REPUBLIC OF KENYA

MINISTRY OF HEALTH

Towards a Malaria-free Kenya

Kenya MALARIA Strategy 2009-2018

National Malaria Control Programme

Komesha Malaria
Okoa Maisha

REVISED 2014

REPUBLIC OF KENYA

MINISTRY OF HEALTH

Towards a Malaria-free Kenya

Kenya MALARIA Strategy 2009-2018

REVISED 2014

The Kenya Malaria Strategy 2009 – 2018 (Revised 2014)

National Malaria Control Programme
Ministry of Health
P.O. Box 19982 KNH
Nairobi 00202, Kenya
Email: head.domc@domckenya.or.ke

http://www.nmcp.or.ke

Foreword

The revised Kenya Malaria Strategy 2009-2018 is a product of the mid-term review of the National Malaria Strategy (NMS) 2009-2017. This strategy is aligned to the: Kenya Health Strategic and Investment Plan (KHSSP) 2014-2018, Vision 2030, Kenya Constitution 2010, Sustainable Development Goals, Roll Back Malaria Partnership Goals and World Health Organization Guidelines. The process of developing this document involved consultation with all stakeholders including the Counties.

This document spells out the operational framework for malaria control interventions in Kenya and has taken into account the achievements and challenges of the first half of the implementation period of the NMS 2009-2017; the changes of governance of the health sector and the Laws of Kenya.

This strategy has maintained the vision, mission and goal of the NMS 2009-2017 and continues with the spirit of attaining universal access and coverage of malaria interventions. Key changes to note are the strategic interventions for advocacy communication and social mobilization to ensure increased uptake of the planned malaria interventions as per our vision of a "*Malaria Free Kenya*." The strategy is in line with the goal of KHSSP 2014-2018 which is "*Attaining the highest possible health standards in a manner responsive to the population needs*." In the KHSSP malaria has been targeted for elimination. This strategy focuses on attaining that by directing malaria interventions towards *pre-elimination* which is also on the global malaria agenda. The revised strategy includes new stakeholders, articulates their roles and responsibilities while retaining the coordination mechanism in the NMS 2009-2017.

We are confident that the interventions in this strategy will remove malaria from the top ten diseases and will no longer be a disease of public health concern. With multi-sector collaboration and engagement between partners at both National and County levels we will be able to fulfill our vision. I urge all our partners to put their efforts into the implementation of this strategy as we move towards pre-elimination of malaria.

"Komesha Malaria Okoa Maisha."

James W. Macharia

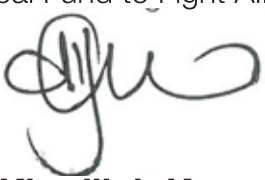
Cabinet Secretary,
Ministry of Health

Acknowledgement

The revised Kenya Malaria Strategy has been developed through a series of consultative meetings involving development and implementing partners; CSO representatives and County health teams led by their respective County Health Executives. The stewardship provided by the Director of Medical Services, Dr Nicholas Muraguri, the Head Department of Preventive and Promotive Health, Dr Jackson Kioko, supported by Head of Division of National Strategic Public Health Programmes, Dr Joseph Sitienei and Head of National Malaria Control Program, Dr Waqo Ejersa is highly appreciated.

The mid-term review of the malaria strategy has been supported by WHO through the Inter-Country Support Team that included Khoti Gausi, Birkinesh Ameneshewa, Dr Josephine Namboze, Odete Cossa and Dr Kalu Akpaka (previously WHO malaria technical advisor, Kenya Country Office) provided the platform upon which the strategy was written. The thematic groups in Malaria interventions included vector control; malaria in pregnancy; case management; epidemic preparedness and response; monitoring and evaluation; advocacy communication and social mobilization and program management. These groups worked with consultants to draft this document and did a detailed costing of planned activities. We thank the lead consultant Professor Olugbenga Mokuolu and Dr Nathan Bakyaita of WHO Kenya Country Office, for their technical support and guidance. We also thank USAID Health Policy Project Team for leading the costing section of this strategy.

The members of the MICC and joint ICC are acknowledged for their contributions. Of special mention are our technical partners in the MICC; WHO, PMI, USAID, UNICEF, World Vision, KEMRI and its affiliates and the Global Fund Country Support Team represented locally through the LFA-Price Waterhouse Coopers. We would also want to appreciate PS Kenya, CHAI, Malaria No More, Measure Evaluation PIMA, ICIPE, AMREF, MSH/SPS and Kenya NGOs Alliance Against Malaria. We appreciate the participation of the Ministry of Health divisions, units and agencies including Health Promotion, Community Health, Child and Adolescent Health, Vector Borne Diseases, Reproductive Health, National Public Health Laboratories, Environmental Health, Kenya Medical Laboratory, Technicians and Technologists Board, Pharmacy and Poisons Board and KEMSA. The National Treasury and the Pest Control Products Board are also acknowledged. Financial support for the Strategic Plan review and drafting was provided by WHO and DFID, Roll Back Malaria, the Global Fund to Fight AIDS, TB and Malaria, and the President's Malaria Initiative (PMI).



Dr Khadijah Kassachoon
Principal Secretary,
Ministry of Health

Table of contents

List of figures

List of tables

List of acronyms

ACSM	Advocacy, Communication and Social Mobilization
ACT	Artemisinin-based Combination Therapy
ADR	Adverse Drug Reactions
AMFm	Affordable Medicine Facility for Malaria
AMREF	African Medical Research and Foundation
AU	African Union
BCC	Behaviour Change Communication
CDC	Center for Disease Control
CHAI	Clinton Health Access Initiative
CHMTs	County Health Management Teams
CHSU	Community Health Services Unit
CHUs	Community Health Units
CHV	Community Health Volunteers
CHWs	Community Health Workers
CIC	Commission on the Implementation of the Constitution
CMCCs	County Malaria Control Coordinators
CSO	Civil Society Organization
DALYs	Disability-adjusted Life Years
DFID	Department for International Development
DHAP	Dihydroartemisinin-piperaquine
DHIS-2	District Health Information System 2
DQA	Data Quality Assessment
EMA	Essential Malaria Actions
EIR	Entomological Inoculation Rate
FAO	Food and Agriculture Organization
FBO	Faith Based Organizations
GFATM	Global Fund to Fight Aids Tuberculosis and Malaria
GOK	Government of Kenya
HPU	Health Promotion Unit
HRH	Human Resource for Health
HSS	Health Systems Strengthening
ICIPE	International Centre for Insect Physiology and Ecology
IMR	Infant Mortality Rate
IPTp	Intermittent Preventive Treatment in Pregnancy
IRS	Indoor Residual Spraying
ITN	Insecticide Treated Nets
IVM	Integrated Vector Management
JICC	Joint Interagency Coordinating Committee
KAIS	Kenya AIDS Indicator Survey
KDHS	Kenya Demographic Health Surveys
KEMRI	Kenya Medical Research Institute
KEMSA	Kenya Medical Supplies Authority
KeNAAM	Kenya NGOs Alliance Against Malaria
KEPH	Kenya Essential Package for Health
KHP	Kenya Health Policy
KHSSP	Kenya Health Sector Strategic and Investment Plan
KMIS	Kenya Malaria Indicator Survey

KMLTTB	Kenya Medical Laboratory, Technicians and Technologists Board
KMS	Kenya Malaria Strategy
KNBS	Kenya National Bureau of Statistics
LLINs	Long Lasting Insecticidal Nets
LMIS	Logistics Management Information System
MACEPA	Malaria Control and Elimination Partnership in Africa
MDGs	Millennium Development Goals
MEWS	Malaria Early Warning Systems
MFL	Master Facility List
MIAS	Malaria Information Acquisition Systems
MICC	Malaria Interagency Coordinating Committee
MiP	Malaria in Pregnancy
MIS	Malaria Indicator Surveys
MMR	Maternal Mortality Ratio
MOH	Ministry of Health
mRDTs	Malaria Rapid Diagnostic Tests
MSH	Management Sciences for Health
MTP	Medium Term Plan
MTR	Mid-Term Review
M&E	Monitoring and Evaluation
NMCP	National Malaria Control Programme
NMR	Neonatal Mortality rate
NMS	National Malaria Strategy
NPHLS	National Public Health Laboratory Service
PLWHA	People Living With HIV/AIDS
PMI	President's Malaria Initiative
PPB	Pharmacy and Poisons Board
PPP	Public Private Partnerships
PS Kenya	Population Services Kenya
QOC	Quality of Care
SARAM	Service Availability and Readiness Assessment Mapping
SBCC	Social Behavior Change Communication
SDG	Sustainable Development Goals
SOPs	Standard Operating Procedures
SP	Sulphadoxine-pyrimethamine
SWOT	Strengths, Weaknesses, Opportunities and Threats
TORs	Term of References
TOT	Trainer of Trainers
TWG	Technical Working Groups
U5MR	Under Five Mortality Rate
UHC	Universal Health Coverage
UNICEF	United Nations Children's Fund
UNDP	United Nation Development Programme
UNEP	United Nations Environment Programme
USAID	United States Agency for International Development
VBDU	Vector-borne Diseases Unit
WB	World Bank
WHO	World Health Organization
WMD	World Malaria Day

EXECUTIVE SUMMARY

Malaria is still a major public health and socio-economic problem in Kenya with three-quarters of the estimated population of 43.6 million at risk of the disease. The country has therefore prioritized malaria among the diseases targeted for elimination in the first objective of the KHSSP which is to *accelerate the reduction of the burden of communicable diseases including malaria.* In Kenya, there are four malaria epidemiological zones namely: *the endemic zone of stable malaria* around Lake Victoria and the Coast*; seasonal malaria transmission zone* in the arid and semi-arid areas of northern and south-eastern regions*; the malaria epidemic-prone zone* of the western highlands*;* and *low-risk malaria areas* in the central highlands and Nairobi. The National Malaria Policy, the Kenya Malaria Strategy and the M&E Plan provide a framework for guiding malaria control in Kenya.

The Kenya Malaria Strategy 2009-2018, is a revision of the National Malaria Strategy (NMS) 2009-2017 following a mid-term review in 2013-2014. The timing of the MTR was also informed by emerging issues such as devolution of health service delivery roles and responsibilities from National to County governments; as well as updated WHO technical guidance on malaria control. The main recommendation of the MTR was the need to consolidate the delivery of current malaria prevention and control interventions, since Kenya was still in the control phase along the control to elimination continuum.

The revised KMS 2009-2018 was developed through a multi-stakeholder and multisectoral participatory process led by the National and County governments and in collaboration with civil society, partner divisions and programs of the Ministry of Health. Furthermore, the revision has been informed by the KHSSP (2014-2018), the Kenya Health Policy (2012-2030), the Global Technical Strategy for Malaria (2016-2030) and the Roll Back Malaria Partnership's Action and Investment plan to defeat malaria (2016-2030).

Vision, Mission, Goal and Objectives

The Vision: A concerted effort towards a malaria-free Kenya.

The Mission: To direct and coordinate efforts towards *a Malaria-free Kenya* though effective partnerships.

The Goal: To reduce morbidity and mortality caused by malaria in the various epidemiological zones by two thirds of the 2007/2008 level by 2017.

The **Objectives:**

1. *To have at least 80% of people in malaria risk areas using appropriate malaria preventive interventions by 2018.*
2. *To have 100% of all suspected malaria cases presenting to a health provider managed according to the National Malaria Treatment Guidelines by 2018.*
3. *To ensure that 100% of the malaria epidemic prone and seasonal transmission sub-Counties have the capacity to detect and timely respond to malaria epidemics by 2018.*

4. *To ensure that all malaria indicators are routinely monitored, reported and evaluated in all Counties by 2018.*

5. *To increase utilization of all malaria control interventions by communities to at least 80% by 2018.*

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

Implementation

The main interventions in the strategy are vector control (IRS, LLINs, LSM), prevention of malaria in pregnancy, diagnosis and treatment, epidemic-preparedness and response as well as surveillance, monitoring, evaluation and operational Research, Advocacy Community and Social Mobilisation (ACSM) and program management.

The guiding principles for the implementation of the strategy include: a multi-sectoral approach; devolution of roles and responsibilities to the counties in line with the 2010 constitution; basing malaria control interventions on prevailing epidemiology. Furthermore, implementation will be supported by partners at National, County and Community levels. The Malaria Inter-agency Coordination Committee (MICC) supported by the Thematic Technical Working Groups will coordinate and provide overall technical guidance during implementation. This Plan will be operationalized while ensuring good governance, sustained resource mobilization, equitable access to malaria control resources, efficiency, accountability and complementarity of partner activities.

Budget

The revised KMS was costed using the Input-Based Costing (IBC) approach and the One Health Model. The cost of implementing the revised KMS 2009–2018 has been estimated at **KSh 57,498,533,580**. Total funding available is **KSh 27,564,782,691** and the funding gap is **KSh 29,933,750,889**.

1 BACKGROUND

1.1 STRATEGIC PLANNING FOR MALARIA CONTROL IN KENYA

Malaria is a major public health concern and fighting the disease is a National priority requiring a focused, comprehensive and consistent approach because three-quarters of the population are at risk of malaria. Children under the age of five, pregnant women, the chronically ill and immune-compromised persons, such as those living with HIV and AIDS, are considered to be at highest risk.

Kenya's response has been multi-faceted. The first anti-malaria strategy was launched in 1981. The major objective was to reduce malaria mortality by treatment of all fever cases using chloroquine (CQ) and reduction of prevalence using prophylaxis among the vulnerable groups. *Plasmodium falciparum* resistance to Chloroquine escalated in the 1980s prompting a revision of treatment policy from Chloroquine to Sulphadoxine-Pyrimethamine (SP) as first-line treatment for malaria in 1998. Kenya launched a National Plan in 1992 to reduce morbidity and mortality by 30% by 2000 through promotion of ITNs; routine surveillance of vectors and promotion of inter-sectoral collaboration in vector control through community participation. At the turn of the century, there was increased global outcry that resulted in the formation of Roll Back Malaria (RBM) partnership and signing of the *Abuja Declaration of 2000* that renewed political commitment for malaria control.

The NMS 2001-2010 was developed in line with RBM guidelines and the objective was to achieve the *Abuja Declaration* targets. This strategy aimed at ensuring reduction of malaria infection by focusing on specific interventions including ITNs, IPTp, prompt treatment, early detection and response to epidemics. This multi-pronged strategy leveraged on multi-sector approach to malaria control. Some notable achievements included: the establishment of a strong Country level partnership, use of ITNs as a key vector control tool and change of malaria treatment policy from SP to ACTs.

In 2009, a malaria programme performance review was undertaken and its recommendations informed the development of a fully-costed NMS 2009-2017 and a performance monitoring plan. This was aimed at reducing the burden of malaria and further, recommended parasitological testing of all fever cases before treatment; and universal coverage of ITNs among at risk population. The first four years of the implementation included targeted interventions based on epidemiology, increased access to malaria diagnostics and treatment at all levels, mass LLINs distribution aimed at achieving universal coverage, and development of County level malaria epidemiological profiles.

The Kenya Malaria Strategy 2009-2018, is a revision of the National Malaria Strategy (NMS) 2009-2017 following a mid-term review in 2013-2014. The timing of the MTR was also informed by emerging issues such as devolution of health transferring roles and responsibilities from National to County governments in line with the 2010 Constitution; as well as updated WHO technical guidance on malaria control. The main recommendation of the MTR was the need to consolidate the delivery of current malaria prevention and control interventions, since Kenya was still in the control phase along the control to elimination continuum.

The revised KMS 2009-2018 was developed through a multi-stakeholder and multisectoral participatory process led by the National and County governments and in collaboration

with civil society, partner divisions and programs of the Ministry of Health. Furthermore, the revision has been informed by the KHSSP(2014-2018), the Kenya Health Policy (2012-2030), the Global Technical Strategy for Malaria (2016-2030) and the Roll Back Malaria Partnership's Action and Investment plan to defeat malaria (2016-2030).

This revised KMS 2009-2018 shall leverage on the successes of the first phase and redirect efforts and investments for better outcomes, to attain the National vision of *a Malaria-free Kenya*.

The strategy opens with a brief profile of Kenya; a description of the malaria control system in Kenya; the epidemiology of malaria; the process and results of the mid-term review; the implementation framework; budget and implementation arrangements.

1.2 COUNTRY PROFILE

1.2.1 Geography

Kenya covers 582,646 square kilometers and lies on the Equator at latitude 5°N to 5°S and longitude 34°E to 42°W. It is bordered by Ethiopia, South Sudan, Uganda, Tanzania, Somalia and the Indian Ocean. The land mass rises from sea level at the Indian Ocean to 5,199 metres at the highest peak of Mount Kenya. About 80 percent of the land mass is arid or semi-arid and 20 percent is arable.

1.2.2 Climate

Kenya's climate is tropical, but moderated by diverse topography. It is hot and humid at the coast, temperate inland and very dry in the north and northeast. The central highlands have an average temperature of 15°C compared with 29°C at the coast. It's hottest from January to March and coldest in July and August. From 1960, the mean annual temperatures have increased by 1.0°C, an average of 0.21° C per decade (McSweeney et al., 2009). The increases could extend malaria into zones relatively free of the disease (UNFPA, 2009).

Kenya experiences two distinct wet periods: the long rains from March to May and the short rains from October to December (McSweeney et al., 2009). The rainfall varies between 50-200mm per month, but exceeding 300mm per month in some localities. (Hove, Hilary; Echeverría, Daniella, Parry, Jo-Ellen, -2011). Historically, over 70 percent of annual rainfall occurs during the long rains (SEI, 2009). However, rainfall is unreliable, both in amount and timing. Moreover, severe rainfall anomalies occur cyclically in periods of 3-5 years induced by the El-Niño Southern Oscillation phenomena. (IISD, Jan. 2013).

The country is vulnerable to the impact of global warming, climate change and cyclical droughts and floods that are associated with malaria epidemics in the arid and lowland areas.

1.2.3 Ecosystems and environment

Kenya has a diverse ecosystem, influenced by altitude, rainfall and proximity to Lake Victoria and the Indian Ocean. This has an influence on the malaria epidemiological zones. The Tana and Athi rivers have hydroelectric power dams, which are major vector breeding sites. Irrigation schemes, ongoing road construction projects and deforestation due to population pressure in the highlands have expanded vector breeding habitats.

1.2.4 Infrastructure

The country has a relatively well-developed international and domestic air transport infrastructure, serving as a regional hub.

The main road network links major cities and towns and is a transit route to Uganda, Rwanda, Democratic Republic of Congo and Southern Sudan and Ethiopia. The internal road network including feeder roads in rural areas improve accessibility of health services and provision of essential supplies. However, rainy seasons hamper this accessibility of health facilities in some areas.

The railway network stretches from the coastal town of Mombasa to Kampala, Uganda. The new standard gauge railway under construction will increase the volume of goods and passengers from the Coast to Nairobi, the western region, Uganda and beyond. The cross-border population movements and those across different malaria epidemiological zones have an impact on malaria transmission.

According to the Communication Authority of Kenya mobile telephone penetration is 82.6% with 33.6 million mobile telephone subscribers across the three providers and internet penetration stands at 16.4 million data/internet subscribers. This has the potential of increasing access to health information.

The expansion of National electricity grid will have positive implications on the availability of health care services including diagnostics. According to the 2012/13 National Housing Survey, 13% of housing structures are either traditional or shanties. Vectors easily pass through eaves and walls increasing transmission of malaria.

1.2.5 Demography

Using projections from the 2009 census at a growth rate of 2.8%, the projected population for Kenya for 2014 is 43.6 million and will be 65.9 million by 2030. A majority (67.6%) of Kenyans live in rural areas (KNBS 2009). Some of the demographic and key health indicators are provided in the Table 1.1.

Table 1.1: Basic Demographic Characteristics

Category	Estimate	Source
Population Growth Rate	2.8	Population and Housing Census 2009
Children Under Five Years	15.7%	Population and Housing Census 2009 (KNBS)
Women of Reproductive Age 15 – 49 years	17%	Population and Housing Census 2009 (KNBS)
Literacy Rates Female (15 - 49)	84.9%	KDHS 2009
Literacy Rates Male (15 – 49)	91.%	KDHS 2009
Life Expectancy at Birth	59.5 (2010) ; 61.7 (2013)	World Bank
	KDHS 2009	**KDHS 2014**
Total Fertility Rate	4.6	3.9
Neonatal Mortality	31 per 1,000	22 per 1,000
Children Under Years Mortality	74 per 1,000	52 per 1,000
Infant Mortality Rate	52 per 1,000	39 per 1,000
Maternal Mortality Rate	488 per 100,000 Live Births	

1.2.6 Socio-politico system

Socio-political

Following the promulgation of the 2010 Constitution, Kenya went through a devolution process, creating County governments with structures that mimic the National government for purposes of service delivery. Working under the County Governor, the County Executive Committee members, who are equivalents of the Cabinet Secretaries, are in charge of line ministries which they manage with the assistance of the chief officers who are the equivalent of the principal secretaries. The Intergovernmental Relations Act (2012) establishes the framework for consultation and cooperation between County and National governments. County Governors collaborate through *the Council of Governors.*

All the ministries have committees for lessons learnt and bench marking and provide opportunities for discussing the health agenda. There is need for information sharing and collaboration with County governments to champion malaria policies, increase budgetary allocation for malaria and empowerment to deliver the Kenya Malaria Strategy.

National development agenda

Kenya's development agenda is articulated in *The Vision 2030 which is* a long term policy that aims at creating a "*globally competitive and prosperous country with a high quality of life by 2030.* (GoK 2007 Kenya Vision 2030). It defines the development agenda along three pillars: *Social, Political and Economic Pillars* They are anchored on macroeconomic stability, continuity in governance structures and enhanced equity and wealth creation opportunities. Each of these pillars has objectives and flagship projects. Health issues are articulated in the Social Pillar. In achieving the goals of Vision 2030, the country has established five year medium term plans where key flagship projects are prioritized.

The National Malaria Program plans to contribute to the following flagship projects in the *Medium Term Plan II Sector Flagship Projects 2013-2017:*

- ***Scale up of community health high impact interventions*** through the establishment, training, and equipping of community units in malaria endemic areas to carry out Malaria Case Management.
- ***Health care subsidies for social protection*** - The program ensures access to subsidized malaria medicines and low cost diagnostics in the private sector.
- ***Health products and technologies*** - The NMCP supports this through procurement and supply of malaria medicines, diagnostics and Long Lasting Insecticide Treated Nets (LLINs).
- ***Transition of research to policy and practical solutions*** - The program has a Technical Working Group (TWG) to prioritize the research agenda. Biennially, the NMCP holds National Malaria Forum which brings together researchers, policy makers and implementers to review research findings and their implication for policy development.

1.2.7 Socio-economic situation

The Kenyan economy is projected to grow by 7% in 2015 (Kenya Economic Report, 2013). The GDP per capita is estimated at US$1245 (World Bank). According to UNDP, it ranked 147 globally and within the top 20 in Africa in the Human Development Index.

The economy is dependent on agriculture, tourism, manufacturing and the services sectors. Agriculture accounts for about 26 percent of GDP and 65 percent of total exports, 18 and 60 percent of the formal and total employment, respectively. The tourism sector registered 1,780,768 non-domestic visitors in 2012 (KNBS, 2012).

The overall poverty levels increased from 48.8 per cent in 2007 to 50.8 per cent in 2008 before declining to 49.8 per cent in 2012. A high proportion of employment is currently in the informal sector, small-scale agriculture and pastoralism (KER, 2013).

1.2.8 Human rights, gender and equity in the Malaria Strategy

Constitutional protection of gender equity: In alignment with the Kenya Constitution 2010, the KHSSP and the Kenya National Health Policy, the Kenya Malaria Strategy will strive towards gender equality with appropriate affirmative action, collaboration and equity of services.

