the populations at risk of malaria with appropriate interventions informed by stratification, and mobilising and engaging affected communities in the fight against malaria.



## Future Strategic Directions

A malaria-free future is feasible and possible in Kenya, despite the mixed results observed during the implementation of the KMS 2009–2018. To achieve this ultimate goal, the review recommends the following strategic directions:

- Develop the requisite capacities at all levels, and introduce case-based investigation in select counties earmarked for malaria elimination after having met the required threshold.
- Refocus the programme to increasing access to universal coverage and delivery of malaria interventions, including the use of community health structures. The current interventions should be scaled up with a focus on achieving and maintaining universal access to prevention and curative services. The delivery of interventions through the current channels should be maintained and improved, including the use of community-based structures.
- Strengthen the capture and reporting of malaria data and conduct regular stratification using routine data for guiding targeting of interventions. The NMCP should use opportunities to update the DHIS 2 tools to strengthen the data collection and to standardise the information collected nationwide by all facilities. The information collected should be used to epidemiologically and entomologically stratify the country to inform decision making and target approaches and interventions.
- Strengthen multi-sectoral and inter-sectoral engagement at the national and county levels for improved programme planning, implementation, monitoring, and coordination towards achievement of the programme goals through use of the Three Ones principle (one authority, one plan, one monitoring and evaluation framework).
- Improve efficiency in the use of existing resources and advocate for increased sustainable investment for malaria interventions at the national and county levels.
- Increase visibility and prioritisation of the malaria agenda through innovative and sustained advocacy and communication at all levels to support universal access and coverage of malaria interventions.
- Strengthen capacity-building initiatives for enhanced skills and competencies for quality delivery of interventions, with particular emphasis at the county level.
- Improve malaria commodity security through end-to-end supply chain visibility and the promotion of data use for supply chain decision making.

## 1.1 Background

### 1.1.1 Geography, Climate, and Malaria Transmission

Kenya is situated in East Africa with an estimated population of 50.8m. The country is administratively divided into 47 counties and 304 subcounties. It covers a total area of 582,646 square kilometres, of which 571,466 square kilometres are the dry land area. Eighty percent of the land area is arid or semi-arid, and only 20 percent is arable. The country has two regions: lowlands and highlands. The lowlands include the coastal and lake regions, and the highlands fall on both sides of the Great Rift Valley. Rainfall and temperatures are influenced by altitude and proximity to the Indian Ocean. The coastal region has a tropical climate, with both rainfall and temperatures higher than the rest of the country throughout the year.

Malaria remains a major public health problem in Kenya, and in 2017 it accounted for an estimated 18.7 percent of outpatient consultations based on data from the routine health information system (HIS) (President’s Malaria Initiative PMI, 2018). Malaria transmission and infection risk across geographic regions in Kenya is determined largely by altitude, rainfall patterns, and temperature. There is contrasting climate across the country in line with the variations in altitude and terrain. The country generally has two rainy seasons, with the long rains occurring from March to May and the short rains from October to December. Temperatures are highest in February and March and lowest in July and August.

### 1.1.2 Demography

According to the most recent census in Kenya, the country’s population was 39.1 million in 2009, with a population density of 65.7 per square kilometre. Table 1 provides a summary of the projected trend of key indicators from 2009 to 2018, showing a decreasing total fertility rate, a slight improvement in life expectancy, and a slight reduction in the crude death rate and infant mortality rate. The Kenya National Bureau of Statistics estimates the current population to be 50.8 million.

**Table 1. Basic demographic indicators**

Indicators	2009 (Census)	2010	2011	2012	2013	2014	2015	2016	2017	2018
Population (millions) <sup>a</sup>	39.1	40.3	41.4	42.7	44.0	45.3	46.6	48.0	49.5	50.8
Density (pop./km <sup>2</sup> ) <sup>a</sup>	65.7	67.6	69.6	71.7	73.8	76.0	78.3	80.7	83.1	85.3
Total fertility rate <sup>b</sup>	4.5	4.4	4.3	4.2	4.1	4.0	3.9	3.9		
Crude birth rate <sup>c</sup>	35.8	35.1	34.3	33.6	32.9	32.3	31.8	31.3		
Crude death rate <sup>d</sup>	7.8	7.3	6.8	6.5	6.2	6.0	5.8	5.7		
Infant mortality rate (per 1,000 live births) <sup>e</sup>	43.6	42.5	41.3	40.6	39.6	38.2	36.5	35.6		
Life expectancy at birth (total) <sup>f</sup>	61.7	62.9	64.0	64.9	65.7	66.2	66.7	67.0		

Data sources:

<sup>a</sup> Kenya National Bureau of Statistics projected figures

<sup>b</sup> World Development Indicators (<https://data.worldbank.org/indicator/SP.DYN.TFRT.IN?locations=KE>)

<sup>c</sup> World Development Indicators (<https://data.worldbank.org/indicator/SP.DYN.CBR.MYLE.T.IN?locations=KE>)

<sup>d</sup> World Development Indicators (<https://data.worldbank.org/indicator/SP.DYN.CDRT.IN?locations=KE>)

<sup>e</sup> World Development Indicators (<https://data.worldbank.org/indicator/SP.DYN.IMRT.IN?locations=KE>)

<sup>f</sup> World Development Indicators (<https://data.worldbank.org/indicator/SP.DYN.LE00.IN?locations=KE>)

## 1.2 The National Health System and the National Malaria Control Programme

The government of Kenya is committed to the realisation of Strategic Development Goals (SDGs), including the third goal agenda which aims at ending epidemics due to communicable diseases and Universal Health Coverage (UHC) by 2030. Kenya's Vision 2030 is the national long-term development plan that articulates the country's development agenda. Its main objective is to make Kenya a globally competitive and prosperous country with a high quality of life by 2030. The Vision's agenda is anchored on three pillars: social, political, and economic, with health issues categorized in the social pillar. The Ministry of Health (MOH) has elaborated the Kenya Health Policy to guide the attainment of the long-term health goals of the country outlined in Vision 2030. These goals are further articulated in the Kenya Health Sector Strategic Plan (KHSSP) 2014-2018. The strategies and goals laid out in these documents focus on the need to improve the number of available health services, scale up their coverage, and reduce the financial burden associated with using health services. The range of health services is comprehensively defined under the Kenya Essential Package for Health (KEPH). Malaria has been identified as a disease programme area contributing to various service delivery objectives.

### 1.2.1 Organisation of the Health System

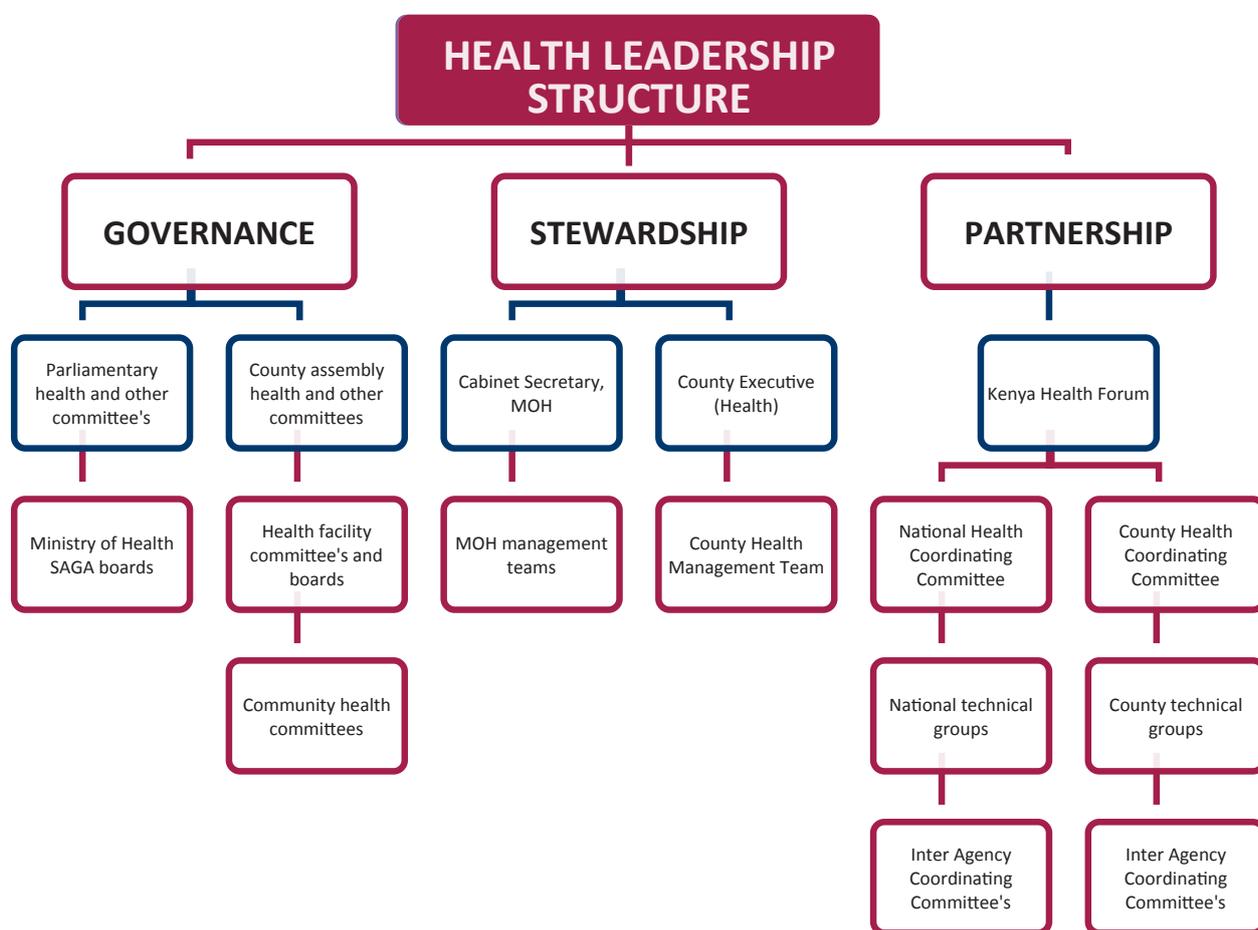
In 2013, Kenya began the process of devolution as set forth in the 2010 constitution. Under the new constitution, the health function was devolved to the county governments, with distinct functions being assigned to national and county governments (Government of Kenya, 2010). The two levels of governance coordinate the health sector through consultative forums as mandated in the Intergovernmental Relations Act, 2012. The Health Sector Intergovernmental Forum serves as a link between national and county governments. Table 2 outlines the roles of each level of government (KHSSP 2013–2017).

**Table 2. Roles of each level of government**

National government	County government
<ul style="list-style-type: none"> <li>Formulating policy, developing strategic plans, setting priorities</li> <li>Budgeting, allocating resources</li> <li>Regulating, setting standards, formulating guidelines</li> <li>Monitoring performance and adherence to the planning cycle</li> <li>Mobilising resources</li> <li>Coordinating with all (internal and external) partners</li> <li>Providing technical support to the county level</li> <li>Building capacity at the county level</li> <li>Providing national health referral services</li> <li>Training health staff (both pre-service and inservice), ensuring that curricula and training institutions are in place</li> </ul>	<ul style="list-style-type: none"> <li>Providing leadership and stewardship for overall health management in the county</li> <li>Providing strategic and operational planning, monitoring, and evaluation of health services in the county</li> <li>Providing a linkage with the national ministry responsible for health</li> <li>Collaborating with state and non-state stakeholders at the county level and between counties in health services</li> <li>Mobilising resources for county health services</li> <li>Establishing mechanisms for the referral function within and among the counties, and among the different levels of the health system in line with the sector referral strategy</li> <li>Coordinating and collaborating through County Health Stakeholder Forums (County Health Management Board, faith-based organisations, nongovernmental organisations, civil society organisations, development partners)</li> <li>Supervising county level</li> <li>Delivering services in all health facilities (levels 1–3)</li> <li>Developing and implementing facility health plans</li> <li>Supervising and controlling the implementation of facility health plans (monitoring and evaluation)</li> <li>Coordinating and collaborating through County Health Stakeholder Forums (faith-based organisations, nongovernmental organisations, civil society organisations, development partners)</li> <li>Training and developing capacity (on-the-job training)</li> <li>Maintaining quality control and adherence to guidelines</li> </ul>

The implementation of the roles and responsibilities of the two levels of governance is anchored in the constitution and articulated through various Acts. The intergovernmental relations committee provides the sustainable linkages and opportunities for intergovernmental consultation and cooperation between the National and the County Governments. The Health Sector Intergovernmental Forum provides the platform for engagement on health. The membership includes the Cabinet Secretary and principal secretary at national level and the County Executive Committee members for health. Implementation related issues are handled through the respective national govt. departments, the council of governors' and the counties. The National and County Government Coordinating Summit meets twice a year to improve inter-government consultation and cooperation, through evaluating performance of governments at the various levels, monitoring implementation of development plans, coordinating and harmonising county and national policies, and facilitating the transfer of functions, power, and competencies from one level to the other. Figure 1 shows the health structure organisation at the national and county levels (MOH, 2014).

**Figure 1. Health structure organisation at national and county levels**



Health services in Kenya are integrated and delivered through a four-tier system, and malaria is managed across all the six levels of healthcare, including level one which is the community. As of 31 July 2018, data available from the Kenya Master Health Facility List showed that the country had a total of 10,483 formal health facilities. Table 3 illustrates the distribution of those health facilities (Kenya Master Health Facility List). Fifty percent are public health facilities managed by the various levels of government, 37 percent are in the private, for-profit sector, and 13 percent are in the private, not-for-profit sector (e.g., faith-based organisations (FBOs)).

**Table 3. Health service delivery structure**

Tier of care	Service delivery level	Facility level	No. of health facilities at level
Tier 1 <sup>a</sup>	Community health services	Level 1—Community health units	
Tier 2	Primary health services	Level 2—Dispensaries	8,409
		Level 3—Health centres	1,535
Tier 3	Secondary health services	level 4—Primary referral	515
		level 5—Secondary referral	19
Tier 4	National	Level 6—National teaching and referral facilities	5
		<b>TOTAL</b>	<b>10,483</b>

Source: Kenya Master Facility List

<sup>a</sup> Level 1 service unit is designed to serve approximately 5,000 people providing basic community health services and is served by community health volunteers supported by community health extension workers. 4,656 community health units had been established, of which 3029 were fully functional, 1255 were semi-functional, 266 were non-functional and 106 were closed.

### 1.2.2 National Malaria Control Programme

The National Malaria Control Programme (NMCP) falls under the Division of Strategic National Public Health Programs, Department of Preventive and Promotive Health Services. This department reports to the Director of Medical Services, who reports to the Principal Secretary, who in turn reports to the Cabinet Secretary for Health.

The NMCP is headed by a programme manager who supervises and provides oversight to seven focal point persons in charge of its six technical units and the programme management functions. The technical units are as follows: Vector Control; Malaria in Pregnancy (MIP); Case Management; Epidemic Preparedness and Response (EPR); Surveillance, Monitoring, Evaluation, and Operational Research (SMEOR); and Advocacy, Communication, and Social Mobilisation (ACSM). The programme manager is in charge of all programme management activities at the NMCP, including partnership coordination, planning, procurement, finance, and administration. One or more technical officers is attached to each of the six technical units. The NMCP has six primary technical working groups (TWGs) that meet quarterly and are aligned with the technical units.

The Malaria Interagency Coordination Committee (MICC) is the overall national technical coordinating agency for the NMCP. It convenes quarterly and on an ad hoc basis as necessary. The MICC is chaired by the Principal Secretary, MOH with the director of preventive and promotive health as the alternate chair. The Principal Secretary can also appoint another person to chair the MICC on his behalf. The membership of MICC consists of multilateral and bilateral partners, research institutions, academia, civil society and faith-based organisations, counties, sister divisions and departments within the MOH, other ministries and government agencies, and the private sector. The MICC coordinates the development of policy, guidelines, and strategies; advocates for resources; and reviews and ratifies the outputs of the various TWGs (MOH, 2014).

### 1.2.3 The National Malaria Strategic Plan under Review

The vision of the NMCP in Kenya is “A concerted effort towards a malaria-free Kenya,” and the mission is to direct and coordinate efforts towards a malaria-free Kenya through effective partnerships. Implementation of malaria control objectives and strategies is guided by the Kenya Malaria Strategy (KMS). The most current strategy was developed in 2009 to cover the period from July 2009 to June 2017. A mid-term review (MTR) of this strategy was undertaken in 2014 and led to several key changes. The period of the strategy was extended by one year to 2018 as part of the alignment to the new health sector strategy 2013–2018, and the strategy name changed from National Malaria Strategy (NMS) to KMS. Additionally, the KMS objectives and strategies were amended for better performance and to align to the devolved status of the health services.



The overall goal of the revised KMS (2009–2018) is to reduce morbidity and mortality caused by malaria by two-thirds of the 2007 levels by 2017. To achieve this goal, the KMS 2009–2018 identified six strategic objectives as follows:

- **OBJECTIVE 1:** To have at least 80 percent of people living in malaria risk areas using appropriate malaria preventive interventions by 2018
- **OBJECTIVE 2:** To have 100 percent of all suspected malaria cases who present to health providers managed according to national treatment guidelines by 2018
- **OBJECTIVE 3:** To ensure that 100 percent of the malaria epidemic-prone and seasonal transmission subcounties have the capacity to detect and timely respond to malaria epidemics by 2018
- **OBJECTIVE 4:** Ensure that all malaria indicators are routinely monitored, reported, and evaluated in all counties by 2018
- **OBJECTIVE 5:** To increase utilisation of all malaria control interventions by communities in Kenya to at least 80 percent by 2018
- **OBJECTIVE 6:** To improve capacity in coordination, leadership, governance and resource mobilisation at all levels towards achievement of the malaria program objectives by 2018

## 1.3 Malaria Programme Review

### 1.3.1 Definition

Malaria programme review (MPR) is a management tool for evidence-based appraisal of a country's malaria situation and programme performance in order to strengthen the programme for better results and impact. The MPR is conducted at the end of the Malaria Strategic Plan (MSP) cycle (end-term evaluation) as a final assessment of programme performance. It evaluates the systems used to deliver interventions, encourage success, and propose solutions for bottlenecks and barriers (World Health Organization (WHO, 2016<sup>a</sup>). The MPR answers the following questions:

- Was the planned impact of the MSP attained, and how can impact on malaria burden be enhanced?
- Was the financing of the programme optimal, and how can programme financing be improved?
- Was the capacity of the programme to implement planned activities optimal, and how can this capacity be further strengthened?
- Were required malaria services delivered optimally to those who needed them, and how can malaria service delivery be further enhanced?
- What lessons have been learned in the implementation of the MSP, and what are the future programming implications of the lessons?

### 1.3.2 Justification

The revised KMS (2014–2018) was scheduled to come to an end in June 2018. Recognizing this fact, one of the activities that was planned in the revised KMS 2009–2018 was an end-term review of the KMS and its accompanying monitoring and evaluation (M&E) plan. This was scheduled to happen during fiscal year (FY) 2016/2017. Thus, the MPR was a necessary process that would enable a comprehensive review of the exiting strategy to assess the malaria situation and programme performance. The MPR would also inform development of the next KMS by identifying new strategies and approaches in view of changing malaria situations, such as reduced donor funding and how to effectively implement malaria control interventions under the devolved governance structure.

### 1.3.3 Objectives

The 2018 Kenya MPR had five objectives built around the five MPR questions:

- To assess the progress of the NMCP towards the epidemiological and entomological impact targets of the MSP during the period under review and make appropriate recommendations towards enhanced impact
- To review the level of financing of the NMCP during the period under review and make appropriate recommendations towards optimal financing
- To review the capacity of the NMCP to implement planned activities during the period under review and make appropriate recommendations towards optimal capacity for programme implementation
- To review the attainment of programme outcome targets during the period under review and make appropriate recommendations for optimal delivery of malaria services
- To define the programming implications of the lessons learned in the implementation of the KMS

### 1.3.4 Methodology of the MPR

As planned in the revised KMS 2009-2018, an end-term review of the malaria strategy and its M&E plan was to be conducted during FY 2016/2017. Subsequently, Kenya adapted the WHO draft guidelines for MPR (2016 edition), which encompass four phases (Table 4). This report describes the process followed in the first three phases of the MPR. The fourth phase will result in the development of a new Kenya malaria strategy.

**Table 4. Phases of the Malaria Programme Review**

MPR phase	Description of programme review phase
I	Preparation and planning phase
II	Thematic desk reviews
III	External review, validation and finalisation of review
IV	Programme strengthening and development of new strategy

Source: Manual for developing national malaria strategic plans (WHO, 2016<sup>a</sup>)

#### ***Phase I: Planning and Preparation***

In March 2017, the NMCP assembled an internal team to plan the MPR. This team developed the MPR concept note, a roadmap, and a budget based on the WHO operational manual for MPR. Senior Management of the Ministry was consulted, and the MICC held a meeting to endorse the process and the expected outcomes. The MPR Secretariat and task force were established in March 2018, with the process anchored under the oversight of the M&E TWG, and a review coordinator was assigned (Annex A.1 and A.2). The taskforce reviewed the activities, budget and funding mechanisms as well as the implementation roadmap and timelines (Figure 2). The funding for the MPR was provided by the U.S. President's Malaria Initiative and the United States Agency for International Development (USAID) and the United Kingdom Agency of International Development (UKAID) through the WHO.

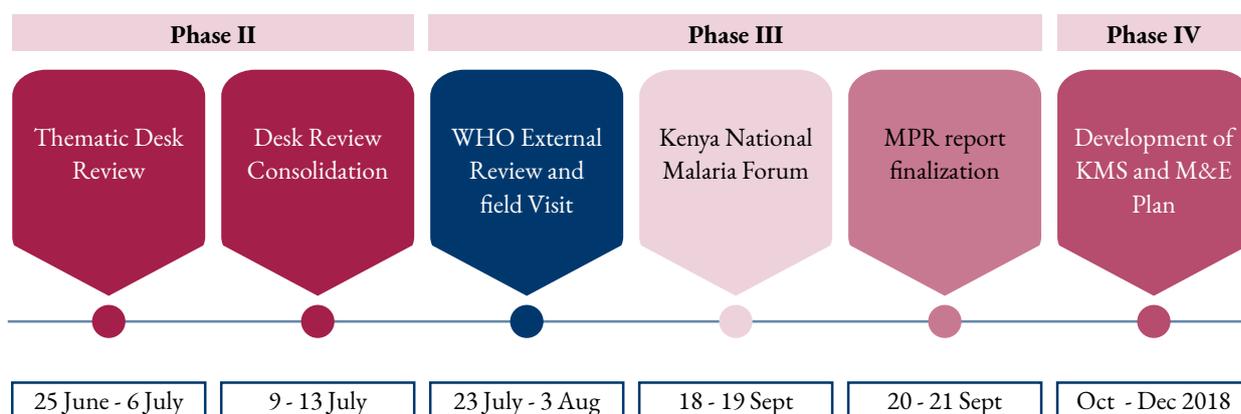
Planning for the thematic desk review was guided by the WHO operational manual. Nine thematic areas to be reviewed were identified as follows:

- Vector control
- MIP
- Case management
- EPR

- SMEOR
- ACSM
- Programme management
- Procurement and supply management
- Costing and finance

Nine local consultants were recruited to support each thematic area, including a lead consultant who also doubled as the programme management consultant.

**Figure 2. Timelines for 2018 MPR process for Kenya**



### ***Phase II: Thematic Desk Reviews and Planning for Phase III of the MPR***

The secretariat, task force and the consultants held a meeting on 6th June 2018 to build consensus on the processes, and the expected timelines for the thematic desk review. This was followed by an inception meeting on the 18th June 2018 which was the scheduled start of the desk review. The key steps of phase II included the following:

#### **Assembling information from reports and documents**

The MPR Secretariat set up an electronic library for managing and sharing documents relevant to the MPR process, and this was continuously updated throughout the review process. The information assembled included MOH policy and strategy documents, Kenya NMCP policy and strategy documents, financing and funding documents, and other published and grey literature relevant to the review. The library also managed the documents generated as part of the review process.

#### **Undertaking thematic desk review**

The inception meeting was held on 18 June, during which all the local consultants and other key malaria stakeholders were updated on the MPR process and roadmap (Annex D1 and D2). In particular, the consultants were sensitised on their roles, responsibilities, and expected outputs, and on the existing MPR coordination structure. They were also oriented on the performance analysis tool to be used in the review process and advised on the preparations for the stakeholder engagement through the respective TWGs. The local consultants were provided with a standard thematic report outline, and subsequently an information extraction framework was developed to aid them in their literature review. Ten out of the 47 counties (Table 5) were identified based on epidemiological profiling for in-depth engagement in Phase III and for field visits during the validation phase.

**Table 5. Selected counties**

County	Epidemiological zone
Kisumu	Lake endemic
Kwale	Coast endemic
Kilifi	Coast endemic
Kisii	Epidemic prone
Busia	Lake endemic
Uasin Gishu	Epidemic prone
Isiolo	Seasonal transmission
Turkana	Seasonal transmission
Makueni	Low transmission
Kirinyaga	Low transmission

From 20 June to 6 July, various TWG and subgroup meetings were held under the guidance of the NMCP focal persons and the local thematic consultants to review achievements and progress in each thematic area, and to make appropriate recommendations. A Microsoft Excelbased tool developed by WHO for MPR was adapted and used to assess achievements under each of the KMS objectives and strategies.

A final thematic review and consolidation workshop was held between 9 and 13 July, to which a wider range of malaria stakeholders in the country was represented. These included sister MOH departments, partners, the academia and county malaria control coordinators (CMCC) from nine counties (Annex E.1 and E.2). By the time of this workshop, the thematic consultants had completed a first draft of their thematic reports, and the workshop was an opportunity for them to present their key findings and recommendations to a wider audience. The feedback received from the stakeholders was used to further refine the thematic reports and update the recommendations.

### **Planning for external validation (Phase III)**

Consultations were held between the NMCP and the WHO team that would be coming for external validation of the thematic reports and field visits. A team of seven WHO external consultants was identified (Annex C) and their availability and travel timelines established. The WHO external consultants were paired with the local consultants as well as NMCP officers to constitute six external validation teams that would visit malaria stakeholders at both the national and regional (county, subcounty, and facility) levels (Annex F.2). The NMCP secretariat finalized all the logistical plans for Phase III, including making appointments with stakeholders to be visited at the national level, and preparations for travel to the nine counties identified to be visited during the field visits. One of the counties, Isiolo, was not visited due to logistical challenges. A two-week detailed programme of activities was prepared for the external review covering the period 23 July to 3 August (Annex F.1).

### ***Phase III: Joint Field Reviews***

The objective of this phase was to validate and build upon the thematic review reports through national level consultations and subnational field visits. This phase had four main sub-activities.

#### **Preparing for the field validation**

This included detailed planning and final scheduling of meetings with national level and subnational stakeholders to ensure their readiness to meet with the review teams.

#### **Holding technical briefings and developing tools**

A workshop was held between the external reviewers and the country team on 23–24 July 2018. The first objective of the workshop was to provide a technical briefing to the reviewers on the MPR process and accomplishments to date and

subsequently hold in-depth discussions on the key findings and recommendations from each thematic area. The second objective was the review and adaptation of tools to be used at the national and regional levels during the field visits. The workshop was also an opportunity for the six field teams to meet, bond, and finalise preparations for the field visits, which were scheduled for 25–27 July 2018.



Local and external reviewers in a joint validation workshop in Nairobi

Photo: ICF, July 2018

### **Conducting field visits and subsequent debrief meetings**

The county/sub-county visits covered the health management teams at both levels, and visit to high level facility with various departments including pharmacy, laboratory and inpatient departments. Lower-level facilities were also visited with the focus being on the out-patient services, maternal and child health (MCH), and the antenatal clinic. Focus group discussions were held with community members. A community engagement was also undertaken. The information gathered centred on the implementation of the malaria control services and activities at both facility and community level. The details of the field teams and schedule are in Annex F.1 and F.2.

The national level team visited institutions which work closely with the NMCP in implementation, funding and technical support. These included top level management teams; other departments and units within the Ministry of Health; departments in other ministries and parastatals; regulatory bodies; partner organisations and other key stakeholders. At the end of the national and county/sub-county visits the teams prepared a summary of the observations and discussions.



Consensus workshop with county health directors held on 2 August, 2018, in Nairobi

Photo: ICF, July 2018

A summary of the outcomes of the review process were further refined from the information collected in the national and county/sub-county visits. The updated details were integrated into thematic reports and the draft MPR report updated accordingly. A PowerPoint presentation on MPR findings and recommendations was prepared for use during the scheduled consensus workshop with county directors of health and other malaria stakeholders.

### **MPR consensus workshop**

County health directors from all 47 counties were invited to attend a consensus workshop that was held on 2 August 2018. Forty of the directors attended the workshop (Annex F.4). The purpose of the one-day meeting was to disseminate the top level summary of the MPR findings and recommendation to date and obtain further inputs while building consensus with the counties to support the outcome of the review.

The inputs generated after the workshop were used to further update the MPR report. On 3 August, the local consultants, external reviewers and the NMCP met to examine the outcome of the meeting with the counties and agree on the main future malaria strategic orientations, which would give thrust to enhanced implementation for universal coverage and impact (Annex F.5).



MPR team in a field validation visit in Busia County.

Photo: Busia County

The third KNMF was held on 18–19 September to provide further information that could be used to inform the future strategic focus of the malaria programme in Kenya (Annexes G.1 and G.2). The forum used a combination of plenary and concurrent breakout sessions to discuss evidence-based malaria control approaches and emerging issues. The plenary sessions touched on all areas of malaria programming, while each breakout session focused on one major thematic area of malaria control, as follows: MIP; vector control; malaria case management; EPR, surveillance, monitoring, and evaluation; and ACSM.

The MPR thematic consultants analysed the information gathered from the KNMF, obtaining evidence which either validated their findings from the desk reviews or provided new ideas and issues that were added to the MPR conclusions and recommendations.

## **1.4 Outline of the Document**

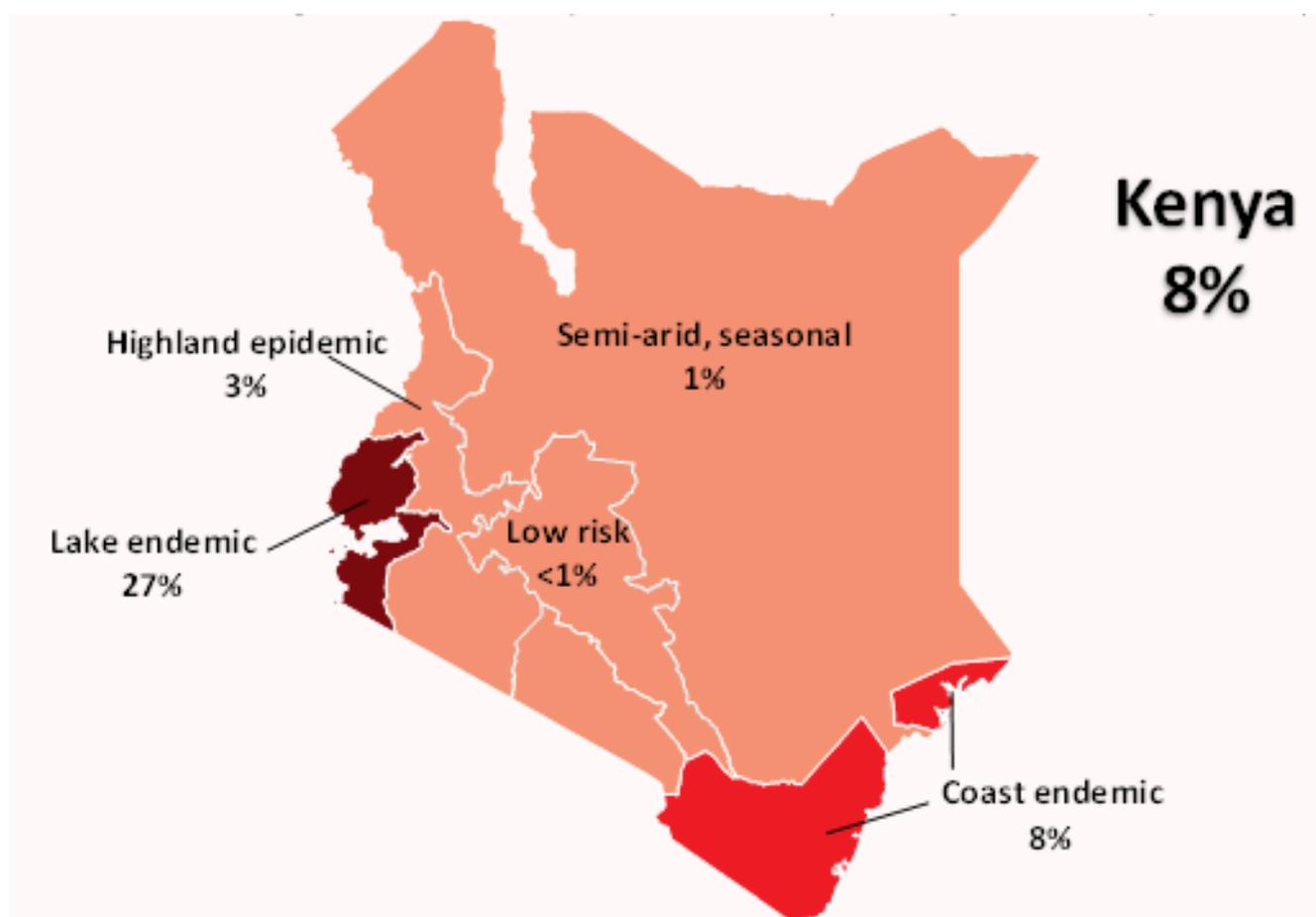
The sections that follow include findings in terms of progress attained, achievements, challenges, conclusions, and recommendations. Chapters are arranged to cover programmatic areas. Chapter 2 assesses progress towards achieving epidemiological and entomological impact. Chapter 3 reviews the financing of the programme, thus measuring the extent to which the programme budget was funded. Chapter 4 reviews the capacity of the NMCP to implement planned activities. Chapter 5 reviews the effectiveness of the health system in delivering malaria services. Chapter 6 discusses the programming implications of the lessons learned while implementing the KMS 2009–2018

## 2.1 Findings

### 2.1.1 Progress Towards Epidemiological Impact of the KMS

To accelerate progress towards a malaria-free Kenya, the national malaria policy 2010 stratified districts into epidemiological zones and proposed intervention packages based on malaria epidemiology by district (currently sub-county). The different epidemiological areas have different prevalences as shown in Figure 3.

