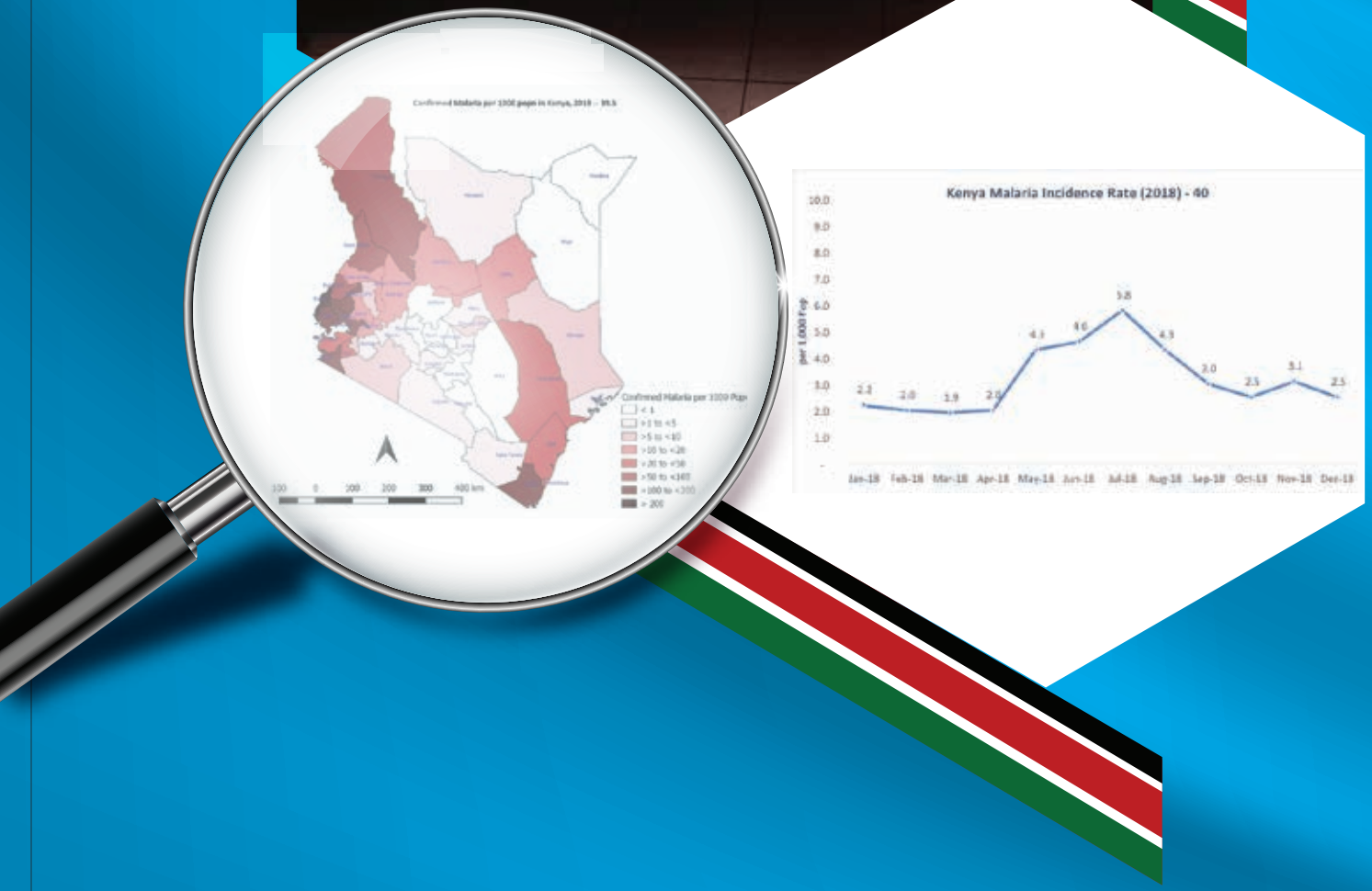
MINISTRY OF HEALTH



KENYA MALARIA MONITORING AND EVALUATION PLAN 2019–2023

National Malaria Control Programme, Ministry of Health

Kenya Malaria Monitoring and Evaluation Plan 2019–2023

National Malaria Control Programme

Ministry of Health

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FOREWORD

The Kenya Malaria Strategy (KMS) 2019–2023 was based on the recommendations of the end-term review of the previous strategy KMS 2009–2018 (revised 2014). The strategy takes into account the Kenya Health Sector Strategic and Investment Plan July 2018–June 2023, the Kenya Constitution 2010, the Kenya Vision 2030, the Global Technical Strategy (GTS) for Malaria 2016–2030, and other World Health Organization guidelines. The strategy was developed in consultation with stakeholders, including county departments of health.

The Kenya Malaria Monitoring and Evaluation Plan was developed alongside the KMS and will assess progress of the KMS goal and objectives. In line with the GTS, the plan recognises surveillance as a core intervention and emphasises strengthening routine surveillance.

This document describes the indicators that will be used to measure progress and performance towards the KMS goal. It describes the data sources and targets for the indicators, frequency of reporting, feedback mechanisms, and responsible entities. A data demand and use plan is also included.

I urge all stakeholders to use this document as a guide to malaria monitoring, evaluation, and operational research so that we can carry out our assessments in a coordinated manner as stipulated in this document. Let us adhere to the "Three Ones" Principle: (1) one national malaria control coordinating authority where implementation is a country-led process; (2) one agreed national plan for malaria control; and (3) one agreed country-level monitoring and evaluation framework—as we move towards our vision of a "malaria free Kenya."

Sicily Kariuki (Mrs), EGH

Cabinet Secretary, Ministry of Health

ACKNOWLEDGMENTS

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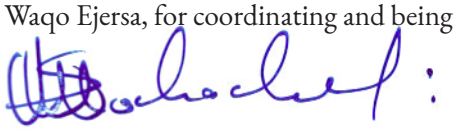
We would also like to acknowledge and appreciate the technical support of the members of the Malaria Interagency Coordinating Committee, members of the Malaria Monitoring, Evaluation, and Operational Research technical working group, the World Health Organization Regional Office for Africa, the lead and thematic consultants and all stakeholders who were involved in this process.

Our appreciation also goes to the U.S. President's Malaria Initiative and the United States Agency for International Development for financing the development of this Monitoring and Evaluation Plan.