Gender and human rights play an important role in exposure and access to malaria control interventions. Malaria exposure, prevention, treatment seeking behaviors, access to care, decision-making, and resource allocation must have a gender perspective. All malaria interventions are to be delivered in the context of *Universal Access* and will ensure that all vulnerable groups or special populations are reached. In order to achieve universal access, gender dynamics and disadvantaged groups such as People Living With HIV/AIDS (PLWHA), widow or orphan-headed households, will be specially considered with regard to exposure to malaria, use of nets, power and decision-making in seeking and paying for care.

Pregnant women and children under five, shall be targeted with Intermittent Preventive Treatment in Pregnancy (IPTp) and LLINs. In addition, non-immune people (e.g. travelers) and immune-compromised people, including PLWHA, will be considered when designing interventions.

Existing sex-disaggregated and gender-specific data will be used to inform decisions, interventions, and policies. Sex disaggregated data from the *Kenya Malaria Indicator Survey* will be used to explore potential gender differences between women and men, girls and boys.

1.2.9 Health system analysis

The Kenya Health System aims to fulfill the Vision 2030 and the Constitution of Kenya 2010 which introduces critical principles around attainment of the right to health and devolution of health services management.

Malaria control is part of KHSSP Strategic Objective I, where malaria is targeted for elimination. The Malaria Program will either contribute to or benefit from three other KHSSP Strategic objectives and services as shown in Table 1.2.

Table 1.2 KHSSP Strategic Objectives and the Kenya Essential Package for Health (KEPH) Services that Contribute to The Malaria Program

No.	KHSSP Objective	KEPH Package Related to Malaria
1	Accelerate the reduction of the burden of communicable conditions	Provision of ANC Integrated Vector Management
2	Halt and reverse the rising burden of non-communicable diseases	
3	Reduce the burden of violence and injuries	
4	Improve access to, and quality of, person-centred essential health services	Provision of in-patient, out-patient, maternity and laboratory services
5	Reduce exposure to health risk factors through inter-sectoral health promotion	Health promotion and health education
6	Strengthen collaboration with Private Sector and other sectors that impact on health.	School health Road infrastructure and transport

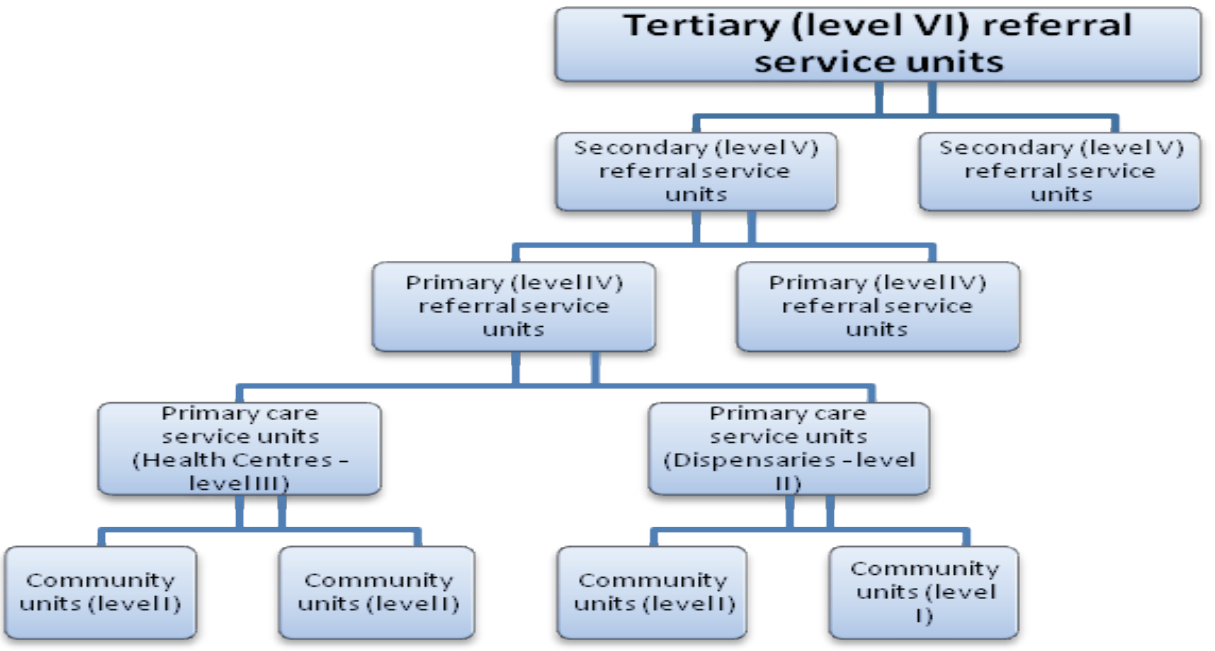


Figure 1.1 Organization of Health Services

Table 1.3 The Health System Levels of Organization of Service Delivery in Kenya

Tiers	Facility Level	Description	Number	
			Existing	Required
Community level	Level I	All non-facility based health and related services are classified as community services and cater for a population of 5000.	439	8,808
Primary care service units	Level II	Usually dispensaries or clinics catering on average for a population of 10,000. In areas with mobile and sparse populations such as in Arid or Semi-Arid lands, mobile facilities would replace dispensaries as much as is rationally possible.	3,676	4,404
	Level III	Usually a health centre catering for 30,000 persons, allowing for at least four deliveries per day	1,064	1,468
Primary referral services	Level IV	These are the Primary/first level hospitals (usually found at County level, catering for 100,000 people.	554	440
Secondary referral services	Level V	The Secondary/second level hospitals provide a comprehensive set of services, including internship services for medical staff, research and serve as training centers for paramedical staff. They cater for 1 million people.	44	44
Tertiary referral services	Level VI	The Tertiary level hospitals have highly specialized services that include training of specialists, biomedical research and serve as internship/apprenticeship centres and cater for 5,000,000.	9	9

Source: SARAM 2013

The coordination of community units is through the village health committees. The community strategy focal person at the County level is the liaison between the community structures and the County health management teams. Community health forums incorporating CBOs, health workers and leaders meet on an ad hoc basis to discuss and implement various health related issues including malaria prevention and treatment.

According to the SARAM 2013, only 439 community level facilities out of the 8,808 required have been established. The level IV, V and VI facilities are not evenly distributed in all the counties. The number of hospital beds is 16/10,000 population ranging from 7/10,000 in Bungoma to 40/10,000 in Isiolo. ICU facilities are available in 17 County hospitals. Only 42 percent (3,155/7,388) of health facilities had clinical laboratory services. By ownership, of the 7,995 facilities analyzed, 49.8% were public facilities, 16.6% private-not-for-profit and 31.7% private-for-profit (mostly clinics).

Table 1.4 Health Worker Cadres in the Kenya Health System

Cadre	Total	Per 100,000 population
Medical Officers	2,239	5.4
Registered Clinical Officers	4,723	11.3
BSc Nursing	772	1.9
KRCHN	14,214	34.1
KECHN	9,201	22.1
Pharmacists	552	1.3
Pharmaceutical Technologists	1,144	2.7
Laboratory Technologists	2,909	7.0
Laboratory Technicians	1,515	3.6
Health Records Information Officers	497	1.2
Health Records Information Technicians	347	0.8

Source: SARAM 2013

Table 1.4 above shows the number of health workers and ratio per population. According to the SARAM (2013), 56% of the Human Resources for Health (HRH) workforce are females most of whom are nurses. Most health workers are concentrated in the urban areas and higher level facilities, with the level 2-3 mostly run by nurses and clinical officers.

Health Information Systems

The Kenya Health Information System currently uses one reporting platform for the routine data called the District Health Information System (DHIS). Routine data input is done at the sub-county level and is available to all users. The data is disaggregated up to facility level. The outpatient modules (where most malaria information is recorded) have reporting rates as high as 90%. The inpatient reporting rates range between 2-10%. The DHIS houses the Logistics Information System which facilitates medicine quantification and forecasting. Weekly surveillance reports that include malaria are sourced from the Integrated Disease Surveillance and Response (IDSR) System.

Health financing

Health services in Kenya are financed through taxation, user fees, donor funds, health insurance in both public and private sectors and out of pocket expenditure. Budgetary allocation for health is done by both the National and County governments. Donor support aligned to the MOH goals and objectives contributes immensely to the health sector. Health financing has substantially increased from $17 to $50 per capita, out of pocket expenditure reduced and contribution from Development Partners almost doubled. However, as a proportion of GOK budgetary allocation, expenditure on health was 4.5% in 2013. Total health expenditure as a percentage of GDP is 1.5, and total health expenditure from out of pocket is 33% (KHSSP, 2014-2018).

Health products and technologies

Health products and technologies are regulated through the Pest Control Products Board (PCPB); Pharmacy and Poisons Board (PPB); the Kenya Medical Laboratory Technicians

and Technologists Board (KMLTTB); and Kenya Bureau of Standards (KEBS). The procurement, supply and distribution of these commodities is through Kenya Medicines Supplies Authority (KEMSA). The mean availability of malaria commodities at primary health facilities and hospitals was at 55% and 65% respectively (SARAM, 2013). Although sub-optimal, it should be noted that malaria commodities were the most available relative to all other health commodities.

Health system leadership

Currently Kenya has two levels of government: the National Government and 47 County Governments. The fourth schedule of the 2010 Constitution spells out the functions of the National and County governments as pertains to health in Table 2.2 and Fig 2.5 and as follows :

i. **National Government**: policy formulation; National referral hospitals; norms and standards; capacity building and technical assistance to counties
ii. **County Governments:** service delivery

Table 1.5 Health Stewardship Roles of the County and the National Government

National Government	County Government
■ Formulating policy, developing strategic plans, setting priorities ■ Budgeting, allocating resources ■ Regulating, setting standards, formulating guidelines ■ Monitoring performance and adherence to the planning cycle ■ Mobilizing resources ■ Coordinating with all (internal and external) partners ■ Provision of technical support to the County level ■ Capacity building of County level ■ National health referral services ■ Training health staff(both pre and in service), ensuring curricula and training institutions are in place	■ Provide leadership and stewardship for overall health management in the County, ■ Provide strategic and operational planning, Monitoring & Evaluation of health services in the County. ■ Provide a linkage with the National Ministry responsible for health. ■ Collaborate with State and Non state Stakeholders at the County and between Counties in health services ■ Mobilize resources for County health services ■ Establish mechanisms for the referral function within and between the Counties, and between the different levels of the health system in line with the sector referral strategy ■ Coordinating and collaborating through County Health Stakeholder Forums (CHMB, FBOs, NGOs, CSOs, development partners) ■ Supervise County health services ■ Delivering services in all health facilities (levels 1–3) ■ Developing and implementing Facility Health Plans (FHPs) ■ Supervising and controlling the implementation of FHP (M&E) ■ Coordinating and collaborating through County Health Stakeholder Forums (FBOs, NGOs, CSOs, development partners) ■ Training and developing capacity (on job training) ■ Maintaining quality control and adherence to guidelines

Additionally, the two levels of governance have consultative forums that will be used to coordinate the health sector as spelt out in the Intergovernmental Relations Act, 2012. Devolution has presented opportunities to the County Governments to improve health services and mobilize resources for their health strategic plans and not to rely solely on the National Government.

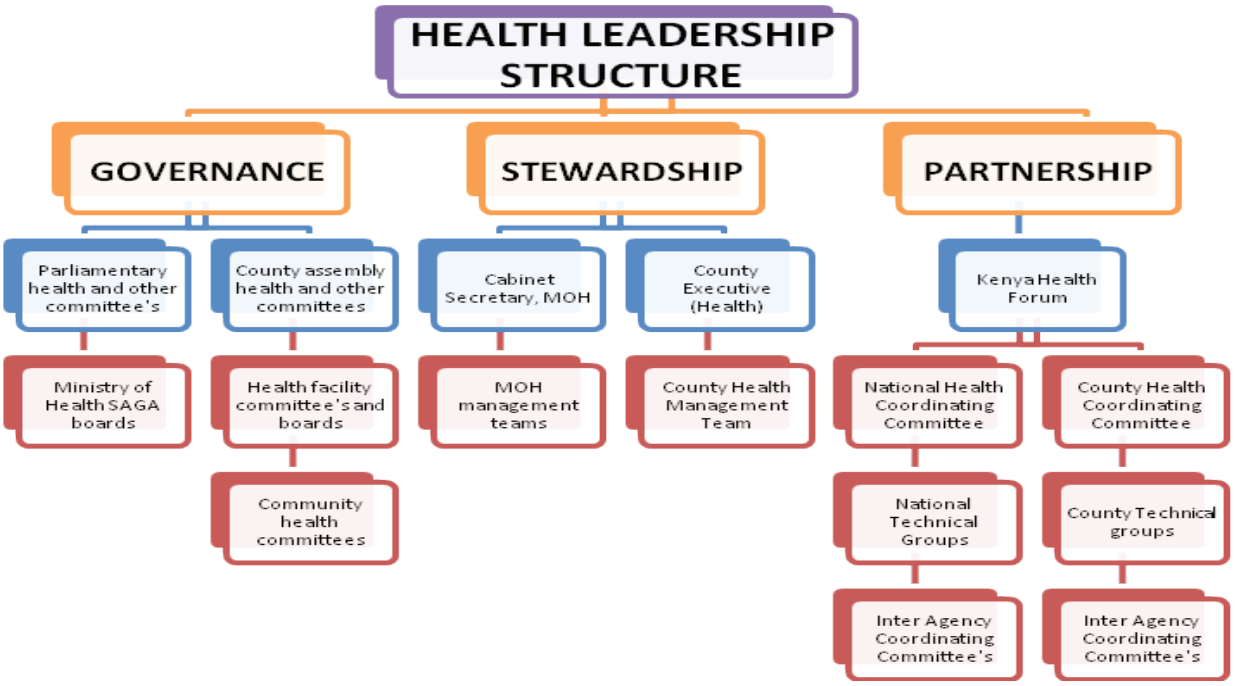


Figure 1.2 The Arrangement of Health Leadership at National and County Level

2 CURRENT MALARIA SITUATION

2.1 MALARIA EPIDEMIOLOGY

2.1.1 Plasmodium species

All four species of human *Plasmodium*: *P. falciparum*, *P. malariae*, *P. ovale* and *P. vivax* occur in Kenya. According to the KMIS 2010, of the malaria positive slides, 96% were *P. falciparum* 80% of which were pure infections while 16% were mixed infections with *P. malariae* or *P. ovale* or both. Another 2% were pure *P. malariae* infections and 1% was *P. ovale*. No *P. vivax* was detected in this survey.

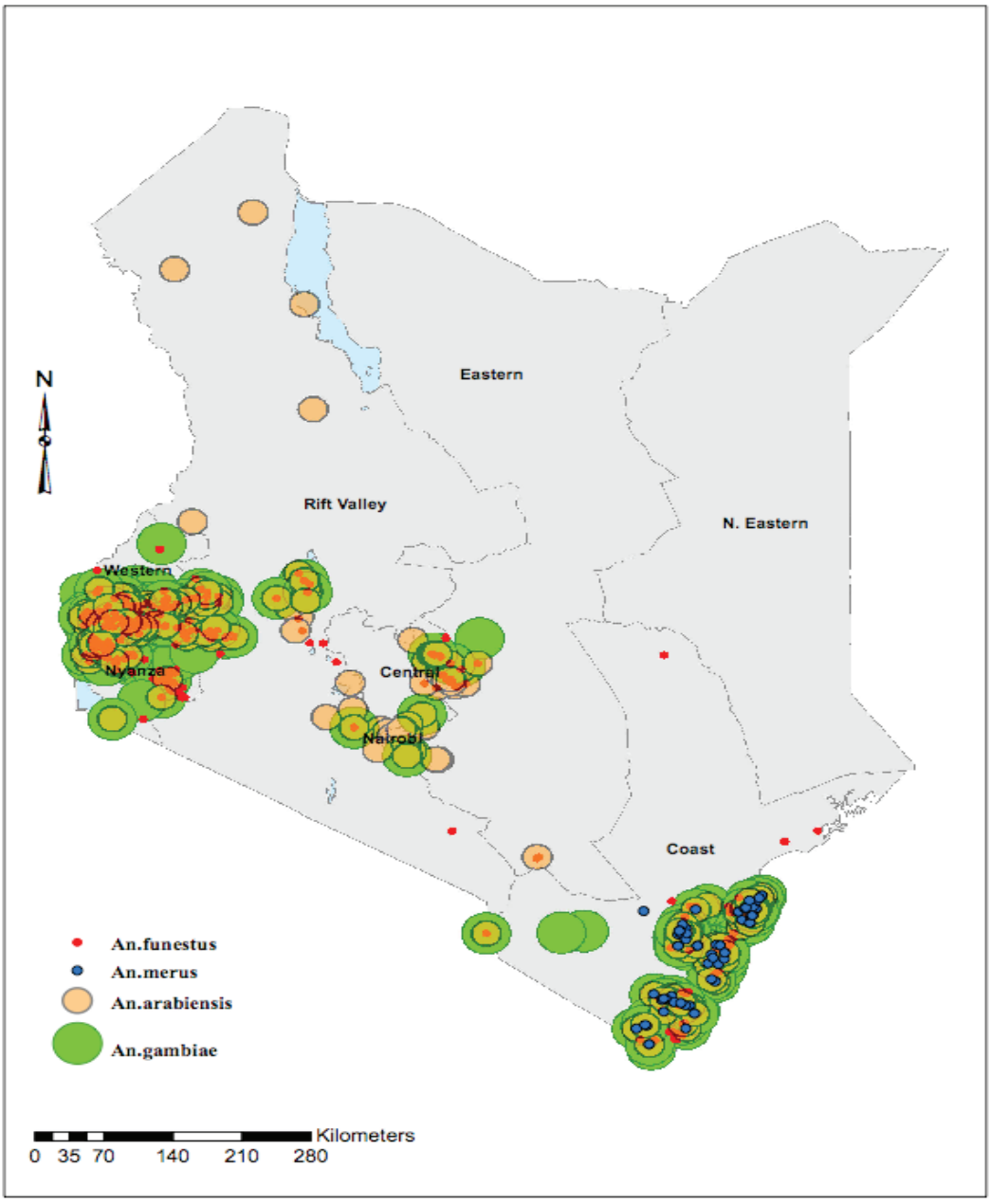


Figure 2.1 Malaria Vector Map (NMCP, Insecticide Resistance Project 2010)

2.1.2 Main malaria vectors

The major malaria vectors in Kenya are *An. gambiae s.s., An. arabiensis*, *An. merus* and *An. funestus*. The distribution and relative abundance of these vectors is shown in Figure 2.1. Initially, *An. gambiae s.s.* was the most predominant vector in the lake endemic zone in western Kenya. However, over the last decade and possibly due to increased use of LLINs, there has been a reversal in the relative abundance of *An. gambiae s.s.* and *An. arabiensis,* with the latter becoming the more predominant species possibly due to the endophilic tendencies of *An. gambiae s.s*. During the same period, there was a significant reduction in the population of *An. funestus* (Bayoh 2010). However, more recent studies indicate a resurgence of *An. funestus* in the lake endemic region (McCann 2014*,)* possibly due to increasing vector resistance to some classes of insecticides.

An. gambiae s.s. and An. arabiensis breed in small temporary pools of water while *An funestus* breeds in larger and more permanent water bodies. The malaria vectors are abundant during and immediately after the rainy season when larval habitats become plentiful. In semi-arid regions or during dry spells in endemic regions, larval habitats are usually few, fixed and findable which makes larval control feasible. Although some vectors have been found biting outdoors and early in the evening, the majority of bites (over 90%) still occur indoors when most people are asleep as per the latest studies conducted in the lake endemic region (Bayoh 2014), implying that LLINs and IRS are still appropriate interventions.

The emergence of vector resistance to commonly used insecticides poses a serious challenge to chemical-based vector control interventions. Currently, there is very high vector resistance to pyrethroid insecticides and DDT but little or no resistance to organophosphates and carbamates (Mbogo C et al., personal communication). As a result, there is a limited choice of insecticides for IRS and LLINs necessitating the development of a robust insecticide-resistance management strategy.

2.1.3 Epidemiological stratification

Kenya has four main malaria epidemiological zones with diversity in risk determined largely by altitude, rainfall patterns and temperature as well as the malaria prevalence.

a. **Endemic**– Includes areas of stable malaria and have altitudes ranging from 0 to 1300 meters around Lake Victoria in western Kenya and in the coastal regions. Rainfall, temperature and humidity are the determinants of the perennial transmission of malaria. The vector life cycle is usually short with high survival rate due to the suitable climatic conditions. Transmission is intense throughout the year with annual entomological inoculation rates between 30 and 100. Malaria parasite prevalence was 4.3% for coast endemic and 38.1% for lake endemic zone (KMIS, 2010).

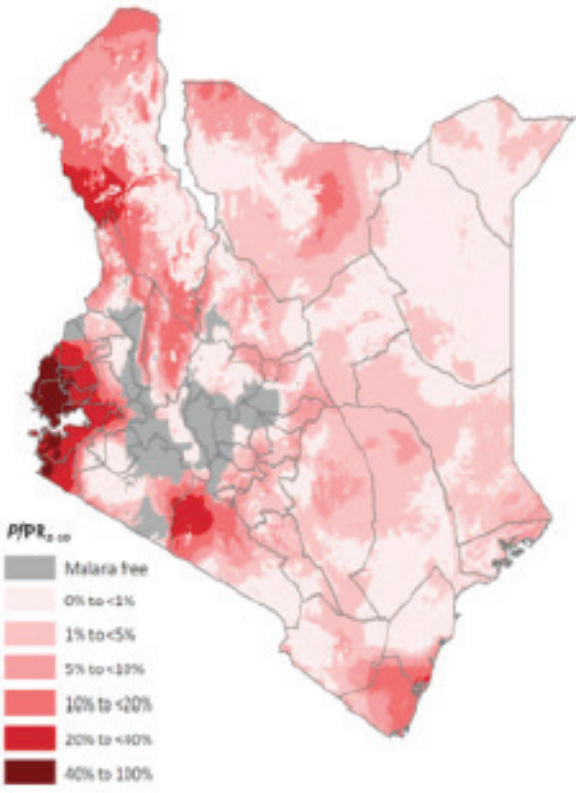
b. **Seasonal malaria transmission** - Occurs in the arid and semi-arid areas of northern and south-eastern parts of Kenya that experience short periods of intense malaria transmission during the rainfall season. Temperatures are usually high and water pools created during the rainy season provide the malaria vector breeding sites. Extreme climatic conditions like *El Niño Southern Oscillation* that lead to flooding can cause malaria epidemics with high morbidity due to the low immune status of the population. Malaria parasite prevalence was 0.5% (KMIS, 2010).

c. **Malaria epidemic prone areas of western highlands of Kenya** - Malaria transmission in the western highlands of Kenya is seasonal, with considerable year-to-year variation. Epidemics occur when climatic conditions favor sustained minimum temperatures around 18°C that favor parasite maturation within the vector resulting in increased intensity of malaria transmission. The whole population is vulnerable and case fatality rates during an epidemic can be ten-times greater than what is experienced in regions where malaria occurs regularly. The estimated malaria prevalence was 3.3% (KMIS, 2010).

d. **Low risk malaria areas** – This zone covers the central highlands of Kenya including Nairobi. The temperatures are usually too low to allow completion of the sporogonic cycle of the malaria parasite in the vector. However, increasing temperatures and changes in the hydrological cycle associated with climate change are likely to increase the areas suitable for malaria vector breeding with introduction of malaria transmission in areas it never existed. Estimated parasite prevalence was 1.1% (KMIS, 2010).

2.1.4 Dynamics of malaria transmission and implication on malaria programme intervention

Data from various sources shows the different epidemiological zones of malaria in Kenya.



Epidemiological Zone	Population	%
Malaria free	3,137,303	7.7
<1% $PfPR_{2-10}$	2,848,584	7.0
1% to <5% $PfPR_{2-10}$	19,194,900	47.3
5% to <10% $PfPR_{2-10}$	2,901,342	7.1
10% to <20% $PfPR_{2-10}$	3,702,957	9.1
20% to <40% $PfPR_{2-10}$	7,211,807	17.8
≥40% $PfPR_{2-10}$	1,606,866	4.0

Figure 2.2 Annual Mean Predicted PfPr2-10at 1X1 km Resolution and the Population at Risk by Endemicity Class for the Year 2010 (Noor et al., 2010)

The map in Figure 2.2 shows that the majority of the population 47.3%, live in areas with a parasite prevalence of 5-10% and 18% live in areas with a parasite prevalence of 20-40%.