Figure 3. Malaria prevalence by zone



Source: Kenya Malaria Indicator Survey 2015

The overall goal of the KMS 2009–2018 was to reduce morbidity and mortality caused by malaria in the various epidemiological zones by two-thirds of the 2007–2008 level by 2017. The goal was based on the national prevalence of malaria among children ages 6–59 months whose baseline estimate in 2007–2008 was 3.5 percent (Division of Malaria Control, Kenya National Bureau of Statistics, & National Coordinating Agency for Population and Development, 2009). In the 2015 KMIS, the prevalence was 5 percent, almost two times higher than the baseline value. Based on routine



health facility information, however, there was notable progress in reducing the total confirmed outpatient malaria cases, from 57 per 1,000 population in 2012–2013 to 36 per 1,000 population in 2017. There was no comprehensive data available to show trends in inpatient morbidity and mortality due to low completeness of inpatient data nationally.

### ***KMS Epidemiological Indicators and Targets***

The strategy proposed 10 epidemiological indicators, as shown in Table 6. This section analyses progress towards attainment of the impact targets, appropriateness of the indicators, and inclusion of baselines and targets.

The epidemiological indicators reflect the goal of the strategy with reference to the measurement of morbidity and mortality and address the existing epidemiology, with particular reference to children below five years of age and prevalence in the high burden areas. Indicators on test positivity rates and on proportion of suspected malaria cases tested were included to describe quality of diagnosis and to help with interpretation of observed trends in malaria incidence. Apart from one prevalence indicator (Malaria parasitaemia prevalence rate among children <5yrs in lake endemic areas) measured through surveys every three years, data for the other indicators were sourced from routine surveillance on either a monthly or quarterly basis. Seven of the 10 indicators had baseline values. Targets were set for all indicators to assess performance at the mid-term in 2013 and at the end of the strategy in 2017–2018 and reflected the anticipated reduction in morbidity and mortality. Table 7 shows progress towards achieving the set epidemiological targets. A few highlights on the epidemiological indicators include the following:

- Data on number of patients tested are available for the period 2016–2017 and have been used to calculate the annual blood examination rate.
- Number of confirmed malaria cases identified through passive surveillance per 1,000 population is presented but has not accounted for reporting rates and estimated number of cases as suggested in the WHO surveillance reference manual (WHO, 2018).
- Comprehensive data to show trends in inpatient morbidity and mortality could not be obtained due to low completeness and poor quality of inpatient data nationally.
- Implementation of “test, treat, and track” guidelines in 2009 led to an expansion of diagnostic capacity that explains the change between the 2007 baseline value and observed values for the indicator “total clinical outpatient malaria cases” during the review period.
- There were no comprehensive data on number of suspected malaria cases during the period under review.
- There were no recent data on prevalence because the last MIS was conducted in 2015.

The 10 epidemiological indicators in the KMS 2009–2018 are aligned with the recommended indicators in the Global Technical Strategy for Malaria 2016–2030 (WHO, 2016b). There is need to strengthen continuous monitoring of malaria admissions and inpatient deaths due to malaria.

**Table 6. Epidemiological impact indicators in the Kenya Malaria Strategy 2009–2018**

	Indicators	Data source	Responsibility	Frequency	Baseline		Targets (2013–2017)				
					Data	Source/Year	2013	2014	2015	2016	2017
1	Inpatient malaria cases among children <5yrs [per 1,000 persons per year]	Routine surveillance	NMCP M&E/HIS	Quarterly	None	HIS	3	-	-	-	2
2	Total inpatient malaria cases [per 1,000 persons per year]	Routine surveillance	NMCP M&E/HIS	Quarterly	4	HIS 2008/2009	3	-	-	-	2
3	Inpatient malaria deaths among children <5yrs [per 1,000 persons per year]	Routine surveillance	NMCP M&E/HIS	Quarterly	None	HIS	2	-	-	-	1
4	Total inpatient malaria deaths [per 1,000 persons per year]	Routine surveillance	NMCP M&E/HIS	Quarterly	4	HIS 2008/2009	2	-	-	-	1
5	Confirmed outpatient malaria cases at health facility level among children <5yrs [per 1,000 persons per year]	Routine surveillance	NMCP M&E/HIS	Monthly	138	HIS 2012/2013	138	-	-	-	92
6	Total confirmed outpatient malaria cases at health facility level [per 1,000 persons per year]	Routine surveillance	NMCP M&E/HIS	Monthly	57	HIS 2012/2013	57	-	-	-	38
7	Total clinical outpatient malaria cases at health facility level among children <5yrs [per 1,000 persons per year]	Routine surveillance	NMCP M&E/HIS	Monthly	277	HIS 2007	164	-	-	-	92
8	Percentage of suspected malaria cases tested using a parasitological-based test	Routine surveillance	NMCP M&E/HIS	Monthly	60	HIS 2013	60	-	-	-	100
9	Slide/rapid diagnostic test positivity rate at health facility level	Routine surveillance	NMCP M&E and lab/HIS	Monthly	None	-	27	-	-	-	13
10	Malaria parasitaemia prevalence (pf) rate among children <5yrs in lake endemic areas (by microscopy); disaggregated by sex	Survey	NMCP M&E/ Kenya National Bureau of Statistics	Every three years	3.3 <sup>1</sup>	KMIS 2007	26.8 (KMIS 2010)	-	-	-	17

Source: Adapted from the Kenya Malaria Strategy 2009–2018 Performance Framework

<sup>1</sup> Indicator was revised in 2014 to assess prevalence in the lake endemic zone, but the baseline value was not changed to reflect the same; 3.3 percent was the national prevalence. In 2007, the coastal and lake endemic areas were treated as one strata and were not separated until 2009.

**Table 7. Achievement of epidemiological impact targets in the Kenya Malaria Strategy, 2009–2018**

	Indicators	Baseline		Achievements (2013–2017)					End Line 2017 target	Comments
		Data	Source/ Year	2013	2014	2015	2016	2017		
1	Inpatient malaria cases among children <5yrs [per 1,000 persons per year]	None	HIS	-	-	-	-	-	2	Data not available
2	Total inpatient malaria cases [per 1,000 persons per year]	4	HIS 2008/2009	-	-	-	-	-	2	Data not available
3	Inpatient malaria deaths among children <5yrs [per 1,000 persons per year]	None	HIS	-	-	-	-	-	1	Data not available
4	Total inpatient malaria deaths [per 1,000 persons per year]	4	HIS 2008/2009	-	-	-	-	-	1	Data not available
5	Confirmed outpatient malaria cases at health facility level among children <5yrs [per 1,000 persons per year]	138	HIS 2012/2013	-	129	170	129	75	92	-46% change between 2017 and baseline; incidence higher in 2015 as a result of increased diagnostic capacity due to roll-out of malaria rapid diagnostic tests
6	Total confirmed outpatient malaria cases at health facility level [per 1,000 persons per year]	57	HIS 2012/2013	49	51	74	63	36	38	-37% change between 2017 and baseline
7	Total clinical outpatient malaria cases at health facility level among children <5yrs [per 1,000 persons per year]	277	HIS 2007	-	74	46	83	77	92	-72% change between 2017 and baseline
8	Percentage of suspected malaria cases tested using a parasitologicalbased test	60	HIS 2013	-	-	-	-	-	100	No consolidation of suspected malaria cases in routine HIS
9	Slide/rapid diagnostic test positivity rate at health facility level	None	-	31	32	34	32	35	13	Target not achieved
10	Malaria parasitaemia prevalence (pf) rate among children <5yrs in lake endemic areas (by microscopy); disaggregated by sex	3.3	MIS 2007	26.8	-	17	-	-	17	Decreasing malaria prevalence observed in the lake endemic area; no recent data on prevalence

### ***Progress Towards KMS Malaria Morbidity Impact Targets***

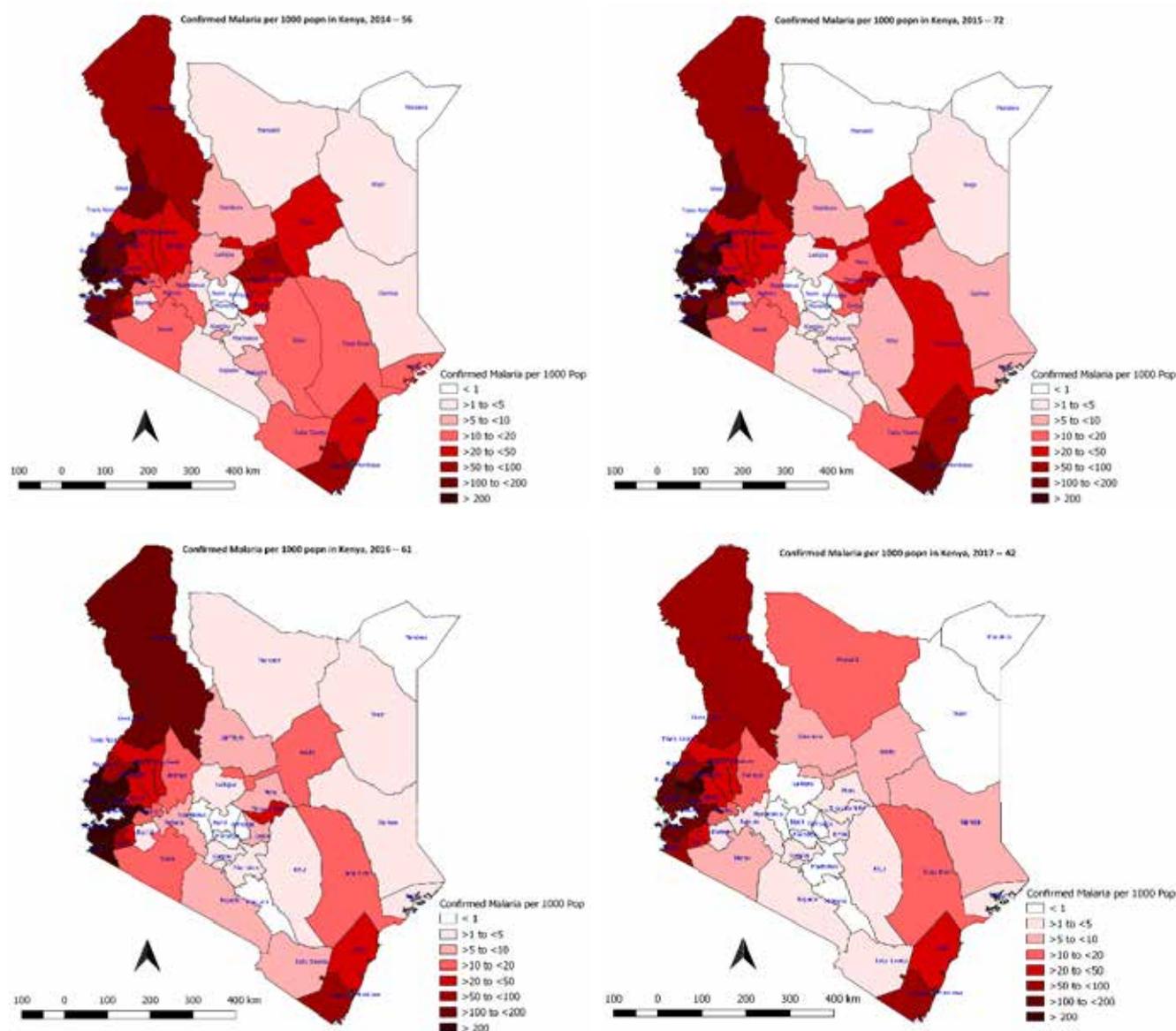
The national malaria parasite prevalence in children under five, as diagnosed by microscopy, decreased, from 8 percent in 2010 to 5 percent in 2015, largely driven by the decrease in lake endemic areas. Parasitaemia prevalence rate (by microscopy) among children under five in lake endemic areas decreased, from 27 percent in 2010 to 17 percent in 2015. Results from the Malaria Indicator Survey (MIS) 2015 also show that malaria prevalence was highest among children aged 10–14 years (11%), followed by children aged 5–9 years (10%). In the lake endemic areas, the rate among children ages 6 months to 14 years was remarkably lower in 2015 (27%) than in 2010 (38%). In contrast, for the same age group, an increase in malaria prevalence was observed in coastal endemic areas, from 4 percent in 2010 to 8 percent in 2015 (NMCP, Kenya National Bureau of Statistics, & ICF, 2016). Other variations in parasite prevalence among children ages 6 months to 14 years included a higher prevalence in rural areas (10%) compared to urban areas (3%).



As shown in Table 7, total confirmed outpatient malaria cases per 1,000 had more than a 30 percent decrease between 2013 and 2017.<sup>1</sup> However, the values were not adjusted to account for reporting rates in the routine HIS, which rarely include the private sector. Figure 4 shows confirmed malaria cases reported per 1,000 population between 2014 and 2017. A decrease was observed across the country, with upsurges in few areas such as Marsabit County and almost constant trends in lake and coastal endemic areas, especially in 2016–2017 (Figure 4 C and D). Some counties in the low-risk malaria areas in central highlands and Mandera County in the north-eastern part of the country have experienced less than one case per 1,000 population over the years. During the review of the KHSSP in 2016, it was determined that malaria accounted for 31 percent of all outpatient diagnoses in 2012–2013, 26 percent of all outpatient diagnoses in 2013–2014, 20 percent in 2014–2015, and 18 percent in 2015–2016 (MOH & WHO, 2016).

The test positivity rate at the health facility level has remained constant over the years, averaging 33 percent in the period under review (Table 7). Monthly data for the period 2016–2018 show varying rates by endemicity, with the low risk areas reporting less than 5 percent continuously (Figure 5). The annual blood examination rate was 17.5 percent in 2016 and 18.4 percent in 2017.

**Figure 4. Total confirmed malaria cases per 1,000 population at risk, 2014–2017**



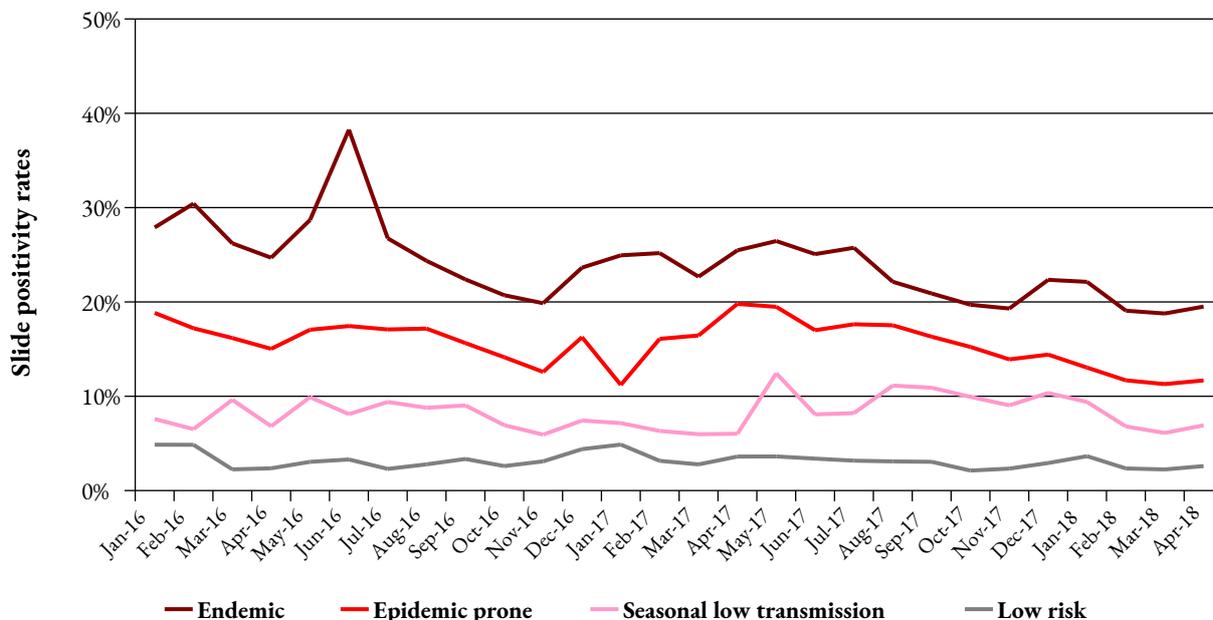
Source of data: DHIS 2/Integrated Disease Surveillance and Response

<sup>1</sup> Using the HIS reported total outpatient malaria cases per 1000; change between 2017 and baseline value in 2012/2013

### Progress Towards KMS Malaria Mortality Impact Targets

Comprehensive data could not be obtained to show trends in inpatient morbidity and mortality due to low completeness in reporting and the fact that classification of morbidity and mortality has not been fully standardized. Thus the available data could not be used to track inpatient mortality due to malaria.

**Figure 5. Trends in slide positivity rate by endemicity, 2016–2018**



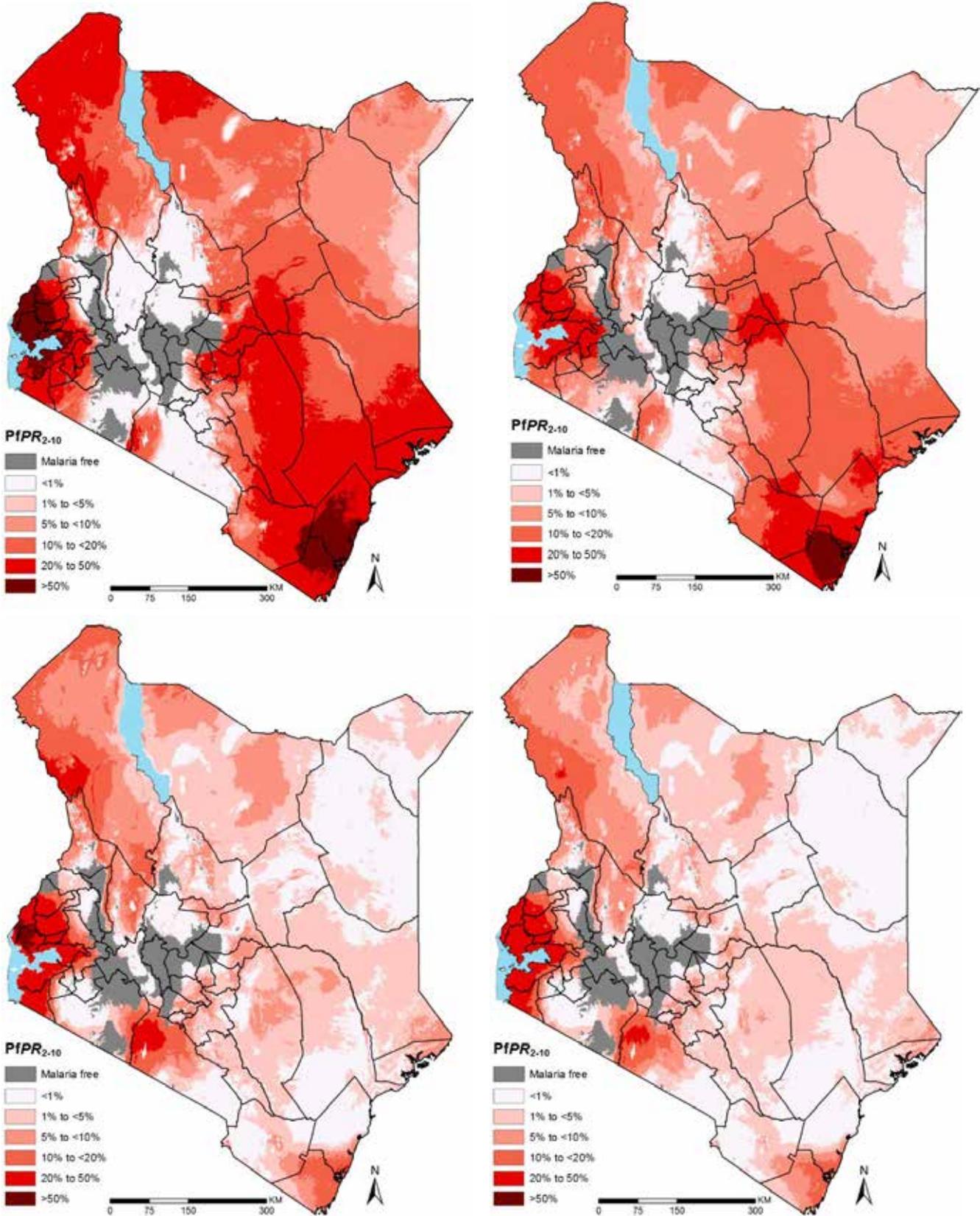
Source of data: DHIS2/Integrated Disease Surveillance and Response

### Malaria Transmission Risk Map and Stratification

The mapping of malaria parasite prevalence in 2015 incorporated the development of county epidemiological profiles that provide information on variations in malaria risk and intervention coverage by subcounty to allow better malaria control planning at the county level. In particular, the countrywide survey data for 1980 to 2015 were modelled using geostatistical methods to develop continuous malaria risk maps from predictions of age-corrected mean *P. falciparum* prevalence in children aged 2–10 years ( $PfPR_{2-10}$ ) for the years 2000, 2005, 2010, and 2015 at 1×1 spatial resolutions (Figure 6) (MOH, 2016a). The maps indicate progression to a wider coverage of less than 5 percent  $PfPR_{2-10}$ , especially in the period 2010–2015. All counties in the lake endemic area in 2015 were under low to moderate transmission risks of between 5 and less than 50 percent and appear to have transitioned from higher transmission levels over time. In 2000, 13.2 percent of Kenya’s population lived in areas where  $PfPR_{2-10}$  was greater than 50 percent; by 2015, there were no areas with  $PfPR_{2-10}$  greater than 50 percent (Figure 7). These data show that the risk of malaria in Kenya is decreasing. Increased resources available to malaria control in the period 2003–2015 resulted in scaled-up delivery of malaria interventions, which may have contributed to the decreasing transmission as well as the reductions in prevalence of malaria parasitaemia and decrease in all-cause under-five mortality (MOH, 2016b).

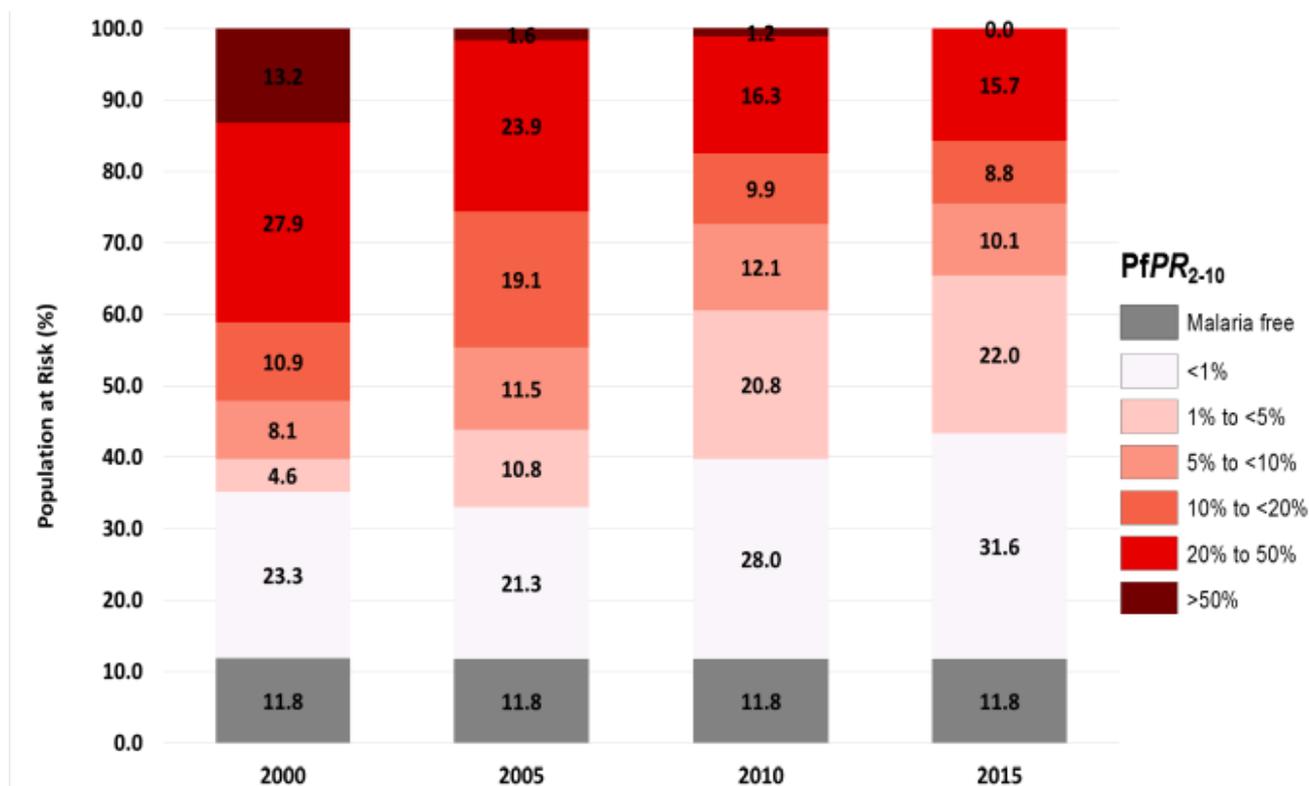


Figure 6. Maps of population-adjusted P/PR<sub>2-10</sub> at 1×1 km spatial resolution by subcounty in a) 2000, b) 2005, c) 2010, and d) 2015



Source: Epidemiology and control profile of malaria in Kenya, June 2016

Figure 7. Changing population at risk of malaria by PfPR<sub>2-10</sub> endemicity from 2000 to 2015



Source: Epidemiology and control profile of malaria in Kenya, June 2016

### 2.1.2 Progress Towards Entomological Impact of the KMS

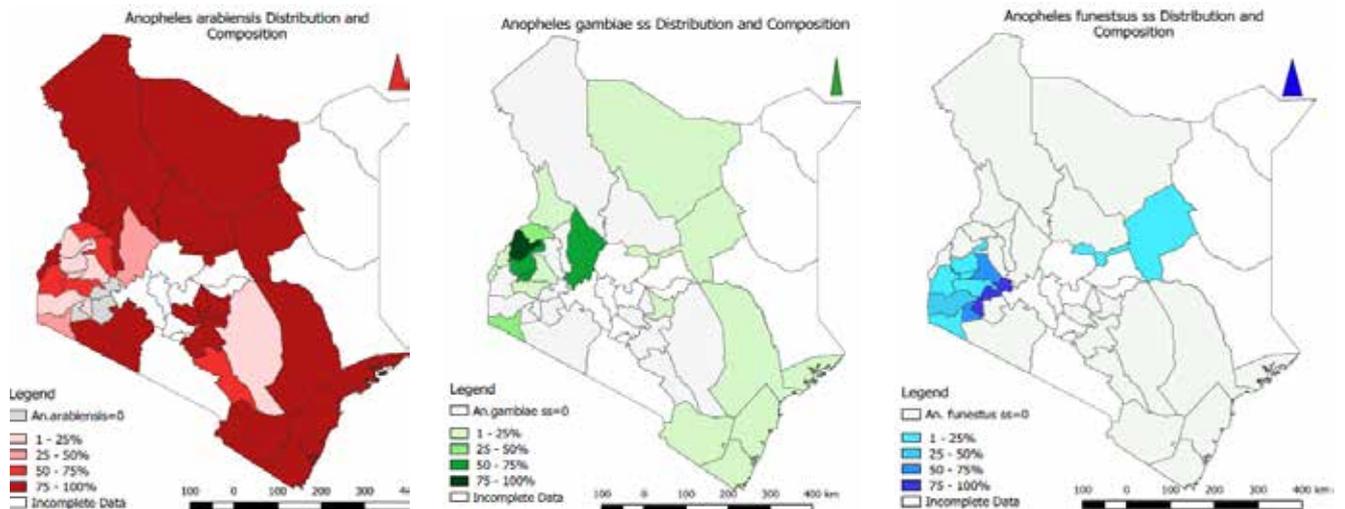
#### *KMS Entomological Indicators and Targets*

The primary aim of entomological surveillance should be to inform vector control planning and implementation. Both entomological and epidemiological surveillance information must be linked to programme decisions to ensure optimal vector control. The KMS 2009-2018 did not provide entomological indicators to assess impact of vector control interventions on malaria parasite transmission and elimination. Although specific entomological data were not available to inform programme implementation on vector control interventions, there were some data from research institutions that could inform on the various vector bionomics, ecology, and transmission potential. In areas implementing indoor residual spraying (IRS), entomological assessments have been conducted pre- and post-spraying to determine vector density, sporozoite rates, insecticide susceptibility, and vector bionomics.

#### *The Situation of Malaria Vectors in Kenya*

The major malaria vectors in Kenya include the *An. gambiae* complex (mainly *An. gambiae* s.s., *An. arabiensis*, and to a lesser extent *An. merus*) and the *An. funestus* complex (Okara, et al., 2010). The malaria vector distribution, abundance, and diversity is not uniform across the country due to variation in ecological and climatic factors, particularly temperature and rainfall patterns (Figure 8).

**Figure 8. Current distribution of the major malaria vectors in Kenya (2016–2018)**



Source: NMCP Vector Surveillance Reports

### ***Changes in Parasite Species Distribution***

In 2015, countrywide survey data for 1980–2015 were assembled and used for mapping malaria parasite prevalence. The data included national community and school surveys from 1980 to 1984 conducted by the then Division of Vector-Borne Diseases; MIS 2007; national school surveys 2009–10; MIS 2010; partial national school surveys 2014; and MIS 2015. Of all infections detected *P. falciparum* was the predominant species (92 percent); followed by *P. malariae* (6 percent) and *P. ovale* (2 percent) (MOH, 2016a). The predominance of *P. falciparum* infections was evident in the MIS 2015 which showed that 8 percent of children age 6 months to 14 years had malaria. Seven percent of the children had pure *P. falciparum* infections, and an additional 1 percent was infected with *P. falciparum* in combination with *P. malariae*, *P. ovale*, or both. Less than 1 percent of children had pure *P. malariae* or *P. ovale* infections (NMCP, Kenya National Bureau of Statistics, & ICF, 2016).