We would also like to thank the staff of the National Malaria Control Programme, led by the Head of the Programme, Dr. Waqo Ejersa, for coordinating and being the secretariat during the development of this document.



Susan N. Mochache, CBS

Principal Secretary, Ministry of Health

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ABBREVIATIONS

AL	artemether-lumefantrine
ANC	antenatal care
CCMm	community case management for malaria
CHEWs	community health extension worker
CHU	community health unit
CHV	community health volunteer
CoE	Committee of Experts
CRVS	civil registration and vital statistics
DQA	data quality audit
EPR	epidemic preparedness and response
HIS	health information system
ICD	international classification of diseases
IDSR	integrated disease surveillance and response
IPTp	intermittent preventive treatment in pregnancy
IRS	indoor residual spraying
KEMRI	Kenya Medical Research Institute
KMS	Kenya Malaria Strategy
KNBS	Kenya National Bureau of Statistics
LLINs	long-lasting insecticidal nets
LMIS	logistic management information system
LSM	larval source management
M&E	monitoring and evaluation
MIP	malaria in pregnancy

MIS	Malaria Indicator Survey
MOH	Ministry of Health
mRDT	malaria Rapid Diagnostic Test
NMCP	National Malaria Control Programme
PfPR2-10	Plasmodium falciparum prevalence in children ages 2–10 years
PPB	Pharmacy and Poisons Board
QOC	quality of care
SBC	social and behaviour change
SOP	standard operating procedures
SP	sulphadoxine-pyrimethamine
USAID	United States Agency for International Development
VBDCU	Vector-Borne Disease Control Unit
WHO	World Health Organization

1. INTRODUCTION

This monitoring and evaluation (M&E) plan is the performance framework that describes the indicators to be measured to track performance in the implementation of the Kenya Malaria Strategy (KMS). The goal of the KMS 2019–2023 is to reduce malaria incidence and deaths by at least 75 percent of the 2016 levels by 2023. To achieve this goal, six objectives have been outlined, each with clear strategies and activities. The M&E plan has defined targets to be achieved over the five-year period of the strategy and identifies respective performance indicators.

A well-functioning M&E system is essential to track and assess progress towards achieving the KMS goal. The malaria programme M&E system is aligned to the Ministry of Health (MOH) M&E framework, which responds to growing interest and demand for quality data for decision making. The malaria programme will use the information generated from the M&E system on a continual basis to guide the formulation of sound policies, improved institutional environment, and enhanced multisectoral coordination mechanisms.

The programme will maintain a strong collaboration with other MOH departments and units, including the Health Information System (HIS) and Integrated Disease Surveillance and Response (IDSR). Institutions such as the Kenya Medical Research Institute (KEMRI), the Pharmacy and Poisons Board (PPB), and the Kenya National Bureau of Statistics (KNBS) will continue to be engaged to provide their expertise in specific areas of M&E.

The malaria burden in Kenya is heterogeneous and requires an enhanced surveillance system to inform stratification of interventions. The malaria programme is working closely with Counties to promote the use of data for decision making and targeting of interventions. These efforts are concentrated in the assembly of high-quality, complete, and timely routine data to track trends in disease patterns to target resources to where they are most needed.

The major thrust of the malaria programme M&E system will be to strengthen malaria surveillance to provide complete and accurate data.

To guide multi-sectoral and inter-sectoral engagement for improved programme planning, the principle of the "three ones" will be adhered to:

- One national malaria control coordinating authority where implementation is a country-led process
- One agreed comprehensive country plan for malaria control, including costed work plans
- One agreed country-level M&E framework

This document describes the malaria M&E system and surveillance processes necessary for informing programme performance. It includes details on indicators to be measured, data sources, frequency of reporting, information flow, and feedback mechanisms.

1.1 Current Malaria Situation in Kenya

1.1.1 Epidemiological Stratification

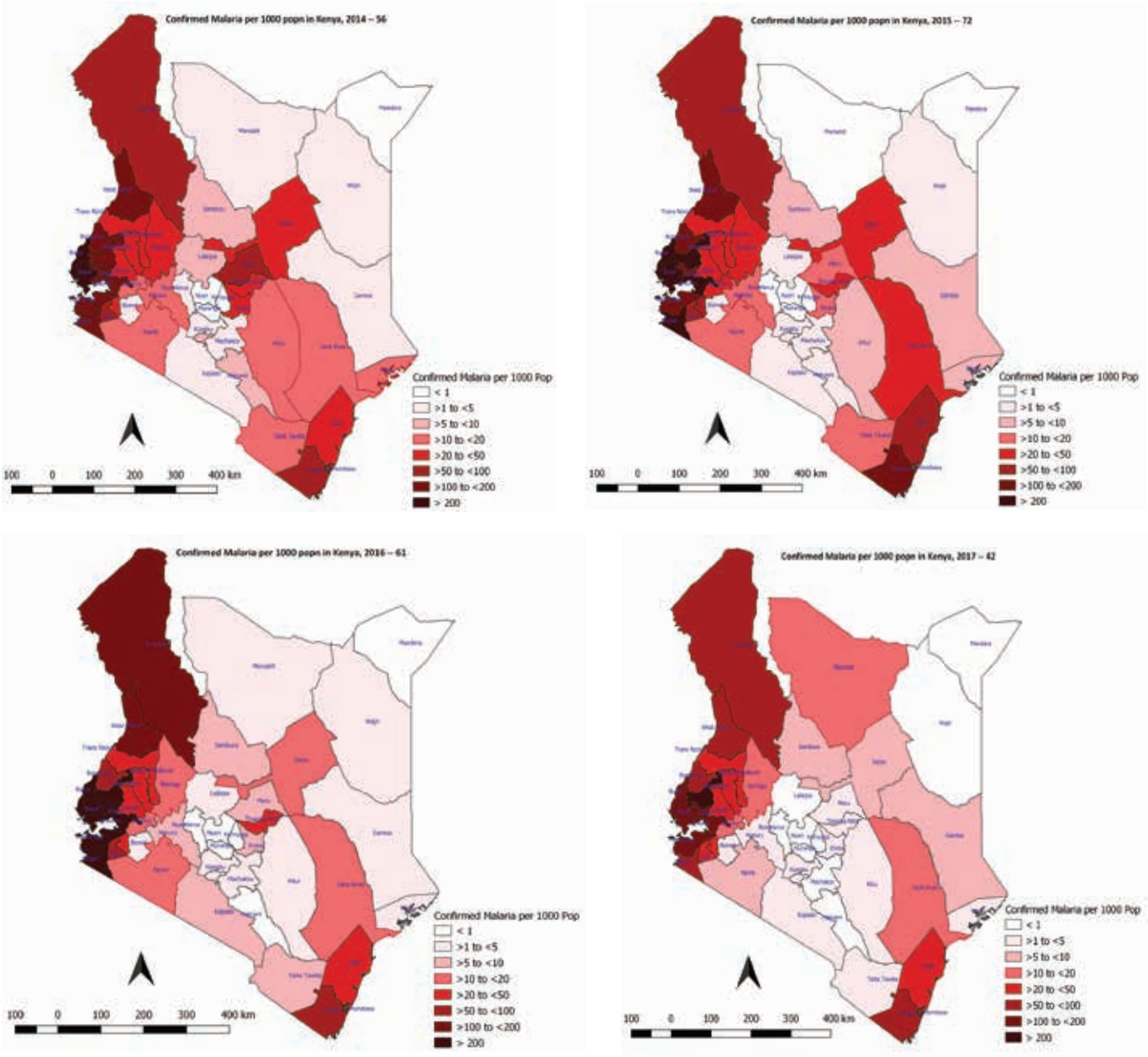
Malaria transmission risk in Kenya is driven by the varying altitude, rainfall patterns, and temperature, which make the distribution and burden of the disease heterogeneous. The country has four defined epidemiological zones, which are as follows:

- **Endemic:** This includes areas of stable malaria with altitudes ranging from 0 to 1,300 meters around Lake Victoria in western Kenya and in the coastal region. Rainfall, temperature, and humidity are the determinants of the perennial transmission of malaria in this zone. The vector life cycle is usually short, with a high survival rate due to the suitable climatic conditions. Transmission is intense throughout the year, with annual entomological inoculation rates between 30 and 100 (Degefa et al., 2017). In 2015, malaria parasite prevalence was 27 percent in the lake endemic and 8 percent in coast endemic zone (NMCP, KNBS, & ICF, 2016).
- **Seasonal malaria transmission:** 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 breeding sites for malaria vectors. Extreme climatic conditions like *El Niño* that lead to flooding can cause malaria epidemics with high morbidity due to the low immune status of the population. Malaria parasite prevalence in this zone was less than 1 percent (NMCP, KNBS, & ICF, 2016).
- **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 favour sustained minimum temperatures around 18° C that sustain vector breeding, resulting in increased intensity of malaria transmission. The whole population is vulnerable, and case fatality rates during an epidemic can be up to 10 times greater than what is experienced in regions where malaria occurs regularly. Malaria prevalence in this zone was 3 percent (NMCP, KNBS, & ICF, 2016).
- **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, the increasing temperatures and changes in the hydrological cycle associated with climate change are likely to increase the areas suitable for malaria vector breeding, leading to the introduction of malaria transmission in areas it never existed before. Malaria parasite prevalence in low-risk areas was less than 1 percent (NMCP, KNBS, & ICF, 2016).

1.1.2 Dynamics of Malaria Transmission and Implication on Malaria Programme Interventions

The stratification of Kenya into epidemiological zones has guided implementation of malaria control interventions as provided in the national malaria policy. Continuous malaria risk maps developed from predictions of age-corrected mean *Plasmodium falciparum* prevalence rate in children ages 2–10 years (PfPR2-10), have shown a reducing transmission risk. In addition, routine health information shows a reduction in the total confirmed outpatient malaria cases per 1,000 in the period 2015–2017 (Figure 1).

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



Source: Health Information System/integrated Disease Surveillance and Response

1.1.3 Distribution of *Plasmodium Species*

The country has continually collected information on the malaria parasite species that cause infection to inform diagnosis and treatment. Currently, 92 percent of infections are from P. *falciparum*, 6 percent are from P. *malariae,* and 2 percent are from P. *ovale.* Some malaria infections are a result of more than one of these species (mixed infections) (MOH, 2016a).

1.1.4 Distribution of Malaria Vectors

Several vectors are responsible for malaria transmission in the Country. These vectors are found in different ecological environments. Based on NMCP surveillance data, *An. funestus* is emerging as the main vector in the highland epidemic prone areas. *An. arabiensis* is predominantly found in arid and semi-areas, and *An. gambiae s.s* is distributed across the country. In some areas, An. coustani, a secondary vector, is now becoming a major vector and contributing substantially to malaria transmission (Mbogo et al., n.d.).

Data on vector distribution and behaviour provide guidance for deployment of vector control interventions in the country. Over time, sustained distribution and use of long-lasting insecticidal nets (LLINs) in western Kenya and coast endemic regions has led to a switch in the relative species composition, with *An. arabiensis* replacing *An. gambiae s.s* as the dominant species (Bayoh, et al., 2010; Mwangangi et al., 2013), particularly in the coast endemic region. This has important implications for malaria epidemiology and control, given that this vector predominantly rests and feeds on humans outdoors. Over the past few years, *An. funestus* has been reported as the dominant malaria vector species in the lake endemic counties (McCann et al., 2014; Abt Associates Inc., 2018).

The use of LLINs and indoor residual spraying (IRS) in the country has contributed to a decrease in vector densities, parity, distribution, and change in feeding behaviour. The impact of vector control measures is affected by insecticide resistance, especially pyrethroid-based insecticide, which is currently used on LLINs (Abt Associates Inc. 2018).

1.2 Review of the Kenya Malaria M&E Plan 2009–2018 (Revised 2014)

The KMS and the M&E plan underwent a comprehensive Malaria Programme Review in 2018 to assess progress towards set targets, review the programme's capacity to implement the strategy, and inform the development of the next strategy. The process involved reviewing the indicators in the M&E plan and conducting an assessment of the implementation of the activities under each of the six strategic objectives of the strategy. The Malaria Programme Review report provides the details of the process and the outcomes of the review (NMCP, 2018).

1.2.1 Summary from the Review of M&E Indicators

There were 10 epidemiological impact indicators in the M&E plan of the KMS 2009–2018 (revised 2014). Routine surveillance provided data for nine impact indicators, and the indicator on malaria prevalence was measured through the 2015 household Malaria Indicator Survey (MIS).