Routine data on malaria cases shows a similar picture with majority of the cases from the malaria endemic zone (Figure X) and the lowest cases in the low endemic areas (Figure Y).

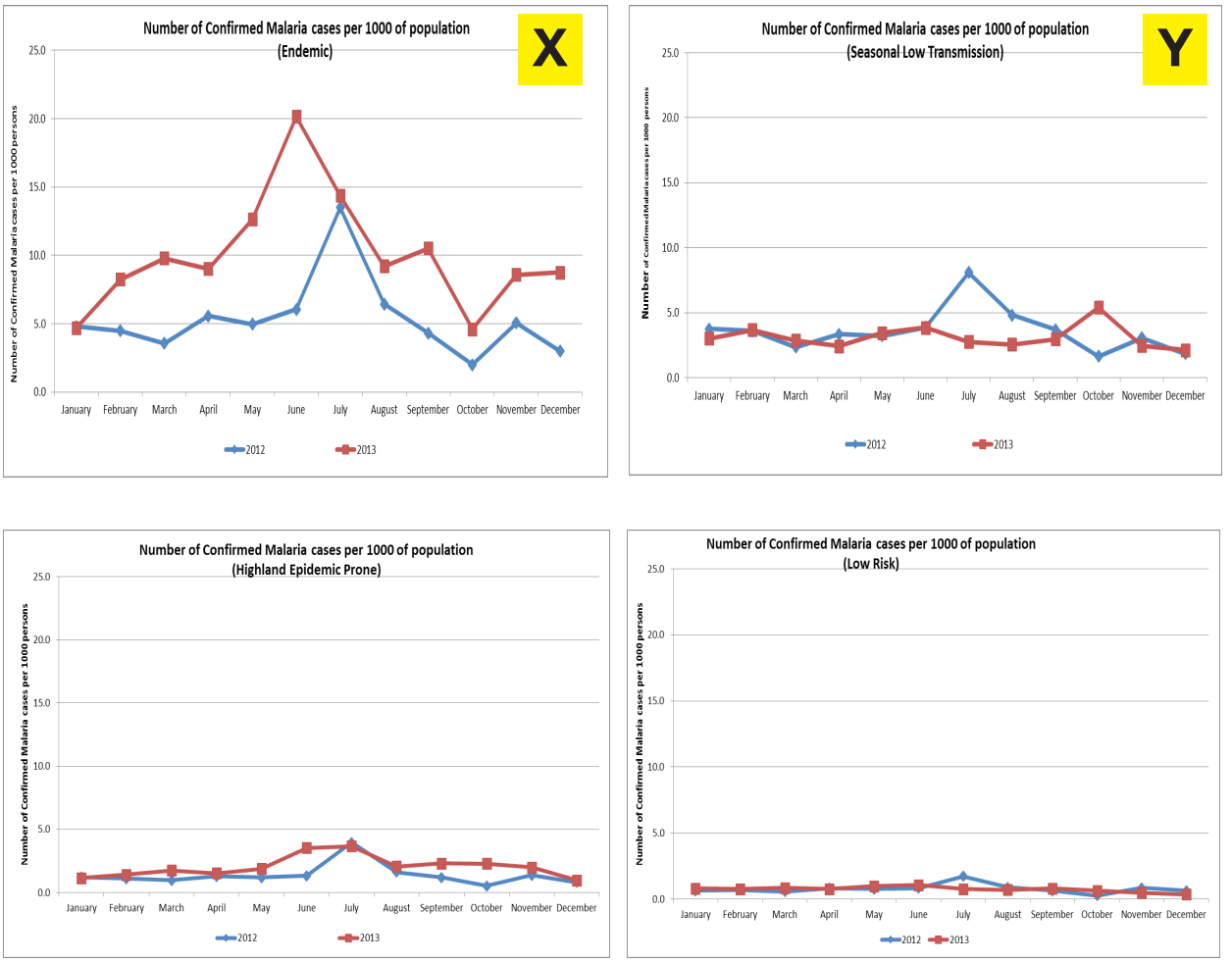
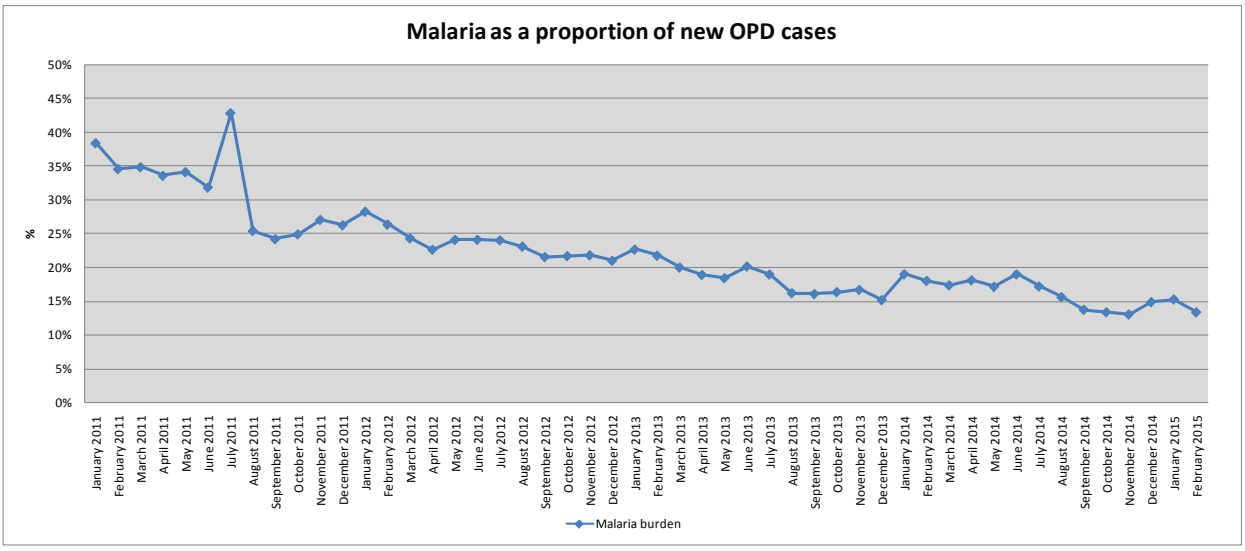


Figure 2.3 Number of Malaria Cases per 1000/population According to Epidemiological Stratification

From 2011 to 2015 the suspected malaria cases as a proportion of the outpatient department cases has reduced. This could be attributable to a better clinical acumen of the health worker due to trainings that have occurred over the years and also the preventive malaria interventions that have been employed over the years. This is depicted below (Figure 2.4).



Source: DHIS 2

Figure 2.4 Malaria as a Proportion of New OPD Cases

Efficacy of antimalarial medicines

Kenya adopted the artemisinin-based combination therapy (ACT) arthemether-lumefantrine (AL) as first line treatment in 2006. In both 2006 and 2008 the efficacy was 96 percent. A comparative study in 2011 between AL and DHAP, the second line treatment showed, 97% and 99% efficacy respectively (Agarwal et al., 2013).

2.2 HISTORICAL PERSPECTIVE OF THE MALARIA PROBLEM

Table 2.1 and 2.2 briefly describe past malaria control interventions, strategic approaches, their effectiveness, operational feasibility, past successes, failures and periods of resurgence.

Table 2.1 Historical Milestones

Era	Milestone	Highlights
Colonial period	▪ Weekly dose of quinine prophylaxis ▪ Recommended Quinine as the first-line treatment ▪ Treatment of all fevers as malaria ▪ Free mosquito nets were distributed mainly to European settlers, Indians, the police and railway workers ▪ Sanitary inspectors were appointed in all the major towns ▪ Larvivorous fish were introduced in water tanks in Mombasa ▪ IRS using DDT in Kericho ▪ Mass spraying using Dieldrin in Nandi district	Vector-control legislation, applicable from 1911 in Nairobi and 1912 in Mombasa Public Health Ordinance of 1913 Establishment of Division of Insect-Borne Diseases (DIBD) to coordinate control efforts against all vector-borne diseases

Era	Milestone	Highlights
"Malaria eradication period" Period (1964 to 1989)	▪ IRS using DDT at Shimba Hills and Malindi that included chloroquine or chloroquine plus sulphadoxine-pyrimethamine prophylaxis ▪ Larvicidal and peri-urban spraying using Dieldrin 50% in Kisumu to avert epidemics due to floods ▪ Chloroquine prophylaxis fortnightly for personnel on Irrigation and Settlement Schemes ▪ Daraprim intermittent treatment was provided to thousands of school children each year by the DIBD during the 1960s ▪ A shift towards integrated public; health delivery including the adoption of a primary health care approach	Limited successes in the 1960s and 1970s Vertical programmes were gradually dissolved into broader public health systems
The 1980s and 90s	▪ Treatment of all fever cases using chloroquine (CQ) ▪ Provision of prophylaxis to vulnerable groups (children 0-14 and pregnant women) ▪ Noted confirmed cases of chloroquine-resistant falciparum infections ▪ Promotion of insecticide treated nets (ITNs) ▪ Routine surveillance of vectors ▪ Promotion of inter-sectoral collaboration in vector control activities through community participation. ▪ Epidemics were reported among communities in the Kenyan highlands ▪ Flooding as a result of unseasonal rainfall led to severe epidemics across the arid and semi-arid areas of North Eastern Province in 1998	Launch of the Kenya Anti-Malarial Strategy by the DVBD in 1981 Launch of the National Plan for Malaria Control in 1992 Formation of the National Malaria Control Unit (MCU) in 1994 under DVBD Launch of revised guidelines supporting the use of sulphadoxine-pyrimethamine (SP) in 1998 Political support around malaria control in Kenya Global recognition of malaria's significance to broader development goals and the formation of the Roll Back Malaria (RBM) partnership in1998

Table 2.2 Strategic Plans Review

Strategic Period	Milestone	Highlights
90s RBM targets	The Global Malaria Action Plan (GMAP) defines two stages of malaria control: (1) scaling-up for impact (SUFI) of preventive and therapeutic interventions, and (2) sustaining control over time.	

Strategic Period	Milestone	Highlights
2001-2010	Aimed to ensure that by 2006: ▪ 60% of at risk children and pregnant women would be sleeping under an ITN ▪ 60% of pregnant women would be protected with two presumptive doses of SP (IPTp) during their second and third trimesters, ▪ 60% of suspected malaria cases would be managed with an efficacious drug within 48 hours of the onset of symptoms ▪ emphasized on ability to detect and contain epidemics These programmatic ambitions were expected to translate into a reduction of malaria infection and consequent death in Kenya by 30% by 2006 and to sustain improved levels of control to 2010.	▪ Post-RBM ten-year Kenya Malaria Strategy was launched in April 2001 ▪ Formation of the Division of Malaria Control (DOMC) in 2001 ▪ Overall coverage of ITN among under-fives across Kenya in 2005 remained low, less than 25% ▪ Malaria epidemic occurred in the western highlands killing approximately 300 people and infecting over a 150,000 individuals ▪ SP resistance that resulted in its replacement with Artemether-Lumefanthrine (AL) in 2004 ▪ First free-mass distribution LLIN campaign was launched in 2006 and resulted in a rapid increase in ITN coverage ▪ Changes in the funding landscape; GFATM, DFID-UKAID, PMI-USAID
2009-2014	Aim to reduce the burden of malaria by two-thirds of the 2007-2008 levels by 2017 and eventually achieve a malaria free status. The strategy promoted: ▪ universal parasitological testing of all suspected cases has been recommended. ▪ Shifted the National ITN policy from targeting vulnerable populations to promoting universal coverage within prioritized regions of the country	Launch of the National Strategy covering the period 2009-2017

3 MID-TERM REVIEW OF NMS 2009-2017

3.1 BACKGROUND

The mid-term review was planned at the mid-point of the NMS 2009–2017 and some of the emerging issues that informed its scope and timing included:

i. Alignment to the KHSSP 2014-2018;

ii. Change in the governance structure of Kenya after the 2013 elections, as a sequel to the promulgation of the 2010 Constitution that devolved power, roles and responsibilities to the Counties including the delivery of health services;

iii. Updates in malaria technical guidance on universal testing before treatment; severe malaria management and emerging insecticide resistance;

iv. Aligning the strategic plan to the evolving malaria epidemiology and the global continuum of malaria control to pre-elimination and subsequent elimination; and the need to comprehensively address community systems and the private sector to ensure universal coverage of all interventions.

3.2 PROCESS

The MTR was conducted with the participation of multiple stakeholders to ensure ownership and provide an appropriate stimulus for resource mobilization and financing of the updated plan. It was conducted with the support of WHO experts, consultants and partners.

3.2.1 Review by WHO experts

The review by the WHO experts was an independent external mid-term evaluation of implementation of the National Malaria Strategic Plan. They reviewed the NMS business model and compilation of the final report. A step-wise series of plenary and group assignments was adopted for the review of the objectives, level of performance and conduct of a SWOT analysis. The conclusions and recommendations informed the updated Strategic Plans.

The review of the business model focused on realigning it to be compatible with the new governance structure and to redirect efforts towards attainment of the 2017 targets.

3.2.2 Strategic Plan peer review

Strategic Plan Peer Review process involving 28 countries was organized in Nairobi, by the WHO and RBM Harmonization Working Group using the Peer Review tool, Kenya reviewed and scored the Tanzania Strategic Plan and vice versa. The scores and comments were used to identify the strengths and weaknesses of the Strategic Plan and used in the revision.

3.2.3 Review by in-country stakeholders

This was a multi-stakeholder and multi-sector series of meetings to review the findings and recommendations of the mini-MPR, the mid-term review and the Strategic Plan Peer Review. Consequently, the participants developed a framework for the revised KMS, identified key sections that needed revision; and updated the County health directors on the mid-term review findings.

3.2.4 Drafting and costing of the revised strategy

A series of meetings involving partners, consultants and the NMCP, were conducted to refine the objectives, strategies, activities and draft text. The strategy was costed using the OneHealth costing and planning tool.

3.2.5 Further consensus building on the revised strategy

A series of consultative discussions and meetings on the draft were held with stakeholders aimed at consensus building. In addition meetings were held with representatives from the counties in order to have their buy-in.

3.2.6 Presentation to the MICC

The revised KMS was presented to the MICC which proposed revisions that were incorporated and the document finalized for printing.

3.3 EVALUATION OF THE NMS 2009-2017

This section is a summary of the MTR highlighting the strategies under each objective, the key achievements, challenges and suggested way forward. The SWOT analysis, the conclusions and suggested strategic direction, are captured in the MTR report. *(It should be noted that these objectives were drafted before the era of devolution hence use of districts and provinces to describe devolved units).*

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

Vector Control

The main vector control strategies are LLINs, IRS and IVM including environmental management. LLINs are distributed through mass campaigns every three years in endemic and epidemic-prone areas through ANC for pregnant women; child welfare clinics for children under one year and retail points that sell subsidized or full-price nets.

Achievements

The NMCP produced the following policies and guidelines: The IVM Policy, The IRS Manual, IRS Curriculum, Standard Specifications for LLINs, Entomological Training Guidelines, Vector Surveillance SOPs, Malaria Surveillance Training Manual, Curriculum & Curriculum Guide

From 2002, Kenya distributed LLINs targeting pregnant women and under-fives attending ANC and EPI respectively as well as social marketing. In 2009, the policy changed to

universal coverage with LLINS (one net per two persons at risk) in endemic and epidemic-prone areas. Between 2009 and 2013, 16.7 million LLINs were distributed through various channels. The 2011/2012 mass LLIN campaign distributed 10.6 million LLINS to protect 22 million people in 23 Counties. In the *lake endemic and epidemic-prone* zones, 83% of households achieved at least one LLIN per household and 67% attained universal coverage.

In the *lake endemic* zone, capacity was built for IRS operations, social mobilization, mapping and monitoring. Field entomologists were trained on entomological surveillance and insecticide resistance. Between 2007 and 2012, IRS campaigns in the lake endemic region covered over 90% of targeted households protecting over 14 million people.

Challenges

- Emergence of insecticide resistance that has limited the choice of insecticides for IRS hence no IRS has been conducted since 2013
- Inspite of high LLINs possession, utilization was low
- Inadequate domestic investment in vector control with LLINs and insecticides entirely supported by donor-funds
- There is no proper disposal mechanism for used LLINs.

Malaria in Pregnancy

The main interventions are LLINs, IPTp and case management.

Achievements

Main achievements included: targeted implementation of IPTp only in the high malaria endemic regions; revision of MIP guidelines; integration of MIP interventions in the "focused antenatal care package;" adequate supply of SP; integration of MIP indicators in the DHIS2; MCH service providers were trained on provision of IPTp-SP; CHWs were trained on MIP messaging to sensitize pregnant women to start ANC early attendance which resulted in increased IPTp coverage from 25% (KMIS, 2010) to 63% in those Counties.

ITN use has stagnated; in Kenya 41% (KMIS, 2010) and between 43-48% (NMCP post Mass LLIN Survey Report, 2014) in 2014 and 56%, in the lake endemic area (KMIS, 2010).

Estimated IPTp2 coverage was 13% in 2007(KMIS, 2007), 22% (KMIS, 2010). In lake endemic region areas with specific projects to increase IPTp uptake it increased to 43% in 2010 and 52% in 2012 in Siaya; and 63% in 2013 in Bungoma (CDC reports).

Challenges

- Low ITNs use inspite of high household ownership
- Poor data management and reporting at health facilities
- Lack of incentives for CHWs to promote MIP and the Private Sector provide IPTp.
- Inadequate knowledge by health care workers on provision of IPTp-SP as per National guidelines of IPTp to provide
- Late ANC attendance.

3.3.2 Objective 2: To have 80% of all self-managed fever cases receive prompt and effective treatment and 100% of all fever cases who present to health workers receive parasitological diagnosis and effective treatment by 2018

Malaria Case Management

The main case management strategies were capacity building for malaria diagnosis and treatment at health facilities. It also included access to affordable malaria medicines through the private sector and the strengthening home management of malaria.

Achievements

The treatment guidelines were updated as follows: dihydroartemisinin-piperaquine (DHAP) is second line for uncomplicated malaria; parenteral Artesunate for severe malaria; and parasitological diagnosis prior to treatment for all.

Additionally, developed a training curriculum for case management; trained 88% of the 12,880 targeted health workers in the public and private sectors; procured and distributed 10 million RDTs; established a quality assurance and quality control (QA/QC) system for malaria diagnostics in 26 counties. Reduction of ACT stock outs in the public sector and migration from a paper based LMIS to the DHIS2.

Kenya implemented the Affordable Medicine Facility for Malaria (AMFm) to increase access, affordability and market share of ACTs in the private sector. Among private sector facilities surveyed, availability of Quality Assured ACTs (QAACTs) increased from 31% to 66%; prices for QAACTs reduced to less than a dollar; and availability of artemisinin monotherapies declined to 1%.

Between 2010 and 2013, adherence to the National Case Management Guidelines improved from 16% to 50% in the public sector and 32% in the private sector (QOC surveys 2010-2013 and Fig 3). Availability of malaria diagnostics in the public sector increased from 55% in 2010 to 90% in 2013 compared with 21% in the private sector in 2013(QOC surveys 2010-2013 and Fig 3).

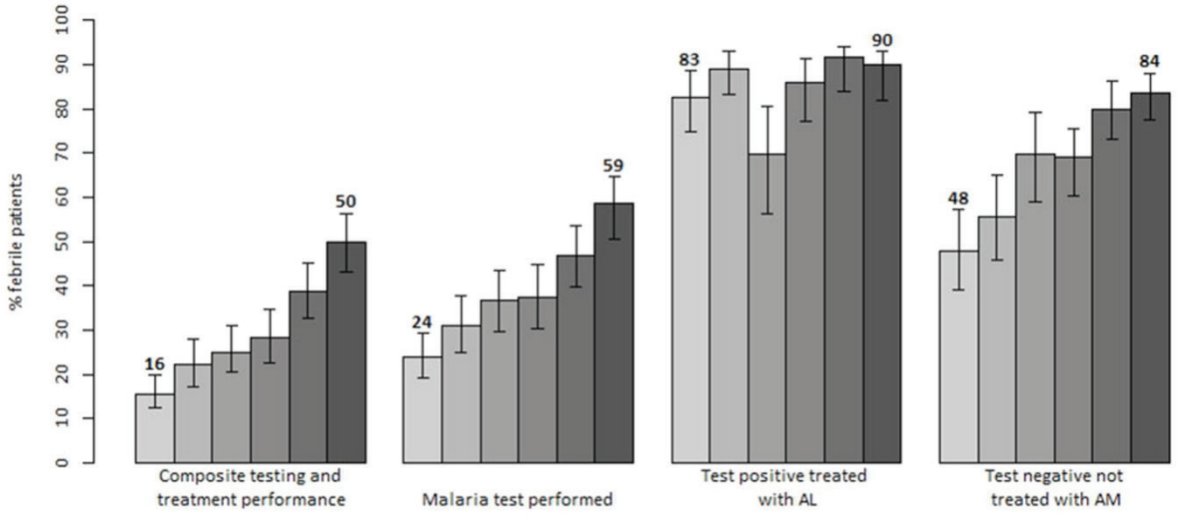


Figure 3.1 Trends in key diagnostic and treatment indicators reflecting performance of the new case-management policy in Kenya: Results of six National surveys between 2010 and 2013 (each bar corresponds to a different survey).

To strengthen community case management of malaria, a training curriculum was developed; 4,000 CHW trained and 445 community health units supported. The Pharmacy and Poisons Board and KMLTB respectively approved deployment of ACTs and RDTS at community level.

Challenges

- Inadequate guidance to health workers on the management of patients with fever that have a negative parasitological test result
- There is no investment for DHAP the second line treatment
- Sustaining availability of QAACTs within the private sector after closure of AMFm.

3.3.3 Objective 3: To ensure that all malaria epidemic prone districts have the capacity to detect and the preparedness to respond to malaria epidemics annually through capacity strengthening for epidemic preparedness and response by 2018

The main strategies for EPR were building capacity for epidemic-preparedness and response and strengthening diseases surveillance capacity.

Achievements

In 2009, capacity was built for Malaria Epidemic Preparedness and Response (EPR) in 33 districts of the epidemic-prone western highlands. Five health facilities per district were designated sentinel sites. The District Health Management and Health Facility Teams were trained to set and monitor malaria weekly *Alert and Action* thresholds resulting in timely detection and response to epidemics.

In 2011, the NMCP developed and disseminated EPR guidelines to all epidemic prone districts.

IRS was initially deployed as a preventive measure. Since 2010 and guided by surveillance data, IRS has been used as an early response measure.

In 2013, the NMCP developed the Malaria Surveillance Curriculum that includes EPR.

Challenges

- Inadequate capacity to set and monitor *Alert and Action* thresholds in some districts and divisions;
- low timeliness and completeness of reporting malaria threshold data and non-reporting;
- Inadequate laboratory malaria data (five years retrospective) in all districts for setting alert and action thresholds in newly established facilities;
- Inadequate buffer stocks and IRS commodities for early response and lack of a strong system for malaria epidemic forecasting and prediction.

3.3.4 Objective 4: Ensure that all malaria indicators are routinely monitored, reported and evaluated in all districts by 2018

The following strategies were deployed: capacity strengthening for malaria surveillance; strengthening facility and school-based malaria sentinel surveillance; strengthening malaria data management systems; conducting and supporting community surveys; conducting and facilitating health facility surveys; operational research and translation into policy.

Achievements

Major achievements included developing and disseminating the costed malaria M&E plan and development of a malaria surveillance curriculum in 2013. It also included development and use of support supervision manual and tools while training of trainers in malaria surveillance was completed in the epidemic-prone and seasonal transmission zones.