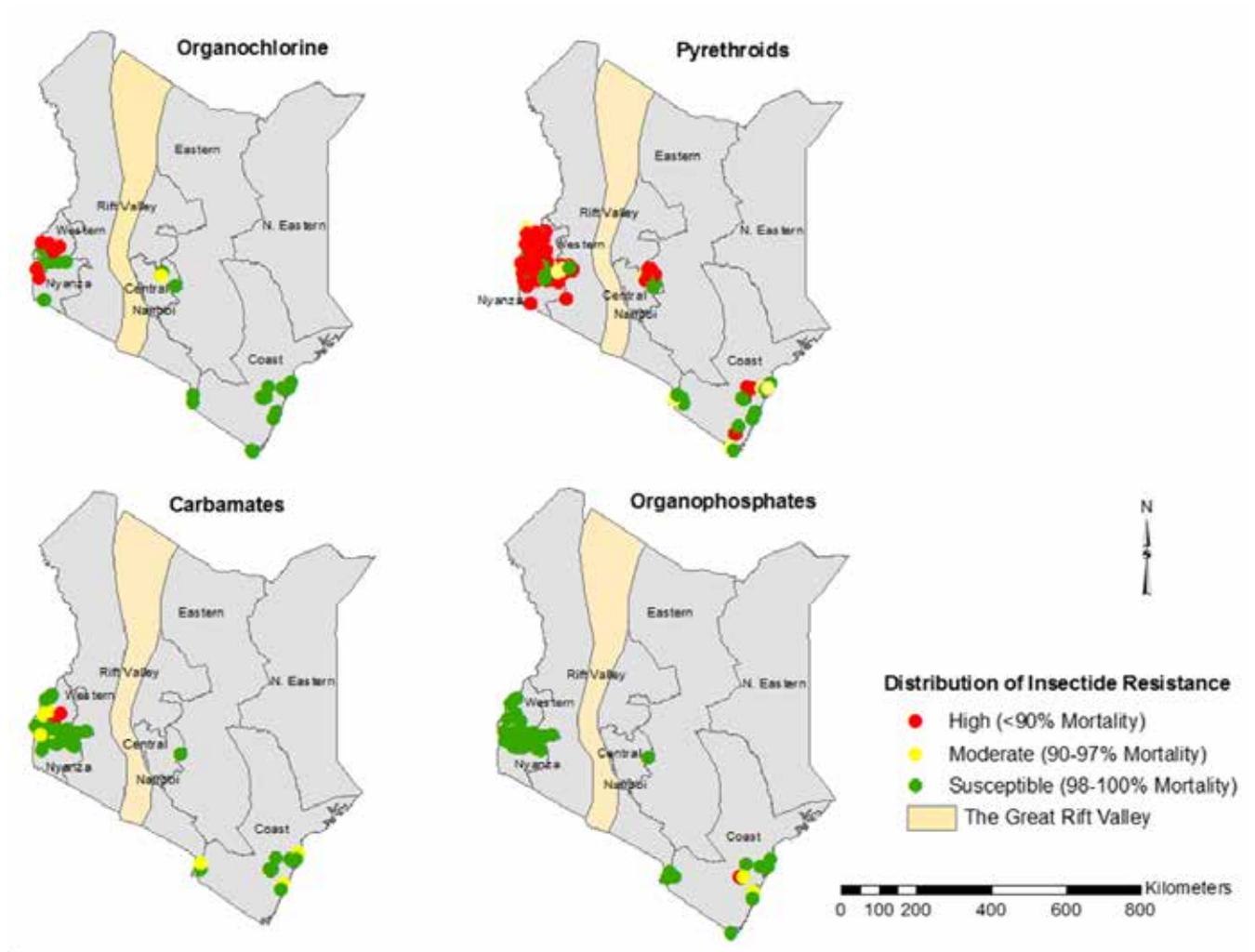
In the highland epidemic-prone areas, *An. funestus* is emerging as the main vector, based on NMCP surveillance data. In western Kenya and coastal endemic regions, a marked decrease in the density of mosquito vectors has been documented and attributed to increased coverage in long-lasting insecticide-treated nets (LLINs). In addition, a switch in the relative species composition has been attributed to sustained LLIN use, with *An. arabiensis* replacing *An. gambiae s.s.* as the dominant species (Bayoh, et al., 2010; Mwangangi, et al., 2013), particularly in the coastal endemic region. This has important implications for malaria epidemiology and control, given that this vector predominantly rests and feeds on humans outdoors. Previously, *An. funestus* was reported as the dominant malaria vector species in the lake endemic counties, probably due to pyrethroid resistance (McCann, et al, 2014; AIRS, 2018). Results from analysis of data from 1990 to 2010 showed a steady decrease in the densities of the major malaria vectors, and a shift from human to animal feeding for both *An. gambiae s.l.* (99% to 16%) and *An. funestus* (100% to 3%), which might have contributed to the decreased burden of malaria along the Kenyan coast (Mwangangi, et al., 2013)

In other areas with high LLIN coverage, *An. gambiae s.s.*, which is traditionally highly anthropophilic, has been found to feed on both humans and animals, with only 26.5 percent feeding purely on humans (Ndenga, et al., 2016). In the recently sprayed endemic county of Migori, *An. funestus*, which was the dominant species comprising 84 percent of malaria vectors before IRS in 2017, was reduced to less than 20 percent of the vectors surveyed after IRS, with a reported 95 percent reduction in indoor resting densities (AIRS, 2018). Exposure to mosquito bites in the area was greatly reduced, and no sporozoite infection was detected in mosquitoes post-IRS.

## Insecticide Resistance Status in Kenya

Resistance to pyrethroids among the major vectors is widespread in Kenya (Figure 9) and well documented (Ondeto, et al., 2017). There is also documented resistance to dichlorodiphenyltrichloroethane (DDT) and to some extent to carbamates and organophosphates in isolated locations in the country (Ondeto, et al., 2017). With the emergence of intense pyrethroid resistance throughout much of western Kenya, IRS did not occur during 2012–2016 because there was no registered non-pyrethroid insecticide for use as an indoor residual spray.

**Figure 9. Distribution of insecticide resistance in anopheles species tested between 1994 and 2015**



Source: Ondeto, et al., 2017

## 2.2 Conclusions and Recommendations

### 2.2.1 Conclusions

Malaria remains a public health concern in Kenya, even in the context of reducing prevalence nationally. Three-quarters of the population are at risk of the disease, and older children ages 10–14 appear to have the highest prevalence, calling for the need to focus preventive measures on school-age children. More importantly, the burden of the disease in the country is not homogenous, and variations are observed in the different epidemiological zones. Incorporation of entomological data will be useful in producing an updated malaria transmission map. The lake endemic areas have experienced a noted decrease in prevalence, which is likely to change transmission to an unstable state with increased likelihood of epidemics.



To stem the slight increase in prevalence in the coastal endemic areas, continued focused intervention efforts remain critical. Many of the areas have low incidences, and concerted effort must be made to maintain high coverage of interventions. Pillar three of the Global Technical Strategy speaks to the transformation of malaria surveillance to a core intervention. Surveillance has been identified as the basis of operational activities in settings of any level of transmission. Recording, reporting, and investigating all malaria cases becomes a critical component of malaria surveillance systems. It is also increasingly important to identify hot spots at the subcounty level to better target interventions in the low transmission areas. Data gaps in epidemiological impact indicators, such as number of suspected malaria cases and inpatient morbidity and mortality, need to be addressed.

Vector species composition remains heterogeneous, but in some areas, *An. arabiensis* has replaced *An. gambiae s.s* as the major malaria vector. This has important implications for malaria epidemiology and control, given that this vector predominately rests and feeds on humans outdoors. There was evidence of reducing both the indoor resting densities and sporozoite rates of *An. funestus* in areas where IRS was implemented in Migori County. Resistance to pyrethroids has been observed, and very few non-pyrethroids have been registered for use in IRS due to the slow registration of new insecticides. Going forward, the main aim of entomological surveillance should be to inform vector control planning and implementation. Both epidemiological and entomological surveillance information must be linked to programme decisions to ensure optimal vector control.

### 2.2.2 Recommendations

This review makes the following recommendations:

- Prioritize investment in epidemiological and entomological surveillance in line with the requirements of the Global Technical Strategy and WHO malaria surveillance monitoring and evaluation reference manual (WHO, 2018).
- Use stratification for targeting interventions. At a minimum, this should be done by subcounty, although it is best to do this by facility.
- Incorporate relevant entomological indicators (vector species diversity, ecology, and bionomics) to enable updating of the malaria transmission map.
- Include entomological impact indicators in the performance framework of the next strategy.
- Strengthen the capture and reporting of outpatient and inpatient morbidity and mortality information to monitor the impact of interventions.
- Ensure the routine conduct of susceptibility testing for insecticides and fast-track the registration of new vector control products for managing insecticide resistance.

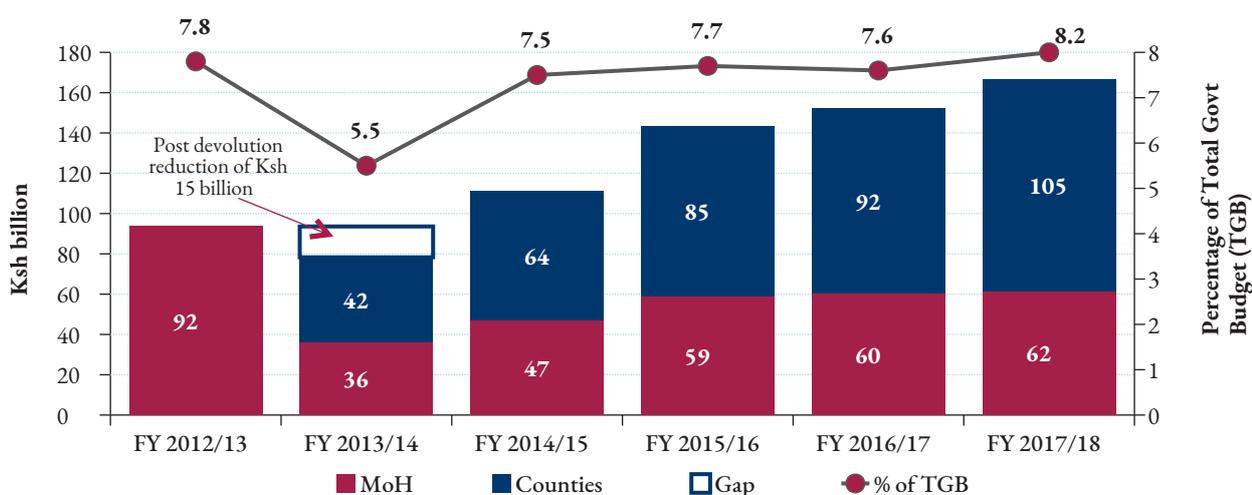
## CHAPTER 3: REVIEW OF PROGRAMME FINANCING

### 3.1. Findings

#### 3.1.1 Malaria Programme Funding Landscape

From 2014 to 2017, national government allocation to the health sector stabilised, with a marginal decrease from a high of 4 percent in FY 2014/15 to 3.1 percent in FY 2017/18. The allocation to health in the county budgets increased steadily, from an average of 21.5 percent in FY 2014/15 to 27 percent in FY 2017/18. In aggregate, the total allocation to the health sector both at the national and county levels for the past four years increased, from 7.5 percent in FY 2014/15 to 8.2 percent in FY 2017/18 (see Table 7 and Figure 10). Health remains a priority sector at the national level, but with devolution, county governments are increasingly becoming an important source of sustainable domestic financing for health in the country. Some county governments devote more than 30 percent of their annual budgets to health.

**Figure 10. Proportional budgetary allocation to the health sector**



Source: National and county budget analysis 2016/17 and 2017/18

**Table 8. Proportional budgetary allocation to the health sector**

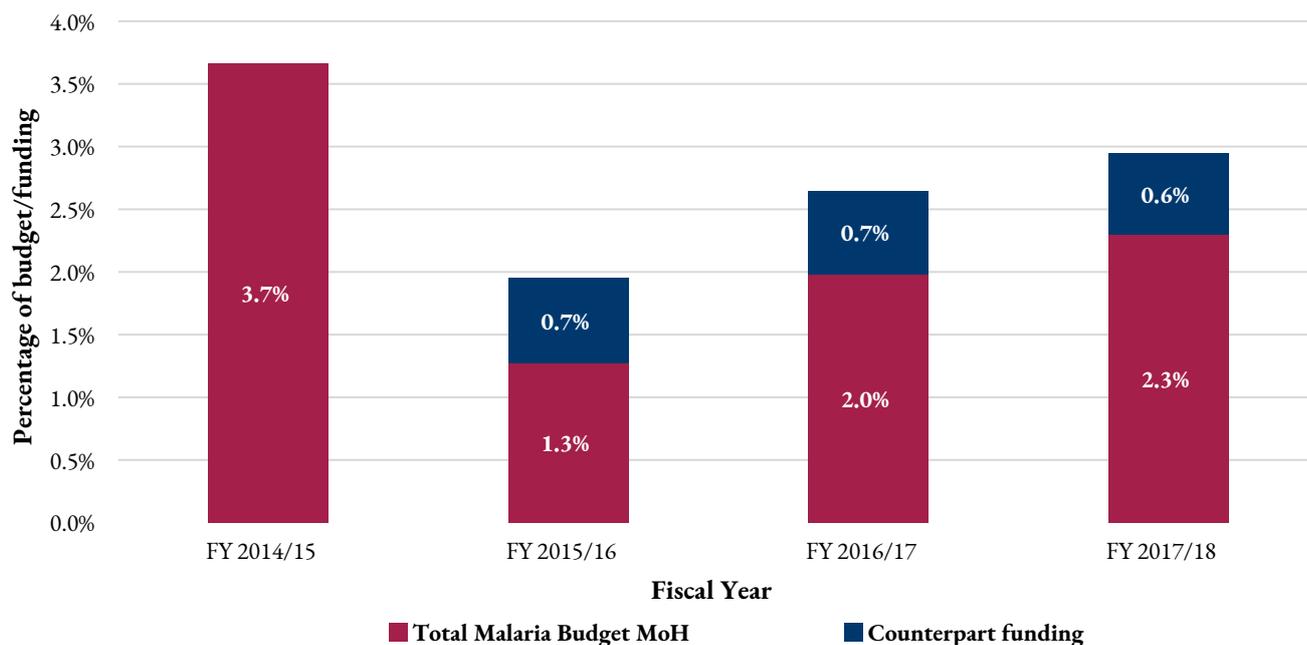
	2014/15	2015/16	2016/17	2017/18
<b>Within national budget.</b>	4.0%	3.9%	3.7%	3.1%
<b>Within county budget</b>	21.5%	23.4%	25.2%	27.0%
<b>Combined county and national</b>	7.5%	7.7%	7.6%	8.2%

Source: National and county budget analysis 2016/17 and 2017/18

As shown in Figure 11, the government allocated about 2.3 percent of the 167 billion health budget to malaria programme in FY 2017/18. This allocation was 1.3 percent in FY 2015/16 but has been rising gradually since then. The highest allocation was in FY 2014/15, with 3.7 percent allocated to the malaria programme. The government also directly contributes towards the malaria programme through the allocation of counterpart financing, which is pegged on a conditional grant from the Global Fund to Fight AIDS, Tuberculosis and Malaria that covers strategic commodities, in addition to the salaries of health workers. The counterpart allocation for malaria began in FY 2015/16 with an allocation

of Ksh 415.7 million, which has been maintained with a marginal decrease to Ksh 412.2 million in FY 2017/18. Overall, counterpart financing from the national government towards the three diseases has increased by more than 40 percent, from Ksh 7 billion in FY 2015/16 to Ksh 10 billion in FY 2017/18.

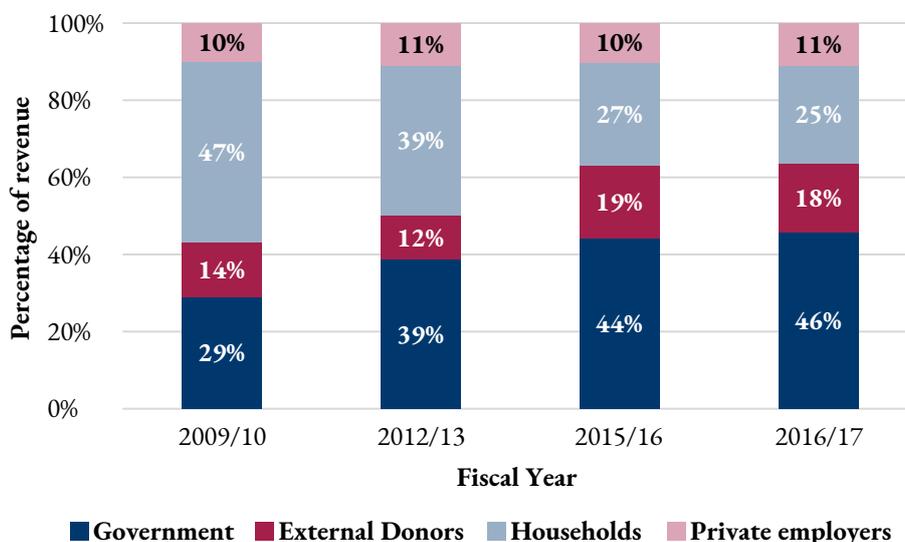
**Figure 11. MOH budgetary allocation and counterpart funding to malaria programme as proportion of total MOH budget**



Source: National budget estimates

Over the implementation period of the revised KMS under review, revenues to finance malaria interventions came from three major sources: the government, households, and donors. As shown in Figure 12, the government was the major financier of malaria, contributing 46 percent of total malaria spending (including capital investment) in FY 2016/17, up from 29 percent in 2009/10 and 39 percent in 2012/13. The household contribution to malaria spending was 25 percent in FY 2016/17, a decrease from a high of 47 percent in FY 2009/10 and 39 percent in FY 2012/13. Of the 25 percent from households, 23 percent was spent through out-of-pocket expenditures at the point of service, and the remaining 2 percent was through a pooling mechanism. The donor contribution to malaria was 18 percent of total malaria spending in FY 2016/17, down marginally from 19 percent in FY 2015/16.

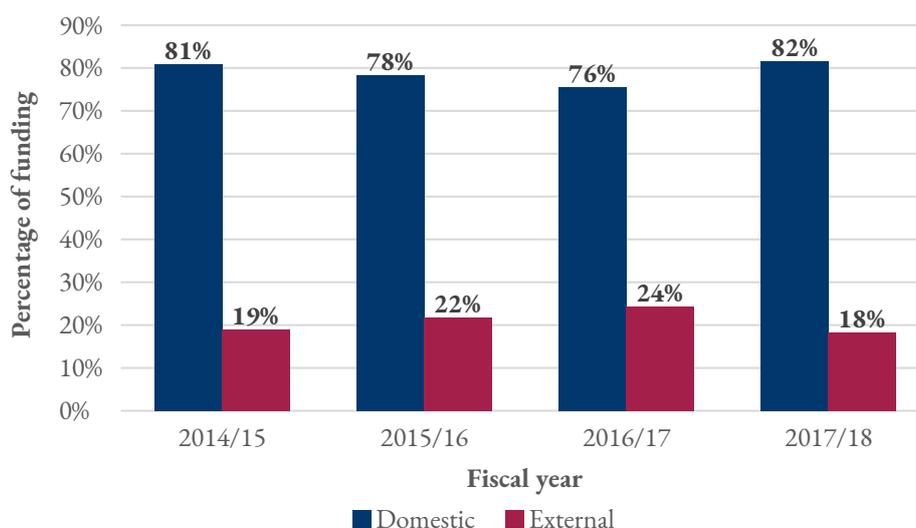
**Figure 12. Revenue sources for financing the malaria programme**



Source: National Health Accounts 2015/16, authors' calculations, resources spent in 2016/17

Data presented in Figure 13 reveal that funding from domestic sources plays a more dominant role than funding from external sources, which bodes well for the sustainability of the programme. Domestic funds are sourced from the government, households, and the private sector. The substantial out-of-pocket expenditure (23%) of the household contribution is of concern, because it has the potential of leading to catastrophic spending and impoverishment, given the high proportion of the population that seek care from the private sector. Donor funds are key for supporting key strategic commodities and preventive interventions, especially at the community level. The major donors for the malaria control over the period included the Global Fund, PMI, UNICEF, and WHO. For FY 2014/15 to FY 2017/18, the Global Fund contributed a total of Ksh 13.6 billion, and PMI contributed a total of Ksh 24.1 billion.

**Figure 13. Sources of funding for malaria programme**



Source: National Health Accounts 2015/16, authors' calculations

### 3.1.2 Malaria Expenditure in the Context of Need-Based Budget

A gap analysis was conducted based on the resource need and allocation across various malaria focus areas in the KMS for 2014–2018. The main cost headings are vector control, MIP, case management, EPR, SMEOR, ACSM, and programme management.

The external resources available were determined for malaria-specific line items in the Development Partners in Health Kenya database for FY 2012/13 to FY 2016/17 and for the funding information provided by donors and government expending per specific malaria focus areas. For Global Fund grants, the resources available were estimated based on the yearly spending for both the state and non-state principal recipients.

Table 9 shows total resource needs as costed in the KMS, and availability for malaria programming in Kenya for four years by focus area from FY 2014/15 to FY 2017/18. The total financial need was Ksh 57.39 billion. Vector control accounted for the highest proportion of the total need at 47 percent, followed by case management at 32 percent and programme management at 14 percent. The total amount of resources made available for malaria programming for the four years was Ksh 26.96 billion, leaving a substantial financing gap of Ksh 30.43 billion, or 53 percent of the total financial need. This means the strategy was not able to mobilise all the resources to finance malaria interventions. Over this period, the programme conducted two mass LLIN distribution campaigns that resulted in the costs of the LLIN intervention increasing 7.3 times the costs in non-campaign years. A significant proportion of the programme budgets were expended on commodities for the different interventions, and was primarily funded by external sources. A significant development over the review period was the increasing numbers of county governments that introduced legislation for the incentivising of community health volunteers (CHVs) that have been instrumental in the expansion of the community malaria interventions.

**Table 9. Kenya malaria programme resource need and availability analysis, FY 2014/15 to FY 2017/18 by focus area**

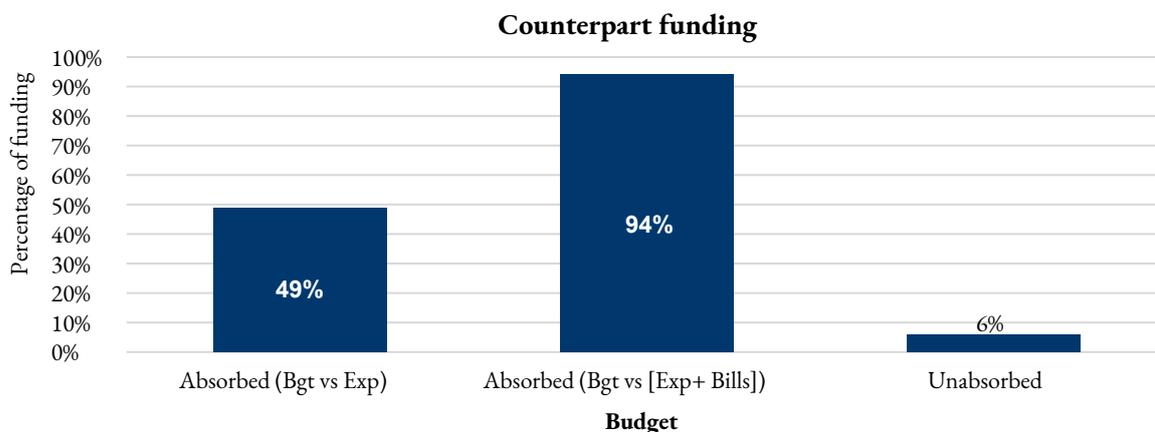
Focus area	Need		Available	
	Ksh billions	Percentage of total budget	Ksh billions	Percentage of total budget available
Vector control	26.9	46.9	16.37	60.9
MIP	1.02	1.8	0.8	78.4
Case management	18.33	31.9	8.18	44.6
EPR	0.1	0.2	-	
SMEOR	1.31	2.3	0.01	0.8
ACSM	1.95	3.4	0.32	16.4
Programme management	7.78	13.6	1.28	16.5
Total	57.39		26.96	47.0

Source: Authors' calculations

### 3.1.3 Absorption Capacity

Given the government allocation for the malaria programme under the counterpart financing, in general there is low absorption of finances allocated to the malaria programme for key strategic commodities. Figure 14 shows average absorption for Global Fund counterpart financing. The absorption level of budget compared to expenditure incurred is 49 percent; if pending bills are included, the absorption level increases to 94 percent, with 6 percent of the funds neither spent nor pending as bills. The pending bills point to bureaucratic payment processes attributable to lags in the procurement process over the years.

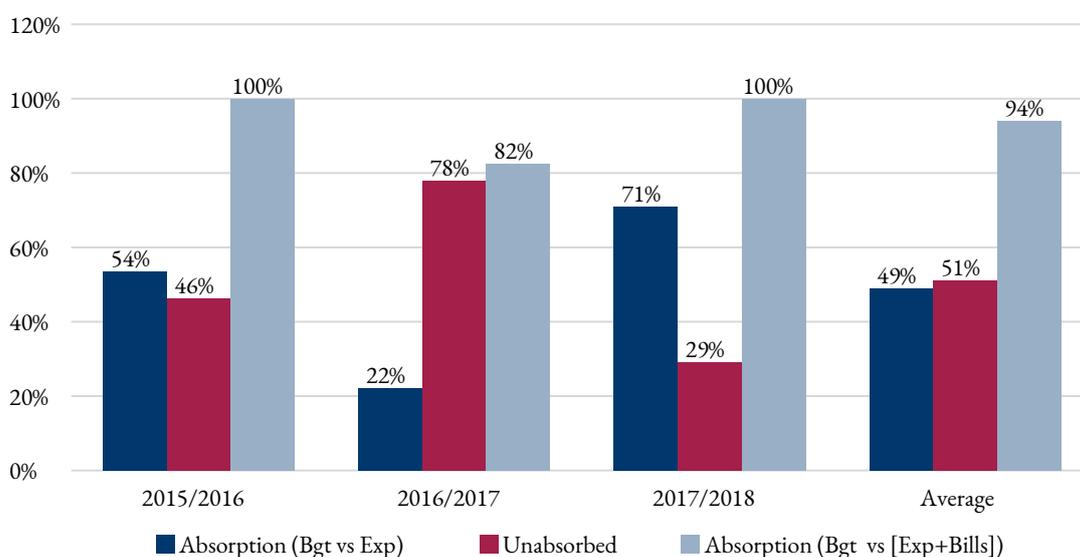
**Figure 14. Absorption rate for Global Fund counterpart financing 2015/16 to 2017/18**



Source: The National Treasury

The trend across the three years shows that the malaria programme was able to absorb 54 percent of the counterpart funding in FY 2015/16. The absorption rate dropped to 22 percent in FY 2016/17 but increased to 71 percent in FY 2017/18. The unabsorbed funds, which include pending bills, represented 46 percent of the funding in FY 2015/16. This increased significantly to 78 percent in FY 2016/17 before decreasing to 29 percent in FY 2017/18. Figure 15 shows the trend in the absorption rates for counterpart funding over the three financial years.

**Figure 15. Trends in absorption rate for Global Fund counterpart financing**



Source: The National Treasury

### 3.1.4 Challenges with Financing for Malaria Control in Kenya

The review noted the following challenges related to the financing of the malaria programme in the revised KMS:

- There were inadequate finances for programme interventions.
- There is a high level of dependence on external sources of funding for the key commodities.
- Programmatic areas, such as SMEOR, MIP, ACSM, and EPR, experience low funding allocations by the government, funding agencies and other entities.
- Limited information is available on **overall partner funding**, particularly at the county level, which means that county governments are not able to determine where their funding for malaria comes from and how much it is.

- There is a lack of process, output, and outcome **indicators to capture financial** sustainability and accountability at both the national and county levels.
- There is an inadequate linkage between:
  - o Programmatic targets and funding
  - o Funding and outcomes.
- There are insufficient advocacy tools for **domestic resource mobilisation** for malaria at the national and county levels.
- The programme experienced **low absorption capacity**, particularly for key commodities.
- There are challenges in the mechanisms for the flow of donor funds to counties; hence, counties are not able to receive all their funding for their malaria interventions.
- There is **limited funding allocation at the county level** and difficulties in accessing the limited resources for malaria. In the annual county budgets, malaria is usually combined with other diseases. This makes it difficult for counties to know how much is allocated specifically for malaria and results in problems in accessing the funds and subsequently spending them
- There is no information on **cost per person per intervention** for malaria. This information would be very useful in better guiding both national and county governments in planning and budgeting.

## 3.2 Conclusions and Recommendations

### 3.2.1 Conclusions

The analysis presented in this chapter has reviewed the financing for malaria over the last four years, under the life of the revised KMS 2009-2018.

Budgetary allocations for health in Kenya have seen a steady increase, with 8.2 percent allocated to health in FY 2017/18, much lower than from the recommended 15 percent as stipulated in the 2001 Abuja Declaration. Government investment in malaria at the national level has increased, with resources allocated under the MOH budget and through counterpart funding, and county governments are devoting increasing proportions of their total annual budgets to health. Household spending for malaria still plays an important role in malaria financing, which should be a cause for concern because it means that there is still a significant level of out-of-pocket expenditure. The donor funding for malaria remains significant but has decreased over the four-year period, which may be a reason for the increase in household spending in financing malaria. Increased public investment in malaria is a positive move because it sets the stage for sustainable financing. An increase in household spending through out-of-pocket payments (excluding cost sharing), however, is detrimental because it may result in catastrophic health spending and negate the goal of financial protection as envisioned in the UHC agenda.

Overall funding for malaria has decreased over the last four years, and if this trend persists, it may threaten the gains already made in controlling malaria.

### 3.2.1 Recommendations

The review makes the following recommendations:

- Ensure that county governments include malaria in their annual programme-based budgets as a subprogramme in the preventive and promotive health services programme.
- Increase budgetary allocations and actual disbursements by national and county governments, and ensure efficient use of resources.

- 
- Advocate for more resources from all sources, including the UHC initiative and the private sector, to move towards financial sustainability.
  - Finalise the current draft domestic resource mobilisation strategy through a consultative process incorporating innovative financing mechanisms.
  - Prepare programme-based budgets and conduct expenditure reviews and analyses that can be used as advocacy and resource mobilisation tools at high levels.
  - Develop a sustainable financing framework for malaria control interventions, especially as the country starts to consider malaria elimination.
  - Provide technical assistance to county health management teams for planning, budgeting, and advocating resource allocation.
  - At national and county levels, promote the expansion of existing prepayment mechanisms (e.g., the National Hospital Insurance Fund) and support the establishment of new prepayment mechanisms to reduce the financial burden on malaria services and the barriers to accessing those services.
  - Systematically and routinely track financial data pertaining to allocation and spending on malaria at national and county levels to provide information on indicators, including the proportion of malaria budget to total health budget and the proportion of total malaria budget contributed by partners
  - Generate evidence for resource mobilisation purposes that is appropriately packaged for targeted audiences.

# REVIEW OF NMCP CAPACITY TO IMPLEMENT PLANNED ACTIVITIES

## 4.1 Findings

An analysis of the programme's capacity to implement planned activities was done for all the six strategic objectives contained in the revised KMS 2014–2018. This assessment was done in two parts. First, a WHO developed Microsoft Excel performance evaluation tool was adapted to conduct performance analysis for each objective and its corresponding strategies from the logframe of the revised KMS 2009–2018. Implementation of the activities under each strategy was assessed using preprogrammed formulas to obtain the overall performance rates. The final score was modulated by assessing the quality of the implementation of these activities. This qualitative assessment was made possible by obtaining documented evidence of the implementation of the activities and also by thematic group discussions. Achievements and challenges experienced in implementation of the different strategies under the six strategic objectives are summarized in Annex J. Second, the status of implementation of the recommendations that arose from the 2014 MTR of the malaria strategy was assessed. Annex K summarizes the implementation of mid-term review recommendations for all objectives.

In terms of ratings, objective and strategy-level implementation performance was considered high if the performance rate analysis yielded a score of above 90 percent. It was considered moderate if the achieved rate ranged from 75 percent to 90 percent, and it was considered low if the score was under 75 percent. A similar calculation was used in assessing the implementation status of the MTR recommendations. The findings for the KMS performance rates and the implementation of MTR recommendations are presented in this section for each of the six objectives. The following colour codes are used to represent the performance rating:

High  Moderate  Low 

### 4.1.1 Performance Rate in Implementation of MSP Objectives and Strategies

#### ***Objective 1: To have at least 80 percent of people in malaria risk areas using appropriate malaria preventive interventions by 2018***

The achievement for this objective was analysed under two thematic areas, vector control and MIP. The overall score was low, at 45 percent. Implementation of larval source management strategy was not done, hence it scored zero percent. Performance of the remaining strategies under this objective ranged from 40 percent for supporting malaria-free schools initiative to 80 percent for universal distribution of LLINs. Annex J.1 summarises the achievements and challenges of each strategy under this objective.