The review assessed outcome indicators across all the objectives. There were improvements in some indicators, such as reporting rates for DHIS2 (a 10 percent increase in 2017 compared to 2013/14), percentage of pregnant women who slept under an insecticide treated net/LLIN (from 40 percent in 2007 to 58 percent in 2015), and percentage of health facilities with capacity to perform malaria parasitological diagnosis (from 77 percent in 2014 to 94 percent in 2017).

The review identified key gaps in data sources to reliably measure indicators on inpatient morbidity and mortality due to malaria, a lack of defined entomological indicators to assess the impact of vector control interventions, and a lack of data and indicators to measure programme financing.

1.2.2 Development of the M&E Plan

The M&E plan was developed in conjunction with the KMS. The key steps taken were as follows:

- Defining impact, outcome, and output-level indicators
- Establishing baselines and setting targets over the five-year period of the strategy
- Identifying data sources, frequency of reporting, and responsible entities

Table 2 describes the performance framework of the M&E Plan.

1.3 Summary of the KMS 2019–2023 Objectives

The goal of the KMS is to reduce malaria incidence and deaths by at least 75 percent of the 2016 levels by 2023. To achieve this goal, the KMS 2019–2023 outlines six strategic objectives aimed at responding to the vision of a malaria-free Kenya. Under each objective, specific strategies and activities are outlined.

OBJECTIVE 1: To protect 100 percent of people living in malaria risk areas through access to appropriate malaria preventive interventions by 2023

a. **Distribute LLINs through appropriate channels to achieve and sustain universal coverage[1] in malaria risk areas**

b. **Use IRS in the targeted areas**

c. **Use larval source management (LSM) in targeted areas**

d. **Develop, review, and update documents for malaria vector control**

e. **Provide intermittent preventive treatment in pregnancy (IPTp)-sulphadoxine-pyrimethamine (SP) at antenatal care (ANC) in targeted areas**

f. **Engage community health volunteers (CHVs) to identify IPTp missed opportunities for referral to ANC in targeted areas**

OBJECTIVE 2: To manage 100 percent of suspected malaria cases according to the Kenya malaria treatment guidelines by 2023

a. **Strengthen capacity for integrated malaria case management**

b. **Strengthen capacity for case management of severe malaria**

c. **Provide malaria case management at the community level in targeted areas**

d. **Ensure quality of malaria parasitological diagnosis**

e. **Procure diagnostic and treatment commodities**

OBJECTIVE 3: To establish systems for malaria elimination in targeted counties by 2023

a. **Establish structures and capacity at the national and county levels to coordinate and drive implementation of the elimination agenda[2]**

b. **Develop capacity for malaria elimination**

c. **Establish active case detection, notification, investigation, and response systems for elimination in targeted counties**

d. **Strengthen quality assurance for diagnosis, treatment, and entomology to enhance surveillance**

e. **Strengthen social and behaviour change (SBC) communication for malaria elimination**

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[1] Universal coverage with LLINs is defined as universal access to and use of one net for every two persons at risk of malaria.

[2] The malaria elimination agenda in this strategy focuses on establishing structures and building capacity to achieve reduction to zero incidence of indigenous cases in targeted counties.

OBJECTIVE 4: To increase utilisation of appropriate malaria interventions in Kenya to at least 80 percent by 2023

a. **Scale up malaria advocacy at national and county levels for increased utilisation of malaria interventions**
b. **Strengthen community-based SBC activities for all malaria interventions**
c. **Strengthen structures for the delivery of malaria SBC interventions at all levels**
d. **Strengthen programme communication for increased utilisation of all malaria interventions**

OBJECTIVE 5: To strengthen malaria surveillance and use of information to improve decision making for programme performance

a. **Strengthen malaria surveillance**
b. **Strengthen malaria epidemic preparedness and response (EPR)**
c. **Increase use of malaria data for decision making**
d. **Conduct and facilitate health facility surveys**
e. **Conduct and support community surveys**
f. **Facilitate operational research for policymaking**
g. **Conduct entomological surveillance**
h. **Monitor efficacy and effectiveness of vector control tools and technologies**

OBJECTIVE 6: To provide leadership and management for optimal implementation of malaria interventions at all levels, for the achievement of all strategic objectives by 2023

a. **Align malaria governance and legislation to constitutional mandates and core functions**
b. **Strengthen partnerships and coordination for malaria programme management**
c. **Strengthen capacity for malaria programming at national and county levels**
d. **Strengthen resource mobilisation initiatives for malaria**
e. **Enhance malaria commodity security at all levels**
f. **Strengthen the use of supply chain data for decision making**

2. THE KENYA MALARIA M&E PLAN 2019–2023

This M&E plan describes the framework for monitoring and evaluating the KMS 2019–2023 and its corresponding implementation arrangements. The plan outlines the performance framework, provides targets for key indicators, and describes the data collection systems. Implementation of this plan will ensure effective monitoring of programme performance and facilitate use of information. It will also enhance effective use of resources through the coordination of M&E efforts, and allow comparability of results through standardisation of survey methods and indicator measurement. Data generated by the M&E system will serve the needs of the MOH and other stakeholders, including other government ministries and development partners. This will eliminate the need for parallel and duplicative M&E processes and activities.

Implementation of the M&E plan will also serve the accountability needs of stakeholders by demonstrating how the malaria programme and its partners have contributed to the intended outcomes as well as provide a basis for evidence-based decision making at all levels.

2.1 Objectives of the M&E Plan

The main objective of the M&E plan is to provide a comprehensive tracking system that enables transparent and objective management of information for the malaria programme and effective implementation of malaria interventions in Kenya. The specific objectives are as follows:

- To ensure collection, collation, processing, and analysis of appropriate malaria data at all levels of malaria programming
- To enable regular monitoring and documentation of programme performance based on implementation plans and targets
- To facilitate harmonisation of malaria data collection based on standardised definitions, tools, and indicators
- To coordinate and strengthen linkages with other programmes and partners that generate malaria data
- To coordinate the flow of information, including feedback mechanisms at all levels
- To provide accurate and timely information for evidence-based decision making at all levels
- To promote the increased use of appropriate malaria information for decision making

2.2 Funding for the M&E Plan 2019–2023

Given the focus on surveillance, M&E will require optimal investment. Table 1 shows the budget estimate for the KMS 2019–2023 and the proportion of the total budget to be spent on M&E. Overall, 13 percent of the budget is set aside to actualise this M&E plan. The general guideline at the global level is that costs related to M&E should constitute between 5 and 10 percent of the total cost of implementing the strategy. This global benchmark has been surpassed in this M&E plan.