It is noteworthy that capacity for M&E was enhanced through training 60 staff on M&E. Twenty others were trained on STATA & SPSS, data demand and use, knowledge translation into policy and in GIS. Routine malaria morbidity and logistics management data were integrated into DHIS2 resulting in increased reporting rates from 40% to 70%.

Various surveys and studies were conducted including Drug Efficacy every two years, the KMIS 2010 and the post-mass LLIN surveys. Other surveillance activities included pharmacovigilance and post market surveillance of ACTs', Data Quality Assessment, Quality of Care surveys (QOCs), Entomological surveys and vector susceptibility monitoring, publication of Malaria Surveillance Bulletin. The updating of OR agenda formulating and funding five OR questions and holding the National Malaria Research to Policy Conference in 2011 were also included in the surveys and studies.

Challenges

- Low quality routine data from HIS and IDSR coupled with paucity of inpatient and laboratory data.
- Inadequate capacity for data demand and use at all levels.
- Inability to roll out the malaria database (MIAS) to the sub-National level.
- Irregular malaria data audit meetings to assess progress at those levels

3.3.5 Objective 5: To strengthen advocacy, communication and social mobilization capacities for malaria control to ensure that at least 80 per cent of people in malaria prone areas have knowledge on prevention and treatment of malaria by 2018

The key strategies for ACSM were strengthening the capacity for ACSM, developing appropriate advocacy for uptake of specific malaria interventions and conducting IEC and BCC.

Achievements

The NMCP revised, developed and disseminated the Malaria Communication Strategy 2010 – 2014, Essential Malaria Action (EMA) Guidelines and Community Educators Manual, trained seven sub-Counties on malaria SBCC and conducted SBCC in 12 endemic and epidemic sub-Counties of Western and Nyanza regions.

The World Malaria Day is commemorated annually and NMCP published eight editions of the quarterly malaria information and advocacy bulletin.

Challenges

- In spite of 95% population knowledge of malaria, there is low utilization of malaria interventions
- Inadequate inter-personal and interactive communication approaches that are able to identify barriers and innovative approaches to increasing utilization of malaria interventions
- Inadequate coordination and resource mobilization for SBCC activities at County level
- Limited translation of ACSM messages to reach all target audiences.

3.3.6 Objective 6: To strengthen capacity for programme management in order to achieve malaria programmatic objectives at all levels of the health care system by 2018

Programme Management

This objective had seven strategies comprising of capacity strengthening for policy formulation, implementation and coordination; strengthening of malaria program at the district and provincial levels; strengthening infrastructure at the National, provincial and district levels; strengthening activity and performance monitoring; strengthening resource mobilization capacity to improve malaria control financing; strengthening human resource capacities in malaria endemic areas and strengthening procurement and supply management systems for malaria drugs and commodities.

Achievements

Malaria policy and several guidelines were adapted, published and disseminated. The NMCP maintained strong partnerships and held coordination meetings involving development, technical and implementing partners working through the MICC, TWGs, regular stakeholder review and planning meetings and biannual performance reviews.

Secured resources from the Global Fund, USAID, UKAID, World Bank and integrated malaria control into the health sector planning process. The NMCP appointed and trained malaria coordinators in the former provinces and districts as well as the Counties on malaria control planning and management.

The NMCP built capacity in supervision, management and strategic leadership.

The procurement and supply chain management system was strengthened that enhanced malaria control commodities quantification, distribution while minimizing stock-outs.

Challenges

- Over-reliance on development partners' funding.
- The devolved governance structure with limited capacity for effective malaria program management.

- Inadequate dissemination of policy and guidelines at all levels..
- Sub-optimal procurement processes that cause disruption in commodity security.

3.4 CONCLUSIONS AND PRIORITY ACTIONS FOR 2014-2018

Strategic Directions

The review highlighted the achievements, strengths and weaknesses that have informed the future strategic direction and priorities for the revised KMS 2009-2018.

Vector Control: Use of LLINs and IRS shall continue to be the mainstay of vector control in line with the IVM policy. IRS shall be implemented in line with the IRS business plan and the Insecticide Resistance Management plan. Capacity for entomological surveillance and insecticide resistance monitoring shall be built at the County level.

Malaria in Pregnancy: IPTp shall only be implemented in the malaria endemic zones.

Case Management: Increased target population for case management from 80% to 100%. There is need to improve the quality of malaria diagnosis by establishing a QA/QC system; train and retrain health workers in case management; including severe malaria management. Procurement and supply chain management will be a standalone strategy to iron out the PSM challenges. The programme shall continue to develop a private sector case management strategy building on the success of AMFm including availing quality-assured RDTs before treatment with ACTs. At community level, there is need to ensure commodity security and to integrate Home Management of malaria into community case management.

EPR: The Strategies including capacity for passive surveillance will be expanded to the seasonal and low-transmission zone to ensure they have capacity to detect and respond to malaria epidemics.

M&E: Capacity shall be built at County level. Additionally, the quarterly M&E TWG shall be expanded to include other partners. The data management system shall be strengthened and be a repository for critical malaria data. Relevant household and health facility surveys will be conducted and data utilized for policy formulation and decision making.

ACSM: Behavior Change Communication (BCC) is the cornerstone of the Advocacy, Communication and Social Mobilization (ACSM) strategy aimed at improving utilization of interventions. Capacity for BCC implementation shall be built at County, sub-county and community levels.

Programme Management: Capacity shall be strengthened at the National and County levels to enhance performance management and frequent assessments to ensure the programme is achieving the set targets.

Conclusions

The malaria programme has made progress in implementing the NMS 2009-2017. Consequently, the objectives, targets, strategies and activities have been revised. This therefore places the programme in consolidated control phase along the control to elimination continuum.

4 STRATEGIC FRAMEWORK (2014-2018)

VISION AND MISSION

The Vision: A concerted effort towards a malaria-free Kenya.

The Mission: To direct and coordinate efforts towards *a Malaria-free Kenya* though effective partnerships.

The Goal: To reduce morbidity and mortality caused by malaria in the various epidemiological zones by two thirds of the 2007/2008 level by 2017.

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

Preamble

All previous strategies including universal coverage of LLINs in targeted areas, scaling up of presumptive treatment in pregnancy, indoor residual spraying, larval source management and supporting school based malaria initiatives have been retained.

4.1.1 Vector Control Strategies

Distribution of LLINs through appropriate channels in order to achieve and sustain universal coverage:

i. **Mass distribution of LLINS**: to all households in endemic and epidemic-prone areas including boarding schools and health facilities with in-patient services, every three years. This will be accompanied by BCC on net use and care.

ii. **Routine distribution of LLINs**: to pregnant women and children aged under one in all malaria prone areas through Antenatal Care (ANC) and child welfare clinics.

iii. **Social marketing of subsidized LLINs** at designated locations in rural and urban poor areas.

4.1.2 Indoor Residual Spraying (IRS) in the targeted areas

i. **Malaria burden reduction IRS**: combined with LLINS will be deployed in targeted malaria endemic areas over three consecutive years during peak transmission seasons. Institutions including boarding schools and prisons will be sprayed.

ii. **Epidemic prevention and response: IRS** will be conducted in epidemic-prone areas based on analysis of sentinel surveillance data, in order to avert impending epidemics.

iii. **Capacity building for IRS:** by providing spray equipment, insecticides and training to all targeted sub-counties.

4.1.3 Larval Source Management (LSM)

In line with the Integrated Vector Management (IVM) guidelines, LSM including larviciding and environmental management will be implemented in specific locations where breeding sites are few, fixed and findable. LSM capacity will be built in all 47 counties.

4.1.4 Malaria free schools initiative

The package of interventions for the malaria free schools initiative includes mainstreaming malaria control in the school curriculum as well as deploying IRS and LLINs in boarding schools in malaria endemic and epidemic prone areas.

4.1.5 Prevention of Malaria in Pregnancy (MIP)

LLIN use, diagnosis and treatment of malaria in pregnancy are covered in objectives 1 and 2 respectively.

All pregnant women in the 14 malaria endemic Counties shall receive at least three doses of IPTp with SP at ANC. Annual quantification of SP based on consumption will ensure adequate supplies. Training, retraining and supervision of health staff shall be done by the NMCP, partners and the counties. Appropriate IPTp messages and materials will be disseminated. CHVs and health workers will sensitize pregnant women on early ANC attendance to receive IPTp doses under observation.

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

Preamble

This objective was revised to ensure universal access to diagnosis and treatment. Two strategies on commodity security of antimalarial drugs and diagnostics as well as quality assurance of diagnosis were added.

4.2.1 Capacity building of health workers in malaria diagnosis and treatment at health facilities

The health workers will be trained and retrained every two years. The County HMTs will conduct the post-training supervision while the NMCP will assure quality. mRDTs will be used at the community and level 1, 2, 3 health facilities while microscopy shall be deployed at level 4 and 5 facilities. Relevant curricula, training materials and job aides shall be updated depending on WHO technical guidelines.

4.2.2 Access to affordable malaria medicines and diagnostics through the private sector

The malaria programme and key stakeholders will develop and implement a private sector case management plan. QAACTs and RDTs for the private sector will be procured through a pre-specified co-payment structure guided by annual quantification and monthly stock monitoring to determine current and projected needs.

4.2.3 Strengthening community case management of malaria using the community strategy through community health volunteers

In line with implementing the MOH Community Health Strategy in the malaria endemic counties, the CHV malaria curriculum will be revised, and community health workers trained on malaria case management, BCC and reporting. The CHVs will be supplied with ACTs, RDTs and IEC materials. The CHVs will be supervised by health workers at link facilities. The NMCP, stakeholders and CHMTs will support the establishment and sustenance of community health units.

4.2.4 Ensure commodity security of anti-malarials and diagnostics in the public sector

Annually, the NMCP, KEMSA, Counties and partners, shall develop specifications, forecast and quantify malaria medicines and diagnostics as well as monitor the supply chain including holding the monthly drug management subcommittee meetings.

KEMSA shall procure, store and distribute commodities to the counties guided by County requisitions and consumption patterns. The LMIS shall be strengthened by availing reporting tools, training County teams, holding biannual review meetings and data quality reviews. Surplus antimalarial medicines and RDTs will be redistributed.

Post-market surveillance of anti-malarials will be undertaken by counties and reference laboratories.

4.2.5 Strengthen quality assurance of malaria diagnosis

The malaria programme will operationalize the QA/QC implementation plan at National and County levels. The program will disseminate the malaria laboratory guidelines and curricula; supervise and monitor QA training and implementation; procure equipment and reagents; establish a slide bank; and convene monthly laboratory sub-committee meetings to monitor progress.

4.3 Objective 3: To ensure that 100% of the malaria epidemic prone and seasonal transmission sub-Counties have the capacity to detect and timely respond to malaria epidemics by 2018

Preamble

The seasonal transmission areas have been included because they are also prone to epidemics.

4.3.1 Strengthen early detection systems for malaria epidemics in epidemic prone and seasonal transmission areas

The NMCP shall update malaria epidemic preparedness guidelines and maintain buffer stocks of malaria commodities. The NMCP and County teams shall establish sentinel sites and train relevant health workers in the seasonal transmission areas and retrain sentinel site staff in the epidemic prone areas. The CHMTs in collaboration with the environmental health and meteorological departments shall install weather stations for climate-based Malaria Early Warning Systems (MEWS). Furthermore, sub-Counties shall update their malaria epidemic-preparedness & response plans and establish rapid response teams (RRT).

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

Preamble

The strategies were reviewed and updated to include entomological surveillance, among others.

4.4.1 To strengthen capacity for malaria surveillance, monitoring and evaluation:

To improve malaria data quality, the NMCP, HIS/DSRU and the CHMTs shall conduct regular supervision and DQAs. The M&E Technical Working Group will meet quarterly.

4.4.2 Conduct and facilitate health facility surveys

The program and relevant institutions shall conduct health facility surveys and assessments that include the Quality of Care; drug availability in the private sector; health provider and health facility inventory for malaria diagnosis and treatment; malaria impact evaluation studies; and therapeutic efficacy testing of 1st and 2nd line anti-malarials.

The NMCP and relevant institutions will conduct pharmacovigilance of anti-malarials and build capacity of health workers to report suspected Adverse Drug Reactions (ADR).

4.4.3 Conduct and support community surveys

The NMCP and partners shall implement community/household surveys that include post-market surveillance of malaria medicines; Malaria Indicator Surveys (MIS) every 3 years and the Kenya Demographic and Health Surveys (KDHS).

4.4.4 Strengthen school based malaria sentinel surveillance

The NMCP and Partners shall implement malariometric surveys among school children annually.

4.4.5 Facilitate operational research and translation of research findings to policy:

The Operational Research Technical Working Group shall meet regularly to define Malaria OR agenda; coordinate ongoing malaria research; review research findings and facilitate translation to policy. Selected institutions shall receive grants to conduct relevant research. Bi-annual research to policy conferences shall be held to share new evidence, identify research gaps, emerging issues and policy implications.

4.4.6 Strengthen malaria data management systems

The malaria information acquisition system (MIAS) enables users to plan, assign budgets and report on planned activities. It consolidates data from HIS, IDSR, LMIS, operational research, on partnerships and training. The ICT infrastructure at NMCP will be upgraded to improve data management.

4.4.7 Human resource capacity building in surveillance monitoring and evaluation

The NMCP shall build capacity for malaria M&E at the National and County levels as well as develop a malaria data demand and use strategy.

4.4.8 Conduct and support entomological surveillance

The Vector-borne Diseases Unit (VBDU) and relevant institutions shall undertake a National malaria entomological survey, update the entomological map and conduct regular entomological surveys. The NMCP in collaboration with research institutions will undertake insecticide resistance monitoring studies.

4.5 Objective 5: To increase utilization of all malaria control interventions by communities in Kenya to at least 80% by 2018

Preamble

The ACSM strategies will ensure increased and optimum utilization of all malaria control interventions with emphasis on behavior change communication.

4.5.1 Strengthen structures for the delivery of ACSM interventions at all levels.

The Malaria Communication Strategy will be reviewed to align it with the revised KMS. Capacity for implementing SBCC approaches at County and sub-county levels will be strengthened. Working with Health Promotion Unit (HPU), Malaria ACSM TWG at National level shall strengthen and support the County level ACSM TWGs to effectively coordinate malaria control promotion activities.

4.5.2 Strengthen program communication for increased utilization of all malaria interventions

The NMCP, County teams and partners shall develop and implement focused ACSM packages. Multi-media campaigns at all levels such as interactive radio programs and new media will ensure continuous ACSM messaging.

4.5.3 Advocate for inter-sector collaboration for malaria ACSM:

World Malaria Day (WMD) will be commemorated annually at National and County levels. The NMCP and partners shall engage the non-health sectors and ensure inter-sectoral collaboration. Counties shall mobilize resources and forge local RBM partnerships. Malaria champions shall be identified and supported at National and County levels to improve advocacy for malaria control. The NMCP will publish an information and advocacy bulletin bi-annually.

4.5.4 Strengthen community based Social and Behavior Change Communication activities for all malaria interventions

The NMCP, partners, the Community Health Strategy Unit and Counties shall be supported to use community health structures to increase inter-personal and interactive community SBCC approaches. Health workers and CHVs will be trained on the EMA guide. Where the community structures do not exist CHVs will be identified, trained and supported to carry out community based SBCC activities.

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

Preamble

The objective addresses the policy and regulatory environment to ensure alignment with global and National level guidelines as well as devolution. The essence of the objective is to provide a conducive environment for malaria control activities.

4.6.1 Develop, update and disseminate policy, lobby for legislation and regulations to strengthen malaria control in Kenya

The NMCP will contribute to legislation relevant to malaria control. The malaria policy will be updated in tandem with overall health policies, local and international best practices.

4.6.2 Strengthen procurement and supply management systems for malaria medicines and commodities

To ensure continuous availability of malaria commodities the program shall develop new tools for quantification, forecasting and inventory management. The County and sub-counties shall be supported to collect accurate consumption information. The NMCP and CHMTs will review the annual PSM plan quarterly to adjust for consumption patterns.

The malaria program will evaluate the commodity distribution systems every three years and work with other stakeholders to improve the storage facilities at County, sub-county and facility level.

4.6.3 Capacity strengthening for planning, partnerships, coordination and implementation at all levels

The malaria program shall work with line ministries, civil society and the private sector to contribute to health system strengthening. In collaboration with stakeholders, the program will support the referral system, upgrading infrastructure and operations of the County and sub-county malaria control coordinators.

The NMCP shall support the quarterly TWG meetings that review programme performance, address issues and implementation challenges. Regular performance reporting on grants will be institutionalized using a standard dashboard. The NMCP shall fill the human resources and skills gaps at National level and provide County and sub-county teams with technical assistance and capacity-building.

4.6.4 Strengthen resource mobilization capacity to improve malaria control financing

The malaria programme shall diversify funding sources including advocating for more domestic funding from National and County government, the private sector and civil society. The program will develop a resource mobilization strategy, guidelines and tools, followed by capacity-building for National and County level officers. The program shall submit funding proposals to development partners and funding agencies.

5. IMPLEMENTATION PLAN KMS 2009-2018

5.1 IMPLEMENTATION PLAN

The objectives, respective strategies, and activities are summarized in Table 5.1.

Table 5.1 Key Programme Activities and Timelines by Objective

Strategies	Activities	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18
Objective 1: To have at least 80% of people living in malaria risk areas using appropriate malaria preventive interventions by 2018					
1.1 Universal distribution of LLINs through appropriate channels	1.1.1 Conduct a mass LLIN distribution campaign to achieve universal access	X			X
	1.1.2 Micro-planning at sub-county level	X	X		X
	1.1.3 Mapping and registration of households;	X	X		X
	1.1.4 Routine distribution of LLINs using ANC and CWC	X	X	X	X
	1.1.5 Distribution of LLINs through social marketing	X	X	X	X
	1.1.6 Pilot community continuous net distribution	X			
1.2 Indoor residual spraying in the targeted areas	1.2.1 Conduct IRS in epidemic-prone Counties and on the fringes of endemic Counties	X	X		
	1.2.2 Conduct IRS in endemic counties	X	X		
	1.2.3 Capacity building for IRS	X	X		X
	1.2.4 Procurement and distribution of IRS commodities and equipment	X	X		X
	1.2.5 Develop GPS mapping system for planning and monitoring IRS activities				X
	1.2.6 Supervision, monitoring and evaluation of IRS operations	X	X		X
1.3 Larval Source Management	1.3.1 Capacity building for larval source management	X	X		X
	1.3.2 Conduct larval source management in targeted areas.	X	X	X	X
	1.3.3 Conduct IVM and (Environmental management)	X	X	X	X
1.4 Support malaria-free schools initiative	1.4.1 Development of Malaria content for schools curriculum	X		X	
	1.4.2 Dissemination and adoption of the developed content by stakeholders	X		X	

Strategies	Activities	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18
1.5 Provision of IPTp at ANC and promotion of its use at the community level	1.5.1 Update and disseminate IPTp guidelines		X	X	
	1.5.2 Procurement and distribution of effective medicines for IPTp	X	X	X	X
	1.5.3 Capacity building for provision of IPTp-SP	X	X	X	X
	1.5.4 Supportive supervision of MIP activities (facility and community) by CHMTs and SCHMTs with mentorship by NMCP/RMHSU	X	X	X	X
	1.5.5 Conducting advocacy and mobilization activities	X	X	X	X
	1.5.6 Holding quarterly MIP TWG meetings	X	X	X	X
	1.5.7 Conduct a review of IPTp implementation		X		X
Objective 2: To have 100% of all suspected malaria cases who present to health workers managed according to National treatment guidelines by 2018					
2.1 Capacity building of health workers in malaria diagnosis and treatment at health facilities	2.1.1 Review print and disseminate malaria diagnosis and treatment guidelines and training curricula		X		X
	2.1.2 Train health workers on integrated case management	X	X		X
	2.1.3 Monitor and supervise case management trainings and practice	X	X		X
	2.1.4 Review print and disseminate guidelines and training material for ETAT+	X	X	X	X
	2.1.5 Train health workers on ETAT+	X	X	X	X
	2.1.6 Monitor and supervise ETAT+ trainings and practice	X	X	X	X
2.2 Access to affordable malaria medicines and diagnostics through the private sector	2.2.1 Develop private sector case management implementation plan	X		X	
	2.2.2 Conduct biannual planning and coordination meetings with private sector	X	X	X	X
	2.2.3 Procure ACTs and ensure availability of RDTs in the private sector	X	X	X	X
2.3 Strengthening Community case management of Malaria using the community strategy through community health volunteers	2.3.1 Review print and disseminate malaria community case management training curriculum	X		X	
	2.3.2 Train Community health volunteers and community health extension workers	X	X	X	X
	2.3.3 Supervise and Monitor community case management trainings and practice	X	X	X	X

Strategies	Activities	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18
2.4 Ensuring commodity security of anti-malarials and diagnostics in the public sector	2.4.1 Ensure inclusion of antimalarial medicines and diagnostics in relevant guidelines, essential medicines list and the National treatment guidelines	X	X	X	X
	2.4.2 Develop and disseminate specifications for antimalarial medicines and diagnostics	X	X	X	X
	2.4.3 Ensure a conducive regulatory environment for anti-malarials and diagnostics	X	X	X	X
	2.4.4 Conduct forecasting and quantification of malaria medicines and diagnostics	X	X	X	X
	2.4.5 Procure and distribute anti-malarials and malaria diagnostics	X	X	X	X
	2.4.6 Strengthen Logistics Management Information System (LMIS)	X	X	X	X
	2.4.7 Conduct Post-market Surveillance of anti-malarials and diagnostics	X	X	X	X
2.5 Strengthen QA of malaria diagnosis	2.5.1 Review and disseminate malaria laboratory guidelines and curricula	X		X	
	2.5.2 Review malaria diagnosis QA implementation plan	X		X	
	2.5.3 Train lab personnel on QA of microscopy and RDTs	X	X	X	X
	2.5.4 Supervise and monitor QA training and implementation	X	X	X	X
	2.5.5 Support County and National reference laboratories	X	X	X	X
Objective 3: To ensure that 100% of the malaria epidemic prone and seasonal transmission sub Counties have the capacity to detect and timely respond to malaria epidemics by 2018					
3.1 Strengthen early detection systems for malaria epidemics in epidemic prone and seasonal transmission areas	3.1.1 Set-up sentinel surveillance sites in the seasonal transmission areas.	X			
	3.1.2 Strengthening existing sentinel surveillance sites in the epidemic prone areas.	X	X	X	
	3.1.3 Install infrastructure for climate based malaria early warning systems (MEWS)	X			

Strategies	Activities	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18
3.2 Strengthen capacity for malaria epidemic preparedness and response	3.2.1 Develop/review/update sub-county and County malaria EPR plans	X	X	X	X
	3.2.2 Disseminate malaria epidemic preparedness guidelines	x			
	3.2.3 Conduct risk mapping at sub-counties annually to identify hot spots and respond appropriately.	X	X	X	X
	3.2.4 Maintain adequate buffer stock of malaria commodities and contingency funds for early response	X	X	X	X
	3.2.5 Establish and maintain rapid response teams at County and sub-county levels	X	X	X	X
	3.2.6 Conduct post-epidemic evaluation	x	X	X	X
Objective 4: Ensure that all malaria indicators are routinely monitored, reported and evaluated in all counties by 2018					
4.1 To strengthen malaria monitoring and evaluation systems	4.1.1 Review and disseminate M&E framework and plan	X		X	X
	4.1.2 Support M&E technical working group	X	X	X	X
	4.1.3 Support scale up of malaria surveillance and monitoring in collaboration with DSRU and HIS	X	X	X	X
	4.1.4 Develop malaria surveillance guidelines and tools		X		
	4.1.5 Malaria surveillance monitoring and supervision	X	X	X	X
	4.1.6 Conduct DQA to counties, sub-counties and selected health facilities in collaboration with HIS and DSRU	X	X	X	X
4.2 Conduct and facilitate health facility surveys	4.2.1 Conduct and support the monitoring of the quality of malaria case management in sampled health facilities	X	X	X	X
	4.2.2 Conduct drug availability survey in the private sector	X		X	
	4.2.3 Conduct countrywide health provider and health facility inventory for malaria diagnosis and treatment			X	X
	4.2.4 Support Pharmacy and Poisons Board to undertake pharmacovigilance for malaria medicines	X	X	X	X