#### ***Objective 2: To have 100 percent of all suspected malaria cases presenting to a health provider managed according to the National Malaria Treatment Guidelines by 2018***

The overall performance for this objective was 48.7 percent. Performance of the five strategies under this objective ranged from 35.9 percent for access to affordable malaria medicines and diagnostics through the private sector to 66.7 percent for strengthening community case management (CCM) for malaria through the community strategy. Annex J.2 summarises the performance analysis describing achievements and challenges under each strategy.

### ***Objective 3: To ensure that 100 percent of malaria epidemic-prone and seasonal transmission subcounties have the capacity to detect and timely respond to malaria epidemics by 2018***

The overall performance for this objective was very low at 26.3 percent, with its two strategies scoring 34 percent and 23 percent. A key reason for this underachievement was lack of a functional malaria early warning system. Although the epidemic-prone counties had informal detection and reporting, response to and control of malaria epidemics was not well coordinated. Annex J.3 summarises the performance analysis describing achievements and challenges under each strategy.

### ***Objective 4: To ensure that all malaria indicators are routinely monitored, reported and evaluated in all counties by 2018***

The overall performance for this objective was low at 60 percent. Two of the strategies (school-based malaria surveillance and malaria data management systems) scored zero percent, contributing significantly to the overall low performance. Two strategies achieved moderate scores of 78 percent (for human resource capacity building in surveillance, monitoring and evaluation) and 76 percent (for conduct and support for community surveys). Annex J.4 summarises the main achievements and challenges in implementing the strategies under this objectives

### ***Objective 5: To increase utilisation of malaria control interventions by communities to at least 80 percent by 2018***

The overall performance of this objective was low at 54.8 percent. Strategy on strengthening program communication for increased utilisation of all malaria interventions achieved the highest score with 86.7 percent while advocating for inter-sectoral collaboration for malaria ACSM achieved the lowest score of 30 percent. Annex J.5 summarises details of the achievements and challenges under each of the strategies.

### ***Objective 6: To improve capacity in coordination, leadership, governance and resource mobilisation at all levels towards achievement of the malaria program objectives by 2018***

The overall achievement was low, with a score of 42.3 percent. Performance of the strategies under this objective ranged from 28.6 percent for strengthening procurement and supply management systems for malaria commodities to 55.7% for strengthening capacity for planning, partnerships, coordination and implementation of malaria control interventions. The low achievements were mainly due to poor progress in updating malaria legislation and regulations to guide malaria control and failure to develop a resource mobilisation strategy and tools. Annex J.6 details the achievements and challenges under each of the strategies.

#### **4.1.2 Performance Rate in Implementation of MTR Recommendations**

The ultimate outcome from the MTR was the revised KMS 2009–2018. In addition, the review yielded recommendations across all the objectives for improved delivery of results in the context of the constitutional provision for right to health and devolution of health services delivery to counties. Annex K summarises the MTR recommendations and how they were implemented between 2014 and 2018.

## **4.2 Conclusions and Recommendations**

Based on the findings described in this chapter, the review made the following conclusions and recommendations on the capacity of the NMCP to implement the planned strategies and activities.

#### 4.2.1 Conclusions

- The performance for implementation of all the six objectives was generally low, ranging from a score of 26.3 percent for objective 3 on EPR to 60 percent for objective 4 on SMEOR.
- Only 5 out of the 28 strategies (17.9%) in the KMS achieved a moderate score (between 75% and 90%). Three strategies (10.7%) were not implemented at all and therefore had a zero score. All the other strategies achieved a low score (under 75%).
- Inadequate funding was cited as a challenge that impeded full implementation of various strategies in the KMS. Some strategies, such as net distribution and IRS, did however receive adequate funding.
- The review found that access to reporting and documentation, especially for activities done at county and subcounty levels, was not easy.
- Mechanisms for engagement between the national and county levels were unclear and inadequate.
- The recommendations that originated from the 2014 MTR were only partially implemented.
- There was insufficient follow-up of activities to ensure sustained achievement of expected outcomes.

#### 4.2.2 Recommendations

- The NMCP should conduct annual review and planning meetings to deliberate and document progress made and outline priorities and milestones for the following year.
- It will be necessary to critically review all factors that led to under-achievement of strategy implementation across all objectives, as identified in this MPR. Removing the identified barriers will lead to better achievements under the next malaria strategy.
- There is need to clarify and utilise the mechanisms of engagement between the national level and county and subcounty levels, including a way to report subcounty level implementation of activities.
- Coordination and collaboration of health departments and units and relevant partners should be enhanced through TWGs and during implementation and review of strategies and activities.
- Interventions beyond “event/one-off” activities should be conceptualised to ensure sustained achievement of expected outcomes

# REVIEW OF THE EFFECTIVENESS OF THE HEALTH SYSTEM TO DELIVER MALARIA SERVICES AS DEFINED IN THE KMS 2009–2018

This chapter reviews in detail the implementation and effectiveness of KMS 2009–2018.

## 5.1 Attainment of Objective 1: To have at least 80% percent of people living in malaria risk areas using appropriate malaria preventive interventions by 2018

This objective combined vector control and MIP interventions. Vector control strategies were: universal coverage of LLINs in targeted areas; indoor residual sprayed; larval source management and supporting school based malaria interventions. There was only one MIP specific strategy which was to scale up presumptive treatment of malaria in pregnancy.

### 5.1.1 Vector Control

#### *Vector Control Outcome Indicators and Targets*

The revised KMS 2009–2018 had the following indicators and targets for measuring vector control outcomes:

1. 90% of households to own more than one ITN/LLINs by 2017
2. 80% children <5yrs slept under an ITN/LLIN on night before a survey by 2017
3. 80% pregnant women slept under an ITN/LLIN on night before a survey by 2017
4. 80% of community members slept under an ITN/LLIN on night before a survey
5. 90% of population in targeted areas protected by IRS by 2017.
6. Proportion of targeted larval habitats appropriately managed
7. Proportion of targeted counties with vector larval habitat maps
8. Number of schools implementing the malaria schools' initiative

Most of these are standard indicators and were thus appropriate for measuring achievement of the vector control interventions. However the review found that there was lack of established standardized entomological impact indicators at the national level.

#### *Progress Towards Vector Control Outcome Indicators*

Progress on vector control indicators was captured by the MIS 2010 and 2015 and by the Post-Mass Net Distribution Long-lasting Insecticide-treated Net Survey conducted in 2017 (PMLLIN 2017). Table 10 shows the trend in these indicators.

Access to LLINs, proportion of households with one net per two people, ranged from 45 percent to 50 percent in the three epidemiological zones in Kenya, which is below the 80 percent target. In 2015, the use of LLINs was below the target (less than 80%) in all endemic regions of Kenya. Only lake endemic region achieved the net usage above the target.

**Table 10. LLIN coverage and use by malaria endemicity in Kenya**

Outcome indicator	MIS 2010			MIS 2015			PMLLIN 2017		
	High-land	Lake	Coast	High-land	Lake	Coast	High-land	Lake	Coast
Proportion of households with at least one LLIN	49 %	54%	57%	73%	87%	73%	76%	83%	63%
Proportion of households with more than one LLIN	23%	26%	32%	54%	60%	39%	55%	62%	40%
Proportion of households with at least one LLIN for every two persons	-	-	-	46%	54%	45%	49%	50%	50%
Proportion of pregnant women sleeping under LLIN	35%	51%	48%	62%	78%	84%	-	-	-
Proportion of children under five sleeping under ITN/LLIN	43%	42%	50%	61%	73%	72%	78%	84%	67%
Proportion of people sleeping under ITN/LLIN	31%	33%	41%	54%	67%	59%	74%	78%	62%

The observed low LLIN coverage and utilisation may be due an inefficient net distribution approach. This review identified some of reasons that may explain the gap in LLIN coverage: (1) Inadequate and untimely availability of resources, 2) community resistance during household registration for mass distribution (due to political reasons), 3) quantification of LLINs using projected population and not the actual registration, and (4) the fact that the previous distribution did not consider the sleeping spaces within the households.

In the two high endemic counties where IRS was implemented in 2017 and 2018, the coverage was above 94 percent. Larval source management was not implemented, but malaria-free school initiative reference materials were developed and disseminated to schools in western Kenya.

### ***Enablers and Constrainers***

The achievements described above were possible facilitated by the following enablers:

- Availability of policy documents and guidelines on vector control
- Availability of requisite expertise and experience at programme and partner levels
- Well-established partnership coordinated through the vector control TWGs
- Availability of resources for vector control, especially LLINs
- A well-established commodity management system for routine LLIN distribution

The following constraints were also identified:

- The spread and intensity of pyrethroid resistance is increasing.
- There are limited choices of non-pyrethroid-based vector control insecticides because only one is registered for use in IRS in Kenya.
- The implementation of integrated vector management (IVM) lacks a systematic approach.
- Inefficiency in the approach for LLIN distribution leading to low coverage and access.

## ***Conclusions and Recommendations***

The review made the following conclusions with regard to whether Kenya had achieved its objective of having at least 80 percent of people living in malaria risk areas using appropriate malaria preventive interventions by 2018.

- The targets for most of LLIN indicators as summarised in Table 16 were not met. Lessons learned and inefficiencies observed in previous LLIN campaigns should inform future distribution plans. Coverage was high in areas targeted for spraying, but the scope of IRS in terms of population covered and targeted areas (high endemicity areas) should be revisited to have meaningful impact as a country.

The review made the following recommendations for the way forward for vector control:

- Improve coverage of LLINs to achieve universal coverage through continued mass net distribution campaigns and scale-up of continuous net distribution (through maternal and child health initiatives and other community initiatives).
- Maintain IRS in the counties where it is currently ongoing and implement IRS for transmission reduction and interruption.
- Strengthen the implementation of insecticide resistance management according to the existing Insecticide Resistance Management strategy.
- Fully embrace IVM approaches for vector control.

### **5.1.2 Malaria in Pregnancy**

#### ***MIP Outcome Indicators and Targets***

The revised KMS 2009–2018 had three key indicators for measuring the outcome of MIP interventions in the revised M&E plan. These were:

1. Proportion of pregnant women who received at least 1 dose of intermittent preventive treatment (IPTp) for malaria during their last pregnancy (in the last 2 years) in endemic areas
2. Proportion of pregnant women who received 2 or more doses of intermittent preventive treatment (IPTp) for malaria during their last pregnancy (in the last 2 years) in endemic areas
3. Proportion of targeted facilities with no reported stock outs of IPTp drugs in the last 3 months lasting more than 7 days

These are standard indicators, the first two of which are measured via household surveys while the last one is measured using routine data. The MIP outcome indicator specifically included in KMS Performance framework was the second one (proportion of pregnant women who received two or more doses of IPTp during the last pregnancy within last two years in endemic areas) with a target of 80 percent. The indicator was appropriately phrased and smart. The outcome indicators, targets, and baseline for this indicator were also appropriate.

Data on some other IPTp indicators is also captured at ANC as part of routine data capture systems. These data capture tools however need to be updated to enable capture data on three or more doses of IPTp3.

#### ***Progress Towards MIP Outcome Indicators***

IPTp and ANC coverage

Until 2015, the policy on chemo-prevention recommended that all pregnant women living in malaria endemic counties should receive a minimum of two doses of intermittent preventive treatment in pregnancy (IPTp).

According to KMIS data 92 percent of expected pregnant women attended the first antenatal care (ANC) visit, and 63 percent made the recommended four ANC visits. Of the 92 percent of women who made first ANC visit, 70 percent received one dose of IPTp; on the other hand, of the 63 percent of women who made the recommended four ANC visits, only 56 percent received two doses, and 38 percent received the recommended three doses of IPTp (KMIS, 2015).

This data clearly shows gaps between ANC1 and IPTp1 coverage. The review also noted a gap between coverage of IPTp1 and IPTp2. This gap is explained by the late starting of ANC, in which some women who received IPTp1 would have delivered when due for IPTp2. Another reason for the gap in coverage is due to migration out of the catchment area by women who accessed IPTp 1.

### LLINs Outcome Indicators and Targets

The LLIN policy for MIP states that every pregnant woman should receive an ITN/LLIN during pregnancy and when having a new born baby. This objective had one indicator to track progress on use of LLINs by women in ages 15–49. The percentage of pregnant women ages 15–49 who slept under an LLIN increased, from 40 percent in 2007 to 58 percent in 2015 (KMIS 2015). The review noted that there had been interrupted supply (occasioned by either accountability issues or other procurement delays) of nets to some facilities.

### *Enablers and Constrainers*

The following enablers were identified:

- **Availability of updated policies and guidelines for implementation of MIP:** MIP was covered under the overall KMS 2009–2018 (revised in 2014), the Kenya Malaria Monitoring and Evaluation Plan, and the national Guidelines for Diagnosis, Treatment and Prevention of Malaria in Kenya. KMS is aligned to the KHSSP, which articulates interventions to be implemented in all malaria epidemiological zones in the country. In 2014, a decision was made to limit implementation of the IPTp-sulphadoxine-pyrimethamine (SP) strategy to 14 malaria endemic counties, a departure from the blanket application in all parts of the country, which was the case prior to 2014. This strategic shift not only resulted in prudent use of resources but also led to greater focus in areas where this intervention was needed. In Kenya, specific implementation guidance tools for MIP are regularly developed and disseminated. These include the standard-based management and recognition MIP tool (15 MIP standards), job aids, brochures, and circulars to facilitate ease of use at the point of care.
- **Technical Working Group:** For technical direction and implementation, the MIP-TWG is chaired by the Reproductive Maternal, Neonatal and Child Health Services Unit (RMNSU) while NMCP acts as the secretariat. The close collaboration between the two units enables smooth operation and delivery of MIP services at the point of care.
- **Supportive supervision and mentorship:** The review noted that much higher IPTp coverage was realised in areas where supportive supervision was regularly done. For example, in the four counties of Bungoma, Kisumu, Homabay, and Migori, which benefited from a comprehensive support from the USAID/PMI project, national targets were nearly met.
- **Community mobilisation, creating demand for SP and LLINs:** The addition of community mobilisation to health facility training showed encouraging results.
- **Availability of SP and LLINs in most facilities:** Apart from the shortage caused by poor coordination between county and national government, the constant availability of SP and LLINs in most facilities enabled prompt delivery of these essential interventions.
- **Trained personnel to meet demand at the health facility:** The nationwide refresher training on malaria, which included an MIP component, resulted in better understanding of IPTp policy among healthcare workers with resultant improved delivery.

In terms of MIP, the following constraining factors and issues were identified.

- Healthcare workers had uncertainty regarding when to give IPTp: Confusion regarding when to give IPTp-SP has been identified as a major cause of missed opportunities at the health facility level and will need to be constantly addressed.
- Inadequate data capture system: The current data capture tools (registers and ANC booklet) do not have space to record IPTp3, which is the primary indicator for IPTp coverage.
- Poor healthcare worker-client communication: Recent studies have shown that healthcare workers do not spend time to explain to the clients the importance of IPTp, which does not auger well for client compliance.
- Erratic supply of SP in the period under review: The erratic supply of SP, which was occasioned by the poor coordination between the national and county government, resulted in temporary SP stockouts, resulting in loss of opportunity to deliver this important intervention.
- Temporary stockout of LLINs due to logistical challenges
- Revised registers had no provision to capture IPTp3
- Late ANC attendance

### ***Conclusions and Recommendations***

There were improved achievements in IPTp (IPTp2 and IPTp3); however additional efforts are needed to fully attain and sustain national targets.

The review makes the following recommendations with regard to MIP:

- Increase uptake of IPTp at the ANC by promoting its use through community health structures.
- Scale up MIP activities currently done in four counties to all the targeted areas.
- Revise data capture systems to include capture of IPTp3+ doses.
- Align SP and LLIN provision with the current Division of Reproductive Health guidelines.
- Strengthen the partnership between the NMCP and the National Reproductive Health Programme for ease of scaling up and sustaining MIP interventions.

## **5.2 Attainment of Objective 2: To have 100 percent of all suspected malaria cases presenting to a health provider managed according to the national malaria treatment guidelines by 2018**

This objective was revised in the KMS 2009–2018 (2014 edition) to ensure universal access to malaria diagnosis and treatment. This was to be achieved through implementation of five strategies.

### ***Case Management Outcome Indicators and Targets***

There were 14 indicators spanning the 5 strategies under Objective 2. This sub-section presents key findings on appropriateness of the outcome indicators selected under each of the strategies.

#### **Strategy 1: Capacity building for malaria diagnosis and treatment at health facilities**

There were three outcome indicators under this strategy:

1. Proportion of patients with fever presenting to health facility who were tested for malaria with RDT or microscopy (<5years and >5 years of age)

2. Proportion of patients with fever presenting to health facilities who were managed in accordance with national malaria guidelines (tested for malaria with RDT/microscopy and test positive prescribed ACT and test negatives not prescribed an antimalarial)
3. Proportion of children under 5 years old with fever in the last two weeks who had a finger or heel stick

These indicators were appropriately phrased and smart, with appropriate baseline and target measures aligned with the objective. The data, however, were not readily available from routine systems, and reporting was dependent on biannual health facility surveys. The review recommended the inclusion of an indicator to capture data on inpatient case management for severe malaria: proportion of inpatients with severe malaria managed in accordance with national malaria case management guidelines. This indicator was recently introduced among the data collected in the NMCP biannual facility-level quality of care surveys. The programme should prioritize adapting current tools and strengthening the quality of reporting, with the ultimate goal of enabling routine capture of the three outcome indicators.

### **Strategy 2: Access to affordable malaria medicines through the private sector**

There are three outcome indicators under this strategy. These indicators were not well-aligned to the strategy, and were generally phrased to match those under the first strategy, albeit for the private sector. The review recommended rephrasing the strategy to “strengthen quality of malaria diagnosis and treatment in private sector.”

### **Strategy 3: Strengthening community case management of malaria using the community strategy through community health volunteers**

There were four indicators under this strategy. The data sources available, however, were unable to report proportions for the outcome indicators due to the lack of reliable denominators. The review recommended inclusion of an indicator to track the proportion of CHVs implementing community case management. A second recommendation was to adapt household survey data capture methods to allow for reliable tracking of performance for this indicator. In the long term, the programme should prioritise adapting current tools and strengthening the quality of reporting, with the ultimate goal of enabling capture of the outcome indicators using routine data.

### **Strategy 4: Ensure commodity security of antimalarials and diagnostics in the public sector**

For all three indicators under this strategy, stockouts were defined as unavailability of commodities (ACTs, rapid diagnostic tests [mRDT], and injectable artesunate) over a period of seven or more days. The review proposed revision of the strategy as follows: proportion of health facilities having no stockouts for the malaria commodities in the seven consecutive days preceding the survey. Another recommendation was to revise the indicator for malaria rapid diagnostic test (mRDT) availability to report on availability of any malaria diagnostic test in order to incorporate availability of microscopy. The indicator on artesunate was only collected from hospitals. This essential treatment should be available in health centres and dispensaries for pre-referral care and should therefore be assessed at all health facilities.

### **Strategy 5: Strengthen quality assurance of malaria diagnosis**

There were two outcome indicators under this strategy. The first outcome indicator was appropriately phrased and smart, with appropriate baseline and target measures aligned with the objective for the thematic area. It was recommended that reporting for the first indicator be disaggregated by test (microscopy/RDT). The second outcome indicator should be revised to; “proportion of laboratories enrolled in external quality assessment.”

## ***Progress Towards Achieving Case Management Outcome Indicators***

This section summarises the performance of the outcome indicators for the five strategies under Objective 2.

### **Strategy 1: Capacity building for malaria diagnosis and treatment at health facilities**

The proportion of suspected malaria cases presenting to public health facilities that were tested for malaria increased, from 24 percent (baseline in 2010) to 64 percent (2017) (Machini, et al., 2017). The increased testing rates have been attributed to increased availability of malaria diagnostics, particularly mRDTs and training on malaria case management and parasitological diagnosis. This performance contrasts with household survey data from the KMIS 2015, which indicate that only 39 percent of children under five with fever in the two weeks before the

survey received a malaria test (NMCP, Kenya National Bureau of Statistics, & ICF, 2016). Overall, the quality of facility-level case management was assessed using a composite indicator representing appropriate patient testing for malaria and treatment with an ACT if the test result was positive or withholding treatment for malaria if the result was negative. Performance of this indicator increased, from 16 percent (baseline in 2010) to 59 percent (2017) (Table 11).

**Table 11. Performance of indicators on capacity building for malaria diagnosis and treatment at health facilities**

Indicator	Baseline (2010)	Target (2017)	2014	2015	2016	2017
% patients with fever presenting to health facility tested for malaria with RDT or microscopy	24%	100%	62%	66%	64%	64%
% patients with fever presenting to health facility managed in accordance with national malaria guidelines	16%	100%	56%	60%	62%	59%
% children <5 with fever in the last 2 weeks who had a finger or heel stick <sup>a</sup>	12%	100%		39%		

Source: Monitoring outpatient malaria case management under the 2010 diagnostic and treatment policy in Kenya - Progress January 2010 - September 2017; <sup>a</sup>KMIS 2015

### Strategy 2: Access to affordable malaria medicines through the private sector

NMCP conducted nationally-representative cross-sectional surveys of private retail outlets in 2013 (Omar, et al., 2013) and 2016 (Machini, et al., 2016). Findings from the surveys showed that the number of facilities with health workers trained in malaria case management was low but had increased, from 9 percent in 2013 to 17 percent in 2016. The proportion of patients with suspected malaria that were tested with RDT or microscopy in the private sector also increased, from 21 percent in 2013 to 79 percent in 2016 but remained short of the target of 100 percent. Suspected malaria cases managed in accordance with national malaria guidelines increased, from 32 percent in 2013 to 58 percent in 2016, against a target of 100 percent (Table 12).

**Table 12. Performance of indicators on access to affordable malaria medicines through the private sector**

Indicator	Baseline (2013)	Target (2017)	2016
% outlets/facilities with at least one trained health worker in malaria case management	9%	100%	17%
% patients with suspected malaria presenting to health facilities in private sector tested for malaria with RDT or microscopy in the private sector	21%	100%	79%
% suspected malaria cases presenting to health facilities in private sector managed in accordance with national malaria guidelines	32%	100%	58%

Source: Availability and quality of dispensing practices of Artemisinin-based Combination Therapies (ACT's) and Rapid Diagnostic Tests (RDTs) in the private retail sector 2013 and 2016

### Strategy 3: Strengthening community case management of malaria using the community strategy through community health volunteers

In 2017, more than two million children with fever presenting to a CHV were tested for malaria using an RDT, compared to approximately 50,000 children in 2016. The drastic increase was due to prolonged industrial action in the public health sector that resulted to shifting care seeking behaviour to the community through the CHVs. Approximately 160,000 children who tested positive by a CHV were treated with ACT in 2017, compared to 103,900 children in 2016.

A similar increase was observed for those who tested negative and were not treated with an anti-malarial (93,328 in 2017, compared to 47,140 in 2016) (Table 13). Although the performance for these indicators reflected an achievement of the defined targets, coverage of community case management for malaria was only in limited areas of the lake endemic zone and was not implemented in other regions of the country.

**Table 13. Performance of indicators under Strategy 3**

Indicator	2015 (target)	2016 (target)	2017 (target)
Proportion of patients with fever presenting to a CHV who are tested for malaria using an RDT	(20,225)	151,040 (96,580)	2,531,898 (81,805)
Proportion of patients with fever who tested positive by a CHV who were treated with ACT	36,035 (20,551)	103,900 (88,076)	159,860 (60,621)
Proportion of patients with fever who tested negative by a CHV who were not treated with an anti-malarial		47,140	93,328

#### Strategy 4: Ensure commodity security of antimalarials and diagnostics in the public sector

In 2013, no stockouts of ACTs were reported in 73 percent of health facilities in the public sector, with modest improvement to 79 percent of health facilities in the public health sector reporting no stockouts in 2017. Availability of RDTs increased substantially, from 53 percent of facilities in 2010 to 90 percent of facilities in 2017. A similar improvement was observed in availability of artesunate in hospitals surveyed (Table 14).

**Table 14. Performance of indicators under Strategy 4**

Indicator	Baseline	Target (2017)	2014	2015	2016	2017
Proportion of health facilities having no stockout of ACTs for seven consecutive days in past three months (for each ACT weight band)	73% (2010)	100%	76%	88%	86%	79%
Proportion of health facilities having no stockout of RDTs for seven consecutive days in past three months	53% (2010)	100%	93%	94%	90%	90%
Proportion of health facilities having no stockout of artesunate injections for seven consecutive days in past three months	53% (Feb. 2016)	100%			81% (Sep 2016)	

#### Strategy 5: Strengthen quality assurance of malaria diagnosis

The proportion of health facilities able to perform malaria parasitological diagnosis (mRDT or microscopy) increased, from 55 percent at baseline to 94 percent in 2017. This high performance has been sustained over successive surveys. However, performance of this indicator remains short of the target of 100 percent required to achieve the case management objective (Table 15).

**Table 15. Performance of indicators under Strategy 5: Strengthen quality assurance of malaria diagnosis**

Indicator	Baseline	Target (2017)	2014	2015	2016	2017
Proportion of facilities able to perform malaria parasitological diagnosis	55% (2010)	100%	77%	97%	93%	94%
Proportion of laboratories enrolled in external quality assessment reporting blood smears correctly	52% (2016)	100%			69%	92%

Enablers and Constraints



The enabling factors contributing to the achievements of the programme were as follows:

- Strong support from local and international partners, with regular TWG meetings
- Existing coordination and oversight structures at NMCP
- Enabling policies and evidence-based guidelines
- A strong PSM for malaria medicines and RDTs, and effective pharmacovigilance system
- Regular quality of care surveys that provide data to track performance resulting in enhanced accountability
- Access to routine data through DHIS 2
- Political will at the national level evidenced by initiatives such as the UHC agenda
- Political will at the county level with some counties committing funds for malaria control activities

The constraining factors that affected implementation of this objective include:

- Inadequate support for community case management of malaria
- Industrial actions by health workers and high staff turnover
- Poor quality of data to inform programming
- Lack of clarity on mRDT regulation on the levels of care that should use them
- Inadequate capacity among malaria coordinators at the county and subcounty levels
- A slow guideline and policy document review process

### ***Conclusions and Recommendations***

The review made the following conclusions.

- **Training:** Surveys and field visits indicated that health facilities had staff who are trained on the national treatment guidelines but coverage remained suboptimal. NMCP was unable to reliably track the number and distribution of health workers trained.
- **Quality of care:** There has been improved quality of malaria case management in health facilities. Performance had however plateaued at around 60 percent and use of data from quality of care surveys for decision making at the county level was limited. NMCP engagement of the private sector in malaria control activities remained weak and unstructured. This gap was reflected in the disparity between performance of case management in the public and private sectors, with the private sector lagging behind the public sector.
- **Commodity security:** Case management commodities were managed centrally at the national level from Kenya medical supplies agencies (KEMSA) through NMCP, although there was no focal point at NMCP for this important activity. In the private sector, commodity security has been successfully facilitated through a co-payment mechanism whereby the costs of ACTs are subsidised through support from the Global Fund.
- **Quality assurance for malaria diagnosis:** The national reference laboratory is well-equipped and staffed to support malaria diagnosis and quality assurance. In the counties, external quality assurance is ongoing through county reference laboratories currently being established in various regions, although counties in low transmission zones have lagged behind due to lack of support in the face of competing priorities.
- **Guidelines development and harmonisation:** NMCP revised and disseminated updated guidelines for malaria case management and malaria parasitological diagnosis. Outdated guidelines for malaria case management were noted to be in use, however. There is currently no guidance on the appropriate levels of care or epidemiological zones for which malaria diagnostics (RDTs and microscopy) should be used.

- **Community case management for malaria:** There is demonstrated support for community case management by counties through the establishment of community health units and provision of stipends to CHVs among other incentives. However, community case management for malaria is currently largely supported by partners and, in some counties, lacks integration with other community-based interventions. The current regulatory framework does not provide for the use of mRDTs and ACTs by CHVs.

The review made the following recommendations

- Enhance capacity building in case management at both the national and county levels, including pre- and in-service training. Incorporate evidence-based behaviour change components in the curriculum and improve tracking of trained health workers.
- Intensify monitoring of the quality of care for improvement of malaria case management at national and county levels both in the public and private sectors.
- Strengthen private sector engagement involved in malaria case management to sustain the achievements realized under the ACT co-payment mechanism.
- Strengthen engagement with counties in low transmission zones to ensure prioritisation of malaria control activities, including surveillance, through strengthening of county reference laboratories and quality assurance of malaria diagnosis.
- Ensure use of the approved guidelines for malaria case management and parasitological diagnosis for safe, evidence-based, and harmonised practice in the public and private sector and at the community level.
- Scale up community case management for malaria in priority areas, and integrated it with other community-level interventions.

### **5.3 Attainment of Objective 3: To ensure that 100 percent of the malaria epidemic-prone and seasonal transmission subcounties have the capacity to detect and timely respond to malaria epidemics by 2018**

The national malaria policy stipulates that counties and subcounties prone to malaria epidemics should establish and maintain effective early warning and detection systems that are part of routine integrated disease surveillance. Further, these subcounties should use available data to plan for and respond in a timely manner for the prevention and containment of malaria epidemics.

For the period under review (2014–2018), the country experienced a significantly reduced number of malaria epidemics. Further, the magnitude, severity, and frequency of the epidemics have remarkably reduced. More recently, however, there has been an upsurge of malaria cases in some of the counties such as Meru County (Igembe North) in 2016, and in Uasin Gishu, Baringo, Marsabit, and Turkana counties in 2017. These upsurges, were much more localized, occasioned by short, heavy rains in September 2017.

#### ***EPR Outcome Indicators and Targets***

The revised KMS 2014-2018 lists five indicators for the measurement of progress towards achievement of the EPR objective as listed below:

1. Proportion of sub-counties in epidemic prone and seasonal transmission areas with at least 5 sentinel sites
2. Proportion of sentinel HFs in targeted epidemic prone and seasonal transmission areas monitoring and reporting current thresholds
3. Proportion of target counties and Sub counties with reviewed Malaria EPR plans
4. Proportion of malaria epidemics detected and reported within 2 weeks of surpassing action threshold
5. Proportion of detected epidemics properly managed as per the EPR guidelines

The review showed that whereas some of the indicators were appropriate as included in the KMS, a few were not smart and were not clearly phrased. Thus they could not be measurable at the end term and will require revision. Additionally, indicators and activities which were meant to be conducted by the county and sub-counties were included in the KMS. In this case it was not clear how NMCP would be evaluated on these activities and indicators in the event that these two levels failed to undertake the EPR activities.

### *Progress Towards Achieving EPR Outcome Indicators*

Performance of EPR outcome indicators and targets is summarized in Table 16 and elaborated in the following section.

**Table 16. Performance of indicators on epidemic preparedness and response**

Indicator	Baseline (2013) %	2014 %	2015 %	2016 %	Target (2017) %
Proportion of sub-counties in epidemic prone and seasonal transmission areas with at least 5 sentinel sites	20	60	80	90	100%
Proportion of sentinel HFs in targeted in epidemic prone and seasonal transmission areas monitoring and reporting current thresholds	20	50	80	90	100
Proportion of target counties and sub-counties with reviewed Malaria EPR plans	40	60	80	100	100
Proportion of malaria epidemics detected and reported within 2 weeks of surpassing action threshold	100	100	100	100	100
Proportion of detected epidemics properly managed as per the EPR guidelines	100				

**Sentinel Surveillance:** Sentinel surveillance sites in the epidemic-prone counties have inadequate capacity to timely detect outbreaks. Apart from sentinel sites, all other health facilities do not have the capacity for early detection, which is key, given the nature of malaria transmission in the country. The target of having all subcounties in epidemic-prone and seasonal transmission areas with at least five sentinel sites was not achieved; only 40 percent of these subcounties have a minimum of five sentinel sites.

**Monitoring and Reporting of Thresholds:** Only 40 percent of the sentinel health facilities in targeted epidemic-prone and seasonal transmission areas were monitoring and reporting current thresholds, an increase from the baseline of 20 percent. The lack of capacity at the sentinel sites means that analysis was primarily done at the subcounty level by the surveillance officers. Some subcounties have limited capacity to perform basic epidemiological analysis, due to inadequate skills, lack of computers, and airtime to transmit the information generated.

**EPR Plans:** The KMS target of having all targeted counties and subcounties with reviewed malaria EPR plans was fully achieved at the county level only (100 percent) because counties did not cascade EPR plans to subcounties due to devolution challenges and lack of resources as envisaged.