Table 1. M&E budget components for the KMS 2019–2023

KMS 2018–2023 Objectives	Budget component	Budget estimates in Kenya shillings					Grand total (Ksh)
		2018/19	2019/20	2020/21	2021/22	2022/23	
Objective 1: To protect 100 percent of people living in malaria risk areas through access to appropriate malaria preventive interventions by 2023	Total budget	5,133,423,500	11,931,745,448	5,820,105,399	5,859,293,953	12,754,789,699	41,499,357,999
	M&E components	475,712,627	556,952,627	475,952,627	473,442,440	554,442,440	2,536,502,762
Objective 2: To manage 100 percent of suspected malaria cases according to the Kenya malaria treatment guidelines by 2023	Total budget	2,257,727,119	1,422,535,288	1,479,980,885	1,673,715,477	1,828,077,531	8,662,036,301
	M&E components	194,441,160	186,172,410	185,328,660	185,328,660	185,328,660	936,599,550
Objective 3: To establish systems for malaria elimination in targeted counties by 2023	Total budget	79,437,764	412,314,962	343,172,924	333,228,510	359,874,924	1,528,029,085
	M&E components	3,578,850	28,673,942	12,282,320	11,254,820	13,558,320	69,348,252
Objective 4: To increase utilisation of appropriate malaria interventions in Kenya to at least 80 percent by 2023	Total budget	967,941,190	932,086,690	848,286,670	905,690,190	872,181,390	4,526,186,130
	M&E components	90,000,000	90,000,000	90,000,000	90,000,000	90,000,000	450,000,000
Objective 5: To strengthen malaria surveillance and use of information to improve decision making for programme performance	Total budget	698,529,802	670,427,366	826,520,039	753,617,339	630,301,268	3,579,395,814
	M&E components	698,529,802	670,427,366	826,520,039	753,617,339	630,301,268	3,579,395,814
Objective 6: To provide leadership and management for optimal implementation of malaria interventions at all levels, for the achievement of all strategic objectives by 2023	Total budget	405,164,121	467,733,505	407,291,821	367,681,351	472,957,395	2,120,828,193
	M&E components	73,036,970	81,272,090	111,160,160	71,199,260	111,151,162	447,819,642
Total KMS budget		**9,542,223,497**	**15,836,843,260**	**9,725,357,739**	**9,893,226,820**	**16,918,182,207**	**61,915,833,522**
Total M&E budget component		**1,535,299,409**	**1,613,498,435**	**1,701,243,806**	**1,584,842,519**	**1,584,781,850**	**8,019,666,020**
M&E budget as a proportion of total KMS budget		**16%**	**10%**	**17%**	**16%**	**9%**	**13%**

2.3 Framework for Monitoring and Evaluating the KMS 2019–2023

The basic M&E framework connecting programme inputs to processes, outputs, outcome, and impact has been adopted (Figure 2). For each of these components, indicators have been defined and presented in the performance framework illustrated in Table 2. The framework is informed by the goal, objectives, and strategies in the KMS.