Strategies	Activities	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18
4.3 Conduct and support community surveys	4.3.1 Conduct malaria drug efficacy monitoring studies every 2 years	X		X	
	4.3.2 Conduct Malaria Indicator Surveys	x			X
	4.3.3 Conduct impact evaluations for malaria interventions		X		
	4.3.4 Conduct re-analysis of KDHS malaria data	X		X	
4.4 Strengthen school based malaria sentinel surveillance	4.4.1 Facilitate malariometric surveys	X	X	X	X
4.5 Facilitate Operational Research and translation to policy	4.5.1 Hold quarterly meetings of the OR TWG	X	X	X	X
	4.5.2 Provide research grants to research institutions		X		X
	4.5.3 Hold National malaria research to policy conference once every two years		X		X
4.6 Strengthen malaria data management systems	4.6.1 Update and upgrade MIAS	X	X	X	X
4.7 Human Resource capacity building in monitoring and evaluation	4.7.1 Develop and implement a system for monitoring improvements in M&E capacity	X	X	X	X
	4.7.2 Training of NMCP staff in M&E	X	X	X	X
	4.7.3 Capacity building of County teams on M&E	X	X	X	
	4.7.4 Develop and disseminate national data demand and use strategy	X	X	X	
4.8 Conduct and Support Entomological Surveillance	4.8.1 Conduct malaria vector surveillance	X	X	X	X
	4.8.2 Conduct insecticides susceptibility studies	X	X	X	X
Objective 5: To increase utilization of all malaria control interventions by communities in Kenya to at least 80 % by 2018					

Strategies	Activities	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18
5.1 Strengthen structures for the delivery of ACSM interventions at all levels.	5.1.1 Review and disseminate ACSM policy and guidelines	X			
	5.1.2 Scale up the capacity of implementers at County, sub-county and partners on ACSM and develop County communication plans.	X	X	X	
	5.1.3 Hold quarterly meetings of malaria ACSM TWGs at National level.	X	X	X	X
	5.1.4 Support quarterly meetings of ACSM TWGs at County level	X	X	X	X
	5.1.5 Undertake support supervision for malaria ACSM activities at County level.	X	X	X	X
	5.1.6 Identify and support national malaria ambassador.	X	X	X	X
	5.1.7 Support the counties to identify and support malaria ambassador.	X	X	X	X
5.2 Strengthen program communication for increased utilization of all malaria interventions	5.2.1 Develop, disseminate and distribute ACSM package to promote utilization of all malaria interventions at household level.	X	X	X	X
	5.2.2 Scale up of routine multi-media activities to support ACSM at County, sub-county and community levels.	X	X	X	X
	5.2.3 Support national multi-media activities.	X	X	X	X
5.3 Advocate for inter-sector collaboration for malaria ACSM	5.3.1 Hold bi-annual consultative meeting with relevant sector partners for malaria ACSM	X	X	X	X
	5.3.2 Provide ACSM implementing partners with IEC/BCC materials	X	X	X	X
	5.3.3 Commemorate World Malaria Day	X	X	X	X
	5.3.4 Publication of bi-annual malaria information and advocacy bulletin	X	X	X	X

Strategies	Activities	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18
5.4 Strengthen community based Social and Behavior Change Communication activities for all malaria interventions	5.4.1 Support community health workers to actively map out households for targeted malaria interventions.	X	X	X	X
	5.4.2 Support counties to identify community own resource persons in areas without community units, train and facilitate them to undertake promotion of malaria interventions at household level	X	X		
	5.4.3 Support community health units to conduct community dialogues to identify and address barriers to uptake and utilization of malaria interventions	X	X	X	X
	5.4.4 Support the community health units to conduct community malaria action days.	X	X	X	X
	5.4.5 Support communities to form malaria advocacy groups comprising of CBOs, FBOs, Ward representatives to advocate for malaria at various locations and villages.	X	X		
	5.4.6 Support counties to undertake monitoring and supervision of net use promotion activities at household level	X	X	X	X
	5.4.7 Support counties to engage school pupils to promote use of malaria interventions at household level	X	X	X	X
	5.4.8 Support counties to use local interactive radio programs on malaria in local dialects.	X	X	X	X
	5.4.9 Document and disseminate lessons learnt on innovative malaria ACSM promotion in selected counties		X		X
Objective 6: To improve capacity in coordination, leadership, governance and resource mobilization at all levels towards achievement of the malaria program objectives by 2018					
6.1 Develop or Update and disseminate policy and strategic documents, lobby for legislation/ regulations to guide malaria control in Kenya	6.1.1 Update and disseminate malaria policy			X	
	6.1.2 Develop and update Strategic and M&E plan			X	
	6.1.3 Review Malaria Prevention Act			X	
	6.1.4 Mainstream malaria into national health plan			X	
	6.1.5 Develop and update risk management plan and operations manual	X		X	X
	6.1.6 End-term review of the strategic and M&E plan			X	X

Strategies	Activities	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18
6.2 Strengthen procurement and supply management systems for malaria drugs and commodities	6.2.1 Develop and review the guidelines and SOPs for malaria commodity quantification, forecasting and inventory management	X	X	X	
	6.2.2 Develop and review the annual PSM plan	X	X	X	X
	6.2.3 Evaluation of malaria commodity distribution system	X	X	X	X
	6.2.4 Provide support to expand storage facilities	X	X	X	
	6.2.5 Strengthen and enhance monitoring and reporting of PSM	X	X	X	X
	6.2.6 Build capacity for procurement supply chain at County levels		X		
	6.2.7 Support supervision for commodity security	X	X	X	X
6.3 Capacity strengthening for planning, partnership, coordination and implementation at all levels	6.3.1 Train counties and sub counties on malaria program management and planning	X			
	6.3.2 Develop and update annual work plan	X	X	X	X
	6.3.3 Advocate for malaria intervention within the County health strategies			X	X
	6.3.4 Review County malaria work plan	X	X	X	X
	6.3.5 Mapping of partners		X		X
	6.3.6 Participate in regional and international meetings and workshops	X	X	X	X
	6.3.7 Conduct regular performance monitoring and review meetings	X	X	X	X
	6.3.8 Provide Technical support to County and sub-county on need basis	X	X	X	X
	6.3.9 Conduct TWGs and MICCs	X	X	X	X
	6.3.10 Recruit and remunerate program officers	X	X	X	X
	6.3.11 Remuneration of current core NMCP staff	X	X	X	X
	6.3.12 Conduct external capacity assessment		X		
	6.3.13 Training, coaching, mentoring & enhancement of skills of health personnel	X	X	X	X
	6.3.14 Support establishment and functionality of community health units	X	X	X	X
	6.3.15 Maintenance of NMCP office infrastructure, plant, logistics, equipment, utilities, communication and connectivity	X	X	X	X

Strategies	Activities	FY 2014/15	FY 2015/16	FY 2016/17	FY 2017/18
6.4 Strengthen resource mobilization capacity to improve malaria control financing	6.4.1 Develop/update resource mobilization strategy	X	X	X	
	6.4.2 Resource mobilization proposal development (such as GFATM)	X	X	X	X
	6.4.3 Identify and engage Public Private Partnership for malaria control	X	X	X	X
	6.4.4 Lobby for increased funding for malaria control	X	X	X	X
	6.4.5 Hold bi-annual donor round-table meeting	X	X	X	X

5.2 GUIDING PRINCIPLES

5.2.1 Multi-sectoral approach

There are three major partnerships in malaria control, at the National, County and sub-county levels with participation of key stakeholders. The main objective of these partnerships is to jointly plan, mobilize resources, implement and monitor activities. The health sector ensures technical leadership of program implementation and coordination. The *'three ones'* principle of implementing *one strategic plan, one M&E plan and one coordination mechanism (MICC)* shall be adhered to.

5.2.2 Devolution of malaria control operations

The NMCP stewards malaria control in Kenya. The implementation of malaria control interventions is shared between the National and County governments with each level having defined roles as shown in Table 1.5.

5.2.3 Basing malaria control interventions on prevailing epidemiology

Interventions shall be targeted according to prevailing epidemiology. The County epidemiological profiles will be regularly updated and used to further refine the targeting of interventions.

5.2.4 Strengthening malaria control performance and monitoring system

Programme performance shall be monitored in line with Government policy on performance monitoring and globally accepted practices. Partnership coordination mechanisms, performance reporting systems, and performance review meetings at County and National levels shall be strengthened.

5.2.5 Investing in Health Systems Strengthening (HSS)

In order to achieve universal coverage, the malaria program will invest in the WHO building blocks of Health system strengthening such as human resources for health; infrastructure and equipment; procurement, and supply chain management; Health Information Systems; Leadership and governance; and health financing. In procurement, supply chain management quantification, forecasting and training in PSM and expansion of health facility drug stores will be done.

To contribute towards delivery of KEPH at the lowest level while improving access to health services; malaria program will support formation of functional community units and their operations. This will provide a platform for service delivery to programs beyond malaria control.

In order to sustain gains made in the fight against malaria, the Program will develop a resource mobilization strategy to expand and diversify funding portfolio. The Program will invest in areas that minimize out of pocket expenses to address equity. Investment in evidence based high impact interventions will ensure value for money and efficiency in service provision.

Information collection, collation, quality assurance and dissemination are important for decision making at all levels. The malaria control program will invest towards improving the information management components through support to DDSR, HMIS and other programs collecting information pertinent to malaria control. This will contribute towards better quality data and synergy.

5.2.6 Risk management

Previously the programme has been employing a systematic approach to risk management; this includes capacity assessments, standards setting and enforcement, internal control mechanisms and external auditors. In-country partners, such as bi-lateral and multi-lateral donors and technical partners do also provide locally-based and independent oversight.

The program shall develop a risk management strategy and plan to address external risks due to political, social-cultural, technological, legal, environmental factors; operational risks related to governance, reputation, service delivery, human resources, security of physical assets and information; and risks that may result from shifts in program direction.

5.2.7 Value for money

Value for Money (VFM) is the relationship between expenditure on an intervention or program and perceived health benefits. The program shall develop VFM indicators to ensure maximum benefit from limited resources and ensure efficiency and effectiveness. It shall be used to guide resource allocation and utilization. The capacity of National and County staff shall be built for effective monitoring of VFM indicators.

5.2.8 Aid effectiveness

The Strategic Plan will be implemented in line with the five principles of the Paris 2005 Declaration on aid effectiveness. These principles are: Country ownership; alignment of aid to Country priorities; harmonization between donor organizations and countries; joint management for results and mutual accountability.

5.3 IMPLEMENTATION ARRANGEMENTS

5.3.1 Institutional framework and human resources for Malaria Control Program

The malaria programme consists of the National Malaria Control Programme (NMCP) as the secretariat, the Counties, partners and key stakeholders supporting malaria control.

The NMCP is part of the Division of Communicable Disease Prevention and Control which is under the Department of Preventive and Promotive Health. 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.

At County level, the health sector is led by the County Executive Committee member for health, a Chief Officer for health who is the accounting officer, and a County Director for Health (CDH) who is in charge of the technical aspects of health. The CDH heads the County Health Management Team. Counties have appointed County Malaria Control Coordinators (CMCCs) to oversee malaria activities.

NMCP Organization Structure and Functional Roles

NMCP develops and disseminates policy and strategies; it provides technical assistance to implementing partners; produces and disseminates National guidelines; monitors and evaluates implementation and impact. It builds capacity through training and advocating for malaria as a priority disease. The organizational structure and roles of various offices within the programme are illustrated in *Annex 7.1.* Its functional relations with other critical sectors that affect malaria control includes collaborating with key divisions and programmes in the ministries of health, education, science and technology, agriculture and others. It also collaborates with the military, police, prisons, academia and research institutions, private sector, civil society, professional associations and societies, Legislators at National and County levels. Details of these collaborations are in the Partnership matrix illustrated in the *Annex 7.4.*

5.3.2 National fiscal planning cycle and alignment with malaria programme implementation

The timelines for budgeting, planning and reporting of annual work plans is aligned to: the Constitution 2010, Public Financial Management Act 2012 and County Government Act 2012. Annual planning and monitoring timelines for malaria program run from July to June. In line with the Strategic Plan and annual work plans, priorities are funded based on available budgetary allocations. Planned activities and program performance will be monitored on quarterly basis by malaria control technical teams, TWGs and MICC. Biannual review meetings will realign and update the business plan. Counties will update annually their malaria medium term expenditure framework and realign with the overall malaria business plans. The plans will be incorporated into County health and development plans in line with the principle of three ones.

5.3.3 Partnerships and coordination

The Malaria Control Programme has established partnerships that contribute financial, technical and operational support. Similar partnerships exist at County and community levels.

National level partners are engaged through the Thematic Technical Working Groups (TWGs) with specified terms of reference and membership. The TWGs contribute to articulation of evidence-based policies and guidelines and hold quarterly progress review meetings, whose findings are fed to the Malaria Inter Agency Coordination Committee (MICC).

Membership of the MICC consists of multilateral and bilateral partners, research institutions, academia, civil society and faith-based organizations sister divisions and departments within the MOH, other ministries and government agencies. The MICC coordinates the development of policy, guidelines and strategies; advocates for resources; reviews and ratifies TWG outputs.

The County Health Management Teams (CHMTs) guided by the NMCP develop three-year Malaria Operational Plans which are embedded in their respective County Health Operational Plans. The plans are reviewed annually. The County Malaria Control Coordinators (CMCCs) oversee malaria control efforts and liaise with the NMCP at the National level.

The malaria programme supports the community health strategy by contributing to establishment and maintenance of the CHUs. These CHUs are responsible for community case management and BCC for all malaria interventions.

5.3.4 Procurement and supply management systems

Procurement of Commodities and Services

Nationally, the Public Procurement and Disposal Act of 2005 and Regulations of 2006, amendment regulation 2013 (Legal Notice No 106), will guide the procurement of commodities and services for malaria control.

Ministry of Health procures malaria medicines and commodities through KEMSA. It is a medical logistics provider supplying quality and affordable essential health commodities to health facilities and programmes in Kenya.

Procurement of commodities under special programmes like the Global Fund follows Government rules and regulations. Procurement of commodities by other donor agencies in malaria control follow rules and regulations of the relevant organizations.

Procurement of services such as trainings, surveys, research and consultancies will follow the guidelines and procedures defined in the Public Procurement and Disposal Act and other relevant legislation.

The NMCP will implement the electronic procurement system that is linked to the Integrated Financial Management Information System (IFMIS) Furthermore the NMCP being a public institution will continue complying with the 30% preferential procurement policy to provide opportunities to the youth, women and persons living with disability.

5.3.5 Financial resources management

Development partners and funding agencies provide the bulk of the funding for malaria interventions in Kenya. Any reduction in funding will negatively affect implementation of the revised KMS. It is important that commitments to ensure stable financing for malaria interventions are honored by all. Measures to mitigate these include;

- Advocating to increase GOK and local private sector financial support for malaria control,
- Strengthening public sector financial management systems for expenditure tracking and accountability,
- Scaling up capacity for resources mobilization at County level,
- Building capacity for financial management and reporting at all levels.

Disbursement to Counties and Priority Programme Areas

Each IP will develop an AOP and quarterly budget requisition. Subsequent funding will depend on performance and submission of comprehensive financial reports and statements to the NMCP with expenditures captured through the IFMIS. Details of all of the financial management procedures are contained in a financial management manual.

Disbursement to CSOs

Funds from Global Fund are disbursed directly to CSOs through the Global Fund's appointed PRs and financial management agencies and are managed according to GOK regulations. Donors or funding agencies will disburse funds at the request of the NMCP and in accordance with their own institutional rules and regulations. Information on all disbursements will be communicated to the NMCP.

Financial Management

The National Treasury (TNT) manages all government resources while ensuring their prudent utilization. The External Resources Department has qualified and experienced financial experts. TNT has introduced the Integrated Financial Management Information System (IFMIS) that captures all costs and expenditures and is able to account for all funds transparently.

Bilateral donors channel resources through agencies based on memoranda of understanding (MOU). For example, DFID funding for malaria control is channeled through the WHO Country Office while PMI channels funding through financial management agencies. The agencies shall use their own financial procedures.

Financial Audit Procedures

Funding made available through the Government systems are subject to both internal audit and external audit by the office of the Auditor General. Resources disbursed and managed by funding agencies will be audited in accordance with their respective rules and regulations.

5.4 IMPLEMENTATION PLAN BUDGET

The revised KMS was costed using the Input-Based Costing (IBC) approach and also using the OneHealth Model, The IBC uses a bottom-up, input-based approach, indicating the cost of all inputs required to achieve revised KMS targets for the financial years of 2014/15–2017/18. According to the Input-Based Costing, the NMCP requires KSh 57 billion for the plan period in order as shown in Tables 5.2 and 5.3.

Table 5.2 Budget Plan 2014-2018 in Kenya Shillings

Objective (s)	FY 2014/2015	FY 2015/2016	FY 2016/2017	FY 2017/2018	Total
Objective 1	9,477,560,362	4,166,070,834	6,364,835,077	7,906,179,538	**27,914,645,811**
Objective 2	4,847,031,160	4,189,506,473	4,934,932,577	4,363,091,088	**18,334,561,297**
Objective 3	44,033,600	20,234,350	20,234,350	20,234,350	**104,736,650**
Objective 4	459,558,723	224,970,295	228,427,564	394,415,102	**1,307,371,685**
Objective 5	857,400,464	363,423,850	368,459,850	358,423,850	**1,947,708,014**
Objective 6	1,799,140,244	1,877,999,590	1,994,201,250	2,218,169,039	**7,889,510,122**
Total	**17,484,724,554**	**10,842,205,391**	**13,911,090,668**	**15,260,512,967**	**57,498,533,580**

Table 5.3 Estimated Budget by Strategy

Requirements by Strategy	FY 2014/2015	FY 2015/2016	FY 2016/2017	FY 2017/2018	Total
Strategy 1.1: Universal distribution of LLINs	7,444,138,876	2,115,088,045	4,309,705,994	5,853,221,292	19,722,154,207
Strategy 1.2: Indoor residual spraying	1,781,503,800	1,779,313,643	1,779,719,488	1,780,148,750	7,120,685,680
Strategy 1.3: Larval source management	-	17,161,310	16,606,910	16,606,910	50,375,130
Strategy 1.4: Support malaria-free school initiative	2,600,100	-	2,600,100	-	5,200,200
Strategy 1.5: Provision of IPTp	249,317,586	254,507,836	256,202,586	256,202,586	1,016,230,594
Strategy 2.1: Capacity building of health workers in malaria diagnosis and treatment at health facilities	556,777,469	546,378,488	541,626,688	560,589,769	2,205,372,413
Strategy 2.2 Access to affordable malaria medicines and diagnostics through the private sector	714,093,345	624,632,943	545,692,162	554,669,417	2,439,087,867
Strategy 2.3 Strengthening Community case management of Malaria using the community health strategy	177,524,800	173,712,500	177,524,800	173,712,500	702,474,600
Strategy 2.4 Ensure commodity security of malaria medicines and diagnostics in the public sector	2,664,934,047	2,827,251,942	2,936,387,427	3,056,588,802	11,485,162,218
Strategy 2.5 Strengthen Quality Assurance of Diagnosis of Malaria	733,701,500	17,530,600	733,701,500	17,530,600	1,502,464,200
Strategy 3.1: Strengthen early detection systems for malaria epidemics in epidemic prone and seasonal transmission areas	25,170,000	4,577,000	4,577,000	4,577,000	38,901,000
Strategy 3.2: Strengthen capacity for malaria epidemic preparedness and response	18,863,600	15,657,350	15,657,350	15,657,350	65,835,650
Strategy 4.1. To strengthen malaria monitoring and evaluation systems	196,371,400	90,411,900	83,490,145	165,340,604	535,614,048

Requirements by Strategy	FY 2014/2015	FY 2015/2016	FY 2016/2017	FY 2017/2018	Total
Strategy 4.2: Conduct and Facilitate Health facility Surveys	41,212,400	43,039,400	41,212,400	43,039,400	168,503,600
Strategy 4.3 Conduct and support community surveys	125,065,735	11,877,781	11,877,781	112,706,985	261,528,281
Strategy 4.4: Strengthen school based malaria sentinel surveillance	14,889,355	2,553,350	14,889,355	2,553,350	34,885,409
Strategy 4.5: Facilitate Operational Research and translation to policy	54,927,364	54,927,364	54,927,364	48,674,264	213,456,356
Strategy 4.6: Strengthening malaria data management systems	3,068,500	3,068,500	2,938,500	3,008,500	12,084,000
Strategy 4.7: Human resource capacity building in monitoring and evaluation	5,867,950	936,000	936,000	936,000	8,675,950
Strategy 4.8: Entomological surveillance	18,156,020	18,156,000	18,156,020	18,156,000	72,624,040
Strategy 5.1: Strengthen structures for the delivery of ACSM interventions at all levels.	78,329,114	40,562,000	40,562,000	40,562,000	200,015,114
Strategy 5.2: Strengthen program communication for increased utilization of all malaria interventions	225,803,250	89,600,000	89,600,000	84,600,000	489,603,250
Strategy 5.3: Advocate for inter-sector collaboration for malaria ACSM	36,544,600	31,434,850	31,434,850	31,434,850	130,849,150
Strategy 5.4: Strengthen community based Social and Behavior Change Communication	516,723,500	201,827,000	206,863,000	201,827,000	1,127,240,500
Strategy 6.1: Develop/ Update and disseminate policy and strategic documents, lobby for legislation/regulations to guide malaria control in Kenya	26,918,250	5,041,505	-	70,286,820	102,246,575
Strategy 6.2: Strengthen procurement and supply management systems for malaria commodities	16,758,130	22,419,780	17,236,117	24,873,546	81,287,573

Requirements by Strategy	FY 2014/2015	FY 2015/2016	FY 2016/2017	FY 2017/2018	Total
Strategy 6.3: Strengthening capacity for planning, partnerships, coordination and implementation at all levels	1,745,675,564	1,831,948,767	1,972,564,009	2,113,334,213	7,663,522,553
Strategy 6.4: Strengthen resource mobilization capacity to improve malaria control financing	9,788,300	18,589,538	4,401,124	9,674,460	42,453,422
Total	**17,484,724,554**	**10,842,205,391**	**13,911,090,668**	**15,260,512,967**	57,498,533,580

Estimating available resources is based on budgets and projections that reflect the total amount of resources available from government and funding agencies as summarized below in Table 5.4.

Table 5.4 Summary of Available Funding by Objective

Objective (s)	FY 2014/2015	FY 2015/2016	FY 2016/2017	FY 2017/2018	Total
Objective 1	6,156,496,185	4,106,914,848	3,439,755,408	3,466,179,759	**17,169,346,199**
Objective 2	3,391,387,753	2,564,129,606	2,218,446,002	3,725,000	**8,177,688,360**
Objective 3	-	-	-	-	**-**
Objective 4	331,655,432	145,705,286	134,670,100	-	**612,030,818**
Objective 5	156,786,364	62,239,669	11,721,596	-	**230,747,629**
Objective 6	355,438,414	349,745,968	323,399,740	346,385,563	**1,374,969,685**
Total Available	**10,391,764,148**	**7,228,735,376**	**6,127,992,846**	**3,816,290,321**	**27,564,782,691**

The difference between the required and available resource is the funding gap which stands at KSh 30 Billion over the plan period of FY 2014/15 to 2017/18 as shown in Table 5.5.