**Timely response to epidemics:** The KMS target of 100 percent timely response to epidemics was fully achieved. All seven outbreaks that occurred over the plan period were reported and responded to within two weeks.

**Post epidemic assessments:** Post-epidemic evaluations were not conducted for the outbreaks reported. Measurement of the indicator on proportion of detected epidemics properly managed as per the EPR guidelines, could not be done.

### *Enablers and Constrainers*

Even though some achievements have been made in malaria EPR, several challenges persist. One major issue facing malaria EPR is low prioritisation, resulting in inadequate funding to support malaria EPR strategies at all levels. Devolution of health functions to the county level brought several challenges, mostly related to implementation and coordination.



Other challenges include the following:

- Lack of integration of EPR and surveillance activities at all levels
- Limited use of available data for decision making for planning and response
- Limited post-epidemic assessment on outbreaks reported and responded to
- High rate of staff turnover, particularly at the county and subcounty levels
- Lack of a coordination body or TWG
- Limitations of currently available predictive models, leading to lack of accurate and practically applicable early warning tool for operational use
- Knowledge gap in the interactions between climate, vectors, environmental, and social factors and the disease
- Weak EPR surveillance in the seasonal transmission counties
- Lack of clarity on the roles and responsibilities of communities, hence limited community engagement in malaria EPR
- Limited capacity for malaria EPR at the county and subcounty levels, resulting in poor, late, and inaccurate reporting

### ***Conclusions and Recommendations***

The review made the following conclusions:

- Malaria EPR was not implemented optimally over the course of the KMS period. This was occasioned by low investment, weak linkages between EPR and surveillance, inadequate coordination at all levels, and limited capacity to undertake effective EPR activities.
- Capacity for predicting and detecting epidemics has improved, and the DSRU, through surveillance coordinators in the subcounties, provides data for plotting thresholds at local levels.
- The NMCP also receives weekly surveillance bulletins that help in assessing the malaria situation in the country.
- There is strong collaboration between the NMCP and the counties for training and EPR planning. Strong collaboration between NMCP, DSRU, partners, and counties has led to timely response to reported upsurges of malaria cases in some of the reported cases.
- Collaboration between NMCP and the Kenya Meteorological Department has resulted in a sharing of information that is used to predict malaria upsurges.
- The KNMF 2018 presentations from epidemic-prone counties validated some of the findings from the review process. The seasonal transmission counties, where there have been challenges in reporting and setting up sentinel sites, reported limited experiences in EPR. As the epidemiology of the disease changes, these areas will be key in sustaining the gains already made in keeping the transmission low. Thus, it is important that a robust EPR be established in the seasonal transmission and epidemic-prone areas.

The review made the following recommendations:

- Integrate malaria EPR with surveillance at the national, county, and subcounty levels.
- Revise SMEOR TWG terms of reference, surveillance manuals, and guidelines to include EPR functions.
- Strengthen the capacity of the sentinel health facilities to improve functionality and to routinely provide timely, accurate, and reliable information, including threshold monitoring.
- Include SMEOR EPR activities in all national, county, and subcounty annual work plans.

## 5.4 Attainment of Objective 4: To ensure that all malaria indicators are routinely monitored, reported, and evaluated in all counties by 2018

Implementation of SMEOR activities under this objective has largely been guided by the Kenya Malaria M&E plan (2009–2018) which includes the following components:

- Strengthening routine monitoring systems through human resource and technical capacity development for M&E
- Enhancing capacity for the HIS, integrated disease surveillance and response (IDSR), and the logistics management information system (LMIS) to provide routine data for malaria control
- Supporting the Pharmacy and Poisons Board (PPB) for nationwide rollout of pharmacovigilance and regular post-market surveillance (PMS) of malaria medicines and further investments in drug efficacy monitoring, insecticide resistance monitoring, and malaria sentinel surveillance
- Evaluating the impact of malaria control interventions through investment in MIS, Kenya Demographic and Health Survey, health facility surveys, entomological surveys, and operational research

Attainment of these components was assessed through three key outcome indicators and targets outlined in the following section.

### *SMEOR Outcome Indicators and Targets*

Table 17 shows the outcome indicators and targets for the SMEOR objective. The three indicators had baseline values, and targets were set to assess performance on an annual basis. The second indicator on counties producing malaria profiles could not be measured because NMCP produced all the 47 county malaria profiles using survey data at national level and disseminated them to the counties. The use of the term “malaria profile” in the indicator is ambiguous; some counties are using malaria surveillance data to produce bulletins/fact sheets/profiles. Entomological sentinel surveillance sites are selected in three subcounties per county. To achieve the intended result and to determine appropriate coverage; the indicator on “counties conducting entomological surveillance” should be measured with reference to the subcounty and disaggregated by county.

**Table 17. SMEOR outcome indicators and targets**

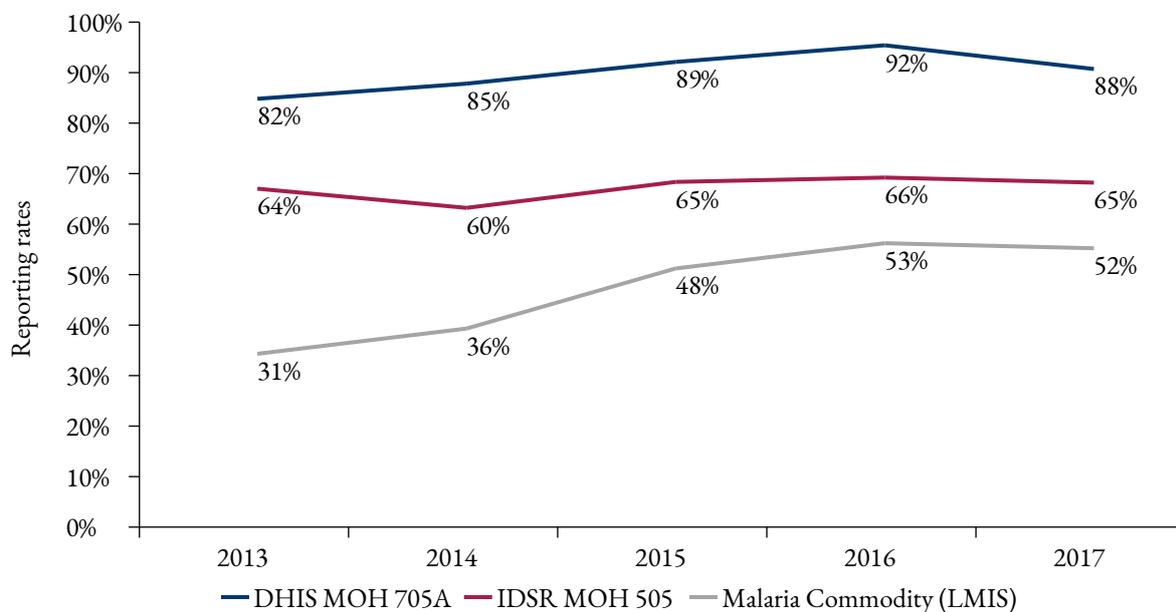
Indicator	Baseline	Targets (achievements)				
		2013	2014	2015	2016	2017
Proportion of health facilities sending timely reports on malaria disease surveillance	83	83 (82)	100 (85)	100 (89)	100 (92)	100 (88)
Proportion of counties using malaria surveillance data to produce a malaria profile	0	0 (--)	25 (--)	60 (--)	75 (--)	100 (--)
Proportion of counties conducting entomological surveillance in endemic and epidemic-prone areas		0 (--)	8 (--)	20 (--)	50 (94)	90 (87)

### *Progress Towards SMEOR Outcome Indicators*

During the period under review, DHIS 2 reporting rates were high (above 80 percent), which is 10 percent higher than the value observed during the mid-term review. The programme did not achieve the 100 percent target indicated in the performance framework. Further, malaria indicators are derived from three data reporting tools, and their reporting rates are shown in Figure 16. Other notable improvements in DHIS 2 include recent reporting of individual-level inpatient data by some facilities. However, completeness of the data is still low, and classification of morbidity and mortality has not been fully standardised. Evidence provided during the KNMF indicated that only 38 percent of admitting health facilities were reporting inpatient data and that some of the major hospitals (Kenya National Hospital and Moi Teaching and Referral Hospital) are not reporting these data in DHIS 2. Thus the available data was inadequate to track malaria inpatient morbidity and mortality.

County malaria profiles were produced by the NMCP at the national level and disseminated to the counties. For this reason, the second indicator on proportion of counties producing malaria profiles could not be measured as envisioned in the performance framework. Entomological surveillance was carried out beyond the proposed endemic and epidemic-prone areas and covered 87 percent of the counties countrywide in 2017.

**Figure 16. Health facilities on-time reporting rates by data reporting tools in DHIS 2**



### ***Enablers and Constrainers***

The review identified the following enabling factors for surveillance, monitoring and evaluation, and operational research:

- Strong M&E partnerships, collaborative research networks, and seamless efficient coordination through M&E and operational research TWGs on a quarterly basis, with participation from key stakeholders
- Coordination with other departments and entities that collect relevant data, including the counties
- Integration of IDSR, malaria commodity, and laboratory data in DHIS improved reporting of malaria data and strengthened availability of routine data
- Increased capacity for analysis and interpretation of malaria surveillance data at the national level and in select counties resulted in the production of routine surveillance bulletins; regular use of malaria data to produce the bulletins has resulted to improved quality of data
- County structure with a malaria control coordinator and M&E TWGs in some counties have enhanced data flow and reporting; malaria control coordinators are members of the county health management teams
- Guidance from WHO on malaria surveillance and especially monitoring of malaria indicators using routine data has facilitated use of malaria data

The review also identified the following constraining factors in relation to malaria surveillance, monitoring and evaluation, and operational research:

- Lack of programme reporting by programme officers within the NMCP. The Malaria Information and Acquisition System (MIAS) designed for programmatic reporting was not used.
- Insufficient data analysis capacity at the programme level; new staff members need basic training and all require capacity to use statistical methods with geographic information system applications to inform visualisation of data collected at all levels

- Insufficient research funding; although there was a research agenda which identified areas for research for informing programming, funding for such research is insufficient
- Lack of cooperation by most members of the research community to report progress on implementation of research agenda and to share results of the research findings
- Prolonged delays in implementation of the malaria drug efficacy monitoring studies which had not been finalised since 2013 in a country where these are supposed to be conducted every two years
- Unavailability of testing kits resulted in lack of susceptibility testing for insecticides
- Inadequate translation of research findings to policy as evidenced by the unavailability of policy briefs during the period under review
- Lack of malaria surveillance guidelines, which were planned for development as early as 2013
- Unavailability of appropriate reporting tools at the county level, leading to a lack of reporting by private facilities, low reporting at the health facility and community levels, and inconsistent data capture in cases in which both old and new tools were in circulation
- Inadequate investments by counties to implement follow-up actions highlighted in DQAs
- Lack of HIS regulation to determine the minimum mandatory reporting requirements and defining roles of national and county levels.
- Low reporting and poor quality of inpatient data that hampers availability of malaria morbidity and mortality data from the health facilities
- Inadequate M&E capacity at the county level, specifically capacity in documentation, data management, data analysis, and data use

### ***Conclusions and Recommendations***

The review made the following conclusions:

- A wealth of information has been made available through the conduct of surveys, production of surveillance bulletins, evaluation of malaria control interventions, and routine HIS and quality of care facility-based assessments. There is need to package this information into digestible information products such as publications and policy briefs to expand their use at subcounty and county levels. More efforts will be needed to ensure that high-quality data are available from routine HIS, including monitoring of trends in inpatient malaria morbidity and mortality, which is hampered by the lack of complete and accurate data.
- Functional M&E structures are required at the county level, as stipulated in the M&E institutionalisation guidelines to address gaps in data management systems, improve surveillance and M&E capacity, and to enhance the use of data for decision-making. Funding gaps and system issues at HIS need to be addressed to ensure the availability of appropriate reporting tools to both public and private sectors at all times.
- To achieve a strong malaria surveillance system, enhanced coordination and collaboration will be critical, especially with the Ministry's units of health information systems, diseases surveillance and response, health research and development, and community health strategy.
- Presentations during the KNMF 2018 noted the existence of a gap between researchers and policymakers, and the fact that importance of research is not recognized at the county level. Suggestions to address this barrier included conducting regular interaction between researchers and policymakers, building mutual trust, and creating knowledge translation desks in research institutes. Another key finding presented at the KNMF was that use of champions and mentorship is a good strategy to enhance data use; and that the MOH, through the Health Research and Development Unit, should explore the use of decision-making frameworks.

The review made the following recommendations:

- Regularly conduct epidemiological and entomological stratification to guide the targeting of intervention deployment.
- Strengthen malaria surveillance, including the development of guidelines and revision of available HIS tools to guide implementation in the context of changing epidemiology.
- Advocate for increased investments in surveillance at both the national and county levels to achieve better quality information for decision making for impact.
- Enhance data ownership and use of information for decision making at the national and subnational levels.
- Establish a network of health facilities to enhance the availability of inpatient morbidity and mortality data.
- Strengthen collaboration between the programme and the research community to allow sharing of research findings for public health use.
- Develop capacity at national and subnational levels for data demand and use to inform programmatic decisions.

## 5.5 Attainment of Objective 5: To increase utilisation of all malaria control interventions by communities in Kenya to at least 80 percent by 2018

The Kenya Malaria policy 2010 states “the Government will ensure all Kenyans have access to appropriate, accurate and culturally relevant information about malaria control and management, so that effective behaviour change is achieved.” Attainment of this objective was assessed based on six outcome indicators and targets outlined in the following section.

### *ACSM Outcome Indicators and Targets*

The KMS 2009-2018 outlined six ACSM indicators to measure progress of the ACSM (Table 18).

**Table 18. ACSM outcome indicators and targets**

Indicator	Baseline (KMIS 2007)	Target (2017) %
Proportion of people with knowledge on malaria prevention, diagnosis, and treatment	38%	80
Proportion of people who know that they should be tested for malaria before treatment	Unknown	80
Proportion of mothers and caregivers who know that ACT is the recommended treatment for malaria	39%	80
Proportion of individuals who slept under an LLIN the previous night	Unknown	80
Proportion of children under five who slept under an LLIN the previous night	39.2%	80
Proportion of suspected malaria cases presenting to health workers who were tested for malaria using RDT or microscopy	Unknown	100

All six indicators were measured through biennial or triennial surveys.

- Only three indicators [Indicators 1, 3, and 5] had baseline figures.
- Indicator 1 was found to be too broad, covering malaria prevention, diagnosis, and treatment, it would be preferable to split it into three separate indicators.
- In measuring the proportion of people with knowledge on malaria prevention, an indicator of pregnant women living within the 14 malaria endemic counties with knowledge on IPTp should be included.
- Indicator 6 measures only the action of the health worker that can be obtained through the quality of care survey; as such, it may be also important to measure the proportion of people demanding malaria testing.

### *Progress Towards Achieving ACSM Outcome Indicators*

The knowledge on malaria prevention was high at 95 percent (KMIS 2015). However, the target of 80 percent of individuals using malaria interventions was not attained. The proportion of people sleeping under an LLIN the previous night increased, from 29 percent in the 2010 KMIS to 48 percent in the 2015 KMIS. The proportion of people who slept under an LLIN was higher at 76 percent in endemic and epidemic-prone areas (post-mass LLIN distribution survey 2017). The proportion of children under five years who slept under an LLIN the night before the survey increased from 39 percent in 2010 to 56 percent in 2015 which was below the 80 percent targeted.

The proportion of mothers who knew that ACT is the recommended treatment for malaria increased marginally, from the baseline of 39 percent in 2007 to 42 percent in 2015 nationally, with a higher proportion of 72 percent in the lake endemic area.

The proportion of pregnant women receiving two doses of SP in malaria endemic zones increased from 25 percent (KMIS 2010) to 56 percent (KMIS 2015).

### *Enablers and Constraints*

The review identified the following enablers:

- The availability of a malaria strategy and communication plans at the national and county levels guided the implementation of ACSM activities. The Government policy of free provision of services and commodities to the beneficiaries was the most important factor that contributed to the coverage levels achieved in the major malaria interventions.
- The efforts of the NMCP in advocacy and mobilisation of Kenyans for the control of malaria at community level has been enhanced by collaboration with a range of partners within the MOH, other ministries and departments of Government and community structures such as communitybased and civil society organisations. It also increased the engagement with media houses in disseminating malaria messages through various radio stations. The availability of community health extension workers and CHVs was a facilitator in the conveyance of key malaria messages at the household level.

The review identified the following constraining factors:

- ACSM was hindered by weak coordination at national and county levels. National TWG meetings were not held regularly due to the decrease in partner participation, and counties did not hold ACSM TWG meetings due to challenges in releasing the available funds.
- Investments in ACSM was very small, with only one percent of the programme's budget allocated to ACSM. There was minimal financial and technical support for counties to implement community ACSM activities.
- Advocacy efforts were not as effective as desired, given that the NMCP did not convene biannual consultative meetings with the non-health sector and could not produce the six malaria information bulletins that had been planned. M&E of ACSM activities was inadequate because there was no mechanism to capture the community-based malaria control implemented at the county level.
- Efforts to increase ownership and use of LLINs have been beset with problems of culture, myths, and beliefs, such as sleeping spaces, allergies, and fatigue. Alternative inappropriate use of LLINs also remained a key challenge. In the area of IPTp there were fears that the drugs may affect the unborn baby.
- Some of the barriers to care-seeking in general include delay in reaching health facilities due to distance, long waiting times at facilities, stock out of malaria medicines, and preference for self-treatment. The review noted that barriers to increased use of malaria interventions varied from county to county, hence the need to understand the context of each county.

## 5.5.2 Conclusions and Recommendations

- Overall, the attainment of ACSM objective was low. There was weak coordination and low investment in malaria advocacy
- The knowledge on malaria prevention was high at 95 percent although the target of 80 percent of individuals using malaria interventions was not attained.
- The communities did not adequately use malaria control interventions due to various barriers such as cultural beliefs, myths and attitudes.
- There is need to understand these barriers and apply appropriate strategies to overcome them. Malaria messages should be tailored to address specific community-based needs and use malaria advocates at all levels to promote the use of malaria interventions.

The following recommendations were made from the review:

- Scale up malaria advocacy at the national and county levels for increased use of malaria interventions.
- Strengthen county-specific social behaviour change communication planning and implementation.
- Build the capacity of healthcare providers in social behaviour change communication at all levels.
- Leverage the community strategy to deliver community-based malaria control activities.
- Update provider knowledge on new guidelines at all levels, while rolling out interpersonal communication to address behavioural barriers to attaining national targets.
- Develop standard messages for adaptation and contextualisation by the counties and other stakeholders.
- Enhance private and non-health sector engagement to undertake ACSM for malaria with clear mandate and guidelines.
- Support community engagement for social accountability for malaria.

## 5.6 Attainment of Objective 6: To improve capacity in coordination, leadership, governance, and resource mobilisation at all levels towards achievement of the malaria programme objectives by 2018

Objective 6 of the KMS 2009–2018 was intended to address the policy and regulatory environment to ensure alignment with global and national level guidelines, as well as the devolved health services. Some of the key activities implemented under this objective during the review period included:

- Development and dissemination of the revised KMS and M&E plan.
- Development and dissemination of several malaria guidelines including: Malaria Communication Strategy (2016-2021); National Treatment Guidelines for the diagnosis, management and prevention of malaria 5th edition (2016); Insecticide Resistance Management strategy 2016.
- Identification and training of county malaria control coordinators
- Development of a costed 4-year business plan to guide investment and AWP
- Holding of MICC and TWG meetings

### *Programme Management Outcome Indicators and Targets*

Four outcome indicators were selected to monitor progress in implementation of the four programme management strategies. The indicators were narrowly focused and not useful for determining good outcomes in the broad mandate of the programme management objective. The indicators had no baseline values but were targeted to be achieved at 90–100 percent by 2017 (Table 19).

**Table 19. Programme management outcome indicators and targets**

Indicator	Baseline	Targets				
		2013 %	2014 %	2015 %	2016 %	2017 %
Proportion of counties with malaria work plans aligned to the national malaria strategy	None	100	100	100	100	100
Proportion of counties with malaria activities in their health plans	None	-	100	100	100	100
Proportion of annual national malaria business plan funded	None	-	60	70	80	90
Proportion of County malaria focal persons trained in malaria control program management	None	-	50	100	100	100

### *Progress Towards Attainment of Programme Management Outcome Indicators*

Most of the outcome indicators were not met. This non-achievement was attributed to challenges in implementation oversight at county and sub-county levels following devolution of health services in 2013. Mandates and roles between national and county governments regarding activity implementation were not clearly defined. Leadership structures at the county level were also not well defined, and county capacity for programme implementation was insufficient. Half of the county malaria coordinators were trained. The malaria business plan was partially funded at 46 percent. Additionally, most counties did not have malaria-specific budgets; a few provided some budgets but even then, the funds were not made readily available. Prioritisation of malaria control activities at the counties was found to be sub-optimal, and not all county work plans were fully aligned to the KMS.

### *Enablers and Constrainers*

Although the programme management outcome indicators were not met, the following enabling factors for overall programme performance were identified:

- **Programme structure and management systems:** Within the MOH, the NMCP is in the department of Preventive and Promotive Health Services under the Division of Strategic Programs. It is headed by a programme manager who provides oversight and supervises focal persons and programme officers responsible for the six technical units within the program (Annex L). In addition, the programme manager provides oversight for partnership coordination, planning, procurement, finance, and administration.
- **Adequate oversight and guidance:** Malaria is part of the SDG goal 3 agenda, which aims to end epidemics due to communicable diseases and to provide UHC by 2030. The global malaria community has set a more ambitious target of reducing the burden of malaria by 90 percent by 2030 (Roll Back Malaria Partnership Strategic Plan 2018-2020). Kenya's malaria policy is implemented through the KMS, which is aligned to the relevant provisions in the Constitution of Kenya 2010, which lists the attainment of the highest quality of healthcare service as a right for all Kenyans. KMS is also informed by the Kenya Health Policy (2012–2030) and aligned to the KHSSP (2014–2018) in which Kenya aims at malaria elimination.
- **Good linkages within the MOH:** NMCP works with other units and divisions within the Ministry of Health. It works with the HIS unit for routine reporting, Vector Borne Disease Unit on vector control, the Disease Surveillance and Response Unit on surveillance, and the Division of Health Promotion on Social and Behaviour Change Communication.

- **Good linkages with other key stakeholders:** Multi-sectoral collaboration with other government ministries is enabled through established collaborative mechanisms. The NMCP collaborated with donors, nongovernmental organisations (NGOs), CSOs, the private sector, United Nations agencies, and research and academic institutions through TWGs and the MICC. The MICC was found to be active and met regularly.
- **Programme monitoring mechanisms:** The programme was found to be monitoring its performance regularly through the following mechanisms: Quarterly MICC and TWGs meetings; Quarterly review meetings held in conjunction with HIV and Tuberculosis units as part of the Global Fund performance tracking mechanisms; Biannual review and planning meetings with key stakeholders, including malaria coordinators from all 47 counties; Production of annual reports (done for 2014 and 2015). MTRs and MPRs of the KMS were also done as appropriate.
- **Established community health structures:** There are community health units with CHVs who have been trained to offer basic services to community members, including the community integrated management of childhood services and vector control. The malaria programme rode on community health structures to deliver some interventions at the household level.
- **Updated malaria strategy and guidelines:** The 2009–2018 KMS, revised and updated subsequent to the 2014 MTR, was used to guide the implementation of malaria strategies and interventions in the country. Additionally, other key malaria guidelines were developed and disseminated to guide implementation of various interventions. These included: up-to-date M&E plan; a three-year costed malaria business plan based on the KMS; annual malaria work plans derived from the malaria business plan; Malaria Communication Strategy (2016–2021); National Treatment Guidelines for the Diagnosis, Management, and Prevention of Malaria, fifth edition (2016); and Insecticide Resistance Management Strategy 2016

The constraining factors identified were as follows:

- The Malaria Control Unit lies two levels below the Director of Medical Services and three levels below the Principal Secretary, as shown in the organisational chart (Annex L). This means that malaria control issues have lower visibility at policy making levels.
- The NMCP organisational chart describes positions based on strategic interventions and is not functions based. There were no job descriptions for the positions of focal point persons. The supervisory roles of the programme manager were stretched beyond recommended good management practices.
- The TWG were operating at sub-optimal level. There was no TWG for EPR activities. The resource mobilisation TWG was inappropriately placed under the ACSM, and not operational.
- Coordination structures between the national and county levels were found to be weak and needed to be strengthened and clearly defined. Some counties were found to hold malaria control stakeholders’ forums, but partnerships, including multi-sectoral collaboration at the county level, had not been well defined.
- Although community groups were willing to participate in control operations, inadequate government and technical support is a hindrance (Kibe, et al., 2006). There is need to strengthen the organisational capacities of community health units, train CHVs, and clarify government policy on malaria vector control responsibilities within the communities.

### 5.6.1 Conclusions and Recommendations

This review made the following conclusions:

- KMS strategies and targets were not aligned to current ambitious global targets that aim at malaria elimination by 2030. Some of the strategic objectives were too broad to be appropriately measured
- Advocacy for the continued prioritisation of and funding for malaria control at national and county levels was weak, and there was no clear malaria control financing mechanism and sustainability framework.

- The legislative and regulatory framework was not up to date to address emerging challenges, such as fake and substandard malaria control commodities and use of RDTs by CHVs.
- Dissemination of policy and strategic guidelines was limited in the counties and across levels of health care, hindering effective implementation.
- Partner engagement mechanisms for capacity building, and provision of appropriate technical assistance by NMCP to partners and counties was not well defined.
- The NMCP organisational chart did not capture key functions, and positions lack job descriptions. County leadership for malaria control was not well defined.
- Partner engagement through TWGs and the MICC at national level was not well coordinated, and private sector participation was minimal.

This review made the following recommendations:

- Raise the visibility of NMCP within the MOH organogram, and align coordination structures to constitutional mandates and core functions.
- Review the legislative, policy, and regulatory framework for malaria control in Kenya to align with current strategic interventions and emerging challenges.
- Advocate to county assemblies to enact appropriate by-laws to support strategic interventions for reducing the burden of malaria in Kenya.
- Review the mandate and membership of the MICC and malaria TWGs to strengthen programme and partner coordination.
- Develop and implement guidelines for engagement between programme implementation at the national and county levels.
- Develop and implement capacity building, advocacy, and resource mobilisation strategies.
- Anchor the programme implementation monitoring and information repository tool at the programme management level for tracking implementation of malaria activities.
- Ensure that malaria services are well articulated within the MOH standards and norms in the context of universal health coverage.
- Support gender mainstreaming and human rights approaches to malaria programming to ensure an inclusive reach that targets vulnerable and marginalised populations.

Discussions at the KNMF 2018 expressed the need to develop clear guidelines on how to implement malaria control activities at the county level. Also recommended was the need to define strategies for dissemination of policy and guidelines that will ensure efficiencies in service delivery. It was recommended that the programme should formulate a common framework for translating research into policy. In a consensus meeting held after the desk review, county health directors reiterated the need for guidance and capacity building on how to implement malaria programmes at the county level.

## 5.7 Procurement and Supply Management

The National Malaria Policy requirement of universal access to prompt malaria diagnosis and effective treatment, universal coverage of at-risk populations with preventive interventions including vector control, and IPTp places a premium on an efficient PSM system for the provision of the necessary medicines and other malaria-related commodities.

KEMSA has the mandate to procure, warehouse, and distribute essential medicines and medical supplies under the KEMSA Act 2013. Malaria health products and technologies are regulated through several bodies, including the PPB, the Pest Control Products Board, the Kenya Bureau of Standards, and the Kenya Medical Laboratory Technicians and Technologists Board.



The Kenya Essential Medicines List 2016 lists the essential medicines in Kenya, and the Kenya Essential Medical Laboratory Commodities List 2014 lists the essential laboratory products.

NMCP carries out annual quantification (forecasting and supply planning) exercises to determine the requirements of the malaria commodities for the next three years and plan their deliveries to ensure that a stable supply chain is maintained to facilitate unimpeded implementation of planned activities. A review of the forecast and supply plan is conducted six months after the annual quantification process using the most recent consumption data. The annual quantification and review exercises are led by the Drug Management Subcommittee (DMSC) of the Case Management TWG.

Procurement of commodities is primarily done by KEMSA for commodities supported by Global Fund and counterpart funding, with USAID's Global Health Supply Chain Program - Procurement & Supply Management (GHSC-PSM) procuring commodities supported by PMI. Procurement of microscopes, routine consumables, and related diagnostic items is largely supported by the Government as part of direct investment to malaria control. Procurement of accessory commodities such as chlorine solution for disinfection of cups after taking SP, disinfecting buckets, and cups are funded by the county governments and partners. Following devolution, counties are expected to put aside funding to contribute to provision of malaria commodities. This, however, was not been well coordinated.

At the central level, KEMSA provides the main warehouse-storing commodities. Nets for routine distribution are stored by PS Kenya in a central warehouse and in regional warehouses in the various epidemiological zones (Eldoret, Kisumu, and Mombasa). There are site-specific warehouses using modified cargo containers in situations where there is no existing building in the health facilities to serve as stores for IRS products. Standard stock cards are in use at facilities and in KEMSA to track commodity receipts, issues, and stock on hand. Facilities maintain stock cards and use the S11 card for stock movements and maintain all stock records in organised files.

A spreadsheet-based Pipeline Monitoring Tool is used by DMSC to update the status of the national commodity pipeline, updating with latest downstream and upstream (e.g., consumption, stock, and procurements) data and adjusting procurements to align with the demand. An additional spreadsheet-based tool (the Expiry risk tracker) is used to track potential expiries in the in-country stock so that the DMSC can raise the alarm for suitable action to be taken by national or county levels.

LMIS tools are used in the public sector for facility-level data collection, for reporting at the end of every month, and for transmission of the data to the national level. These LMIS tools cover malaria medicines and RDTs. There are currently no national LMIS reporting forms for commodities under vector control. For routine LLIN distribution, a data collection and reporting system has been instituted by PS Kenya using a Free Net Pack Record to record daily issues of nets at health facilities. Stock movements are tracked using S11, delivery notes, and stock cards, and monthly orders generated by subcounties.

National malaria commodity reporting rates are monitored monthly in DHIS 2, and the trends are shown in the monthly national stock status reports that are presented and discussed in the monthly drug management subcommittee meetings. Reporting rates (80%) and timeliness of reporting (70%) have both been fairly high for ACTs and RDTs. In the eight lake-endemic counties, the commodity security TWGs at the county and subcounty levels convene quarterly, funded through PMI, to review DHIS 2 commodity data and identify any supply chain-related issues for action. This has led to high reporting and on-time reporting rates (more than 99%) for malaria commodities in these counties.

Commodities are mainly distributed through KEMSA and PS Kenya for routine distribution of LLINs. Monthly distribution data and stock data are provided to NMCP for use in routine stock status monitoring by both KEMSA and PS Kenya. County and subcounty pharmacists use the LMIS reports in DHIS 2 to generate orders for facilities, which are then input into the KEMSA web-based ordering platform (also called KEMSA LMIS). KEMSA sends the county orders to the NMCP commodity logistician for rationalisation, and then NMCP, in consultation with the county pharmacist and county medical lab coordinator, agrees on the final quantities to be supplied. Both hospitals and lower-level health facilities are supplied quarterly with provisions for emergency orders. Health facilities use a pull system that enables them to request the commodities they require based on demand for and consumption of services. Field validation in some of the counties visited during the MPR revealed a lack of review of the malaria caseload and LMIS data to inform the facility orders. Some of the visited counties also noted delays in commodity supply from KEMSA after ordering.



The PPB manages a national pharmacovigilance system that includes a malaria component. Post Market Surveillance (PMS) is the continuous process of monitoring the quality, safety, and efficacy of all medical products and health technology on the market. Cohort event monitoring, which is an intensive method of PMS to assess the safety of medicines, has been adapted by WHO for monitoring the safety of medicines used in public health programmes. PMS was held annually from 2014 to 2017, with another one planned for 2018. The report on the cohort event monitoring activity, which was undertaken in 2012, had not been concluded. The NMCP adheres to tenets of the MOH's health care waste management strategic plan 2015-2020 that provides guidance in planning, implementing, and monitoring the activities of healthcare waste management in health facilities.

Oversight and coordination of PSM functions is by the DMSC of the Case Management TWG, whose membership includes NMCP, donors, the National Treasury, implementing partners, and KEMSA, among others. Biannual county forums are held with county commodity managers, specifically county pharmacists and county medical laboratory coordinators, to review progress on implementation of the malaria programme activities, provide updates, identify gaps and best practices, and obtain consensus between the national and county levels on key programmatic objectives as per the KMS.