Figure 2. The basic M&E framework

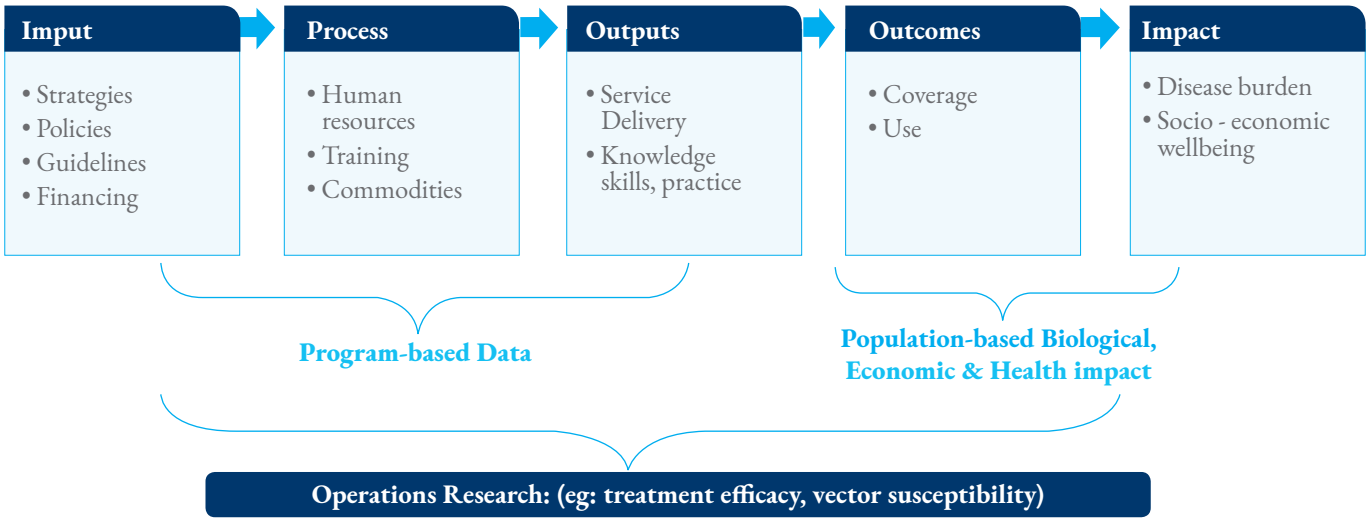


Table 2. M&E performance framework for the KMS 2019–2023

Goal/strategy	Impact/performance indicators	Data source	Frequency	Responsible
To reduce malaria incidence and deaths by at least 75 percent of the 2016 levels by 2023	Total inpatient malaria deaths (per 100,000 persons per year)	HIS/routine surveillance	Annually	NMCP M&E, HIS, civil registration and vital statistics (CRVS), counties
	Total inpatient malaria cases (per 10,000 persons per year)	HIS/routine surveillance	Annually	NMCP M&E, HIS, CRVS, counties
	Total confirmed malaria cases (per 1,000 persons per year)	HIS/routine surveillance	Annually	NMCP M&E, HIS, counties
	Annual entomological inoculation rate	Entomological surveillance	Annually	NMCP M&E/vector control
Objective 1: To protect 100 percent of people living in malaria risk areas through access to appropriate malaria preventive interventions by 2023				
Strategy 1: Distribute LLINs through appropriate channels to achieve and sustain universal coverage in malaria risk areas	**Input**			
	Amount of funds available for LLINs	Programme reports	Annually	NMCP vector control, partners
	Action plan for mass net distribution			
	Process			
	Number of LLINs purchased	Activity reports	Annually	NMCP vector control, partners
	Number of households registered for mass net distribution	Activity reports	Quarterly—during mass net distribution	NMCP vector control, counties, partners
	Number of LLINs distributed through mass net campaigns	Activity reports	Quarterly—during mass net distribution	NMCP vector control, counties, partners
	Number of LLINs distributed through other channels[1]	Activity reports	Quarterly	NMCP vector control, counties, partners
	Number of LLINs distributed through health facilities (ANC and child welfare clinics)	HIS/routine surveillance	Monthly	NMCP vector control, counties, HIS
	Output			
	Proportion of household population with universal coverage of LLINs	Household surveys	Once every three years	NMCP vector control/ M&E, KNBS
	Outcome			
	Proportion of households with universal coverage of LLINs in malaria risk areas	Household surveys	Two to three years	NMCP vector control/ M&E, KNBS
	Proportion of the general population in targeted areas using an LLIN the night before the survey			

Goal/strategy	Impact/performance indicators	Data source	Frequency	Responsible
Strategy 2: Use IRS in the targeted areas	**Input**			
	Amount of funds available for IRS strategy	Programme reports	Annually	NMCP vector control, partners
	Reviewed IRS business plan			
	Updated IRS guidelines			
	Process			
	Number of targeted households/sprayable structures identified	Activity reports	Annually	NMCP vector control, counties, partners
	Number of spray operators trained			
	Number of house units (dwelling structures) sprayed within the last 12 months			
	Output			
	Proportion of targeted structures sprayed per spray cycle	Activity reports	Annually	NMCP vector control, counties, partners
	Outcome			
	Proportion of population in targeted areas protected through IRS within the last 12 months	Activity reports/ postspray assessments	Annually	NMCP vector control/ M&E, KNBS
Strategy 3: Use LSM in targeted areas	**Input**			
	Amount of funds available for LSM	Programme reports	Annually	NMCP vector control, Vector-Borne Disease Control Unit (VBDCU)
	Updated LSM standard operating procedures (SOPs)			
	Process			
	Number of people trained in LSM in targeted counties	Activity reports	Quarterly	NMCP vector control, VBDCU, KEMRI, counties
	Number of larval habitats mapped			
	Number of mapped larval habitats targeted for LSM			
	Output			
	Proportion of known habitats mapped	Activity reports	Biannually	NMCP vector control, VBDCU, KEMRI, counties
	Outcome			
	Proportion of larval habitats targeted for LSM that are appropriately managed	Entomological surveys	Annually	NMCP vector control/ M&E, VBDCU, KEMRI, counties

Goal/strategy	Impact/performance indicators	Data source	Frequency	Responsible
Strategy 4: Develop, review, and update documents for malaria vector control (insecticide resistance management (IRM) strategy, IRS business plan, SOP for mosquito surveillance, integrated vector management (IVM) policy guidelines, LSM guidelines)	**Input**			
	Amount of funds available	Programme reports	Annually	NMCP vector control
	Process			
	Number of review meetings held	Activity reports	Quarterly	NMCP vector control
	Output			
	Final draft documents	Activity reports	Once every three years	NMCP vector control
	Outcome			
	Updated documents	Activity reports	Once every three years	NMCP vector control
Strategy 5: Provide IPTp-SP at ANC in targeted areas	**Input**			
	Amount of funds available for IPTp	Programme reports	Quarterly	NMCP malaria in pregnancy (MIP), counties, partners
	SP doses procured for IPTp			
	SP doses distributed			
	Process			
	Number of service providers trained on IPTp in targeted counties	Activity reports	Quarterly	NMCP MIP, counties, partners
	Number of pregnant women attending ANC visits in targeted counties	HIS/routine surveillance	Monthly	NMCP MIP, counties, HIS, partners
	Output			
	Proportion of ANC clients receiving IPTp at ANC	HIS/routine surveillance	Quarterly	NMCP MIP, counties, HIS, partners
	Outcome			
	Proportion of eligible pregnant women who receive three or more doses of IPTp for malaria during their last pregnancy in targeted counties	Household surveys	Two to three years	NMCP MIP/M&E, KNBS

Goal/strategy	Impact/performance indicators	Data source	Frequency	Responsible
Strategy 6: Engage CHVs to identify IPTp missed opportunities for referral to ANC in targeted areas	**Input**			
	Amount of funds available for IPTp	Programme reports	Annually	NMCP MIP, partners
	Updated Community Health Information System tools to include data on referrals to the ANC	Activity reports	Quarterly	NMCP MIP, HIS
	Developed messages for CHVs on referrals to the ANC	Activity reports	Annually	NMCP MIP, partners
	Process			
	Number of CHVs trained on ANC referral for IPTp	Activity reports	Quarterly	NMCP MIP, counties, partners
	Number of review meetings with CHVs			
	Output			
	Proportion of pregnant women referred by CHVs to health facility for IPTp	HIS/routine surveillance	Quarterly	NMCP MIP, counties, HIS
	Outcome			
	Percentage of IPTp missed opportunities referred[2]	HIS/routine surveillance	Quarterly	NMCP MIP, counties, HIS