Table 5.5 Funding Gap

Objective (s)	FY 2014/2015	FY 2015/2016	FY 2016/2017	FY 2017/2018	Total
Objective 1	3,321,064,178	59,155,986	2,925,079,670	4,439,999,779	**10,745,299,613**
Objective 2	1,455,643,407	1,625,376,867	2,716,486,575	4,359,366,088	**10,156,872,937**
Objective 3	44,033,600	20,234,350	20,234,350	20,234,350	**104,736,650**
Objective 4	127,903,291	79,265,009	93,757,464	394,415,102	**695,340,867**
Objective 5	700,614,100	301,184,181	356,738,254	358,423,850	**1,716,960,385**
Objective 6	1,443,701,830	1,528,253,622	1,670,801,510	1,871,783,476	**6,514,540,438**
Total Funding Gap	**7,092,960,406**	**3,613,470,015**	**7,783,097,823**	**11,444,222,645**	**29,933,750,889**

6 MONITORING AND EVALUATION

A separate monitoring and evaluation plan supports this strategy. The M&E framework is shown in Table 6.1.

6.1 TRACKING PROGRESS

The M&E plan envisions the following:

- ***Monitoring:*** The NMCP will conduct quarterly performance monitoring meetings to review progress of implementation against targets in the annual business plan, address implementation bottlenecks and refocus as necessary. At the stakeholder level and in line with the governance mechanisms for the multisector approach, quarterly coordination meetings will be held with respective implementing partner groups to review implementation and address bottlenecks. Semi-annual stakeholder performance monitoring and review meetings at County and National levels will also review performance against targets, address any constraints in implementation and refocus activities if needed.

- ***Control and audit:*** HMIS, the custodian of routine malaria information and data, will conduct annual data quality audits and make official routine malaria data available. Non routine data, including data from surveys, will be available from the NMCP.

- ***Annual review meeting:*** As part of the commitment to performance monitoring, all stakeholders will meet annually to review achievements against targets and milestones in the strategic plan and annual business plans. These meetings will also define and finalize priorities for the new financial year.

6.2 MEASURING OUTCOME AND IMPACT

Final evaluation: The final evaluation of the strategy will be an in-depth review of the National Malaria Control Programme during the second half of 2017.

6.3 PERFORMANCE FRAMEWORK

Table 6.1 Performance Framework

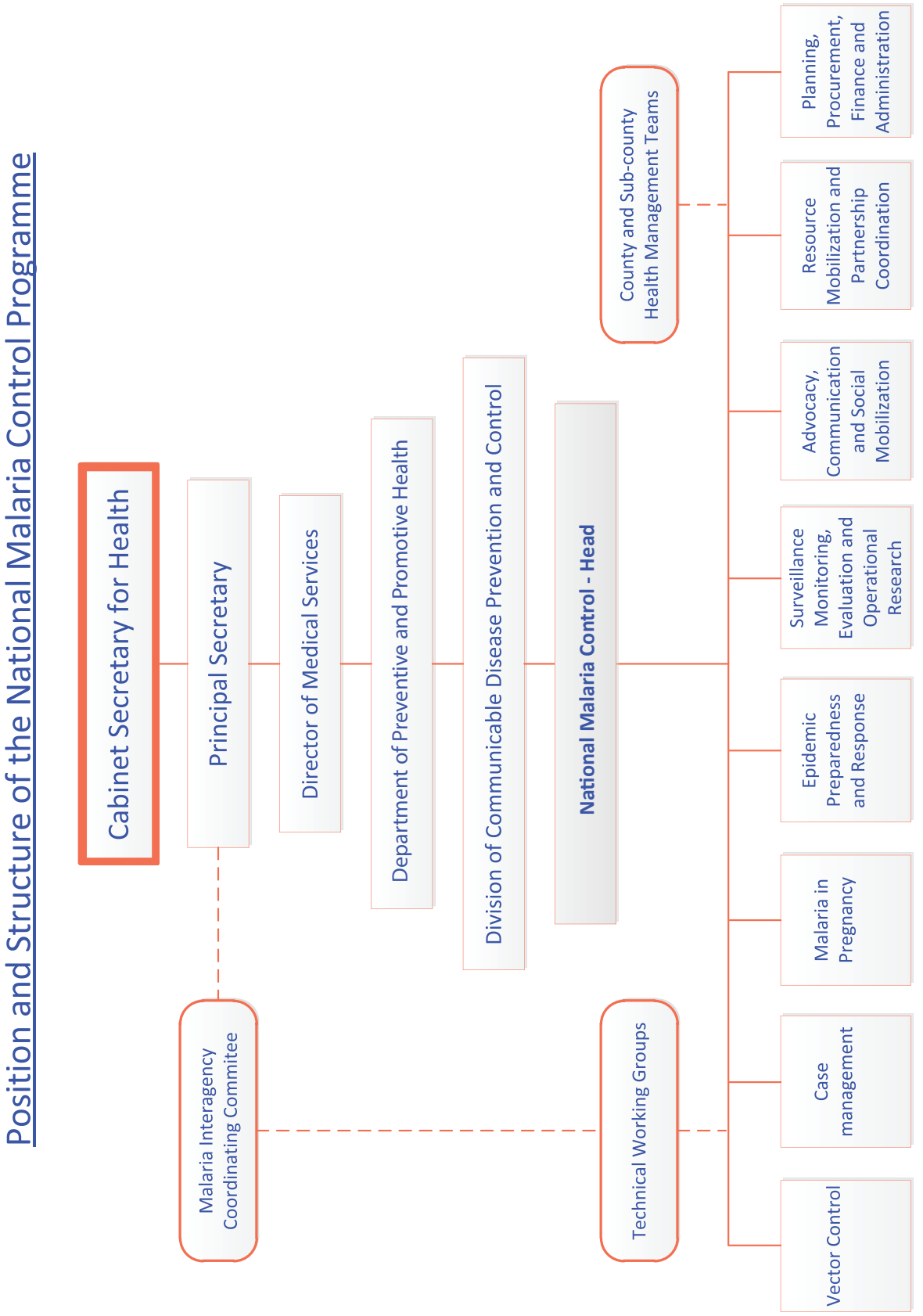
Indicators	Sources	Responsibility	Frequency	Baseline		Targets (2013 - 2017)				
				Data	Source/ year	'13	'14	'15	'16	'17
Goal: To have reduced morbidity and mortality caused by malaria in the various epidemiological zones by two thirds of the 2007/2008 level by 2017										
Inpatient* malaria cases among children <5yrs [per 1000 persons per year]	Routine surveillance	NMCP M&E / HIS	Quarterly	None	HIS	3				2
Total inpatient* malaria cases [per 1000 persons per year]	Routine surveillance	NMCP M&E / HIS	Quarterly	4	HIS (08/09)	3				2
Inpatient* malaria deaths among children <5yrs [per 1000 persons per year]	Routine surveillance	NMCP M&E / HIS	Quarterly	None	HIS	2				1
Total inpatient* malaria deaths [per 1000 persons/ year]	Routine surveillance	NMCP M&E / HIS	Quarterly	3	HIS (08/09)	2				1
Confirmed outpatient malaria cases at health facility level among children <5 years [per 1000 persons per year]	Routine surveillance	NMCP M&E / HIS	Monthly	138	HIS (12/13)	138				92
Total confirmed outpatient malaria cases at health facility level [per 1000 persons per year]	Routine surveillance	NMCP M&E / HIS	Monthly	57	HIS (12/13)	57				38
Total Clinical outpatient malaria cases at health facility level [per 1000 persons per year]	Routine surveillance	NMCP M&E / HIS	Monthly	277	HIS 2007	164				92
Percentage of suspected malaria cases tested using a parasitological based test	Routine surveillance	NMCP M&E / HIS	Monthly	60%	HIS 2013	60%				100%
Slide/RDT Test Positivity Rate (TPR) at health facility level	Routine Surveillance	NMCP M&E and Lab /HIS	Monthly	None	-	27%				13%
Malaria parasitaemia prevalence (pf) rate among children 5yrs in lake endemic areas (by microscopy)	Survey	NMCP M&E / KNBS	3Yrs	3.3	MIS [2007]	26.8 [MIS 2010]				17%
Objective 1: To have at least 80% of people living in malaria risk areas using appropriate malaria preventive interventions, by 2018										
Proportion of households who own more than one ITN/LLINs	Survey	NMCP Vector Control and M&E /KNBS	2-3 years	23%	MIS [2007]	65%	75%			90%
Proportion of children <5yrs who slept under an ITN/LLIN on night before a survey	Survey	NMCP Vector Control and M&E /KNBS	2-3 years	39%	MIS [2007]	23%	30%			80%
Proportion of pregnant women who slept under an ITN/LLIN on night before a survey	Survey	NMCP Vector Control and M&E /KNBS	2-3 years	40%	MIS [2007]	37%	60%			80%
Proportion of individual slept under an ITN/LLIN on night before a survey	Survey	NMCP Vector Control and M&E /KNBS	2-3 years	None	MIS [2007]	32%	35%			80%

Indicators	Sources	Responsibility	Frequency	Baseline		Targets (2013 - 2017)				
				Data	Source/ year	'13	'14	'15	'16	'17
Proportion of population in targeted areas protected by IRS	Activity Reports	NMCP Vector Control and M&E /KNBS	Annually	85%	Activity Reports	0%	0%			90%
Proportion of pregnant women who received 2 or more doses of IPTp during last pregnancy (within last 2 years) in endemic areas.	Survey	NMCP Vector Control and M&E /KNBS	2-3 years	12.5%	MIS [2007]	25% [KMIS 2010				80%
Objective 2: To have 100% of all suspected malaria cases who present to health workers managed according to national treatment guidelines by 2018										
Proportion of patients with suspected malaria presenting to health facility who are tested for malaria with RDT or microscopy in the public sector	QoC Survey	NMCP/KEMRI WT	Bi-Annual	None		58%	60%	65%	80%	100%
Proportion of suspected malaria cases presenting to health facility who are managed in accordance with National malaria guidelines in public sector	QoC Survey	NMCP/KEMRI WT	Bi-Annual	None		50%	60%	70%	80%	100%
Proportion of public health facilities having no stock-out of ACTs for 7 consecutive days in past 3 months (for ALL ACT weight bands)	QoC Survey	NMCP/KEMRI WT	Bi-Annual	None		93%	95%	95%	97%	100%
Proportion of private facility outlets stocking quality assured ACTs	Drug availability survey	NMCP/KEMRI WT	Once every 2 years	None		36.4%	40%	50%	55%	60%
Proportion of patients with fever who tested positive by a CHV who were treated with ACT in Lake Endemic areas	Routine Surveillance	NMCP/AMREF	Monthly	2%	2013	40%	60%	80%	100%	100%
Objective 3: To ensure that 100% of the malaria epidemic prone and seasonal transmission sub counties have the capacity to detect and timely respond to malaria epidemics by 2018										
Proportion of sub counties in epidemic prone and seasonal transmission areas with at least five sentinel sites	Threshold reports / EPR review meeting Reports	NMCP / EPR	Annually	20%	(2013)	20%	60%	80%	90%	100%
Proportion of sentinel health facilities in targeted epidemic prone and seasonal transmission sub counties monitoring and reporting current thresholds data	Weekly Thresholds Reports	NMCP / EPR	Weekly	20%	Annual Thresholds reports (2013)	20%	50%	80%	90%	100%
Proportion of target counties and sub counties with reviewed Malaria Epidemic Preparedness and Response plans	EPR review and planning meeting reports	NMCP EPR	Annual	40%	EPR review and planning meeting reports [2013]	40%	60%	80%	100%	100%
Proportion of malaria epidemics detected and reported within 2 weeks of surpassing action threshold	Outbreak Report / threshold reports/ Outbreak & Rumour Log	Counties / NMCP EPR / DSRU	Annual	100%	Outbreak reports [2013]	100%	100%	100%	100%	100%

Indicators	Sources	Responsibility	Frequency	Baseline		Targets (2013 - 2017)				
				Data	Source/ year	'13	'14	'15	'16	'17
Proportion of the detected epidemics properly managed as per the EPR guidelines.	Post Epidemic Evaluation Reports	Counties / NMCP EPR / DSRU	Annual	100%	Post Epidemic Evaluation Report [2013]	100%	100%	100%	100%	100%
Objective 4: To ensure that all malaria indicators are routinely monitored, reported and evaluated in all counties by 2018										
Proportion of health facilities sending timely reports on malaria disease surveillance	e-IDSR Reports	NMCP EPR/ CDSC	Quarterly	83%	2013	83%	100%	100%	100%	100%
Proportion of counties using malaria surveillance data to produce a malaria profile	DHIS / e-IDSR Reports	NMCP EPR/ CDSC	Annual	0	2013	0	25%	50%	75%	100%
Proportion of counties conducting entomological surveillance in endemic and epidemic-prone areas	Surveillance Reports	NMCP/VBDU	Annual	0	2013	0	8%	20%	50%	90%
Objective 5: To increase utilization of all malaria control interventions by communities in Kenya to at least 80 % by 2018										
Proportion of people with knowledge on malaria prevention, diagnosis and treatment	Survey	NMCP ACSM	3-5 years	38%	MIS [2007]	35% [MIS 2010]		60%		80%
Proportion of people who know that they should be tested for malaria before treatment	Survey	NMCP ACSM	2-3 years	None			50%			80%
Proportion of mothers/ caregivers who know that ACT is the recommended treatment for malaria	Survey	NMCP ACSM	2-3 years	39%	MIS [2007]	35%		60%		80%
Proportion of individuals who slept under an LLIN the previous night	Survey	NMCP ACSM	2-3years	None			35%			80%
Proportion of children under five who slept under an LLIN the night before	Survey	NMCP M&E and ACSM	2-3 years	39.2%	MIS [2007]	23%	30%			80%
Proportion of suspected malaria cases presenting to health workers who were tested for malaria using RDT or Microscopy	Survey	NMCP M&E and ACSM	Bi-annual	None		58%	60%	65%	80%	100%
Objective 6: To improve capacity in coordination, leadership, governance and resource mobilization at all levels towards achievement of the malaria program objectives by 2018										
Proportion of counties with malaria work plans aligned to the Kenya Malaria Strategy	County Plans	NMCP / Partners	Annually	None		100%	100%	100%	100%	100%
Proportion of counties with malaria activities in their health plans	County Health Plans	NMCP / Counties	Annually	None		-	100%	100%	100%	100%
Proportion of annual national malaria business plan funded	Malaria Business Plan	NMCP / Partners	Annually	None		-	60%	70%	80%	90%
Proportion of County malaria focal persons trained in malaria control program management	Program Report	NMCP / Counties	Annually	None		-	50%	100%	100%	100%

7 ANNEXES

ANNEX 7.1: NMCP ORGANIZATIONAL CHART



ANNEX 7.2 TERMS OF REFERENCE FOR MICC

The MICC is the National technical coordinating agency for the National Malaria Control Program. The MICC's role is to advocate for and mobilize resources for malaria control and elimination in Kenya, agree on priority areas of investment, set National targets based on global and Roll Back Malaria targets for malaria control and elimination, support coordination of implementation activities, and monitor and review performance and progress.

Terms of Reference

1. To advise and guide the Ministry of Health on National malaria policy, strategies and priorities, including cross-border issues
2. To advise and support the NMCP, MOH in mobilizing resources for malaria control interventions
3. To advise and guide the NMCP and other implementing partners on the content and organisation of their malaria work plans
4. To act as a forum for exchange of information on partners' malaria control and research activities
5. To identify and advise on strategic areas for co-ordination at the County, National and international levels
6. To define and review the output of technical working groups and sub-committees and take account of their findings in formulating advice and recommending action
7. To receive and review progress and performance reports against set targets
8. To identify problems and obstacles to implementation of malaria control activities and recommend solutions
9. To report to the MOH twice yearly on achievements and progress against objectives

Membership

Principal Secretary MOH (Chair); Director of Preventive and Promotive Health (Alternate Chair)

Head, Division of Communicable Disease Prevention and Control; Head, Health policy, Planning and Finance

Head, Malaria Control Unit (Secretary); Chief Pharmacist; Head of Curative Services; Deputy Secretary Finance

Head, Division of Vector Borne and Neglected Tropical Diseases; Head, Division of Reproductive Health and Maternal Unit; Head, Division Neonatal, Child and Adolescent Health Unit; Head, Division of Primary Health Care

Head, Department of Health Promotion; Head, Health Management Information System (HMIS),

County Health Directors; Council of Governors (Chairman of the Health Committee); Faith Based Health Care Providers ; Chief Public Health Officer; Deputy Director Research and Development KEMRI; KEMRI/Wellcome Trust Program; Ministry of Education; The National Treasury; Ministry of Information, communication and Technology; Ministry of Commerce, Tourism and East Africa Region; KEMRI/CDC; USAID/PMI; AMREF; World Health Organization.

Department for International Development; United Nations Children's Fund; World Bank.

Frequency of meetings

The Committee will meet quarterly, depending on the volume of business and the frequency of meetings kept under review. Meetings on specific business may be arranged in exceptional circumstances.

ANNEX 7.3 TERMS OF REFERENCE FOR THE NMCP TECHNICAL WORKING GROUPS

Table 7.1 Terms of Reference for NMCP Technical Working Groups

Monitoring and Evaluation Technical Working Group

Purpose: To agree on mechanisms for monitoring and evaluating progress against strategic objectives and assess research needs and implications of emerging evidence

Terms of reference	Chair	Membership
■ To agree on methods for measuring the indicators for malaria as stipulated by the Kenya Malaria Strategy ■ To identify the logistical and resource issues associated with applying the proposed methodology and make recommendations on the way forward ■ To advise on the surveillance modalities for malaria control ■ To advise on methods and routes for disseminating the results of monitoring and evaluation and ensuring they are taken into account during strategic planning and review ■ To identify and advise on emerging evidence and implications for policy and strategy ■ To report regularly to MICC	Head, NMCP	NMCP, HMIS, KNBS, NCAPD, PMI, PSK, KeNAAM, DSRU, WHO, UNICEF, VBDU, KEMRI Partners, CDC, MEVAL, JPHEIGO, RHU, CHU, NCAHU, MSH, National Universities, ICIPE, AMREF, PPB, Technical Planning and Coordination, KEMSA, HPU, DEH, CHAI

Operation Research Technical Working Group

Purpose To coordinate malaria research activities and assess policy implications of emerging evidence

Terms of Reference	Chair	Membership
■ To advise on needs for malaria research to support the Kenya Malaria Strategy implementation ■ To set a prioritized research agenda for malaria control in Kenya as well as review progress in the various on-going research activities ■ To mobilize partners and advocate for funds for the malaria research agenda ■ To develop, and oversee the implementation of a strategy for dissemination of research findings relevant to the Kenya Malaria Strategy implementation ■ To monitor, collate and disseminate emerging research evidence nationally and internationally in relation to policy issues in the Kenya Malaria Strategy ■ To provide a theme and stewardship for the biennial Kenya National Malaria Forum ■ To report regularly to the MICC	KEMRI	KEMRI, KEMRI Partners (CDC, Walter Reed Project, Wellcome Trust) NMCP, public universities, VBDU, HRU, ICIPE, AMREF, KeNAAM, Development partners (PMI/USAID, WHO, UNICEF, World Bank,) JPHEIGO, MACEPA, PSK, MEVAL, MSH

Vector Control Technical Working Group

Purpose To provide Policy direction and technical support for Integrated Vector Management for malaria control activities

Terms of Reference	Chair	Membership
■ Provide a forum for the private and public sector groups to consider and review policy direction and against solicited market research ■ Solicit and tender targeted research on market size and consumer behaviour ■ Review modalities and costs of GoK/donor assisted targeted distribution of LLINs to populations at risk ■ Liaise with the ACSM TWG on appropriate messaging to support vector control activities ■ Provide forum for sharing of technical information with PCPB on new malaria vector control products ■ Advise MICC on Vector Control policy directions	Head, Division of Communicable Disease Prevention and Control	NMCP, DDSR, DRH, Department of Primary Health Care, Division of Child and Adolescent Health, Private Sector representation, PCPB, PSI, DVBD, UNICEF, DEH, KeNAAM, CHAK, WHO, PMI and Partners, KEMRI, KEMRI/CDC, Ministry of Environment, Ministry of Local Government, Ministry of Agriculture, KEMSA, ICIPE

Resource Mobilization Technical Working Group

Advocacy Communication and Social Mobilization Technical Working Group

Purpose: To advise on advocacy, and communication for malaria control interventions.

Terms of Reference	Chair	Membership
■ Advise on all aspects of the ACSM to support malaria control interventions including research, design, production, dissemination, monitoring and evaluation ■ Contribute to and support the establishment of a network linking all stakeholders in advocacy and BCC for malaria ■ Identify best practices in malaria control and prevention and provide technical advice on updating and dissemination of appropriate messages and best practices. ■ Collaborate with Ministry of Education and Kenya Institute of Education on life-skills curriculum development for students and teachers ■ Report regularly to the MICC	Head, Department of Health Promotion	NMCP, Department of Health Promotion, Ministry of Education, Department of Information and Public Communications (Ministry of Information and Communication), Division of Community Strategy, Merlin, Division of Reproductive Health, Kenya Red Cross, Public Relations Officer (MOPHS), PMI/ USAID, UNICEF, WHO, AMREF, PSI, World Vision, MEDS.

Malaria in Pregnancy Technical Working Group

Purpose: To advise on policy issues related to prevention and treatment of malaria in pregnancy

Terms of Reference	Chair	Membership
■ Advise the MICC on policies and strategies including suitable products for IPTp ■ Provide technical guidance for the implementation of activities for the prevention and treatment of malaria in pregnancy ■ Review the performance of MIP on a regular basis ■ Advise on Operational Research for the prevention and treatment of malaria in pregnancy ■ Advise on curriculum review for pre-service and in-service training for health workers	Head, DRH	NMCP, DRH, University of Nairobi Department of Obstetrics and Gynaecology, MEDS, KEMRI, KEMSA, JHPIEGO,KMTC, WHO, UNICEF, PSI, CDC, Kenya Obstetrical and Gynaecological Society, Department of Health Promotion, Division of Community strategy, HMIS, Nursing Council of Kenya

Case Management Technical Working Group

Purpose: To advise on policy issues related to diagnosis and treatment of malaria

Terms of Reference	Chair	Membership
■ Provide policy guidelines on malaria treatment and chemoprophylaxis based on available evidence. ■ Maintain a review of the quality of antimalarial medicines to ensure safe and effective antimalarial medicines are available in the market ■ Monitor the implementation of the current treatment policy, identify problems and recommend solutions. ■ Review pre-service and in-service training needs for case-management and laboratory diagnosis and recommend changes to curricula or training packages to meet these needs ■ Technical advice on the quantification of antimalarial medicines and diagnostic equipment based on country needs ■ Report regularly to and advise MICC on case management policy directions	Head, NMCP	NMCP, PPB, KEMSA, KMA, University of Nairobi, MEDS, KEMRI KEMRI-Wellcome Trust, AMREF, Department of Pharmacy, Pharmaceutical Society of Kenya, Nursing and Clinical Officer National Councils, NPHLS, KMTC, WHO, UNICEF, PSI, MSH/SPS, NQCLS, Division of Child and Adolescent Health (DCAH), CDC

ANNEX 7.4 CRITICAL SECTORS THAT AFFECT MALARIA CONTROL

The following table outlines the key critical sectors that affect malaria control, grouped into seven areas. These sectors are critical to malaria control due to their direct or indirect contribution to malaria control. Collaboration and partnerships in planning, implementation, monitoring and evaluation of the program is important in order to achieve the program's goal and objectives.