The DMSC mainly discusses issues related to case management commodities (ACT, SP, artesunate injection, and RDTs). LLINs and IRS commodities are tracked by the vector control TWG. There is no PSM focal person in the NMCP, and the focal leads for case management, vector control, MIP, and laboratory address commodity issues in those areas. At the county level, every county should have commodity focal staff: pharmacist, medical laboratory coordinator, malaria coordinator. NMCP has a list of the current county pharmacists, county medical laboratory coordinators, and county malaria coordinators for each of the 47 counties.

The KNMF 2018 presentations and discussions validated these findings from the PSM desk review.

### ***PSM Outcome Indicators and Targets***

Two PSM-related outcome indicators were included in the performance framework of the KMS. The indicators were appropriately stated and had targets, but they lacked baselines so performance could only be measured against the targets. The indicators were as follows:

- Proportion of public health facilities having no stock out of ACTs for seven consecutive days in past three months (for all ACT weight bands)
- Proportion of private facility outlets stocking quality-assured ACTs

The lumping together of all ACT packs in one indicator did not make the first indicator smart. The desired programmatic information could be obtained with a rephrased indicator that checks availability of at least one of the pack sizes of artemether-lumefantrine (AL), preferably the 6s due to ease of administration.

### ***Progress Towards Achieving PSM Outcome Indicators***

- The programme recorded high malaria commodity availability at facilities (ACTs, diagnostics) as demonstrated in the Service Availability and Readiness Assessment Mapping 2013 and the Service Availability and Readiness Assessment 2016. AL availability increased from 74 percent in 2013 to 82 percent in 2016; RDT availability increased from 42 percent in 2013 to 66 percent in 2016. The Outpatient Quality of Care round 13 conducted in 2017 revealed that availability of any AL pack in health facilities averaged 86 percent, while availability of any malaria diagnostics averaged 90 percent.
- This outpatient quality of care report documenting progress from January 2010 to February 2017 indicated that the proportion of public facilities having no stockouts of ACTs was 40.2 percent, falling far short of the target of 100 percent. Stockouts of diagnostics were rare, with only 10 percent of facilities reporting the absence of any malaria diagnostic capacities in 2017 according to the same report. There was no central-level warehouse stockouts for LLINs for routine distribution over the period (2014–2017) (PS-Kenya LLIN Planner, 2014–2018).

- Regarding private facility outlets stocking quality-assured ACTs, the 2016 ACTwatch survey revealed that the availability of quality-assured ACTs was 46.7 percent in the anti-malaria stocking private sector outlets, short of the expected target of 55 percent.

### *Enablers and Constraints*

The review identified the following enablers:

- At the national level, there was coordination of PSM functions, mainly for case management commodities, through the DMSC of the Case Management TWG.
- Commodity procurement was informed by the existing national quantification system for malaria commodities, through which a supply plan was generated and a semi-annual review undertaken. Quantification was based on consumption data from facilities and NMCP plans.
- Commodity distribution was based on a pull system with clear instructions available to counties for determining health facility order quantities.
- LMIS is available with online reporting (DHIS 2) and standardised LMIS data collection and reporting tools. It covers most malaria commodities.
- National level stock status and pipeline monitoring with sharing of status to partners through DMSC has provided the programme with national-level experience in commodity oversight and ensured commodity security, mainly for ACTs and RDTs.
- County-level engagement improved with biannual county forums.
- Riding on national systems (such as for pharmacovigilance, procurement and warehousing, and the distribution system to the last mile run by KEMSA) has enabled efficiencies without heavy parallel investment.

The review identified the following constraints:

- Overdependence on external funding may affect the sustainability of commodity supplies if there is inadequate domestic funding to procure commodities to meet the programme's requirements.
- There was a fragmented approach to PSM and the lack of a comprehensive procurement and supply chain management plan against which to monitor PSM performance.
- Stockouts and overstocks were reported at facilities, partly due to inadequate capacity in inventory management (skills and staffing) at facilities, with the distribution system and unreliable consumption data. Guidance for commodity resupply to facilities has assumed a standard inventory control system across the country, not taking into consideration that there are different consumption levels in the different epidemiological zones.
- Debt by counties to KEMSA for the essential medicines supply affected the timely distribution of malaria commodities, which rode on the essential medicines supply. County delays in payment to KEMSA delayed commodity delivery, hence increasing occurrences of suboptimal stock levels of malaria commodities at the peripheral level.
- There was a lack of comprehensive commodity management guidelines or standard operating procedures and limited content in existing documents for quantification, inventory management, and other commodity management areas.
- Inadequate capacity in commodity management at all levels (no specific PSM focal lead at national level, capacity building of county and subcounty levels on commodity management skills not yet undertaken)
- Weak coordination and harmonisation of procurement for malaria commodities between national and county levels
- Lack of LMIS tools for the community level; sustaining printing and dissemination of hardcopy LMIS tools remained a major challenge.
- Limited visibility of routine LLIN stocks at facility level (lack of institutionalised LMIS for LLINs)

### 5.7.1 Conclusions and Recommendations

The review made the following conclusions:

Over the duration of the KMS under review, there have been significant improvements in malaria commodity availability and efficiency gains in procurement of malaria commodities, and hence value for money. Implementation of a pull system across all malaria commodities has improved stock management, and the available expertise in the PSM component contributed to improved performance across all interventions.

However, despite having a specific strategy under programme management, PSM was poorly implemented. There was disjointed oversight and coordination for PSM activities at the national level. The DMSC under the Case Management TWG focused mainly on case management-related commodities (ACTs, RDTs) and SP, and there was poor oversight of PSM activities for the other commodity categories. There was inadequate capacity in commodity management at all levels with weak inventory management, poor data management and use, and inadequate oversight by county and subcounty teams. This resulted in stockouts and overstocks being reported at facilities.

Recommendations:

- Consolidate and strengthen malaria PSM at the national level for effective management of all commodities.
- Enhance existing systems for commodity data analysis and visualisation to ensure end-to-end visibility of the supply chain.
- Establish a malaria commodity logistics and inventory control system that is adaptable to the different endemicity zones.
- Build capacity in commodity management at the county and subcounty levels.

This short chapter highlights the key lessons learnt during the implementation of the KMS described as per the intervention areas.

## **6.1 Lessons Learned Implementing the KMS**

### **Vector Control and Malaria in Pregnancy**

Under this intervention area, the following were the key lessons learnt:

- It is difficult to attain and maintain universal LLIN coverage and use through the current LLIN distribution channels. Alternative distribution channels such as use of CHVs were recommended. For vector control interventions to be effective, there is need to embrace integrated vector management in its totality.
- Using circulars, memos, and job aids delivered directly to the point of care improved health worker performance and resulted in better understanding of the MIP guidelines.
- Comprehensive coverage of MIP training and outreach activities, resulted in better programme outcomes (increased IPTp-SP uptake).
- Community involvement was a key driver towards increased IPTp coverage.

### **Case Management**

In case management, the following were the key lessons learnt:

- Continued quality of care surveys at the national level provided useful data for monitoring case management practices and availability of malaria commodities. However, the surveys were not powered to provide county level data. Introduction of county-level routine quality of care assessments integrated with supportive supervision in the public and private sectors, was recommended. The long-term goal should be to adapt routine reporting tools to capture quality of care indicators.
- There was inadequate monitoring of care provided in the private sector. There is need for a private sector implementation plan to provide guidance on training and mentorship, quality assurance for antimalarials and diagnostics, and monitoring of quality of care provided in the private sector.
- There was a growing nationwide support for the community health strategy. NMCP should leverage on this to scale up community case management for malaria integrated with other community-level interventions.
- Availability of malaria diagnostics had increased tremendously in the public health sector. However, to optimise coverage standardise the quality of parasitological diagnosis across settings, NMCP should develop guidance on the appropriate levels of care and epidemiological zones for which malaria diagnostics (RDTs and microscopy) should be used.

## **EPR**

- This intervention area attained in the lowest score in the MPR assessment with most of its activities not implemented. The following were the key lessons learnt for effective implementation of EPR activities:
- In order to prioritize and secure funding for implementation, EPR should be integrated into the broader malaria surveillance and M&E activities across the national, county, and subcounty levels.
- To achieve the desired outcomes malaria EPR strategies should encompass early warning, detection, preparedness, and early response.

## **SMEOR**

For the SMEOR interventions, the following were the key lessons learnt:

- Communication between NMCP and the counties was slow due to the bureaucratic procedures required. There is need to establish and maintain better communication and coordination structures between NMCP and the counties to ensure that consultations are made and relevant information passed more efficiently. .
- There were serious challenges with availability and appropriateness of routine malaria data capture and reporting tools, without which quality malaria data cannot be obtained. The roles of the national and county governments in printing and distribution of HIS tools were unclear. NMCP needs to engage with the HIS department to ensure that appropriate tools are available at all health care levels.
- The quality of routine malaria data was low despite regular DQAs. Follow-up mechanisms to track and document action points undertaken after the DQA assessments need to be developed and implemented.

## **ACSM**

There were three key lessons learnt under the ACSM intervention area described as follows:

- Advocacy for malaria was low across all levels. There is need to strengthen advocacy at the national and county levels for policy, resource mobilisation, and increased use of interventions.
- Information on community-based malaria interventions was not readily available to the NMCP. There is need to strengthen communication between NMCP and the counties so that NMCP can capture and report on the community-based malaria control activities.
- Barriers to increased use of malaria interventions differed across the counties; hence the need for counties to identify their specific barriers and address them appropriately.

## **Project Management**

The key lessons for the programme management objectives were as follows:

- Funds for optimal implementation of malaria control activities were inadequate, and external donor support is decreasing. NMCP needs to reactivate its resource mobilisation technical working group and mobilize domestic resources to cover the huge funding gaps (53%) that partly led to low levels of attainment of the KMS 2009-2018. The program needs to leverage on UHC agenda and community strategy to support both curative and preventive malaria control interventions which are currently heavily dependent on donor support.
- Following devolution of health services, there have been no clear guidelines on the engagement of the national and county levels in activity implementation based on the constitutional mandates. In some cases, this has hampered policy dissemination and activity implementation.
- Partner coordination mechanisms and multi-sectoral engagement structures have not been optimal. NMCP needs to develop clear terms of reference for partner and stakeholder engagement and regularly review the engagements.

## 6.2 Future Strategic Directions

A malaria-free future is feasible and possible in Kenya, despite the mixed results observed during the implementation of the KMS 2009-2018. To achieve this ultimate goal, the review recommended the following strategic directions:

- Introduce case-based investigation in select counties earmarked for malaria elimination after having met the required thresholds. In addition, develop the requisite capacity at the national level as well as at the county and subcounty levels, in the earmarked counties, to strengthen the programme towards malaria elimination.
- Refocus the programme to increase access to universal coverage and delivery of malaria interventions, including the use of community health structures. The current interventions should be scaled up, with a focus on achieving and maintaining universal access to prevention and curative services. The delivery through the current channels should be maintained and improved, including the use of community-based structures.
- Strengthen capture and reporting of malaria data and conduct regular stratification using routine data for guiding the targeting of interventions. The NMCP should use opportunities to update the DHIS 2 tools to strengthen the data collection and standardise information collected nationwide by all facilities. The information collected should be used to epidemiologically and entomologically stratify the country to inform decision making and target approaches and interventions.
- Strengthen multi-sectoral and inter-sectoral engagement at national and county levels for improved programme planning, implementation, monitoring, and coordination towards achievement of the programme goals through use of the Three Ones principle (one authority, one plan, one M&E framework).
- Improve efficiency in use of existing resources and advocate for increased sustainable investment for malaria interventions at national and county levels.
- Increase visibility and prioritisation of the malaria agenda through innovative and sustained advocacy and communication at all levels to support the universal access and coverage of malaria interventions.
- Strengthen capacity-building initiatives for enhanced skills and competencies for quality delivery of interventions, with particular emphasis on the county level.
- Improve malaria commodity security through end-to-end supply chain visibility and promotion of data use for supply chain decision making.

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# TERMS OF REFERENCE AND COMPOSITION OF MALARIA PROGRAMME REVIEW TASK FORCE AND SECRETARIAT

## Annex A.1. Terms of Reference and Composition of Malaria Programme Review Task Force

### Terms of Reference for the Malaria Programme Review (MPR) Task Force

The Malaria Interagency Coordinating Committee established a task force to provide oversight for the MPR process. The task force was a multi-sectoral team that provided both technical and financial support for the process. The task force included members of the secretariat and also co-opted membership from other stakeholders as needed.

The key roles and responsibilities of the task force were as follows:

- Sourcing the funds required for the implementation of the MPR
- Identifying and recruiting the thematic consultants
- Providing oversight for and feedback for the review process
- Preparing the final MPR report
- Following up on the MPR recommendations and implementation of its work plan

The members of the task force were as follows:

Name	Institution
Rebecca Kiptui, Chairperson	NMCP
Mildred Shieshia	PMI/USAID
Margaret Njenga	PS, Kenya
James Mwangi	PS, Kenya
Andrew Wamari	NMCP
James Sang	NMCP
Sophie Githinji	MEASURE Evaluation
Deborah Ikonge	NMCP
Enos Masini	WHO, Kenya
Robert Perry	PMI/CDC
Geoffery Lairumbi	Consultant, KNMF



## **Annex A.2. Terms of Reference and Composition of Malaria Programme Review Secretariat**

### **Terms of Reference for the Malaria Programme Review (MPR) Secretariat**

The MPR secretariat was composed of membership from the National Malaria Control Programme. This team was led by the overall MPR coordinator, also a staff member of the NMCP. The MPR secretariat's roles spanned the entire review process, it was mainly tasked with the day-to-day management of the process. The secretariat was assisted by other members of staff within the programme.

The roles and responsibilities of the secretariat were as follows:

- Developing the overall concept note for the review
- Preparing the review proposal, plan, and budget
- Developing and reviewing the roadmap
- Preparing, collecting, and collating background literature for the desk review
- Providing a platform for information sharing across various thematic areas
- Preparing and reviewing key presentations
- Coordinating the finalisation of the review outputs and final report.

The members of the MPR secretariat were as follows:

- Rebecca Kiptui, overall MPR coordinator
- James Sang
- Deborah Ikonge
- Andrew Wamari

# TERMS OF REFERENCE AND LIST OF LOCAL CONSULTANTS

## Terms of Reference for Malaria Programme Review (MPR) Lead Consultants

The MPR task force appointed two experienced consultants to provide leadership and guidance during the review process. The lead consultants were appointed on the basis of their good understanding of the Kenya health system and knowledge of and experience with the national malaria control programme.

The key roles and responsibilities of the lead consultants were as follows:

- Providing leadership and guidance to the thematic review teams
- Developing templates for the desk review and presentations
- Coordinating and guiding the thematic review consultants
- Facilitating discussions during MPR workshops
- Conducting high-level interviews with key stakeholders at the central level
- Coordinating the writing of the MPR thematic reports
- Reviewing the draft thematic reports
- Consolidating the thematic reports into a comprehensive MPR report
- Revising the MPR report following review by local and external reviewers

The lead consultants appointed were as follows:

- Dr. Willis Akhwale, Lead Consultant
- Dr. Josephine Karuri, Co-lead Consultant

## Terms of Reference for Thematic Review Consultants

The task force identified nine thematic areas to be reviewed and recommended suitable consultants to lead each of the areas. The recommended consultants were experts in their specific areas and had good understanding of the Kenya health system and the malaria programme. The consultants were drawn from research institutions, universities, and other organisations involved in malaria control.

The key roles and responsibilities of the thematic area consultants were as follows:

- Leading and directing the review of the specified thematic area
- Coordinating technical working group meetings to assess performance in the specific thematic area
- Facilitating and coordinating discussions during the MPR workshops
- Conducting desk review to document achievements and challenges experienced in the implementation of the specific thematic area
- Drafting the thematic area report

- Revising the thematic area report based on comments from the MPR reviewers
- Reviewing the consolidated MPR report and ensuring that the key findings and recommendations from their specific thematic areas were captured in the report Thematic Review Consultants and Areas of Focus

Consultant	Thematic Area
Ambrose Agweyu	Case Management
Evan Mathenge	Vector Control
Stephen Munga	Epidemic Preparedness and Response
Peter Ouma	Malaria in Pregnancy
Hellen Gatakaa	Surveillance, Monitoring, Evaluation, and Operational Research
Ben T. Adika	Advocacy, Communication, and Social Mobilisation
Cecilia Muiva	Procurement and Supply Management
Theresa Watwii Ndavi	Costing and Finance
Willis Akhwale	Programme Management
Geoffrey Lairumbi	Coordinator for the Kenya National Malaria Forum

## COMPOSITION OF EXTERNAL REVIEWERS

Technical support for the Malaria Programme Review (MPR) was provided by the World Health Organization (WHO) intercountry support team of eastern and southern Africa. A team of seven external reviewers was sent to Kenya for two weeks to support the MPR. The external team reviewed the thematic desk review reports and conducted field visits at the national level and in selected counties to validate the findings reported. The team supported the local consultants in finalising the MPR report and pulling out key findings and recommendations for consideration in developing a new Kenya malaria strategy.

### Composition of the External Review Team

Consultant	Role	Institution
Dr. Gausi Khoti Managwa	Team Lead	WHO-AFRO
Dr. Lyda Ozor	Case Management and Malaria in Pregnancy	WHO
Dr. Charles Katureebe	Epidemic Preparedness and Response	WHO-Uganda
Dr. Michael Kayange	Programme Management	NMCP-Malawi
Dr. Daniso Mbewe	Partnerships	Roll Back Malaria Partnership
Prof. Tuoyo Okorosobo	Health Economics	Roll Back Malaria Partnership
Dr. Emmanuel Temu	Vector Control	WHO-Global Malaria Programme

# MALARIA PROGRAMME REVIEW INCEPTION WORKSHOP

18 June, 2018, Silver Springs Hotel, Nairobi, Kenya

## Annex D.1. Programme for the Inception Workshop

Time	Activity	Responsible Person	Moderator
8:30–9 a.m.	Registration		Rebecca Kiptui
9 a.m.–9:15 a.m.	Introductions	Deborah Ikonge	
9:15–9:45 a.m.	Expectations	James Sang	
9:45–10 a.m.	The MPR Road Map	Dr. Waqo	
10–10:10 a.m.	Q&A	Dr. Waqo	
10:10–10:20 a.m.	The Coordination Structure	Dr. Akhwale	
10:20–10:30 a.m.	Q&A	Dr. Akhwahle	
10:30–11 a.m.	Tea Break	ALL	
11–11:20 a.m.	The Reporting Outline	Josephine Karuri	
11:20–11:30 a.m.	Q&A	Josephine Karuri	
11:30–11:45 a.m.	TWG Preparations	Dr. Akhwale	
11:45 a.m.–12:30 p.m.	Group Work	ALL	
12:30–1 p.m.	Presentations	Groups 1,2,	
1–2 p.m.	Lunch	All	
2–3 p.m.	Group Presentations	Groups 3, 4, 5, 6	Andrew Wamari
3–3:30 p.m.	Closing Remarks	Dr. Waqo/ Dr. Akhwale	

## Annex D.2. List of Participants

Name	Institutions
Patrick Igunza	AMREF
Josephine Karuri	Co-lead Consultant
Ben T. Adika	Consultant, Advocacy, Communication, and Social Mobilisation
Ambrose Agweyo	Consultant, Case Management
Stephen Munga	Consultant, Epidemic Preparedness and Response
Theresa Watwii Ndavi	Consultant, Finance and Costing
Peter Ouma	Consultant, Malaria in Pregnancy
Cecilia Muiva	Consultant, Procurement and Supply Management
Hellen Gatakaa	Consultant, Surveillance, Monitoring, Evaluation, and Operational Research
Evan Mathenge	Consultant, Vector Control
Lairumbi Geoffrey	Consultant, Kenya National Malaria Forum
David Khaoya	Health Policy Plus
Stephen Muchiri	Health Policy Plus
Willis Akhwale	Lead Consultant and Programme Management
Glorine Atuya	MEASURE Evaluation
Wamari Andrew	NMCP-MOH
Charles Chege	NMCP-MOH
Chimwani Welby	NMCP-MOH
Deborah Ikonge	NMCP-MOH
Rebecca Kiptui	NMCP-MOH
James Sang	NMCP-MOH
Peter Njiru	NMCP-MOH
Waqo Ejersa	Head, NMCP
Esther Kinyeru	NMCP-MOH
Jackline Kisia	NMCP-MOH
Abduba D. Mudale	NMCP-MOH
Robert Perry	PMI/CDC
Daniel Wachira	PMI/USAID
Mildred Shieshia	PMI/USAID
Fredrick Nyongesa	PMI-AIRS Kenya
James Mwangi	Population Services Kenya
Margaret Njenga	Population Services Kenya
Nancy Njoki	Population Services Kenya
George Wadegu	TUPIME Kaunti
Victor Sumbi	USAID/Afya Ugavi
Rato Selby	Vector Works/PMI
Josephine Njoroge	WHO

# DESK REVIEW CONSOLIDATION WORKSHOP

9 to 13 July, 2018, Nokrass Hotel, Sagana

## Annex E.1. Programme for the Desk Review Workshop

Day and Time	Activity	Facilitation	Chair
<b>Day 1: 9 July, 2018</b>	<b>Arrival of Delegates</b>	NMCP and PSKenya	
<b>Day 2: 10 July, 2018</b>	<b>Review of MPR Processes and Update on Thematic Desk Review</b>		
8:30–9 a.m.	Registration and Welcome	NMCP and PSKenya	NMCP
9–9:10 a.m.	Introduction of Participants	NMCP	
9:10–9:20 a.m.	Objectives and Expected Outcomes	NMCP	
9:20–9:30 a.m.	Opening Address	Head—NMCP and Lead Consultant	
9:30–9:40 a.m.	MPR overview and Current Status	NMCP	
9:40–10:20 a.m.	Thematic Presentations from Malaria Prevention 1—Vector Control 2—Malaria in Pregnancy	Consultants	
<b>10:20–10:45 a.m.</b>	<b>Tea Break</b>		
10:45–11:25 a.m.	Thematic Presentations from 3—Diagnosis and Treatment 4—Procurement and Supply Management	Consultants	
11:25–11:45 a.m.	Plenary Discussions		
11:45 a.m.–1 p.m.	Thematic Presentations from 5—Epidemic Preparedness and Response 6—Advocacy, Communication, and Social Mobilisation 7—Monitoring and Evaluation	Consultants	
<b>1–2 p.m.</b>	<b>Lunch</b>		
2–2:30 p.m.	Thematic Presentations from 8—Programme Management 9—Finance and Costing	Consultants	Lead Consultant
2:30–3 p.m.	Plenary Discussions and Group Selection	Focal Persons and Consultants	
3–5 p.m.	County Presentation and Discussion		
<b>Day 3: 11 July, 2018</b>	<b>Group Work on Thematic Desk Review</b>		
8:30–10:30 a.m.	Group Work on Thematic Reports	Focal Persons and Consultants	Lead Consultant
<b>10:30–11 a.m.</b>	<b>Tea Break</b>		
11 a.m.–1 p.m.	Group Work on Thematic Reports	Focal Persons and Consultants	
<b>1–2 p.m.</b>	<b>Lunch</b>		
2–5 p.m.	Group work on Thematic Reports	Focal persons and Consultants	

Day and Time	Activity	Facilitation	Chair
<b>Day 4: 12 July, 2018</b>			
<b>Thematic Desk Review Presentation</b>			
8:30–9:30 a.m.	Presentations on Thematic Areas 1—Vector Control 2—Malaria in Pregnancy 3—Diagnosis and Treatment 4—Procurement and Supply Management	Consultants	Lead Consultant
9:30–10:15 a.m.	Plenary Discussions		
<b>10:15–10:45 a.m.</b>	<b>Tea Break</b>		
10:45 a.m.–12 p.m.	Presentations on Thematic areas 5—Epidemic Preparedness and Response 6—Advocacy, Communication, and Social Mobilisation 7—Monitoring and Evaluation 8—Programme Management 9—Finance and Costing	Consultants	NMCP
12–1 p.m.	Plenary Discussions		
<b>1–2 p.m.</b>	<b>Lunch</b>		
2–3 p.m.	Group Work on Thematic Reports	Focal Persons and Consultants	
3–4 p.m.	Plenary on Thematic Reports and Way Forward		
4–4:30 p.m.	Submission of Draft Thematic Reports Closing Remarks for Workshop	NMCP and Lead Consultant	
<b>Day 5: 13 July, 2018</b>			
9 a.m.	Departure of the Delegates		

## Annex E.2. List of Participants of the Desk Review Consolidation Workshop

Name	Organisation
Abdinasir Amin	ICF
Ali Hassan	Health Information Systems-MOH
Ambrose Agweyu	Consultant, Case Management
Amos Komen	MOH
Andrew Wamari	NMCP-MOH
Anthony Miru	The National Treasury
Athanasius Ochieng	Health Promotion Unit-MOH
Augustine Ngindu	Jhpiego
Ben T. Adika	Consultant, Advocacy, Communication, and Social Mobilisation
Benson Kamau	Kirinyaga County
Bernard Abongo	PMI- Vector Link
Caroline Njoroge	Health Policy Plus
Cecilia Muiva	Consultant, Procurement and Supply Management
Charles Chege	NMCP-MOH
Christine Mbuli	NMCP-MOH
Daniel Mwai	Health Policy Plus
Daniel Wacira	USADI/PMI
Deborah Ikonge	NMCP-MOH
Dennis Mwambi	Living Goods
Diana Menya	Moi University
Diana Omache	NMCP-MOH
Diana Wandia Kimondo	Population Services Kenya
Dominic Kariuki	Pharmacy and Poisons Board
Edward Mwangi	KeNAAM
Edwin Onyango	Busia County
Elias Nyaga	Kenya National Bureau of Statistics
Elizabeth Chomba	Kwale County
Ephantus Murigi	NMCP-MOH
Esther Kinyari	NMCP-MOH
Evan Mathenge	Consultant, Vector Control
Florence Nyagwara	Kisii County
Florence Wambeti	PCPB
Grace Baya	Kilifi County
Hellen Gatakaa	Consultant, Surveillance, Monitoring, Evaluation, and Operational Research
Ismail Abbey	NMCP-MOH
Jacinta Omariba	NMCP-MOH
Jacinta Opondo	NMCP-MOH
Jackie Kisia	NMCP-MOH
James Kiarie	NMCP-MOH
James Mwangi	Population Services Kenya

Name	Organisation
James Mwendwa Kitetu	NMCP-MOH
James Sang	NMCP-MOH
Jared Oure	AMREF
Josephine Karuri	Co-lead Consultant
Josephine Njoroge	WHO
Joyce Wanderi	Population Services Kenya
Julie Cege	Malaria No More
Julius Muololo	NMCP-MOH
Kiambo Njagi	NMCP-MOH
Lilian Manyonge	AMREF
Lilyana Dayo	Kisumu County
Margaret Njenga	Population Services Kenya
Mildred Shieshia	PMI/USAID
Mwaniki Njuguna	NMCP-MOH
Nabie Bayoh	PMI - AIRS, Vector Link
Omar Ahmeddin	NMCP-MOH
Patrick Igunza	AMREF Health Africa
Peter Njiru	NMCP-MOH
Peter Ouma	Consultant, Malaria in Pregnancy
Rebecca Kiptui	NMCP-MOH
Regina Karonji	NMCP-MOH
Robert Mwaura	NMCP-MOH
Roseline Muchai	Price Waterhouse Coopers (GF Local Fund Authority)
Roselyne Kasati	Vector Borne Disease Control Unit-MOH
Safia Adan	National Public Health Laboratories
Samuel Kigen	NMC-MOH
Samuel Lokener	Turkana County
Samuel Muia	MOH-MOH
Solomon Karoki	NMCP-MOH
Sophie Githinji	MEASURE Evaluation
Stanslau Ndeto	Makueni County
Stephen Munga	Consultant, Epidemic Preparedness and Response
Stephen Ngososei	KeNAAM
Theresa Watwii Ndavi	Health Policy Plus
Victor Sumbi	USAID/Afya Ugavi
Waqo Ejersa	Head, NMCP
Welby Chimwani	NMCP-MOH
Willis Akhwale	Lead Consultant and Programme Management
Willis Omoro	Population Services Kenya

## ANNEX F. VALIDATION PHASE

### Annex F.1. Programme for the Validation Workshop and Field Visits

WEEK 1							
	Sun, 22 July	Mon, 23 July [D1]	Tue, 24 July [D2]	Wed, 25 July [D3]	Thurs, 26 July [D4]	Fri, 27 July [D5]	Sat, 28 July [D6]
<b>Early Morning</b>	Arrival of external reviewers	<ul style="list-style-type: none"> <li>• Courtesy call with WR</li> <li>• 9 a.m.: Introduction and welcome: with NMCP and all external reviewers- Head of Program, Khoti Gausi</li> <li>• Update on MPR from NMCP</li> <li>• 9: 30 a.m.: Discussions by thematic area on key findings including performance framework/KMS objectives 1 and 2 and PSM (30 min each)</li> </ul>	<ul style="list-style-type: none"> <li>• Discussion on compilation of the final report and division of roles and contributions</li> <li>• Improvement of write-ups based on discussions and feedback (by thematic groups)</li> </ul>	Travel to the field	<ul style="list-style-type: none"> <li>• Courtesy call to County Governments [depending on the county each team should visit a sub-county hospital, a peripheral health centre, and the community]. As much as possible use the guidance in the MPR manual.</li> </ul>	• Field visit	• Travel back to Nairobi

**WEEK 1**

	Sun, 22 July	Mon, 23 July [D1]	Tue, 24 July [D2]	Wed, 25 July [D3]	Thurs, 26 July [D4]	Fri, 27 July [D5]	Sat, 28 July [D6]
<b>Late Morning</b>	Arrival of external reviewers	<ul style="list-style-type: none"> <li>• Presentations by thematic area/ KMS objectives</li> </ul>	<ul style="list-style-type: none"> <li>• Review of tools and methods for the field work</li> <li>• Review of what to look for in the field</li> <li>• Logistics of travel to the field</li> </ul>	<ul style="list-style-type: none"> <li>• Travel to the field</li> </ul>	<ul style="list-style-type: none"> <li>• Field visit</li> </ul>	<ul style="list-style-type: none"> <li>• Field visit</li> </ul>	<ul style="list-style-type: none"> <li>• Travel back to Nairobi</li> </ul>
<b>Early Afternoon</b>	Arrival of external reviewers	<ul style="list-style-type: none"> <li>• Presentations by thematic area/ KMS objectives</li> <li>• Progress on KMS line by line</li> </ul>	<ul style="list-style-type: none"> <li>• Review of tools and methods for the field work</li> <li>• Review of what to look for in the field</li> <li>• Logistics of travel to the field</li> </ul>	<ul style="list-style-type: none"> <li>• Travel to the field</li> </ul>	<ul style="list-style-type: none"> <li>• Field visit</li> </ul>	<ul style="list-style-type: none"> <li>• Debrief with the county officials</li> </ul>	<ul style="list-style-type: none"> <li>• Teams rest</li> </ul>
<b>Late Afternoon</b>	All external reviewers hold a 1-hour meeting to discuss conduct of the MPR [time to be advised]	<ul style="list-style-type: none"> <li>• Progress on KMS line by line</li> <li>• Discussion on compilation of the final report and division of roles and contributions</li> </ul>	<ul style="list-style-type: none"> <li>• Review of tools and methods for the field work</li> <li>• Review of what to look for in the field</li> <li>• Logistics of travel to the field</li> </ul>	Travel to the field	<ul style="list-style-type: none"> <li>• Field visit</li> </ul>	<ul style="list-style-type: none"> <li>• Debrief with the County officials</li> <li>• Travel back to Nairobi</li> </ul>	<ul style="list-style-type: none"> <li>• Teams rest</li> </ul>
<b>Evening</b>	All external reviewers hold a 1-hour meeting to discuss conduct of the MPR [time to be advised]	Meeting of MPR core team with external reviewers: (output: dates, locations, and county focal persons of field visits per team)	Meeting of MPR core team with external reviewers	<ul style="list-style-type: none"> <li>• All teams confirm arrival in the provinces</li> <li>• A small team of people should remain behind at the centre to start working on compilation of aide memoire and report</li> </ul>	<ul style="list-style-type: none"> <li>• Report writing of field work</li> </ul>	<ul style="list-style-type: none"> <li>• Field report writing</li> <li>• Travel back to Nairobi</li> </ul>	<ul style="list-style-type: none"> <li>• Teams rest</li> </ul>

**WEEK 2**

	Sun, 29 July [D7]	Mon, 30 July [D8]	Tue, 31 July [D9]	Wed, 1 Aug [D10]	Turs, 2 Aug [D11]	Fri, 3 Aug [D12]	Sat, 4 Aug [D13]
<b>Early Morning</b>	<ul style="list-style-type: none"> <li>• Teams rest</li> </ul>	<ul style="list-style-type: none"> <li>• Meeting to share and review field findings in view</li> </ul>	<ul style="list-style-type: none"> <li>• Finalise aide memoire<sup>a</sup> in plenary</li> <li>• Agree and send document to immediate bosses of DOH and WR for review before meeting on Wednesday with Chief Director</li> </ul>	<ul style="list-style-type: none"> <li>• Debrief with WR</li> <li>• Report compilation</li> </ul>	<ul style="list-style-type: none"> <li>• Report writing</li> <li>• PowerPoint presentation finalisation</li> </ul>	<ul style="list-style-type: none"> <li>• Plenary meeting</li> </ul>	<ul style="list-style-type: none"> <li>• External reviewers depart</li> </ul>
<b>Late Morning</b>	<ul style="list-style-type: none"> <li>• Teams rest</li> </ul>	<ul style="list-style-type: none"> <li>• Meeting to share and review field findings in view</li> </ul>	<ul style="list-style-type: none"> <li>• Review of draft report</li> <li>• Compilation of presentation</li> </ul>	<ul style="list-style-type: none"> <li>• Report compilation</li> </ul>	<ul style="list-style-type: none"> <li>• Report writing</li> <li>• PowerPoint presentation finalisation</li> </ul>	<ul style="list-style-type: none"> <li>• Presentation of aide memoire to MOH top management and key partners</li> </ul>	
<b>Early Afternoon</b>	<ul style="list-style-type: none"> <li>• Finalise field report</li> </ul>	<ul style="list-style-type: none"> <li>• Integrating of field findings in thematic reports for insertion into final report</li> </ul>	<ul style="list-style-type: none"> <li>• Review of draft report</li> <li>• Compilation of presentation</li> </ul>	<ul style="list-style-type: none"> <li>• Presentation of draft aide memoire for review and improvement at MOH</li> <li>• Report compilation</li> </ul>	<ul style="list-style-type: none"> <li>• Report writing</li> <li>• PowerPoint presentation finalisation</li> </ul>	<ul style="list-style-type: none"> <li>• Meeting of NMCP and external reviewers to plan next steps</li> </ul>	
<b>Late Afternoon</b>	<ul style="list-style-type: none"> <li>• Finalise field report</li> <li>• External reviewers meet</li> </ul>	<ul style="list-style-type: none"> <li>• Finalisation of aide memoire</li> <li>• Report Writing</li> <li>• PowerPoint presentation compilation in line with aide memoire; presentation to have graphics and some details</li> <li>• Core team meets with external reviewers</li> </ul>	<ul style="list-style-type: none"> <li>• Review of draft report</li> <li>• Compilation of presentation</li> </ul>	<ul style="list-style-type: none"> <li>• Improvement of aide memoire based on feedback</li> <li>• Report writing</li> <li>• PowerPoint presentation finalisation</li> </ul>	<ul style="list-style-type: none"> <li>• Report writing</li> <li>• PowerPoint presentation finalisation</li> </ul>	<ul style="list-style-type: none"> <li>• Left blank to make manage possible overflow</li> </ul>	
<b>Evening</b>	<ul style="list-style-type: none"> <li>• Finalise field report</li> <li>• External reviewers meet</li> <li>• Finalise drafting of aide memoire</li> </ul>	<ul style="list-style-type: none"> <li>• Finalisation of draft aide memoire<sup>a</sup></li> </ul>	<ul style="list-style-type: none"> <li>• Review of draft report</li> <li>• Compilation of presentation</li> </ul>				

<sup>a</sup> A summary of key findings was prepared in place of an Aide memoire. The key findings were presented in a consensus meeting held with county health directors on 2nd August 2018.