Goal/strategy	Impact/performance indicators	Data source	Frequency	Responsible
Objective 2: To manage 100 percent of suspected malaria cases according to the Kenya malaria treatment guidelines by 2023				
Strategy 1: Strengthen capacity for integrated malaria case management	**Input**			
	Amount of funds available for malaria case management	Programme reports	Annually	NMCP case management
	Revised malaria diagnosis and treatment guidelines and curricula			
	Process			
	Number of health workers trained in malaria case management and reporting	Activity reports	Quarterly	NMCP case management, counties, partners
	Output			
	Proportion of targeted health workers trained	Activity reports	Quarterly	NMCP case management, counties, partners
	Proportion of health workers who received supportive supervision for malaria case management in the three months preceding the survey	Outpatient quality of care (QOC) surveys	Biannually	NMCP case management, counties
	Test positivity rate[3]	Routine surveillance	Monthly	NMCP case management/ M&E, counties, HIS
	Outcome			
	Proportion of suspected malaria cases presenting to public health facilities tested with malaria rapid diagnostic test (mRDT) or microscopy	Outpatient QOC surveys	Biannually	NMCP case management/ M&E, counties
	Proportion of suspected malaria cases presenting to public health facilities managed in accordance with the Kenya malaria treatment guidelines	Outpatient QOC surveys	Biannually	NMCP case management/ M&E, counties
Strategy 2: Strengthen capacity for case management of severe malaria	**Input**			
	Amount of funds available for case management	Programme reports	Quarterly	NMCP case management, partners
	Process			
	Number of health workers trained on severe malaria case management and reporting	Activity reports	Quarterly	NMCP case management, counties
	Output			
	Proportion of targeted health workers trained on severe malaria case management and reporting	Activity reports	Quarterly	NMCP case management, counties
	Proportion of confirmed cases of severe malaria managed according to malaria case management guidelines	Inpatient QOC surveys	Annually	NMCP case management/ M&E, counties
	Outcome			
	Severe malaria case fatality rate (proportion of severe malaria cases resulting in death)	Inpatient QOC surveys	Annually	NMCP case management/ M&E, counties

Goal/strategy	Impact/performance indicators	Data source	Frequency	Responsible
Strategy 3: Provide malaria case management at the community level in targeted areas	**Input**			
	Amount of funds available for community case management	Programme reports	Quarterly	NMCP case management, partners
	Community case management of malaria (CCMm) guidelines and curricula			
	CCMm commodities			
	Process			
	Number of CHVs trained on CCMm and reporting	Activity reports	Quarterly	NMCP case management, counties, partners
	Proportion of planned quarterly county review meetings on CCMm held			
	Output			
	Proportion of community health units (CHUs) in all target areas implementing CCMm	Programme reports/routine surveillance	Annually	NMCP case management, partners, Community Health and Development Unit
	Outcome			
	Proportion of suspected malaria cases presenting to a CHV in targeted areas tested with mRDT	Activity reports	Annually	NMCP case management, partners, Community Health and Development Unit
Strategy 4: Ensure quality of malaria parasitological diagnosis	**Input**			
	Malaria parasitological diagnosis guidelines and curricula	Programme reports	Quarterly	NMCP case management
	Guidelines and curricula for quality assurance of malaria diagnosis			
	Updated malaria diagnosis quality assurance implementation plan			
	Process			
	Number of health workers trained on malaria parasitological diagnosis	Activity reports	Quarterly	NMCP case management, counties
	Number of health workers trained on quality assurance for malaria diagnosis			
	Number of biannual quality assurance meetings held	Activity reports	Annually	NMCP case management, counties
	Output			
	Proportion of health facilities performing diagnosis as per national malaria parasitological diagnosis guidelines	Activity reports	Annually	NMCP case management
	Outcome			
	Proportion of laboratories performing light microscopy for malaria enrolled in external quality assessment	Activity reports	Quarterly	NMCP case management, counties

Goal/strategy	Impact/performance indicators	Data source	Frequency	Responsible
Strategy 5: Procure diagnostic and treatment commodities	**Inputs**			
	Amount of funds available for diagnostic and treatment commodities	Programme reports	Quarterly	NMCP case management
	Process			
	Forecasting and quantification done for malaria diagnostic and treatment commodities	Activity reports	Quarterly	NMCP case management, counties, partners
	Output			
	Quantity of diagnostic and treatment commodities procured	Activity reports	Quarterly	NMCP case management, counties, partners
	Outcome			
	Quantity of diagnostic and treatment commodities distributed	Activity reports	Quarterly	NMCP case management, counties, partners
Objective 3: To establish systems for malaria elimination in targeted counties by 2023				
Strategy 1: Establish structures and capacity at the national and county levels to coordinate and drive implementation of the elimination agenda	**Input**			
	Amount of funds available for malaria elimination	Programme reports	Annually	NMCP, partners
	Terms of reference for a national malaria elimination taskforce/committee			
	Process			
	National and county malaria elimination taskforce/committee in place	Activity reports	Annually	NMCP, counties
	Output			
	Number of malaria elimination technical meetings held	Activity reports	Annually	NMCP, counties, partners
	Amount of funds solicited for malaria elimination	Programme reports	Annually	NMCP, counties, partners
	Outcome			
	Functional malaria elimination unit in place	Programme reports	Annually	NMCP

Goal/strategy	Impact/performance indicators	Data source	Frequency	Responsible
Strategy 2: Develop capacity for malaria elimination	**Input**			
	Amount of funds available for malaria elimination	Programme reports	Annually	NMCP, counties, partners
	Business plan, guidelines, training curricula, and SOPs for malaria elimination			
	Process			
	Number of health workers[4] trained in malaria elimination	Activity reports	Annually	NMCP, counties, partners
	Output			
	Proportion of health workers in malaria elimination teams who received supportive supervision	Activity reports	Quarterly	NMCP, counties
	Outcome			
	Proportion of targeted health workers trained in malaria elimination	Activity reports	Quarterly	NMCP, counties
Strategy 3: Establish active case detection, notification, investigation, and response systems for elimination in targeted counties	**Input**			
	Case notification systems in place	Activity reports	Annually	NMCP, counties
	Malaria investigation teams in place			
	Process			
	Case and foci repositories established at national and county levels	Activity reports	Annually	NMCP, counties
	Proportion of planned malaria elimination review meetings held			
	Output			
	Proportion of malaria cases notified	HIS/routine surveillance	Weekly	NMCP, counties, HIS
	Outcome			
	Proportion of malaria notifications investigated/followed up	HIS/routine surveillance	Weekly	NMCP, counties, HIS