Group 1: Health sector programs such as DRH, DSR, Public Health Laboratories, Health promotion, DCAH,

Group 2: Non-health ministries: Ministry of Education Science and Technology, Ministry of Interior Coordination and Security, Ministry of Defense; Ministry of Devolution and Planning; Ministry of Environment, Water and Natural Resources: Ministry of Mining; The National Treasury; Ministry of EAC, Commerce and Tourism; Ministry of Transport and Infrastructure; Ministry of Land, Housing and Urban Development; Ministry of Agriculture, Livestock and Fisheries

Group 3: Academia and Research institutions

Group 4: Private Sector

Group 5: Civil Society

Group 6: Professional Associations and Societies

Group 7: Legislators at National and County levels

Table 7.2 Seven Key Critical Sectors/Groups that Affect Malaria Control

Ministry, Department, Agency	Role in Malaria Control
GROUP 1: HEALTH SECTOR PROGRAMS	
Reproductive and Maternal Health Unit	▪ Support LLIN and IPTp delivery through ANC ▪ Treatment of malaria in pregnancy ▪ Conduct integrated support supervision ▪ Monitor and evaluate MIP indicators ▪ Include MIP in RH ACSM messages, incorporate MIP in RH capacity building curricular
Neonatal, Child and Adolescent Health Unit	▪ Support routine LLIN distribution through CWC (Child Welfare Clinics) in malaria prone counties ▪ Implement diagnosis and appropriate treatment of fever particularly the use of parasitological diagnostics for confirmation of malaria ▪ Development of appropriate job-aids and treatment guidelines ▪ Integration of current malaria policies in IMCI ▪ Coordination of implementation, M&E of CCM
Division of Vector Borne and Neglected Tropical Disease	▪ Participate in implementation of IRS activities ▪ Support and participate in LSM surveys and entomological surveillance ▪ Undertaking vector surveillance activities ▪ Participate in the development and validation of MEWS ▪ Undertake risk mapping to identify hot spots ▪ Capacity building on vector surveillance ▪ Participate in updating of EPR and IRS guidelines ▪ Participate in insecticide resistance monitoring

Ministry, Department, Agency	Role in Malaria Control
Division of Environmental Health and Sanitation Services	▪ Support and assist in planning and coordination of Larval Source Management, IRS and mass net distribution ▪ Advocacy and Social mobilization ▪ Enforce Public Health and health related Environmental Laws and Regulations ▪ Participate in vector control TWG ▪ Support environmental impact assessment and environmental audit including IRS and LLIN waste management ▪ Participate in policy formulation for Insecticides to be use for IRS in early response ▪ Participate in revision of EPR guidelines ▪ Participate in climate change and share information for EPR planning
Community Health Unit	▪ Dissemination of key information to communities ▪ Participation in LLIN distribution, IRS, LSM, IPTp and Malaria Free-schools initiative ▪ Ensuring that Community Health Units are functional ▪ Assist in surveillance activities at Household level ▪ Assist in monitoring LLINs ownership and use at household level ▪ Develop and disseminate policies and guidelines for malaria CCM ▪ Coordination and implementation of malaria CCM programmes ▪ Develop and review CHIS tools ▪ Monitor and report CHIS indicators
Division Health Informatics, Monitoring and Evaluation	▪ Develop , review and produce reporting tools ▪ Formulation, integration and review of health indicators ▪ Participate in DQAs ▪ Ensure timely and complete reporting through the DHIS2
Division of Research and Development	▪ Link MCU to overall health research agenda ▪ Provide research policy and guidelines ▪ Participate in dissemination of Malaria OR results
Disease Surveillance and Response Unit	▪ Coordinate malaria surveillance and reporting countrywide ▪ Participate in capacity building for EPR at County and Sub-County level ▪ Participate in updating of EPR guidelines and surveillance curriculum. ▪ Participate in EPR planning and Review meetings ` ▪ Support detection and response to Malaria Epidemics ▪ Participate in Malaria Post Epidemic evaluation ▪ Generate and disseminate disaggregated Malaria weekly data by County and sub-county through a feedback epidemiological bulletin. ▪ Participate in review of tools for reporting disease surveillance ▪ Prepare weekly and monthly disease surveillance reports ▪ Provide feedback to County and sub-county HMTs on malaria surveillance data ▪ Capacity building of National and sub-National levels on disease surveillance ▪ Participate in DQAs

Ministry, Department, Agency	Role in Malaria Control
National Public Health Laboratory Services	▪ Establish the national malaria reference lab for training and QA/QC for malaria diagnosis ▪ Support response to malaria epidemics ▪ Participate in verification exercises in case of high positivity rates in a County or sub-county for quality assurance ▪ Ensure timely reporting of malaria lab data through Laboratory Information System ▪ Participate in health facility and community surveys ▪ Support the development of malaria diagnostic policy and guidelines ▪ Diagnostics quantification, forecasting and inventory management ▪ Ensure adequate supply of malaria diagnostics countrywide ▪ Ensure personnel are regularly updated on malaria diagnosis
Health Promotion Unit	▪ Risk communication during malaria outbreaks ▪ Support the review and development of appropriate` messages to promote the uptake of malaria control interventions including campaigns (WMD, community mobilization meetings) ▪ Support delivery of malaria control messages to target audiences ▪ Provide guidance on ACSM and participate in ACSM TWGs ▪ Evaluate impact of various messages and delivery mechanisms ▪ Report on performance, best practices and impact of messages
Kenya Medical Supplies Authority (KEMSA)	▪ Support logistics and management of commodities and supplies ▪ Procurement of warehousing and distribution of malaria case management commodities ▪ Procurement and distribution of emergency malaria commodities ▪ Maintaining malaria commodities buffer stocks and prepositioning at central and regional depots ▪ Participate in the strengthening of LMIS for malaria commodities ▪ Report on commodity distribution ▪ Support supervision on commodity management ▪ Training on PSM
Regulatory Bodies (Pharmacy and Poisons Board, KMLTTB, KEBS)	▪ PPB - Conduct pharmacovigilance for malaria medicines including monitoring of adverse drug reactions ▪ PPB - Regulate monitor and evaluate access to subsidized ACTs in the private sector ▪ PPB- Participate in post market surveillance for malaria medicines ▪ PPB - Participate in the drug availability survey in the private sector ▪ KMLTTB- Regulation of malaria parasitological testing and conduct QA/QC of malaria diagnostics ▪ Monitor performance and report on set targets

Ministry, Department, Agency	Role in Malaria Control
Malaria Control Programme	▪ Development and dissemination of policies, strategies and guidelines ▪ Planning, coordination and partnerships for the implementation of interventions ▪ Technical support for all implementing partners ▪ Compile, analyze and interpret epidemiological and meteorological data ▪ Produce and disseminate seasonal malaria epidemic risk maps ▪ monitoring for malaria indicators and targets ▪ Coordinate, plan and implement various National surveys ▪ Produce various information products e.g. annual malaria reports, surveillance bulletins ▪ Develop operational research agenda to support policies ▪ Provide technical support for supervision ▪ Convene performance monitoring and review meetings ▪ Capacity build counties on malaria control activities ▪ Report to the global malaria reports (WMR, MDGs, ALMA) ▪ Report on ministerial indicators (performance contracts) ▪ Provide technical leadership on malaria data use ▪ Coordinate malaria control activities through the TWGs ▪ Upgrade and maintain malaria database ▪ Support anti-malaria advocacy campaigns (WMD, community mobilization meetings) ▪ Support deliver malaria control messages for target Audience ▪ Mobilize resources for malaria control locally and externally ▪ Mainstream malaria into National health agenda
GROUP 2: NON-HEALTH SECTOR MINISTRIES AND ORGANIZATIONS	
Ministry responsible for Education, Science and Technology	▪ Mainstreaming malaria prevention activities in the school curriculum ▪ Promotion of LLIN use in schools ▪ Encourage prompt diagnosis and treatment for all fever cases in schools ▪ Participate in malariometric surveys in schools ▪ Participate in evaluation of various interventions to control malaria in school populations ▪ Participate in performance monitoring and review meetings
Ministry responsible for Agriculture, Livestock and Fisheries	▪ Sensitization of communities on environmental manipulation through reclamation of water bodies and wet lands ▪ Provide a platform for exhibition during agricultural shows to promote malaria interventions ▪ Support LSM in irrigation schemes (well planned and designed irrigation schemes) ▪ Enhance registration and regulation of vector control commodities (PCPB) ▪ Participate in the monitoring of insecticide resistance to malaria vectors (PCPB) ▪ Participate in the monitoring of the impact of agricultural activities on malaria ▪ Participate in performance monitoring and review meetings
Ministry responsible for Transport and Infrastructure	▪ Implement NEMA regulations for road construction and maintenance (Backfilling of excavations during road construction and road side pot holes) ▪ Regulate construction of dams and irrigation systems to minimize larval habitat creation
Ministry responsible for Tourism and Wildlife	▪ Support LLIN use in hotels ▪ Participate in dissemination of malaria information on prevention and treatment in tourism sector

Ministry, Department, Agency	Role in Malaria Control
Ministry responsible for Environment and Natural Resources	▪ Enforce environmental regulations for roads, buildings and construction works, agricultural and water sector ▪ Environmental impact assessment and environmental audit including IRS and LLIN waste management ▪ Kenya Meteorology Department: Generate and share weather forecast reports to guide EPR activities ▪ Participate in evaluation of the impact of environmental degradation and climate change on malaria ▪ Provide climate forecast to facilitate malaria risk communication ▪ Advocate for measures to mitigate against environmental impact that promote malaria transmission
The National Treasury	▪ Allocation of resources for Malaria Control ▪ Mobilization of resources ▪ Financial management ▪ Participate in performance monitoring and review meetings
Directorate of Public Prosecution **Ministry of Interior and National Coordination** **Attorney General**	▪ Support and facilitate distribution of LLINs to disciplined forces and families and hard to reach areas ▪ Implement IRS activities in barracks and officers dwelling ▪ Support security of commodities in hard to reach areas ▪ Participate in Public Health Emergency Management Committee (PHEMC) at County and sub-county level ▪ Provide security during epidemic response in security high risk areas ▪ Support in enforcement of the public health laws during response
Ministry of Devolution and Planning	▪ Coordinate, plan and implement MIS, DHS, SPA and economic surveys, national health accounts ▪ Provision of National/County demographic data
Media	▪ Advocacy and social mobilization ▪ Education on malaria prevention ▪ Resource Mobilization
Ministry of EAC	▪ Ensure provision of efficient and high quality regional health system ▪ Harmonization of legal and regulatory framework, standards and guidelines, for malaria control within the health sector in the region ▪ Address crosscutting challenges affecting malaria control in the region such as health financing, human resources, poverty, climate, ▪ Monitoring and evaluation of regional projects such as the EAPHLN ▪ Mainstream malaria control into the regional development agenda
Immigration	▪ Ensure wellbeing of refugee populations as regards to malaria control ▪ Ensure all visitors comply with regulation and policies of malaria control
Ministry of Labour, Social Security and Services	▪ Promote progressive workplace and safety policies that safeguard the health of workers ▪ Develop social policies for protection of vulnerable groups ▪ Ensure development and enforcement of proper regulation of traditional health practitioners

Ministry, Department, Agency	Role in Malaria Control
GROUP 3: ACADEMIC AND RESEARCH INSTITUTIONS	
Academic and Research Institutions	▪ Participate in Malaria control TWGs ▪ Participate in training and capacity building at National and County levels ▪ Carry out Operational Research ▪ Generate evidence for policy formulation ▪ Monitor drug efficacy ▪ Conduct entomological surveillance ▪ Monitor insecticide resistance ▪ Collaborate in the implementation of MIS and other surveys ▪ Participate in carrying out various interventions ▪ Participate in performance monitoring and review meetings ▪ Mainstream Malaria Control guidelines, policies into relevant school curriculum
GROUP 4: PRIVATE SECTOR	
Private Sector	▪ Contribute malaria control commodities (IRS, LLINs, ACTs, mRDTS) through Corporate Social Responsibility Initiatives ▪ Support logistics for distribution of malaria control commodities ▪ Development of Innovative products for malaria prevention and control ▪ Manufacture malaria control commodities ▪ Support the provision and access to affordable ml2alaria case management especially within the private sector and implement training of health workers on malaria case management ▪ Submit complete and timely reports through HMIS ▪ Promote partnership with the public health sector ▪ Provide resources for malaria control interventions through various alliances ▪ Participation is the various technical working groups at the NMCP ▪ Participate in the development and implementation of malaria business plans
GROUP 5: CIVIL SOCIETY ORGANIZATIONS	
Civil Society Organizations	▪ Support implementation of malaria control activities as guided by the policy documents and Strategic Plan ▪ Support curriculum, guidelines, strategies and policy documents development ▪ Support M&E of various interventions implemented by CSOs ▪ Participate in various community-based surveys ▪ Monitor various malaria indicators and report in a timely manner ▪ Ensure timely data submission to HMIS/ LMIS and community information system where relevant ▪ Conduct and report on performance review meetings ▪ Document and share best practices ▪ Participate in the implementation of operational research ▪ Participate in proposal development for malaria control interventions ▪ Participation is the various technical working groups ▪ Participate in strategic planning, and policy implementation ▪ Participate in the development and implementation of malaria business plans ▪ Submission of performance reports ▪ Lobby for increased domestic funding for malaria control

Ministry, Department, Agency	Role in Malaria Control
GROUP 6: PROFESSIONAL ASSOCIATIONS AND SOCIETIES	
Professional Associations and Societies	▪ Advocate for policies in favor of malaria prevention and control, ▪ Support implementation of malaria prevention and control policies and strategies ▪ Support and participate in updating of the curricula for pre-service and in-service training of health workers ▪ Participate in the development of guidelines and job aids for health workers and ensure utilization ▪ Maintain quality of care in service delivery by various cadres of health workers ▪ Hold clinical discussions and reviews of malaria diagnosis and treatment with health workers ▪ Strengthen research capacities at institutional level to evaluate quality of service delivery ▪ Support the generation of evidence based practices for health workers ▪ Participate in discussions to translate research to policy ▪ Disseminate information on malaria policies, strategies and guidelines to health workers ▪ Participate in the dissemination of the vision, goals and objectives of the malaria control strategic plan to members ▪ Participate in mass communication to the public on malaria prevention and control messages ▪ Participation is the various technical working groups ▪ Participate in strategic planning, and policy implementation ▪ Participate in the development and implementation of malaria business plans ▪ Submission of performance reports ▪ Liaising with regulatory bodies to encourage malaria best practices through trainings contributing to continuous professional development in malaria activities
GROUP 7: LEGISLATORS AT PARLIAMENTARY AND COUNTY ASSEMBLY COMMITTEES ON HEALTH	
Parliamentary	▪ Advocate for review of Malaria Prevention Act and Public Health Act ▪ Advocate for allocation of more resources for malaria control activities ▪ Advocacy for malaria control interventions ▪ Budget allocation in support of malaria control interventions ▪ Political goodwill for support of malaria control interventions ▪ Pass bills in support of malaria control interventions ▪ Advocate for enforcement of laws mopping up non-recommended medicines and diagnostics ▪ Advocate for the passing of relevant bills and their amendment as need arises ▪ Support in policy formulation and change ▪ Advocacy for GoK support for health infrastructure development ▪ Participate in resource mobilization for malaria control interventions for partners

Ministry, Department, Agency	Role in Malaria Control
County Assembly Committees on Health	▪ Participate in County level stakeholder meetings for malaria policy and strategic develop ▪ Support delivery of malaria prevention and control measures at community ▪ Allocate resources for malaria interventions from County budget ▪ Advocacy for prompt diagnosis and treatment for malaria ▪ Advocate for the allocation of financial resources towards provision of stipend and other incentives for CHVs implementing CCM Advocate for enforcement of laws mopping up non-recommended medicines and diagnostics ▪ Advocate for the passing of relevant bill sand their amendment as need arises ▪ Community mobilization activities for malaria control ▪ Advocacy for uptake interventions including the use of LLINs, acceptability of IRS, uptake of IPTp ▪ Participate in the dissemination of malaria information to communities e.g. during WMD ▪ Lead malaria control efforts and inter-sectoral collaboration within ;constituencies ▪ Participate in ward, constituency and County level performance monitoring, planning and review meetings. ▪ Support and fund the recruitment of community health workers to support service delivery at community level. ▪ Support passing of a resolution on a **Malaria Free Kenya** ▪ Advocate for the allocation of resources for a **Malaria Free Kenya** ▪ Support resource mobilization from private sector and other funding agencies ▪ Recruitment of health workers to support service delivery

ANNEX 7.5 COMMODITIES NEEDED

Gap Analysis for LLIN	2014	2015	2016	2017	2018	Assumptions
Population targeted	22,093,862			23,932,219		**Target population for universal coverage is the most at risk population living in endemic and epidemic prone areas**
LLINs required for campaign	12,274,368	0	0	13,295,677		LLINs required is calculated as the total population targeted divide by 1.8, the number of nets required to achieve universal coverage
Routine LLINs ANC + CWC	1,877,978	1,928,684	1,980,758	2,034,239	2,089,163	Routine nets required is a multiplication of ANC coverage by number of pregnant women living in endemic and epidemic prone and the multiplication of EPI coverage by number of infants living in endemic and epidemic prone areas
Total LLINs Required	14,152,346	1,928,684	1,980,758	15,329,916		
Total LLINS Financed	13,822,000	1,800,000	1,800,000	1,800,000	1,800,000	LLIN financed through GF and PMI
LLIN Routine Gap*	577,978	128,684	180,758	234,239	289,163	Gap for routine LLIN
LLIN Campaign Gap	330,346	-	-	13,295,677		**Gap for campaign LLIN**

Gap Analysis for IRS	2014	2015	2016	2017	2018	Assumptions
Target population for IRS	2,289,540	3,572,979	4,767,873	3,398,579	4,056,962	Target population for IRS = people living in targeted endemic Counties
Performance Target	80%	80%	80%	80%	80%	
Target Structures	1,305,038	2,036,598	2,717,688	2,273,490	2,312,468	Five Persons per HH and three structures per HH (95% of structures)
Number of Insecticide Bottles Needed (Actellic CS)	435,013	678,866	905,896	757,830	770,823	Actellic CS remains effective; A bottle of Actellic CS sprays three structures

Gap Analysis for IRS	2014	2015	2016	2017	2018	Assumptions
Cost of Insecticide (USD)	10,875,317	16,971,650	22,647,400	18,945,750	19,270,567	A bottle of Actellic CS will cost USD 25 (including transport, storage and disposal)
Resource Available (sources)	0	0	0	0	0	
Gap in Resource Needs	**10,875,317**	**16,971,650**	**22,647,400**	**18,945,750**	**19,270,567**	

Gap Analysis for IPTp	2014/2015	2015/2016	2016/2017	2017/2018	Total	Assumptions
Total population in endemic areas by year based on the NSP	12,674,215	13,045,400	13,427,853	13,821,290	52,968,758	Expected percentage of pregnant = 4% of population living in areas of stable transmission
Expected number of pregnancies annually in targeted areas	506,969	521,816	537,114	552,852	2,118,750	4% of population
Number of pregnant women to be targeted annually = 80% of pregnant women	405,575	417,453	429,691	442,281	1,695,000	Multiply total number of pregnant women living in targeted areas by the targeted percentage coverage
Number of IPTp doses per woman (based on 4 ANC attendances)	4	4	4	4		Depending on NationalNational policy on 4 ANC scheduled visits and IPTp guidelines of IPTp dose every four weeks
Total number of IPTp doses	1,622,299	1,669,811	1,718,765	1,769,125	6,780,001	Multiply number of pregnant women in target area by number of doses
Number of doses currently funded	1,622,299	1,669,811	1,718,765	1,769,125	6,780,001	There has been excellent commitment by the Government in procurement and distribution of SP for IPTp. It is expected that the same commitment will continue in the next four years

Gap Analysis for IPTp	2014/2015	2015/2016	2016/2017	2017/2018	Total	Assumptions
Gap to be covered (no. of doses)	$0	$0	$0	$0	$0	
No of SP Tins required (1 tin =1,000 tablets)	4,867	5,009	5,156	5,307	20,340	Comment: 3 tablets per treatment; therefore multiply the gap to be covered by three, and divide by 1000 where tin of 1,000 tablets are procured (e.g for year 2014 = (405,575 pregnant women X 4 doses X 3 tablets)/1000 tablets per tin. = 4,867 tins

GAP ANALYSIS FOR ACTs	2014	2015	2016	2017
Consumption data extracted from malaria LMIS data 2013/2014	12,933,240	13,250,104	13,574,732	13,907,313
Total number of malaria cases extrapolated from consumption data	32,369,110	33,162,153	33,974,626	34,807,005
Target coverage				
National target coverage of malaria cases %	85.0%	90.0%	95.0%	100.0%
total number of malaria cases targeted	27,513,744	29,845,938	32,l2275,895	34,807,005
Target coverage by sector				
Health Facility	68.3%	68.3%	68.3%	68.3%
Community Case Management	4.6%	4.6%	4.6%	4.6%
Private Sector	27.1%	27.1%	27.1%	27.1%
Number of treatments required				
Health Facility	18,791,887	20,384,776	22,044,436	23,773,184
Community Case Management	1,265,632	1,372,913	1,484,691	1,601,122
Private Sector	7,456,225	8,088,249	8,746,768	9,432,698
Total	27,513,744	29,845,938	32,275,895	34,807,005
Factor in decreasing consumption with vector control				
No of malaria cases reduced with vector control	8,254,123	8,953,781	9,682,768	10,442,101
Total number of treatment after subtracting number reduced vector control	19,259,621	20,892,157	22,593,126	24,364,903
Factor in decreasing consumption with increasing diagnosis				
Percentage diagnosis - Public Sector	53%	63%	75%	80%
Percentage diagnosis - Private Sector	15%	20%	20%	20%
Percentage negative tests	50%	50%	50%	50%
Correcting for compliance	50%	65%	80%	90%
No of malaria cases reduced with increasing diagnosis Health facility	1,742,948	2,921,648	4,629,332	5,990,842

GAP ANALYSIS FOR ACTs	2014	2015	2016	2017
No of malaria cases reduced with increasing diagnosis community	117,387	196,773	311,785	403,483
No of malaria cases reduced with increasing diagnosis private	195,726	368,015	489,819	594,260
Total Number of treatment after subtracting number reduced due to increasing diagnosis	17,320,947	17,602,493	17,473,976	17,779,801
Health Facility	68.3%	68.3%	68.3%	68.3%
Community Case Management	4.6%	4.6%	4.6%	4.6%
Private Sector	27%	27%	27%	27%
Number of malaria cases by sector				
Health Facility	11,411,373	11,347,695	10,801,774	10,650,386
Community Case Management	768,555	764,266	727,499	717,303
Total need public sector	12,179,929	12,111,961	11,529,272	11,367,689
Total Private Sector	10,252,309	8,972,473	8,163,650	8,708,158
No. of treatments financed public sector	4,000,000	4,000,000	4,000,000	4,000,000
No. of treatments financed private sector	10,252,309	8,111,961	0	0
Gap in ACTs needed public sector	8,179,929	6,836,103	7,529,272	7,367,689
Gap in ACTs needed private sector	-	-	8,163,650	8,708,158

GAP ANALYSIS FOR RDTs	2014	2015	2016	2017
Malaria cases following reduction in vector control	17,625,532	19,151,743	19,620,960	20,101,674
Approximate number of fever cases requiring parasitological diagnosis	35,251,064	38,303,485	39,241,921	40,203,348
Country target for diagnostic coverage	70%	80%	90%	100%
% coverage of Public sector by RDTs	75%	75%	75%	75%
% coverage of community by RDTs	4.6%	4.6%	4.6%	4.6%
% coverage of private sector by RDTs	10%	10%	10%	10%
Total RDT needed	13,775,234	17,106,337	19,716,122	22,443,519
Available RDTs	14,730,746	4,955,512	4,000,000	4,000,000
Final Gap of RDTs needed	-	11,195,313	15,716,122	18,443,519

Gap Analysis for Artesunate Injection	2014	2015	2016	2017
Total Artesunate need	1,649,221	1,649,221	1,649,221	1,649,221
Available Artesunate (Already financed from any source)	0	0	0	0
Final Gap of Artesunate needed	1,649,221	1,649,221	1,649,221	1,649,221
Gap Analysis for Dihydroartemisininpiperaquine DHAP				
Total DHAP need	1,522,500	1,522,500	1,522,500	1,522,500
Available DHAP (Already financed from any source)	0	0	0	0
Final Gap of DHAP need	1,522,500	1,522,500	1,522,500	1,522,500

ANNEX 7.6 BUDGET DETAILS (Costing by OneHealth Model)

7.6.1 Costing methodology

The revised KMS 2009-2018 was also costed using the OneHealth model. The OneHealth Model is a tool for medium term to long term (3-10 years) strategic planning in the health sector at National level. It estimates the costs of health service delivery and health systems as related to the public sector. It computes the cost implications of achieving the targets set under the disease programs and for the health system.