## Annex F.2. Composition of the Field Validation Teams

Region	Counties/Institutions Visited	Team Members
Nation-level Institutions	National-level institutions, including key partners, research and affiliate programmes, and departments	Agneta Mbithi Andrew Wamari Hellen Gatakaa Jacinta Opondo Josephine Karuri Khoti Gausi Rebecca Kiptui Welby Chimwani Regina Karonji Samuel Kigen Solomon Karoki Theresa Ndavi Tuoyo Okorosobo Willis Akhwale
Lake Endemic	Kisumu Busia	Ambrose Agweyu Caroline Njoroge Lyda Ozor Peter Njiru Peter Ouma
Coast Endemic	Kwale Kilifi	Ahmeddin Omar Emmanuel Temu Evan Mathenge James Mwai
Highland Epidemic	Kisii Uasin Gishu	Charles Katureebe James Sang Stephen Munga
Seasonal Low Transmission	Turkana	Ben T. Adika Charles Chege Daniso Mbewe
Low Risk	Makueni Kirinyaga	Cecilia Muiva Deborah Ikonge Josephine Njoroge Michael Kayange Sophie Githinji

**Annex F.3. List of Participants of the Desk Review Validation Workshop, 23–24 July, 2018, and Consolidation of Field Visit Reports, 30 July to 1 August, 2018, Four Points Hotel, Nairobi**

Name	Organisation
Agneta Mbithi	MEASURE Evaluation
Ambrose Agweyu	Consultant, Case Management
Anariko Ikweri	KeNAAM
Andrew Wamari	NMCP-MOH
Antony Mwangi	NCCG.CHO
Augustine Ngindu	Jhpiego
Beatrice Kariuki	HIGDA
Beatrice Machini	NMCP-MOH
Ben T. Adika	Consultant, Advocacy, Communication, and Social Mobilisation
Brian Mdawida	Population Services Kenya
Caroline Njoroge	Health Policy Plus
Cecilia Muiva	Consultant, Procurement and Supply Management
Charles Chege	NMCP-MOH
Charles Katureebe	WHO
Charles Ndemo	MEASURE Evaluation
Chimwani Welby	NMCP-MOH
Christine Mbuli	NMCP-MOH
Daniel Mwai	Health Policy Plus
Daniel Wacira	USAID/PMI
Daniso Mbewe	Roll Back Malaria Partnership
Deborah Ikonge	NMCP-MOH
Dennis Mwambi	Living Goods
Diana Omache	NMCP-MOH
Diana Wandia Kimondo	Population Services Kenya
Edward Mwangi	KeNAAM
Elizabeth Mwangeka	MEASURE Evaluation
Emanuel Temu	Roll Back Malaria Partnership
Enok Masini	WHO
Ephantus Murigi	NMCP-MOH
Evan Mathenge	Consultant, Vector Control
Geoffrey Lairumbi	Consultant, Kenya National Malaria Forum
George Wadegu	TUPIIME Kaunti
Hellen Gatakaa	Consultant, Surveillance, Monitoring, Evaluation, and Operational Research
Howard Akimele	Living Goods
Ismail Abbey	NMCP-MOH
Jacinta Omariba	NMCP-MOH
Jacinta Opondo	NMCP-MOH

Name	Organisation
Jackie Kisia	NMCP-MOH
James Kitetu	NMCP-MOH
James Mwangi	Population Services Kenya
James Sang	NMCP-MOH
Jared Ouma	AMREF
Job Makyo	Population Services Kenya
Joseph Kagiri	Pricewaterhouse Coopers (GF Local Fund Authority)
Josephine Karuri	Co-lead Consultant
Josephine Njoroge	WHO
Julie Cege	Malaria No More
Julius Mwololo	NMCP-MOH
Keith Esch	PSI/IMPACT Malaria
Khaisy Soe	UNICEF
Khoti Gausi	WHO
Kiambo Njagi	NMCP-MOH
Leonard Cosmas	WHO
Lyda Ozor	WHO
Margaret Njenga	Population Services Kenya
Michael Kayange	NMCP Malawi
Mildred Shieshia	USAID/PMI
Nancy Njoki	Population Services Kenya
Omar Ahmeddin	NMCP-MOH
Peter Njiru	NMCP-MOH
Peter Ouma	Consultant, Malaria in Pregnancy
Rebecca Kiptui	NMCP-MOH
Regina Kandie	NMCP-MOH
Regina Karonji	NMCP-MOH
Roseline Muchai	Pricewaterhouse Coopers (GF Local Fund Authority)
Samson Osano	NMCP-MOH
Samwel Kigen	NMCP-MOH
Scholastica Koki	NMCP-MOH
Solomon Karoki	NMCP-MOH
Sophie Githinji	MEASURE Evaluation
Soukeyna Sylla	Global Fund
Stephen Munga	Consultant, Epidemic Preparedness and Response
Theresa Watwii Ndavi	Health Policy Plus
Tuoyo Okorosobo	Roll Back Malaria Partnership
Victor Sumbi	USAID/Afya Ugavi
Waqo Ejersa	Head, NMCP
Willis Akhwale	Lead Consultant and Programme Management

## Annex F.4. County Directors at the Malaria Programme Review Consensus Meeting, 2 August, 2018, Crowne Plaza Hotel, Nairobi

Name	County
Abdullah Daud	Garissa
Abuya Otieno	West Pokot
Allan Owino	Kitui
Arthur Muchiri	Kakamega
Bernard Makenzi	Kwale
Bernardus Ahindikha	Vihiga
Betty Chepngeno	Kericho
David Kiuluku	Makueni
Edwin Onyango	Busia
Elizabeth Mgambi	Migori
Eunice Masamo	Taita Taveta
Ezekiel Kibelion Kapkoni	Kajiado
Geoffrey Otomu	Kisii
George Karoki	Kirinyanga
Gerald Celes	Homabay
Issacko Roba	Marsabit
Isamil Abdikadir	Mandera
Jackson Cheruyot	Nakuru
Johnson Amariati	Bugoma
Josephine Muiru	Nyandarua
Kennedy Odhiambo Oruenjo	Siaya
Lilian Bruno	Meru
Martin Kirimi Thurania	Samburu
Micah Koech	Bomet
Mohamed Somow	Wajir
Nelly Rangara	Kisumu
Nelson Lolos	Turkana
Oscar Okonga	Tana River
Patrick Njoka	Narok
Ray Sowon	Nandi
Ruth Muthama	Machakos
Shem Patta	Mombasa
Silas Ayunga	Nyamira
Sowon Gilbert	Trans Nzoia
Teresia Njoroge	Kiambu
Vincent Iduri	Kilifi
Wenseslaus Kienyere	Uasin Gishu
William Kendagor	Elgeyo Marakwet
Winfred Kanyi	Murang'a

## Annex F.5. Participants at the Validation and Field Visits Wrap-Up Meeting 3 August, 2018, Crowne Plaza Hotel, Nairobi

Name	Organisation
Agneta Mbithi	MEASURE Evaluation
Ambrose Agweyu	Consultant, Case Management
Ben T. Adika	Consultant, Advocacy, Communication, and Social Mobilisation
Caroline Njoroge	Health Policy Plus
Cecilia Muiva	Consultant, Procurement and Supply Management
Charles Chege	NMCP-MOH
Charles Ndemo	MEASURE Evaluation
Daniso Mbewe	Roll Back Malaria Partnership
Diana Omache	NMCP-MOH
Elizabeth Mwangeka	MEASURE Evaluation
Emmanuel Temu	Roll Back Malaria Partnership
Emphantus Murigi	NMCP-MOH
Evan Mathenge	Consultant, Vector Control
George Wadegu	TUPIME Kaunti
Hellen Gatakaa	Consultant, Surveillance, Monitoring, Evaluation, and Operational Research
Jacinta Omariba	NMCP-MOH
Jacinta Opondo	NMCP-MOH
James Sang	NMCP-MOH
Josephine Karuri	Co-lead Consultant
Katureebe Charles	WHO
Khoti Gausi	WHO
Linda Ozor	WHO
Michael Kayange	NMCP-Malawi
Peter Njiru	NMCP-MOH
Peter Ouma	Consultant, Malaria in Pregnancy
Rebecca Kiptui	NMCP-MOH
Samwel Kigen	NMCP-MOH
Scholastica Koki	NMCP-MOH
Sophie Githinji	MEASURE Evaluation
Soukeyna Sylla	The Global Fund
Stephen Munga	Consultant, Emergency Preparedness and Response
Theresa Watwii Ndavi	Health Policy Plus
Tuoyo Okorosobo	Roll Back Malaria Partnership
Victor Sumbi	USAID/Afya Ugavi
Wamari Andrew	NMCP-MOH
Willis Akhwale	Lead Consultant and Programme Management

A special national malaria forum was organized to provide an opportunity for researchers, implementers, and other stakeholders to input into the Malaria Programme Review by sharing relevant data and research findings that could further inform the ongoing process. The topics presented at the forum and speakers were selected through a consultative process between the National Malaria Control Programme and its partners. The forum was held on 18 and 19 September 2018, at the Intercontinental Hotel in Nairobi.

### **Annex G.1. Program for the Kenya National Malaria Forum**

#### **Day 1: 18 September, 2018**

8:30–10 a.m.: Main Plenary, Mara North Ballroom

Chair: Dr. Peter Cherutich

Opening Remarks:

1. NMCP
2. Council of Governors
3. Director KEMRI
4. USAID Kenya and East Africa Representative
5. WHO Representative
6. Director of Medical Services
7. Principal Secretary
8. Cabinet Administrative Secretary

**Main Plenary  
Emerging Issues  
10:30 a.m.–1 p.m.**

Chair: KEMRI Director

Rapporteur: Dr. Rebecca Kiptui

1. Status of pilot malaria vaccine testing in Kenya: Emerging issues and opportunities  
**Dr. Rose Jalango, MOH (NVIP)**
2. Planned evaluation of MVIP  
**Dr. Dan James Otieno, WHO, MVIP Consultant**
3. Larvae source management for malaria pre-elimination  
**Dr. Kiambo Njagi, NMCP**
4. Role of seasonal malaria chemo suppression in the Kenyan setting  
**Ben Andagalu, USAMRU, Kenya**
5. Moving towards malaria elimination in Kenya: Challenges and opportunities  
**Dr. Peter Ouma, Maseno University**
6. Expanding the vector control toolkit: New tools for vector control  
**Dr. Evan Mathenge, KEMRI**
7. HIS capacity strengthening: Lessons learnt and way forward  
**Prof. Jim Thomas, MEASURE Evaluation**

**Concurrent Sessions 1  
2–4 p.m.**

**Session 1: Case Management/Vaccines**

Chair: Dr. Beatrice Mutai

Rapporteur: Samuel Kigen

Lessons learnt in strengthening community case management using the community strategy

**Jared Oule, AMREF Health**

Innovative approach to improve antimalarial use in the retail sector

**Joseph Kipkoach, Moi University, School of Public Health**

Access to affordable malaria medicines and diagnostics through the private sector **Patricia Njiri, Clinton Health Access Initiative**

Monitoring the quality of care for OPD and IPD: Utility for programming

**Dr. Walter Otieno, USAMRU-Kenya**

Lessons learnt in implementing quality of care surveys and their utility for programming

**Prof. Dejan Zurovac, KEMRI WT**

**Session 2: Surveillance, Monitoring, Evaluation, and Operations Research**

Chair: Dr. Rebecca Kiptui

Rapporteur: Hellen Gatakaa

Barriers to sharing research evidence with policy makers: Researchers' perspectives

**Dr. Evan Mathenge, KEMRI**

The quality of inpatient data from HIS: Challenges, opportunities, and way forward **Samuel Cheburet, HIS, MOH**

The quality of laboratory data in the HIS: Challenges, opportunities

**Nancy Amayo, MOH**

Limited capacity to demand and use data at the county level

**Lilyana Dayo, CMCC, Kisumu**

Use of geospatial analysis to drive demand and use of data for decision making

**Dr. Rose Nzyioka, HIGDA**

Improving completeness in reporting and quality of data at county level

**Dr. Francis Njoroge, CMCC, Garissa**

Role of entomological surveillance in malaria elimination

**Prof. Charles Mbogo, KEMRI WT**

### Concurrent Sessions 2

4:30–5 p.m.

<p><b>Session 3: Advocacy, Communication, and Social Mobilisation</b></p> <p>Chair: Ben Adika</p> <p>Rapporteur: Jacinta Opondo</p> <p>Socio behavioural issues affecting adherence to treatment guidelines</p> <p><b>Prof. Grace Irimu, KEMRI WT</b></p> <p>Strategies for sustaining gains in net use through socio-behaviour change communication (SBCC)</p> <p><b>Nancy Njoki, PS Kenya</b></p> <p>Role of ACSM in domestic resource mobilisation for malaria control</p>	<p><b>Session 4: Surveillance, Monitoring, Evaluation, and Operational Research</b></p> <p>Chair: Dr. Rebecca Kiptui</p> <p>Rapporteur: Hellen Gatakaa</p> <p>Strengthening surveillance system in preparation for malaria elimination:</p> <p><b>Dr. Sophie Githinji, MEASURE Evaluation</b></p> <p>Lessons learnt in capacity building for entomological surveillance at the county level <b>Lenson Kariuki, VBDCU</b></p>
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### Concurrent Sessions 2

4:30–5 p.m.

<p><b>Zeba Siaanoi, Malaria No More</b></p> <p>Communication to support demand creation for malaria services</p> <p><b>Dr. Margaret Njenga, PS Kenya</b></p>	<p>Spatial and temporal analysis of malaria in Turkana county based on routine reporting data</p> <p><b>Dr. Wendy O'Meara, Moi University, School of Public Health.</b></p> <p>Temporal and spatial antimalarial drug sensitivity in Kenya</p> <p><b>Dr. Hoseah M., KEMRI/USAMRU</b></p> <p>Molecular surveillance of ACT resistance in Kenya</p> <p><b>Dr. Lynette Isabella Oyier, KEMRI WT</b></p>
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**5–5:10 p.m.: Wrap up for the day**  
**DAY 2: 19 September, 2018**  
**Main Plenary**  
**8–10 a.m.**

Chair: Dr. Willis Ahkwale

Rapporteur: Deborah Ikonge

1. Exit strategy for IRS in Uganda: Experience and lessons learnt  
**Dr. Agaba Bosco, National Disease Control, Uganda**
2. Barriers to uptake of research evidence in policy making  
**Dr. Solomon Nzioka, WHO**
3. Domestic resource mobilisation for health: Lessons for malaria programme funding  
**Dr. Daniel Mwai, Health Financing, University of Nairobi**
4. Guidance on resource flow for malaria control from treasury to the counties  
**Mr. Stephen Muiruri, The National Treasury**
5. Challenges and opportunities for malaria commodity management at the county level  
**Dr. Victor Sumbi, Chemonics**

**Concurrent Sessions 3**

**10:30 a.m.–12:30 p.m.**

**Session 5: Vector Control**

Chair: Dr. Luna Kamau

Rapporteur: Damaris Matoke

Emergence of pyrethroid resistance and the way forward

**Nabie Bayoh, PAMCA**

Economic evaluation of LLIN distribution channels in Kenya

**Dr. Vincent Were**

Strategies for achieving universal coverage; role of continuous net distribution

**Dr. Margaret, PS Kenya**

**Session 6: Malaria in Pregnancy**

Chair: Dr. Lynette Isabella

Rapporteur: Dr. Esther Kinyeru

Implementation of the new ANC+ model: Implication for malaria control

**Dr. Peter Ouma, Maseno University**

Innovative approaches to support CHVs to facilitate early referral for pregnant mothers

**Dr. Augustine Ngindu, Jhpiego Kenya**

Use of ACTs in pregnancy during the 1<sup>st</sup> trimester

**Ben Andagalu, USAMRU, Kenya**

Experience and lessons learnt in implementing community IPTp

**Concurrent Sessions 3**

**10:30 a.m.–12:30 p.m.**

Entomological Impact of IRS with Actellic 300 CS in Migori County

**Bernard Abongo, AIRS, Kenya**

Anopheles funestus mosquitoes and malaria transmission in Kenya

**Dr. David Tchouassi, ICIPE**

**Dr. Samuel Onditi**

## Concurrent Sessions 4

2–4 p.m.

### Session 7: Epidemic Preparedness and Response

Chair: Dr. Steve Munga

Rapporteur: James Sang

Experience and lessons learnt in EPR at the county level

#### Dr. Godfrey Otomu, CDH Kisii

- Sustained epidemic monitoring, detection and response
- Coordination of outbreak management
- Skills and capacity gaps in threshold setting
- Investment for EPR at the county level

New systems and technology for malaria early warning and tools for decision support system for epidemic response

#### Dr. Solomon Nzioka, WHO

Malaria risk mapping and stratifications: Lessons for malaria control

#### Peter Macharia, KEMRI WT

### Session 8: Accountability for Malaria Control at the Community Level: Experiences and lessons learnt by CSOs

Chair: Dr. Maurice Odindo

Rapporteur: Dennis Mwangi

Taking malaria to the community: A civil society perspective

#### Edward Mwangi, KeNAAM

Experiences of malaria Implementation at community level in the coastal region in Kenya

#### Jasho Bomu, Coastal Malaria Advocacy Network

Role of CSO's and communities in strengthening health systems in high malaria transmission area

#### Eric Omondi, Lake Endemic Malaria Advocacy Network

Experiences of malaria control programs in low transmission settings

#### Georgina Ngugi, Low & Seasonal Advocacy Network

## Main Plenary

4:20–5 p.m.

Implications for malaria programme review and the next KMS

#### Dr. Willis Akhwale, Lead Consultant, MPR

Wrap up of the two-day forum and closing ceremony

#### Dr. Waqo Ejersa, Head, NMCP

## G2. Participants at the Kenya National Malaria Forum

Name	Organisation
Agaba Bosco	Department of Disease Control, Uganda
Agnetta Mbithi	MEASURE Evaluation
Alice Mwangangi	RMHSU
Allan Owino	Kitui County
Aloise Gikunda	Population Services Kenya
Alto Selby	JHU CCP
Ambrose Agweyu	Consultant, Case Management
Anthony Miru	The National Treasury
Anthony Mwangi	Nairobi County
Arthur Muchiri	Kakamega County
Augustine Ngindu	Jhpiego
Beatrice Mutai	University of Nairobi
Ben Adangalu	USAMRU
Ben T. Adika	Consultant, Advocacy, Communication, and Social Mobilisation
Bernard Abongo	Vector Link
Bernard Makenzi	Kwale County
Betty Chepng'eno Lagat	Kericho County
Bradford S	National Government
Brian Masitza	Busia County
Cecilia Muiva	Consultant, Procurement and Supply Management
Celestine Adipo	MEASURE Evaluation
Charles Mbogo	KEMRI
Charles Ogari	MEASURE Evaluation
Christine Wayua	NMCP-MOH
Damaris Matoke	KEMRI
Dan Otieno	WHO
Daniel Wacira	USAID/PMI
David Muasya	Taita Taveta County
David P. Tchousassi	International Centre for Insect Physiology and Ecology
Deborah Ikonge	NMCP-MOH
Dejan Zurovac	KEMRI/Wellcome Trust Research Programme
Dennis Mwangi	KeNAAM
Diane Sibi	Kajiado County
Douglas Kiobo	Parallel Media
Edward Mwangi	KeNAAM
Elizabeth Mwangeka	MEASURE Evaluation
Emelda Okiro	KEMRI/Wellcome Trust Research Programme

Name	Organisation
Enock Marita	AMREF
Ephantus Murigi	NMCP-MOH
Erick Okoth	Blue Cross
Erols Sigei	KMTC
Esther Kinyeru	NMCP-MOH
Eunice Njeru	NMCP-MOH
Evan Mathenge	Consultant, Vector Control
Francis Kiio	Narok County
Francis Maingi	PSM Migori
Geoffrey Otomu	Kisii County
George Ayundo	KEMRI
George Karoki	Kirinyaga County
George Okello	KEMRI/Wellcome Trust Research Programme
George Wadegu	TUPIIME Kaunti
Georgina Ngugi	KeNAAM
Gilchrist Sowon	Turkana County
Gladys Moraa	NMCP-MOH
Grace Baya	Kilifi County
Grace Irimu	KEMRI/Wellcome Trust Research Programme
Grace Joyce	NMCP-MOH
Hassan Mohamed Odo	Mandera County
Hellen Gatakaa	Consultant, Surveillance, Monitoring, Evaluation, and Operational Research
Hosea Akala	KEMRI/Wellcome Trust Research Programme
Isabella Nyangau	PATH
Isabella Oyier	KEMRI/Wellcome Trust Research Programme
Isaki Kushi	Marsabit County
Ismail Abby	NMCP-MOH
Jacinta Opondo	NMCP-MOH
James Kiarie	NMCP-MOH
James Mwangi	Population Services Kenya
James Sang	NMCP-MOH
Jasho Bomu	KeNAAM
Jim Thomas	MEASURE Evaluation
Joel Mwangi	Vector Borne Disease Control Unit, MOH
Jonathan Ino Okwaku	Siaya County
Joseph Kipkoech	Moi University
Joshua Muia	Makueni County
Josephine Karuri	Co-lead Consultant

Name	Organisation
Joyce Onsongo	WHO
Kang'ethe Ngure	Vestergaard
Kelly Gathiri	Parallel Media
Khoti Gausi	WHO
Kiambo Njagi	NMCP-MOH
Kimani Francis	KEMRI
Kizito Mbao	KEMRI
Lairumbi Geoffrey	Consultant, Kenya National Malaria Forum
Laura Wangai	Kirinyanga University
Lenson Kariuki	MOH
Lilian Chebon	World Vision Kenya
Lilian Gitau	USAID/Afya Ugavi
Lilian Kaloki	Meru County
Lilian Mageto	TUPIIME Kaunti
Lilyana Dayo	Kisumu County
Lindsey Tumbull	KEMRI
Lucy Mugoya	Tropical Health
Luna Kamau	KEMRI
Margaret Mungai	AMREF
Margaret Njenga	Population Services Kenya
Maurice Opondo	KeNAAM
Micah Koech	Bomet County
Mildred Shiesha	USAID/PMI
Mohamud Maalim Hassan	Wajir County
Nancy Amayo	Health Information Systems, MOH
Nancy Njoki	Population Services Kenya
Nelly Rangara	Kisumu County
Omar Ahmeddin	NMCP-MOH
Omor Willis	Population Services Kenya
Patricia Njiru	Clinton Health Access Initiative
Peter Kimun	The National Treasury
Peter Macharia	KEMRI/Wellcome Trust Research Programme
Peter Njiru	NMCP-MOH
Peter Ouma	Maseno University
Randoph Augustin	USAID
Rebecca Kiptui	NMCP-MOH
Regina Kandie	NMCP-MOH
Robert Mwaura	NMCP-MOH

Name	Organisation
Robert Perry	PMI/CDC
Robert Snow	KEMRI/Wellcome Trust Research Programme
Robinson Oyando	KEMRI/Wellcome Trust Research Programme
Rose Jalango	MOH-NVIP
Rose Nzyoka	HIGDA
Roseline Muchai	Pricewaterhouse Coppers/ GF Local Fund Authority
Roselyne Kasati	Vector Borne Disease Control Unit, MOH
Sam Wilks	Maisha Meds
Samuel Chebet	MOH
Samuel Kigen	NMCP-MOH
Samuel Onditi	Independent Consultant
Shem Patta	Mombasa County
Silas Ayunga	Nyamira County
Simon Kariuki	KEMRI
Solomon Karoki	NMCP-MOH
Solomon Sirma	Nakuru County
Sophie Githinji	MEASURE Evaluation
Sowon Gilbert	Trans Nzoia County
Stephen Munga	Consultant, Emergency Preparedness and Response
Steve Kianiaru	Embu County
Theresa Watwii Ndavi	Health Policy Plus
Tom Wabwire	KeNAAM
Tony Njoka	Tharaka Nithi County
Victor Sumbi	USAID/Afya Ugavi
Vincent Were	KEMRI
Walter Otieno	Maseno WRP
Wamari Andrew	NMCP-MOH
Waqo Ejersa	Head, NMCP
Welby Chimwani	NMCP-MOH
Wendy O'Meara	Moi University
Wenseslaus Kienyere	Uasin Gishu County
Willis Akhwale	Lead Consultant and Programme Management
Winfred Kanyi	Murang'a County
Yusuf Suraw	NMCP-MOH
Zeba Siaanoi	Malaria No More
Zeddy Bore	PMI Vector Link

## ANNEX H.

# PARTICIPANTS AT THE MALARIA PROGRAMME REVIEW REPORT FINALISATION WORKSHOP

21 and 22 September, 2018, Crowne Plaza Hotel, Nairobi

Name	Organisation
Agneta Mbithi	MEASURE Evaluation
Aloise Gikunda	Population Services Kenya
Andrew Wamari	NMCP-MOH
Antony Chege	KEMSA
Beatrice Machini	NMCP-MOH
Ben T. Adika	Consultant, Advocacy, Communication, and Social Mobilisation
Bernard Abongo	Vector Link
Cecilia Muiva	Consultant, Procurement and Supply Management
Charles Chege	NMCP-MOH
Charles Ndemo	MEASURE Evaluation
Christine Wayua	NMCP-MOH
Daniel Wacira	USAID/PMI
Deborah Ikonge	NMCP-MOH
Elizabeth Mwangeka	MEASURE Evaluation
Esther Kinyeru	NMCP-MOH
Evan Mathenge	Consultant, Vector Works
George Wadegu	TUPIIME Kaunti
Jacinta Opondo	NMCP-MOH
James Kiarie	NMCP-MOH
James Mwangi	Population Services Kenya
James Sang	NMCP-MOH
Josephine Karuri	Co-lead Consultant
Khoti Gausi	WHO
Patricia Njiri	Clinton Health Access Initiative
Peter Njiru	NMCP-MOH
Peter Ouma	Consultant, Malaria in Pregnancy
Rebecca Kiptui	NMCP-MOH
Robert Mwaura	NMCP-MOH
Robert Perry	PMI/CDC



Name	Organisation
Samuel Kigen	NMCP-MOH
Solomon Karoki	NMCP-MOH
Sophie Githinji	MEASURE Evaluation
Stephen Munga	Consultant, Emergency Preparedness and Response
Theresa Watwii Ndavi	Health Policy Plus
Victor Sumbi	USAID/Afya Ugavi
Waqo Ejersa	Head, NMCP
Willis Akwale	Lead Consultant and Programme Management
Willis Omoro	Population Services Kenya



ANNEX I.