Costing of the revised KMS 2009-2018, entailed calculating costs for interventions and programmatic areas. The general approach to calculating costs involved estimating the number of people in need of intervention based on epidemiological and demographic data together with the coverage of the service, based on the targets. The unit cost of each intervention was then calculated by estimating the physical ingredients of the intervention (e.g. diagnostic tests, health-facility consultations) and multiplying this by the cost of each component. Overall resource needs are a function of the number of people using the intervention and the unit cost of the intervention. These were estimated on an annual basis and summed across the period to give an indication of the likely costs of implementing the revised KMS 2009-2018.

The chapter describes in detail the level of resource requirements for the strategic plan period, the available resources and the gap between what is anticipated and what is required.

According to the costing estimates, the Malaria program requires an investment worth KES 61 billion over the plan period. This further has been disaggregated by objective areas as shown in Table 7.3.

Table 7.3 Resource Requirements

Requirements (KSh)	2014/15	2015/16	2016/17	2017/18	Total
Intervention Costs	13,856,715,587	8,413,315,518	8,543,368,087	6,641,274,682	**37,454,673,873**
Programme management	6,051,527,923	5,391,410,514	4,945,783,810	6,695,263,051	**23,083,985,298**
Total Requirements	**19,908,243,510**	**13,804,726,032**	**13,489,151,896**	**13,336,537,733**	**60,538,659,171**

Table 7.4 Resource Requirements in KSh

Programme management (KSh)					
Programme Categories	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**Total**
1.Programme-Specific Human Resources	52,103,337	65,889,468	70,240,659	74,591,850	**262,825,314**
2. Training	866,961,855	758,696,826	765,016,996	751,491,484	**3,142,167,160**
3. Supervision	174,532,900	183,760,566	184,722,443	185,684,320	**728,700,229**
4. Monitoring and Evaluation	550,341,179	229,627,152	242,440,042	409,938,520	**1,432,346,894**
5. Infrastructure and Equipment	10,165,470	1,060,000	1,130,000	13,800,000	**26,155,470**

Programme management (KSh)					
Programme Categories	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**Total**
6. Transport	309,000	1,310,160	14,956,680	1,483,200	**18,059,040**
7. Communication, Media & Outreach	330,266,750	159,216,750	159,216,750	154,216,750	**802,917,000**
8. Advocacy	3,906,453,551	3,837,113,735	3,370,815,360	4,903,210,786	**16,017,593,432**
9. General Programme Management	157,061,214	147,726,018	132,166,053	195,427,964	**632,381,249**
Other	3,332,667	7,009,840	5,078,827	5,418,177	**20,839,511**
Sub Total	**6,051,527,923**	**5,391,410,514**	**4,945,783,810**	**6,695,263,051**	**23,083,985,298**
Malaria Prevention and Control Commodities (KSh)					
Intervention costs	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**Total**
Insecticide treated nets(LLINs)	5,887,070,925	1,073,546,490	1,105,753,140	1,105,753,140	**9,172,123,695**
Indoor residual spraying	5,238,593,942	4,267,069,850	4,386,547,183	2,446,259,878	**16,338,470,854**
IPTp	15,379,594	15,404,406	15,661,975	15,786,959	**62,232,934**
Malaria treatment (adults)	1,597,868,358	1,771,253,721	1,717,856,733	1,723,645,698	**6,810,624,511**
mRDTs	1,095,366,170	1,260,227,565	1,291,103,140	1,322,735,167	**4,969,432,043**
Microscopy	22,436,597	25,813,485	26,445,915	27,093,840	**101,789,837**
Sub Total	**13,856,715,587**	**8,413,315,518**	**8,543,368,087**	**6,641,274,682**	**37,454,673,873**
Total Requirements	**19,908,243,510**	**13,804,726,032**	**13,489,151,896**	**13,336,537,733**	**60,538,659,171**

7.6.2 Available Resources (FY 2014/15 – 2017/18)

A good health system raises adequate revenue for health service delivery, enhances the efficiencies of management of health resources and provides the financial protection to the poor against catastrophic situations.

Combining the government and donor funding provides an estimate of the total budget available each year of the planning period, as shown in the table below. The NMCP has earmarked financial support from the government and development partners a total of KES 28 Billion for the planned period as shown in the Table 7.5.

Table 7.5 Available Resources 2014/15 – 2017/18

Available Resources (KSh)	2014/15	2015/16	2016/17	2017/18	Total
Intervention Costs	7,690,447,861	4,355,006,516	4,213,376,502	2,134,483,700	**18,393,314,579**
Programme management	2,564,053,654	2,948,041,057	1,953,371,908	1,845,159,831	**9,310,626,450**
Total Available (KSh)	**10,254,501,515**	**7,303,047,573**	**6,166,748,409**	**3,979,643,531**	**27,703,941,029**

7.6.3 Funding Gap (FY 2014/15 – 2017/18)

The difference between the resource requirements and the available resource based budgets provides a measure of the gap in funding which exists if the Strategic Plan is to be

fully implemented.

Overall the funding gap was KSh 32.8 Billion over the plan period of FY 2014/15 to 2017/18 as shown in the Table 7.6.

Table 7.6 Funding Gap

Funding Gap (KSh)	2014/15	2015/16	2016/17	2017/18	Total
Intervention Costs	6,166,267,726	4,058,309,002	4,329,991,585	4,506,790,982	**19,061,359,294**
Programme Management	3,487,474,269	2,443,369,457	2,992,411,902	4,850,103,220	**13,773,358,848**
Total Funding Gap	**9,653,741,995**	**6,501,678,459**	**7,322,403,487**	**9,356,894,202**	**32,834,718,142**

ANNEX 7.7 LIST OF PARTICIPANTS

NO	NAME	ORGANIZATION	COUNTY
1	Helen Irahuya	MOH	Vihiga
2	Ziporah W. Kihereko	MOH	Murang'a
3	Aboi H. Gedi	MOH	Mandera
4	Michael N. Thuita	MOH	Kiambu
5	Mwenda Nicholas	MOH	Tana River
6	Joseph Kapolonto	MOH	Bomet
7	Florence Nyangwara	MOH	Kisii
8	Patrick M. Njoka	MOH	Narok
9	Isaac Ruttoh	MOH	Nandi
10	Eunice Rotich	MOH	Uasin-Gishu
11	Evans Kiplangat	MOH	Busia
12	Owaka Isaac	MOH	West Pokot
13	Josphat Maiyo	MOH	E/Marakwet
14	Agnes Chesire	MOH	Baringo
15	Grace Baya	MOH	Kilifi
16	Moses W. Wanyonyi	MOH	Bungoma
17	Philip Bett	MOH	Trans-Nzoia
18	Ekamais James	MOH	Turkana
19	Kimani Evelyn	MOH	Kiambu
20	Yussuf Duba	MOH	Isiolo
21	George Wadegu	MOH	Siaya
22	Zablon Onyango	MOH	Kakamega
23	Dorcas Muia	MOH	Makueni
24	Christine A. Kaleme	MOH	TaitaTaveta
25	Mwaka J. Chiti	MOH	Mombasa
26	Patrick K. Ndung'u	MOH	Nyandarua
27	Abel K. Bahati	MOH	Kitui
28	Joseph Mbirwa	MOH	Kirinyaga
29	John Ngugi	MOH	Nyeri
30	Keith Kinyua	MOH	Embu
31	Judith M. Kimuyu	MOH	Machakos
32	Stephen Angwenyi	MOH	Nyamira
33	Mutile Wanyee	MOH	Kiambu
34	Richard Siele	MOH	Kericho
35	Lilyana Dayo	MOH	Kisumu
36	Jean Abuya	MOH	Kajiado
37	Muhsin M. Ahmed	MOH	Lamu
38	David Mbugua	MOH	Nakuru
39	Clara Ahenda	MOH	Homabay
40	Margaret Kigoi	MOH	Laikipia
41	Munyi Edward	MOH	Tharaka Nithi
42	Simeon Okuthe	MOH	Migori

NO	NAME	ORGANIZATION	COUNTY
43	Esther Karisa	MOH	Kwale
44	Agnes Mukindia	MOH	Meru
45	Daniel Langat	MOH	Samburu
46	Geoffrey Maina	MOH	Nairobi
47	Waqo Ejersa	MOH/NMCP	Nairobi
48	Paul Kiptoo	MOH/NMCP	Nairobi
49	Julius Kimitei	MOH/NMCP	Nairobi
50	Samuel Kigen	MOH/NMCP	Nairobi
51	Kiambo Njagi	MOH/NMCP	Nairobi
52	Mwaniki Njuguna	MOH/NMCP	Nairobi
53	Benard Were	MOH/NMCP	Nairobi
54	Eunice Njeru	MOH/NMCP	Nairobi
55	David Meda	MOH/NMCP	Nairobi
56	Bernadette Wanjema	MOH/NMCP	Nairobi
57	Ephantus Murigi	MOH/NMCP	Nairobi
58	Peter Njiru	MOH/NMCP	Nairobi
59	Jackie Kisia	MOH/NMCP	Nairobi
60	Regina Karonji	MOH/NMCP	Nairobi
61	Deborah Ikonge	MOH/NMCP	Nairobi
62	Rebecca Kiptui	MOH/NMCP	Nairobi
63	Joel Karogoi	MOH/NMCP	Nairobi
64	James Kiarie	MOH/NMCP	Nairobi
65	Jacinta Opondo	MOH/NMCP	Nairobi
66	Andrew Wamari	MOH/NMCP	Nairobi
67	John Kembe	The National Treasury	Nairobi
68	Owatto H. Oboo	MOH/HPU	Nairobi
69	Jane Koech	MOH/DCHS	Nairobi
70	Josephat M. Yundu	MOH	Nairobi
71	Dorothy Memusi	MOH/NMCP	Nairobi
72	Andrew Nyandigisi	MOH/NMCP	Nairobi
73	James Sang	MOH/NMCP	Nairobi
74	Charles Chege	MOH/NMCP	Nairobi
75	Jacinta Omariba	MOH/NMCP	Nairobi
76	Beatrice Machini	MOH/NMCP	Nairobi
77	Ahmeddin Omar	MOH/NMCP	Nairobi
78	Jacob M. Kimani	MOH/NMCP	Nairobi
79	Irungu Kungu	MOH/NMCP	Nairobi
80	Rose Mokaya	MOH/DSU	Nairobi
81	Silas Agutu	MOH/NCAHU	Nairobi
82	Samuel Muiruri	MOH/VBU	Nairobi
83	Mary Mukimba	MOH	Nairobi
84	Edward Obwao	PPB	Nairobi

NO	NAME	ORGANIZATION	COUNTY
85	Mercy Kambi	PCPB	Nairobi
86	Heather Njuguna	KEMSA	Nairobi
87	Josephine Mburu	KENAAM	Nairobi
88	Peter Ouma	KEMRI/CDC	Kisumu
89	Josephine Karuri	Consultant	Nairobi
90	Ben Adika	Consultant	Nairobi
91	Ambrose Agweyu	KEMRI/ Consultant	Nairobi
92	Huka Duba	Consultant	Nairobi
93	Francis Wafula	IFC/consultant	Nairobi
94	Nabie Bayoh	KEMRI/CDC	Kisumu
95	Augustine Ngindu	JhPIEGO	Nairobi
96	Shiroya Makeba	UASID/MCHIP	Nairobi
97	Peter Nasokho	Measure Eval.	Nairobi
98	Agneta Mbithi	Measure Eval.	Nairobi
99	Abdinasir Amin	Measure Eval	Nairobi
100	Jared Oule	AMREF	Nairobi
101	Joaquim Da Silva	EARN	Nairobi
102	Cornelius Muthiani	The National Treasury	Nairobi
103	Walter Mukhwana	LFA	Nairobi
104	Ann Njeri	AfriAfya	Nairobi
105	Jacinta Macharia	KENAAM	Nairobi
106	Edward Mwangi	KENAAM	Nairobi
107	Nathan Bakyaita	WHO	Nairobi
108	Charles Njuguna	WHO	Nairobi
109	Anne Musuva	PS Kenya	Nairobi
110	Nancy Njoki	PS Kenya	Nairobi
111	James Mwangi	PS Kenya	Nairobi
112	Terry Muchoki	PS Kenya	Nairobi
113	James Githui	World Vision	Nairobi
114	Margaret Njenga	World Vision	Nairobi
115	Janet Shiboje	World Vision	Nairobi
116	Abdi Mohamed	MACEPA	Nairobi
117	Alex Muturi	MSH/HCSM	Nairobi
118	Juliana Hagembe	CHAI	Nairobi
119	Patricia Njiri	CHAI	Nairobi
120	Victor Watta	Vesteergard	Nairobi
121	Michael Mwanza	Smile Africa	Kitui
122	Edward Serem	MOH	Nandi
123	Robishor Bulimo	MOH	E/Marakwet
124	Edith Wacera	MOH	Nyandarua
125	Sam Ochola	MOH	Nairobi
126	Jack Nthanga	MOH	Machakos
127	Alex Mungai	MOH	Samburu

NO	NAME	ORGANIZATION	COUNTY
128	Rosaline Murugami	MOH	Kiambu
129	Elizabeth Chomba	MOH	Kwale
130	Gondi Joel	MOH	Migori
131	Okoth P. J	MOH	Narok
132	Kiprotich E	MOH	Uasin Gishu
133	Bernard Maritim	MOH	Bomet
134	Philip Ngere	MOH	Kajiado
135	J H Thiomio	MOH	Tharaka Nithi
136	Lydia W. Njaramba	MOH	Nyeri
137	Jack Magara	MOH	Nyamira
138	H.F.O Oluoch	MOH	Homabay
139	Kanyi W. W.	MOH	Muranga
140	Muriithi Ruano	MOH	Kitui
141	Cheruiyot Kimutai	MOH	Kisii
142	M G. K Toromo	MOH	Baringo
143	James G. Mbugua	MOH	Lamu
144	Mohamed Hanif	MOH	Mombasa
145	Philip Mbithii	MOH	Trans Nzoia
146	Lutomia Melsa	MOH	Busia
147	Arthur Andere	MOH	Kakamega
148	Anil Omar	MOH	Kilifi
149	James Gitonga	MOH	Meru
150	John Logedi	MOH	Taita Taveta
151	Kiio S. Ndolo	MOH	Makueni
152	Mogol Dorcas	MOH	Laikipia
153	Kiplagat Kipruto	MOH	Kericho
154	Mohamed Duba	MOH	Isiolo
155	Beata Ruwa	MOH	Embu
156	Osman U. Endekwa	MOH	Tana River
157	Benedict Osore	MOH	Nakuru
158	Akaro Ekirapa	KEMSA	Nairobi
159	Geoffery Rairumbi	MOH/Measure Evaluation	Nairobi
160	Birkinesh Ameneshiwa	WHO	Nairobi
161	Augustine Ngindu	MCHIP/Jhiego	Nairobi
162	Caitlin Dolkort	CHAI	Nairobi
163	Caroline Njambi	AMREF	Nairobi
164	David Nyaberi	DRH-MOH	Nairobi
165	David Odhiambo	Kenya Red Cross	Nairobi
166	Davis Wachira	DVBD- MOH	Nairobi
167	Emmanuel Musombi	AMREF	Nairobi
168	Evan Mathenge	WHO/KEMRI	Nairobi

ANNEX 7.8 BIBLIOGRAPHY

1. MoPHS and DoMC, 2009: *National Malaria Strategy 2009-2017*.
2. KNBS, 2009: *The 2009 Kenya Population and Housing Census*
3. Kenya National Bureau of Statistics (KNBS) and ICF Macro, 2010*: Kenya Demographic and Health Survey (2008-09)*; Calverton, Maryland*: KNBS and ICF Macro.*
4. Kenya Institute for Public Policy Research and Analysis, 2013: *Kenya Economic Report, 2013.*
5. KNBS and GoK, 2012: *Kenya Economic Survey, 2012*.
6. Government of Kenya, 2014: **Kenya Service Availability and Readiness Assessment Mapping (SARAM)**; Ministry of Health, Nairobi Kenya.
7. GoK, 2007: *Kenya Vision 2030*; Ministry of State for Planning and National Development, 2008.
8. Kenya Parliament, 2012: *Intergovernmental Relations Act, 2012*.
9. Division of Malaria Control, Ministry of Public Health and Sanitation, Kenya National Bureau of Statistics, ICF Macro, 2011: **2010 Kenya Malaria Indicator Survey**. Nairobi, Kenya.
10. Noor, Abdisalan M., Peter W. Gething, Victor A. Alegana, Anand P. Patil, Simon I. Hay, Eric Muchiri, Elizabeth Juma and Robert W. Snow, 2009: "*The risks of malaria infection in Kenya in 2009*." BMC Infectious Diseases, 9:180. http://www.biomedcentral.com/1471- 2334/9/180
11. Aarti Agarwal, Meredith McMorrow, Peter Onyango, Kephas Otieno, Christopher Odero, John Williamson, Simon Kariuki, Stephen Patrick Kachur, Laurence Slutsker and Meghna Desai, 2013: '*A randomized trial of artemether-lumefantrine and dihydroartemisinin-piperaquine in the treatment of uncomplicated malaria among children in western Kenya'* BMC Infectious Diseases, 12:254 http://www.malariajournal.com/content/12/1/254
12. MoH, 2014: Transforming Health- Accelerating Attainment of Universal Health Coverage; *Kenya Heath Sector Strategic and investment Plan (KHSSP), 2014-2018.*
13. MOH, 2014: *Kenya Malaria Mid-Term Review Report.*
14. Ministry of Public Health and Sanitation, 2011: *Evaluation of the 2011 Mass LLIN Distribution Campaign; Phase1 and 2 Report.*
15. President's Malaria Initiative, 2013: *Country Profile Kenya.*
16. UNFPA, 2009: *State of the African Population Report 2008 – Population Dynamics and Climate Change: Implications for Africa's Sustainable Development*- United Nations Population Fund/AU Liaison Office, Addis Ababa, Ethiopia,

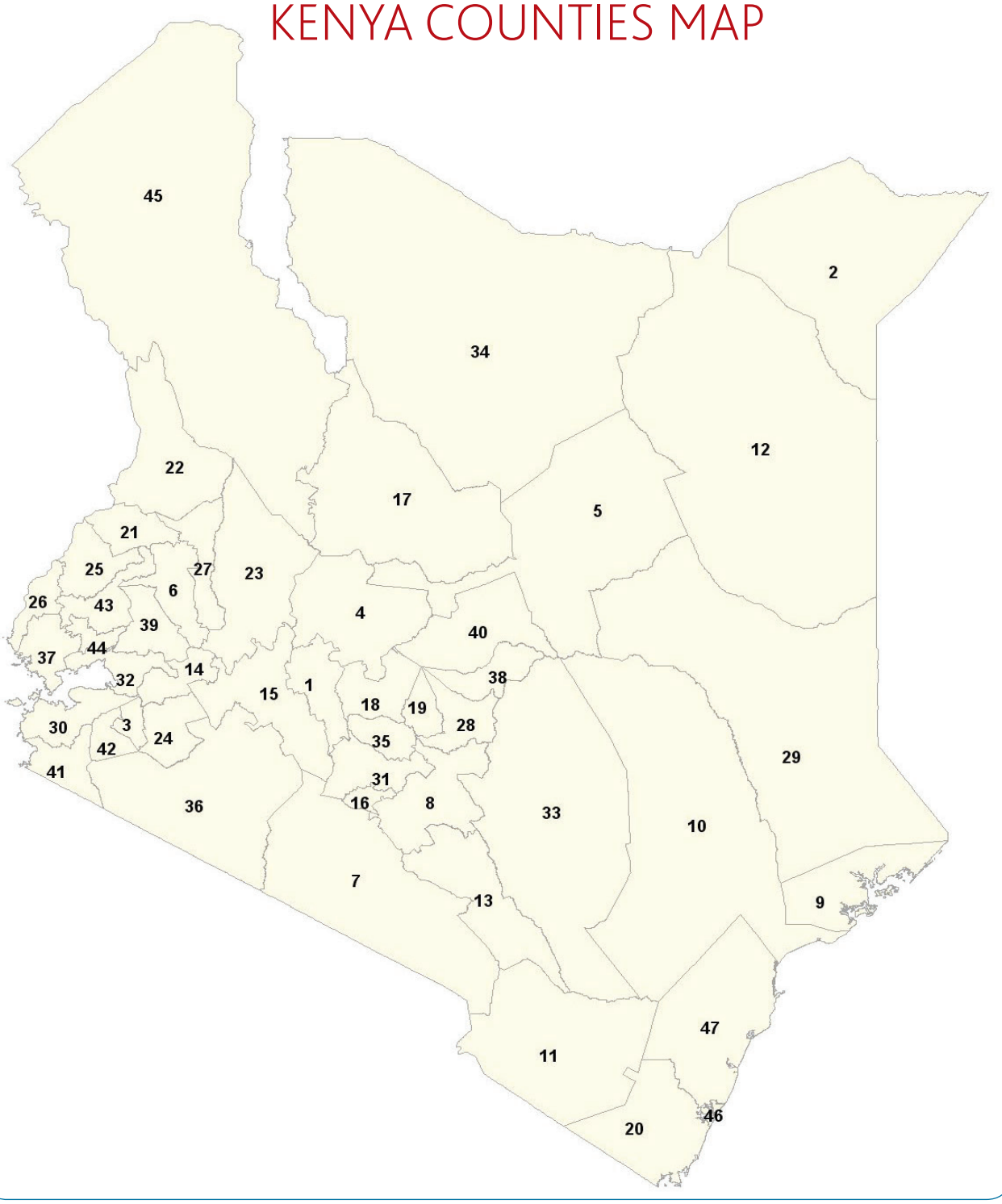
17. McSweeney, C., M. New and G. Lizcano, 2009: *UNDP Climate Change Country Profile: Kenya*.

18. Hove, Hilary; Echeverría, Daniella; Parry, Jo-Ellen; 2011: *"Review of Current and Planned Adaptation Action: East Africa*." Adaptation Partnership/International Institute for Sustainable Development - ALM-Adaptation learning Mechanism for WB, UNDP, GEF, UNFCC, UNEP & FAO.

19. Stockholm Environment Institute, SEI, 2009: *Economics of Climate Change Kenya* - Final Report submitted in advance of COP15; Available online http://www.sei-international.org / mediamanager / documents / Publications / Climate-mitigation-adaptation / kenya-climatechange.pdf

20. International Institute for Sustainable Development (IISD), 2013: *Climate risk management for malaria control in Kenya Report: The case of the western highlands.*

KENYA COUNTIES MAP



COUNTIES

1 Nyandarua	11 Taita Taveta	21 Trans Nzoia	31 Kiambu	41 Migori
2 Mandera	12 Wajir	22 West Pokot	32 Kisumu	42 Kisii
3 Nyamira	13 Makueni	23 Baringo	33 Kitui	43 Kakamega
4 Laikipia	14 Kericho	24 Bomet	34 Marsabit	44 Vihiga
5 Isiolo	15 Nakuru	25 Bungoma	35 Muranga	45 Turkana
6 Uasin Gishu	16 Nairobi	26 Busia	36 Narok	46 Mombasa
7 Kajiado	17 Samburu	27 Elgeyo Marakwet	37 Siaya	47 Kilifi
8 Machakos	18 Nyeri	28 Embu	38 Tharaka	
9 Lamu	19 Kirinyaga	29 Garissa	39 Nandi	
10 Tana River	20 Kwale	30 Homa Bay	40 Meru	

National Malaria Control Programme
Ministry of Health
PO Box 19982 KNH
Nairobi 00202, Kenya
Email: head.domc@domckenya.or.ke

http://www.nmcp.or.ke