# BUDGET FOR THE MALARIA PROGRAMME REVIEW

Phases	Total in US\$
Phase I: Planning (Preparations and Organisation)	13,354
Phase II: Thematic Desk Review	172,864
Phase III: External Validation and Field Visits	183,116
Finalisation of Malaria Programme Review Report	56,495
<b>Grand Total</b>	<b>425,829</b>

# ACHIEVEMENTS AND CHALLENGES IN IMPLEMENTING THE KENYA MALARIA STRATEGIES

## Annex J.1. Achievements and challenges for Objective 1: To have at least 80 percent of people in malaria risk areas using appropriate malaria preventive interventions by 2018

Strategy	Score	Main achievements	Key challenges
1.1 Universal distribution of LLINs through appropriate channels	80%	<ul style="list-style-type: none"> <li>A total of 36,998,283 LLINs were distributed during the period under review.</li> </ul>	<ul style="list-style-type: none"> <li>Attainment of universal coverage is still low at 48%.</li> </ul>
1.2 IRS in targeted areas	68.3%	<ul style="list-style-type: none"> <li>In the areas where IRS was implemented, high levels of coverage were achieved.</li> </ul>	<ul style="list-style-type: none"> <li>Delays in registration of appropriate insecticide for IRS</li> </ul>
1.3 Implement larval source management	0.0		<ul style="list-style-type: none"> <li>Limited resources for implementing larval source management</li> <li>Lack of a clear operational and implementation plan for larval source management</li> </ul>
1.4 Support malaria-free school initiative	40.0%	<ul style="list-style-type: none"> <li>Curriculum content was developed and disseminated to schools in western Kenya</li> </ul>	<ul style="list-style-type: none"> <li>Lack of clarity on the vector control-related activities to be implemented through schools, and on implementation approach.</li> </ul>
1.5 Provision of intermittent preventive treatment in pregnancy (IPTp) to pregnant women at antenatal clinics and promotion of its use at community level	57.6%	<p>Increase in IPTp uptake:</p> <ul style="list-style-type: none"> <li>IPTp 1: 56% (2015) to 79% (2017) (DHIS 2)</li> <li>IPTp 2: 47% (2015) to 69% (2017) (DHIS 2)</li> <li>IPTp 3: 11% (2010) to 38% (2015) (KMIS)</li> <li>The percentage of pregnant women ages 15–49 who slept under an LLIN increased from 37% in 2013 to 58% in 2015.</li> </ul>	<ul style="list-style-type: none"> <li>Healthcare workers were not oriented on the new WHO recommendation of starting IPTp at 13 weeks and subsequent monthly provision.</li> <li>Inadequate data capture systems, poor healthcare worker-client communication, and erratic supply of sulphadoxine-pyrimethamine (SP) in the period under review</li> <li>Revised registers had no provision to capture IPTp3.</li> </ul>

## Annex J.2. Achievements and challenges for Objective 2: To have 100 percent of all suspected malaria cases presenting to a health provider managed according to the National Malaria Treatment Guidelines by 2018

Strategy	Score	Main achievements	Key challenges
2.1 Capacity building of health workers in malaria diagnosis and treatment at health facilities	47.8%	<ul style="list-style-type: none"> <li>Guidelines available in 75% of health facilities</li> <li>Trained 100% of target healthcare workers (HCWs) in public health facilities</li> <li>Supervision provided during case management training</li> <li>Emergency Triage, Assessment, and Treatment plus admission care (ETAT+) guidelines and curricula purchased from WHO; national ETAT guidelines updated by Newborn child and Adolescent Health Unit</li> <li>ETAT+ training conducted by Kenya Paediatric Association (KPA) for 1,238 HCWs in 17 counties</li> </ul>	<ul style="list-style-type: none"> <li>Guidelines available in some health facilities were not current</li> <li>Not all health facilities covered during training</li> <li>Only 60% of HCWs fully adhered to guidelines</li> <li>Non-adherence to training standards in terms of class size,</li> <li>Lack of oversight in selection of training participants, and production of training reports</li> <li>Suboptimal monitoring of practice</li> <li>Not all recommendations made during supervision were implemented</li> <li>NMCP did not facilitate or supervise ETAT+ training</li> </ul>
2.2 Access to affordable malaria medicines and diagnostics through the private sector	35.9%	<ul style="list-style-type: none"> <li>Consultative stakeholders meeting held and market analysis for development of private sector case management implementation plan done</li> <li>Annual quantification and procurement for private sector done</li> </ul>	<ul style="list-style-type: none"> <li>Private sector case management implementation plan was not developed due to delay in stakeholder engagement</li> <li>Biannual planning and coordination meetings with private sector delayed</li> <li>Suboptimal stock monitoring (price and stock availability) in private sector</li> </ul>
2.3 Strengthening community case management (CCM) of malaria using the community health strategy	66.7%	<ul style="list-style-type: none"> <li>CCM curriculum revised and disseminated</li> <li>7,350 CHVs trained in CCM for malaria</li> <li>County supervision and monitoring done</li> </ul>	<ul style="list-style-type: none"> <li>Only 30% CHV coverage in target location</li> <li>Frequent stock outs of malaria rapid diagnostic tests (mRDTs) and ACTs due to poor inventory management and lack of coordination with link facilities</li> <li>Poor coordination of CCM—some partners using unapproved guidelines and training materials</li> <li>Shortages of communitylevel reporting tools</li> </ul>

Strategy	Score	Main achievements	Key challenges
2.4 Ensure commodity security of malaria medicines and diagnostics in the public sector	45.0%	<ul style="list-style-type: none"> <li>Antimalarials and diagnostics were included in relevant guidelines and essential drugs list as per the national treatment guidelines</li> <li>Held meetings with Pharmacy and Poisons Board (PPB) on regulation on antimalarials and diagnostics</li> <li>Quantification and quantification review done annually</li> <li>Four planned annual postmarket surveillance (PMS) activities for antimalarial medicines conducted</li> </ul>	<ul style="list-style-type: none"> <li>Some commodities missing in the Kenya essential medicines list: artemether-lumefantrine (AL) 40/240mg, AL 60/360mg, rectal artesunate</li> <li>Ad hoc review of antimalarials and diagnostics specification done—no specifications manual</li> <li>Lack of clarity on regulation of mRDT (PPB vs. National Quality Control Laboratory)</li> <li>Lack of reliable consumption data resulting in use of morbidity data for quantification and in forecast errors for RDTs</li> <li>Over-quantification done due to lack of data in DHIS 2</li> <li>Stockouts reported in surveys and stock status reports</li> <li>Overstocks and short expiration dates</li> <li>Delayed supply of commodities in some counties</li> <li>Dihydroartemisinin-piperaquine (second line for uncomplicated malaria) not procured—funds not allocated</li> <li>Three of the PMS reports not disseminated although available on PPB website; one PMS report yet to be completed</li> </ul>
2.5 Strengthen quality assurance (QA) of diagnosis of malaria	50.0%	<ul style="list-style-type: none"> <li>Review of malaria diagnosis QA implementation plan done</li> <li>2,000 QA officers trained</li> <li>Proficiency training for QA officers done</li> <li>Supervision and monitoring of QA training and implementation done (only lake endemic region covered)</li> <li>National reference laboratory is well-equipped</li> <li>2013 malaria laboratory guidelines disseminated</li> </ul>	<ul style="list-style-type: none"> <li>Review of malaria diagnosis QA implementation plan delayed; document now due for review</li> <li>Imbalance in numbers of QA officers trained across counties (lower numbers in low risk zones)</li> <li>Inadequate personnel to provide QA supervision and monitoring in all counties</li> <li>Establishment of county reference laboratories lagging behind, especially in low risk zones</li> <li>Malaria laboratory guidelines and curricula not reviewed due to competing tasks</li> </ul>

### Annex J.3. Achievements and challenges for Objective 3: To ensure that 100 percent of malaria epidemic-prone and seasonal transmission subcounties have the capacity to detect and timely respond to malaria epidemics by 2018

Strategy	Score	Main achievements	Key challenges
3.1 Strengthen early detection systems for malaria epidemics in epidemic-prone and seasonal transmission areas	34%	<ul style="list-style-type: none"> <li>Staff were trained on the Malaria Early Warning System</li> </ul>	<ul style="list-style-type: none"> <li>Limited funding for EPR activities</li> <li>Lack of coordination and implementation arrangements to cascade EPR trainings to sub-county and health facility levels</li> </ul>
3.2 Strengthen capacity for epidemic and preparedness response	22.8%	<ul style="list-style-type: none"> <li>Counties trained on EPR plans and</li> <li>EPR plans developed</li> </ul>	

### Annex J.4. Achievements and challenges for Objective 4: To ensure that all malaria indicators are routinely monitored, reported and evaluated in all counties by 2018

Strategy	Score	Main achievements	Key challenges
4.1 Strengthen malaria monitoring and evaluation	57.5%	<ul style="list-style-type: none"> <li>Comprehensive M&amp;E system with structures for coordination and strong M&amp;E partnerships</li> <li>More than 4,000 health workers across the 47 counties trained in malaria surveillance</li> <li>Exemplary generation and use of malaria surveillance information on a routine basis at national level and in select counties</li> </ul>	<ul style="list-style-type: none"> <li>Outdated malaria surveillance guidelines and tools</li> <li>Persistently poor quality of data due to non-implementation of DQA recommendations</li> <li>Lack of continuous and systematic availability of appropriate reporting tools at health facility and community levels</li> <li>Lack of data reporting by most private sector health care providers</li> </ul>
4.2 Conduct and facilitate health facility surveys	50.0%	<ul style="list-style-type: none"> <li>Data from repeat surveys indicate improvements in quality of care</li> <li>The data informs on gaps especially in health facility readiness to provide quality care</li> <li>Initiated inpatient survey in faith-based hospitals in 2017</li> <li>Supportive supervision conducted in 47 counties 2017 and in 41 counties in 2016</li> </ul>	<ul style="list-style-type: none"> <li>DQAs and supportive supervision, had challenges with disbursements of funds from national to county levels before 2016</li> <li>Implementation of supportive supervision and DQA activities is primarily supported by external financial resources</li> <li>Lack of opportunities to package the wealth of information into key messages for use by actors beyond facility and donors</li> <li>Reporting of progress in laboratory assessments and pharmacovigilance not readily available within SMEOR unit</li> <li>Data reported separately through PPB; a need for collaboration and joint working between PPB and NMCP</li> <li>No reports made regarding adverse reactions to malaria medicines</li> </ul>

Strategy	Score	Main achievements	Key challenges
4.3 Conduct and support community surveys	76.0%	<ul style="list-style-type: none"> <li>MIS 2015 was done; findings were disseminated; and together with Kenya Demographic and Health Survey, informed the impact evaluation and programme performance review</li> <li>Conducted a post-mass LLIN distribution survey in 2017</li> </ul>	<ul style="list-style-type: none"> <li>MIS 2018 was not conducted due to logistical and operational challenges</li> <li>Reports of progress in post-market surveillance and malaria medicines quality assessment were not available despite joint implementation by PPB and NMCP</li> <li>Identified gaps in molecular data for drug efficacy studies; notable delayed implementation</li> <li>No publications and policy briefs as envisioned in the outcome indicators</li> </ul>
4.4 Strengthen school-based malaria sentinel surveillance	0.0%	<ul style="list-style-type: none"> <li>MIS surveys in 2010 and 2015 provide parasite prevalence in school age children</li> </ul>	<ul style="list-style-type: none"> <li>No survey in the period under review; last survey was done in 2013; a compilation of surveys among children ages 2–9 as well as community prevalence surveys were key in measuring impact of malaria control interventions as indicated in the impact evaluation report</li> </ul>
4.5 Facilitate operational research and translation of research findings to policy	43.3%	<ul style="list-style-type: none"> <li>SMEOR maintained an updated operational research agenda. It was reviewed in March 2018 to incorporate research questions that would inform bottlenecks in implementation of activities under each objective in the KMS 2009-2018.</li> </ul>	<ul style="list-style-type: none"> <li>Financial constraints to implement research due to funding constraints</li> <li>Weak coordination of research beyond DFID funding; at programme level no documentation of what had been done</li> <li>Inadequate translation of research findings to policy; only one policy brief was produced during the period under review</li> </ul>
4.6 Strengthening malaria data management systems	0.0%	<ul style="list-style-type: none"> <li>Minor updates done</li> </ul>	<ul style="list-style-type: none"> <li>Programme performance tracking platform MIAS not used due to infrastructure malfunction and inadequate internal processes to support its effective use.</li> </ul>
4.7 Human resources capacity building in surveillance, monitoring, and evaluation	77.5%	<ul style="list-style-type: none"> <li>Use of M&amp;E capacity assessment tool in 2013 and 2016 gives an indication of M&amp;E capacity improvements</li> <li>Strong M&amp;E system in place</li> </ul>	<ul style="list-style-type: none"> <li>Gap in capacity for data analysis and use among new staff</li> <li>Lack of human capacity-building plan</li> <li>Inadequate post-training followup (mentoring and support for enhanced data analysis and use) across the country</li> </ul>
4.8 Conduct and support entomological surveillance	68.1%	<ul style="list-style-type: none"> <li>Countrywide coverage—entomological surveillance training in all counties, 2 rounds of surveillance in 41 counties</li> <li>Entomological surveys in 2016 and 2017 in 38 counties; updated entomological profile in place</li> </ul>	<ul style="list-style-type: none"> <li>Lack of testing kits, so susceptibility testing for insecticides not done</li> <li>No plans to incorporate impactlevel entomological indicators in the entomological surveillance</li> </ul>

## Annex J.5. Achievements and challenges for Objective 5: To increase utilisation of malaria control interventions by communities to at least 80 percent by 2018

Strategy	Score	Main achievements	Key challenges
5.1 Strengthen structures for delivery of ACSM interventions at all levels	32.1%	<ul style="list-style-type: none"> <li>NMCP revised and printed 1,000 copies of the Kenya malaria communication strategy (KMCS) that were disseminated to all the 47 counties and partners</li> <li>NMCP built the capacity of 38 counties on ACSM; the counties developed county communication plans</li> <li>NMCP held 9 out of the planned 16 ACSM TWG meetings at the national level</li> </ul>	<ul style="list-style-type: none"> <li>Seven TWG meetings were not held due to decrease in partners' participation</li> <li>Facilitation of counties to hold ACSM TWG meetings was not possible due to bureaucratic challenges of releasing available funds</li> <li>Low prioritisation of a malaria ambassador role</li> <li>Implementation of community ACSM activities was not undertaken due to merger with the planned supportive supervision conducted at the health facility level</li> </ul>
5.2 Strengthen program communication for increased utilisation of all malaria interventions	86.7%	<ul style="list-style-type: none"> <li>NMCP with support from partners developed three ACSM packages (LLIN, case management, and IPTp) that were disseminated through national and regional TV and radio stations under different themes and slogans</li> </ul>	<ul style="list-style-type: none"> <li>A package of ACSM messages on EPR was not developed;</li> <li>Poor coordination of media activities with different partners disseminating messages under different themes while targeting the same radio and TV stations.</li> </ul>
5.3 Advocate for inter-sectoral collaboration for malaria ACSM	30%	<ul style="list-style-type: none"> <li>NMCP successfully held events to commemorate annual World Malaria Day over the four years in different locations</li> <li>Two out of the planned eight malaria information and advocacy bulletins produced and distributed</li> </ul>	<ul style="list-style-type: none"> <li>NMCP did not convene biannual consultative meetings with the non-health sector due to the lack of an advocacy package</li> <li>Six malaria information bulletins not produced due to lack of articles</li> </ul>
5.4 Strengthen community based Social Behaviour Change Communication (SBCC) activities for all malaria interventions	75%	<ul style="list-style-type: none"> <li>NMCP through its partners supported community-based malaria control activities at county level</li> <li>Successfully undertook a pilot programme in engaging school children to promote malaria prevention and treatment at community level</li> <li>Disseminated malaria messages through regional stations and documented four success stories.</li> </ul>	<ul style="list-style-type: none"> <li>Weak mechanism at NMCP to capture community-based malaria control interventions implemented at the county level</li> </ul>

## Annex J.6. Achievements and challenges for Objective 6: To improve capacity in coordination, leadership, governance and resource mobilisation at all levels towards achievement of the malaria program objectives by 2018

Strategy	Score	Main achievements	Key challenges
6.1 Develop, update, and disseminate policy and strategic documents; lobby for legislation and regulations to guide malaria control in Kenya	31.7%	<ul style="list-style-type: none"> <li>Enabling policy environment with a revised KMS and M&amp;E plan</li> <li>Several guidelines developed and available, including the following:               <ul style="list-style-type: none"> <li>Malaria Communication Strategy (2016-2021)</li> <li>National Treatment Guidelines for the Diagnosis, Management, and Prevention of Malaria, 5th edition (2016)</li> <li>Insecticide Resistance Management Strategy 2016</li> <li>Kenya Malaria Monitoring and Evaluation Plan 2014-2018</li> </ul> </li> <li>Identification and training of county malaria control coordinators (CMCCs)</li> <li>Development of a costed four-year business plan to guide investment and Annual Work Plan (AWP)</li> </ul>	<ul style="list-style-type: none"> <li>Lack of defined mechanism for dissemination of policy guidelines</li> <li>Planned Resource mobilisation strategy remains incomplete hampering efforts for effective RM activities.</li> <li>Development of planned documents including; laboratory QA/QC training manual, community-based diagnostic testing and treatment plan for community health workers, risk management plan and operations manual and county malaria manual was not done</li> <li>Lowered NMCP hierarchically at MOH</li> <li>Lack of a curriculum for CMCC trainings and training strategy</li> <li>Ineffective structures for coordination of partners' activities at national and county levels</li> </ul>
6.2 Strengthen procurement and supply management systems for malaria drugs and commodities	28.6%	<ul style="list-style-type: none"> <li>Consumption data for essential malaria commodities (ACTs and RDTs) are available in DHIS 2. National reporting rates (80%) and timeliness of reporting (70%) have been fairly high.</li> <li>High malaria commodity availability at facilities (ACTs, diagnostics). AL availability increased, from 74% in 2013 to 82% in 2016; RDT availability increased from 42% in 2013 to 66% in 2016 (Service Availability and Readiness Assessment Mapping 2013 and Service Availability and Readiness Assessment 2016). Availability averaged 86% (any AL pack) and 90% (any malaria diagnostics) (outpatient QOC-13 2017).</li> <li>Stockout levels: Average of 19% for AL (all packs) across the period at facility level; diagnostics stockouts (absence of any malaria diagnostic capacities) were 10% in 2017 (outpatient QOC-13 2017). No central level warehouse stockouts for LLINs for routine distribution over the period 2014-2017 (PS-Kenya LLIN Planner, 2014-2018).</li> </ul>	<ul style="list-style-type: none"> <li>Fragmented approach to procurement and supply chain management at national level</li> <li>Inadequate capacity in commodity management at the national, county, and subcounty levels management at facility level)</li> <li>Weak coordination and harmonisation of procurement for malaria commodities between national and county levels</li> </ul>

Strategy	Score	Main achievements	Key challenges
6.3 Strengthening capacity for planning, partnerships, coordination, and implementation at all levels	55.7%	<ul style="list-style-type: none"> <li>Active MICC and TWGs.</li> </ul>	<ul style="list-style-type: none"> <li>Lack of clear national and county engagement mechanisms for implementation of malaria control activities</li> <li>CMCCs not trained or facilitated to fulfil their roles and responsibilities</li> <li>Lack of programmatic data on activity implementation</li> <li>Inadequate skills sets and competencies for effective programme management (e.g., trainings, data management, M&amp;E)</li> </ul>
6.4 Strengthen resource mobilisation capacity to improve malaria control financing	34%	<ul style="list-style-type: none"> <li>Development of a costed four-year business plan to guide investment and Annual Work Plans.</li> </ul>	<ul style="list-style-type: none"> <li>Lack of financial indicator to measure programme financing</li> </ul>

## IMPLEMENTATION OF MID-TERM REVIEW RECOMMENDATIONS FOR ALL OBJECTIVES

MSP objectives	MTR recommendations	Proportion implemented:			Enabling and constraining factors
		Fully	Partially	Not at all	
<p><b>Objective 1:</b> To have at least 80% of people living in malaria risk areas using appropriate malaria preventive interventions by 2018</p>	<p><b>Vector- Related:</b></p> <p>LLIN</p> <ul style="list-style-type: none"> <li>Investment in continuous advocacy and community mobilisation through appropriate channels to increase net use</li> <li>Diversify routine distribution outlets to maintain LLIN coverage above 80% between campaigns</li> <li>Mass campaigns should be followed up with a mop-up exercise to reach households missed during the campaign period</li> </ul> <p>IRS</p> <ul style="list-style-type: none"> <li>Use of existing business plan to guide IRS implementation</li> <li>Annual rotation of insecticides used in IRS as stated in the Insecticide Resistance Management Strategy</li> <li>Enhance capacity of counties to carry out IRS and entomological surveillance, including monitoring insecticide resistance</li> </ul> <p>Larval source management</p> <ul style="list-style-type: none"> <li>Operational research to assess feasibility and impact of the method</li> <li>Build capacity for assessing the feasibility of larval source management in all 47 counties</li> <li>Initiate dry season larviciding in semi-arid and arid counties</li> <li>Tailor larval source management in the county context and provide technical support for implementation in feasible areas</li> <li>Limited application of environmental management to determine feasibility and effectiveness with full involvement of the communities and relevant stakeholders</li> </ul>	13%	75%	12%	<p><b>Enablers:</b></p> <ul style="list-style-type: none"> <li>Availability of funding, expertise in net distribution, and IRS</li> </ul> <p><b>Constrains:</b></p> <ul style="list-style-type: none"> <li>Social cultural issues, current method of net quantification, use of census data, underestimates of the need for mass nets</li> </ul>

MSP Objectives	MTR Recommendations	Proportion Implemented:			Enabling and Constraining Factors
		Fully	Partially	Not at All	
	Malaria school initiative <ul style="list-style-type: none"> <li>· Mainstream malaria control content into the school curriculum</li> </ul>				
	<b>Malaria in pregnancy-related:</b> <ul style="list-style-type: none"> <li>· Assessment of IPTp coverage through KMIS and Kenya Demographic and Health Survey.</li> <li>· Sensitisation of communities</li> <li>· Review of IPTp implementation to be conducted in 2014</li> <li>· FBOs and urban health facilities in malaria endemic areas to be supplied with effective medicine</li> <li>· Free administration of IPTp to pregnant women and reported through DHIS 2</li> </ul>	80%	10%	10%	<b>Enablers:</b> <ul style="list-style-type: none"> <li>· Funding support from Government of Kenya and partners enabled purchase and distribution of sulphadoxine-pyrimethamine (SP), refresher training and supervision</li> <li>· Robust advocacy conducted through radio, television, and health facilities. KMIS survey conducted to determine coverage, IPTp 3 adopted as a strategy and LLIN distributed to pregnant women through multiple channels.</li> </ul> <b>Constraints:</b> <ul style="list-style-type: none"> <li>· Erratic supply of SP due to poor coordination between central and county government health systems, poor healthcare worker understanding of when to give SP and infrastructural issues such as lack of clean water and taps to give IPTp directly observed treatment</li> </ul>
<b>Objective 2:</b> To have 100% of all suspected malaria cases presenting to a health provider managed according to the national malaria treatment guidelines by 2018	<ul style="list-style-type: none"> <li>· Ensure commodity security of malaria medicines and diagnostics in the public sector</li> <li>· Strengthen quality assurance for malaria diagnostics</li> <li>· Provide adequate guidance to health workers on the management of patients with fever that have a negative parasitological test result</li> <li>· Investment in dihydroartemisinin-piperazine (DHAP), the second-line treatment</li> <li>· Sustain availability of quality-assured ACTs in private sector after the Affordable Medicines Facility-malaria (AMFm)</li> <li>· Make PSM a standalone strategy under programme management</li> <li>· Continue to develop a private sector case management strategy building on the success of AMFm</li> <li>· Ensure commodity security at community level and integrate home management of malaria into community case management</li> </ul>	0%	83%	17%	<ul style="list-style-type: none"> <li>· Activities related to ensuring commodity security generally performed poorly</li> <li>· Although a procurement and supply chain management (PSM) strategy was introduced in the Programme Management objective, actual implementation was not effected</li> <li>· Compliance with case management guidelines on the management of patients with fever who have a negative parasitological test result has been improving since baseline; however, performance is still not optimal</li> <li>· Challenges in sustaining the availability of quality-assured ACTs in the private sector after AMFm, given limited funds to support the procurement of commodities for the private sector</li> <li>· Challenges with reporting and commodity security at community level. This might be alleviated by the recent implementation of reporting module for community in DHIS 2.</li> </ul>

MSP Objectives	MTR Recommendations	Proportion Implemented:			Enabling and Constraining Factors
		Fully	Partially	Not at All	
<p><b>Objective 3:</b> To ensure that 100% of the malaria epidemic-prone and seasonal transmission subcounties have the capacity to detect and timely respond to malaria epidemics by 2018</p>	<ul style="list-style-type: none"> <li>· Perform analysis of target indicators</li> <li>· Perform epidemic reporting, reviews, and evaluations</li> </ul>	67%	0%	33%	<ul style="list-style-type: none"> <li>· Some of the EPR indicators were neither smart nor clearly phrased, and hence not measurable.</li> <li>· No formal system exists for recording reported epidemics, hence local outbreaks and epidemics may not be reported or documented.</li> <li>· Performance of a post-mortem after every epidemic or outbreak has generally been overlooked.</li> <li>· Consistent plotting, detection, and local decision making is a challenge from health facilities and this is more challenging in health facilities in the seasonal transmission zones.</li> <li>· Low prioritisation of EPR activities at all levels</li> <li>· Limited capacity to implement EPR activities at county and sub-county levels.</li> <li>· Inadequate integration of EPR and surveillance.</li> </ul>

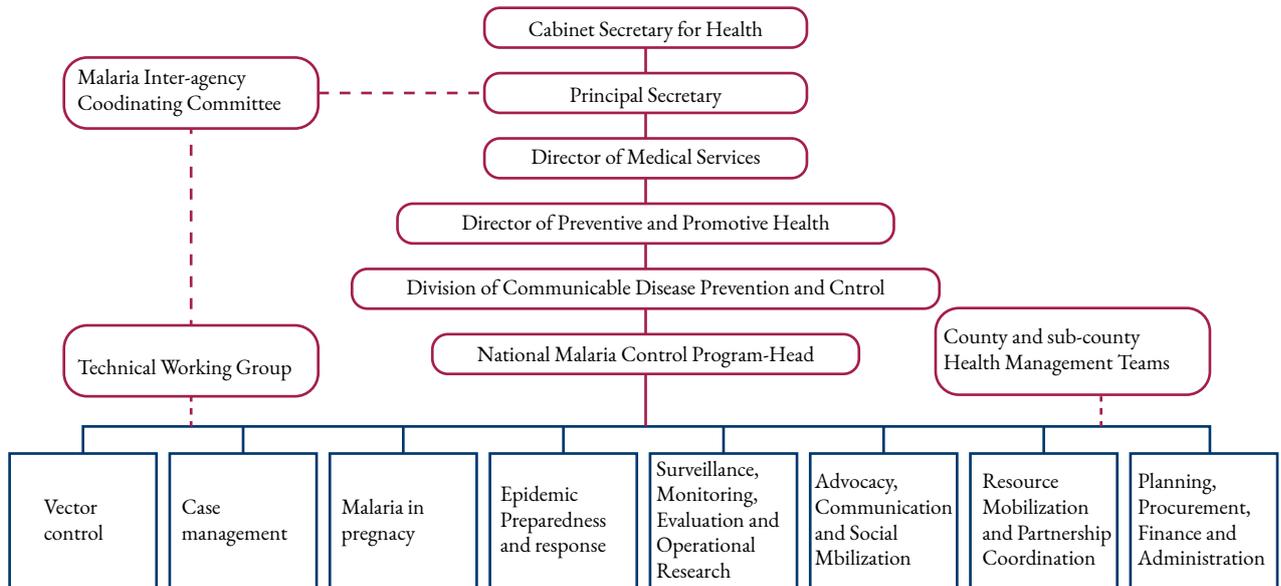
MSP Objectives	MTR Recommendations	Proportion Implemented:			Enabling and Constraining Factors
		Fully	Partially	Not at All	
<p><b>Objective 4:</b> To ensure that all malaria indicators are routinely monitored, reported and evaluated in all counties by 2018</p>	<ul style="list-style-type: none"> <li>· Review M&amp;E plan and disseminate to counties</li> <li>· Hold quarterly TWG meetings and include all stakeholders</li> <li>· Facilitate conduct of supportive supervision at county and subcounty levels</li> <li>· National level to carry out mentorship activities at the county level</li> <li>· Conduct school-based malariometric surveys in epidemic-prone and endemic areas</li> <li>· Build capacity of the community health management teams to conduct quality of care assessments</li> <li>· Update the Malaria Information Acquisition System (MIAS) to include surveillance data, partnership and training data, surveys, and data acquired from the health information system</li> <li>· Institute use of MIAS at NMCP level</li> <li>· Collaboration for pharmacovigilance and PMS</li> <li>· Conduct entomological surveys</li> <li>· Ensure timely reports to inform policy on insecticide resistance monitoring</li> <li>· Integrate health provider and facility inventory for malaria diagnosis and treatment into quality assurance/quality control</li> <li>· Hold national malaria forum every two years</li> <li>· Train health workers on malaria surveillance</li> <li>· Train county staff on M&amp;E</li> <li>· Make tools and software available after training to ensure continuous capacity and experience</li> </ul>	25%	63%	12%	<ul style="list-style-type: none"> <li>· Strong leadership with high level of organisational efficiency</li> <li>· Technical and financial support from partners</li> <li>· Integration of activities (e.g., M&amp;E capacity modules in surveillance training)</li> <li>· Expertise within Surveillance, Monitoring, and Evaluation unit</li> <li>· Strong M&amp;E partnerships</li> <li>· Failure to fully achieve deliverables beyond the unit's mandate (e.g., supportive supervision for county and subcounty levels)</li> <li>· Bureaucracies affecting information flow and implementation at county level</li> <li>· MIAS not in use at NMCP level due to behavioural and technology constraints</li> <li>· Exit of human resource to conduct malariometric surveys at Kenya Medical Research Institute-Walter Reed Project and reprioritisation of research agenda at that level hampered conduct of the surveys. In addition, MIS 2010 onwards provided data on prevalence among school age children.</li> <li>· USAID suspension of national-level support in 2017</li> </ul>

MSP Objectives	MTR Recommendations	Proportion Implemented:			Enabling and Constraining Factors
		Fully	Partially	Not at All	
<p><b>Objective 5:</b> To increase utilisation of all malaria control interventions by communities in Kenya to at least 80% by 2018</p>	<ul style="list-style-type: none"> <li>· Disseminate malaria communication strategy and guidelines widely.</li> <li>· Develop a comprehensive ACSM training plan at all levels in an integrated approach</li> <li>· Develop a database for all trained personnel and competent ACSM group of trainers at national and county level.</li> <li>· Make supportive supervision a key function of counties.</li> <li>· Strengthen continuous multi-sectoral joint planning at all levels and prioritisation of routine ACSM activities.</li> <li>· Counties take up the planning and organisation of World Malaria Day.</li> <li>· Identify and support malaria ambassador and community malaria champions.</li> <li>· Share information and best practices for the documentation of the malaria bulletin</li> <li>· Modify existing strategies and introduce an additional strategy addressing behaviour change specifically for all interventions related to net Inclusion of Orient County's health promotion personnel and select community volunteers on health promotion and community-based malaria interventions</li> <li>· Modify existing indicators and introduce specific behaviour change indicators to measure progress.</li> </ul>	<b>60%</b>	30%	10%	<ul style="list-style-type: none"> <li>· Availability of resources, social and behaviour change communication trainings.</li> <li>· Capacity on social and behaviour change communication was available at national and county levels</li> <li>· Lack of package for multi-sectoral collaboration and lack of funding</li> <li>· More counties able to plan and conduct World Malaria Day due to availability of funds from counties (devolution) and partners</li> <li>· Lack of resources to support the malaria ambassador and community malaria champion</li> <li>· Malaria bulletin not produced as frequently due to lack of articles</li> <li>· Weak linkage with community health services</li> </ul>

MSP Objectives	MTR Recommendations	Proportion Implemented:			Enabling and Constraining Factors
		Fully	Partially	Not at All	
<p><b>Objective 6</b></p> <p>To improve capacity in coordination, leadership, governance, and resource mobilisation at all levels towards achievement of the malaria programme objectives by 2018</p>	<ul style="list-style-type: none"> <li>Rename and re-align strategy to incorporate the county health teams and strengthen county capacity in programme and performance management, including hold semi-annual review meetings</li> <li>National level to continue with holding semi-annual review and planning meetings. <ul style="list-style-type: none"> <li>Build capacity for programme management at national level.</li> <li>At county level, the programme will provide technical assistance and capacity building</li> <li>Focused and more frequent assessment of performance against the targets and tracking of M&amp;E indicators annually.</li> <li>Develop the resource mobilisation strategy.</li> <li>Develop strategy on strengthening human resources for health capacities in malaria endemic areas.</li> <li>Separate the broader system issues on procurement and handle them under objective 6. The other procurement issues specific to objectives 1 and 2 should be left in the specified areas for ease of coordination. The strategy needs to be managed by a PSM focal person.</li> </ul> </li> </ul>	53%	17%	29%	<p><b>Enablers:</b></p> <ul style="list-style-type: none"> <li>Malaria policy that articulates interventions across different epidemiological zones</li> <li>Availability of a four-year costed business plan</li> <li>Availability of guidelines for key interventions</li> <li>Availability of M&amp;E plan with performance indicators for all strategic interventions</li> </ul> <p><b>Constrainers:</b></p> <ul style="list-style-type: none"> <li>Inadequate dissemination of policies and guidelines</li> <li>Lack of a resource mobilisation strategy and tools</li> <li>Lack of an operation manual to guide CMCC activities</li> <li>Lack of a risk management strategy</li> <li>Lack of defined skills and competencies for key staff at national and county levels</li> <li>Lack of an updated Malaria Prevention Act</li> <li>Weak partner engagement at MICC and TWGs</li> </ul> <p><b>PSM Specific:</b></p> <ul style="list-style-type: none"> <li>Activities related to PSM generally performed poorly</li> <li>Fragmented approach to PSM, no PSM focal lead, and the lack of a comprehensive procurement and supply chain management plan against which to monitor PSM performance</li> <li>Inadequate PSM capacity building at county and subcounty commodity manager levels</li> <li>Lack of distribution system evaluation system</li> <li>Limited content in integrated supportive supervision manual for commodity management issues</li> </ul>

# ORGANOGRAM POSITION AND STRUCTURE OF THE NATIONAL MALARIA CONTROL PROGRAMME

## Position and Structure of the National Malaria Control Programme







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