Goal/strategy	Impact/performance indicators	Data source	Frequency	Responsible
Strategy 4: Strengthen quality assurance for diagnosis, treatment, and entomology to enhance surveillance	**Input**			
	Amount of funds available for malaria elimination	Programme reports	Annually	NMCP, counties, partners
	Curricula for malaria microscopy quality assurance and entomological surveillance			
	Process			
	Laboratory assessment for diagnosis of malaria	Activity reports	Annually	NMCP, counties, partners
	Number of health workers trained on malaria parasitological diagnosis	Activity reports	Annually	NMCP, counties, partners
	Number of health workers trained on malaria entomology	Activity reports	Annually	NMCP, counties, partners
	Output			
	Proportion of targeted health workers trained on malaria parasitological diagnosis	Activity reports	Annually	NMCP, counties
	Proportion of targeted health workers trained on malaria entomology	Activity reports	Annually	NMCP, counties
	Proportion of health workers receiving support supervision within the last three months	Activity reports	Quarterly	NMCP, counties
	Proportion of laboratories in targeted counties performing light microscopy for malaria enrolled in external quality assessment	Activity reports	Annually	NMCP, counties
	Outcome			
	Proportion of functional county reference laboratories for malaria elimination	Programme reports	Once	NMCP, counties
Strategy 5: Strengthen SBC for malaria elimination	**Input**			
	Amount of funds available for malaria elimination	Programme reports	Annually	NMCP, counties, partners
	Malaria elimination messages available			
	Process			
	Number of meetings held with national and county health leadership, including governors	Activity reports	Annually	NMCP, counties, partners
	Number of meetings held with partners and other stakeholders			
	Output			
	Number of community-based and civil society organisations engaged to participate in malaria elimination	Activity reports	Annually	NMCP, counties, partners
	Outcome			
	Proportion of households in target counties reached with SBC messages for malaria elimination	Survey reports	Annually	NMCP, counties

Goal/strategy	Impact/performance indicators	Data source	Frequency	Responsible
Objective 4: To increase utilisation of appropriate malaria interventions in Kenya to at least 80 percent by 2023				
Strategy 1: Scale up malaria advocacy at national and county levels for increased utilisation of malaria interventions	**Input**			
	Amount of funds available for SBC	Programme reports	Annually	NMCP SBC, partners
	Malaria briefing kits			
	Process			
	Development of malaria advocacy guidelines and briefs	Activity reports	Biannually	NMCP SBC, partners
	Training in malaria advocacy	Activity reports	Quarterly	NMCP SBC, partners
	Output			
	Proportion of roundtable meetings held to advocate increased utilisation of malaria interventions	Activity reports	Biannually	NMCP SBC, counties, partners
	Proportion of the targeted stakeholders advocating for malaria interventions	Activity reports	Biannually	NMCP SBC, counties, partners
	Outcome			
	Proportion of population that slept under an LLIN the previous night	Household surveys	Every two to three years	NMCP SBC/M&E
	Proportion of the population using an LLIN, among households with universal coverage	Household surveys	Every two to three years	NMCP SBC/M&E
Strategy 2: Strengthen community-based SBC activities for all malaria interventions	**Input**			
	Amount of funds available for SBC	Programme reports	Annually	NMCP SBC, counties, partners
	Communication package on malaria interventions for CHVs			
	Process			
	Number of pupils trained on malaria interventions	Activity reports	Annually	NMCP SBC, counties, partners
	Number of CHVs trained on promotion of malaria interventions	Activity reports	Annually	NMCP SBC, counties, partners
	Output			
	Number of schools reached to promote the use of malaria interventions	Activity reports	Quarterly	
	Number of households reached with malaria messages through school children	Activity reports	Quarterly	
	Outcome			
	Proportion of targeted pregnant women who received at least three doses of IPTp (disaggregated by provider-initiated, self-initiated, or both)	Household survey (Population Evaluation Tests, PET)	Every two to three years	NMCP SBC/M&E
	Proportion of children under five with fever in the last two weeks for whom advice or treatment was sought within 24 hours of the onset of fever	Household surveys	Every two to three years	NMCP SBC/M&E

Goal/strategy	Impact/performance indicators	Data source	Frequency	Responsible
Strategy 3: Strengthen structures for the delivery of malaria SBC interventions at all levels	**Input**			
	Amount of funds available for SBC	Programme reports	Annually	
	Revised malaria communication strategy			
	Process			
	County communication plans developed	Activity reports	Annually	NMCP SBC, counties, partners
	Number of SBC meetings held at national and county levels	Activity reports	Annually	NMCP SBC, counties, partners
	Output			
	Proportion of counties with communication plans	Activity reports	Annually	NMCP SBC, counties, partners
	Outcome			
	Proportion of counties implementing their malaria communication plans	Activity reports	Annually	NMCP SBC, counties, partners
Strategy 4: Strengthen programme communication for increased utilisation of all malaria interventions	**Input**			
	Amount of funds available for SBC	Programme reports	Annually	NMCP SBC, partners
	SBC packages developed			
	Process			
	Number of focused intervention SBC packages developed	Activity reports	Annually	NMCP SBC, counties, partners
	Number of media campaigns conducted			
	Number of interactive radio programs conducted through county and sub-county radio stations			
	Number of radio and TV adverts aired			
	Output			
	Number of people reached with malaria messages	Media monitoring reports	Quarterly	NMCP SBC, counties, partners
	Online portal of existing malaria and education communication material and messages	Programme reports	Annually	NMCP SBC
	Outcome			
	Proportion of people who recall hearing or seeing any malaria messages within the last six months	Survey reports	Annually	NMCP SBC, counties, partners

Goal/strategy	Impact/performance indicators	Data source	Frequency	Responsible
Objective 5: To strengthen malaria surveillance and use of information to improve decision making for programme performance				
Strategy 1: Strengthen malaria surveillance	**Input**			
	Amount of funds available for malaria surveillance	Programme reports	Annually	NMCP M&E, partners
	Malaria surveillance guidelines			
	Revised malaria surveillance curriculum			
	Updated data quality audit (DQA) tools			
	Revised support supervision manual			
	Process			
	Number of health workers trained in malaria surveillance	Training reports	Annually	NMCP M&E, counties, partners
	Number of sub-counties conducting DQA	Activity reports	Annually	NMCP M&E, counties, partners
	Number of targeted health facilities for which a DQA was conducted	Activity reports	Annually	NMCP M&E, counties, partners
	Output			
	Proportion of health facilities reporting inpatient data	HIS/routine surveillance	Monthly	NMCP M&E, HIS, CRVS, counties
	Proportion of targeted health facilities for which malaria support supervision was conducted	Activity reports	Biannually	NMCP M&E, partners, counties
	Outcome			
	Proportion of expected health facility reports received	HIS/routine surveillance	Monthly	NMCP M&E, HIS, IDSR, counties
	Proportion of expected health facility reports received on time	HIS/routine surveillance	Monthly	NMCP M&E, HIS, IDSR, counties
	Annual blood examination rate[5]	HIS/routine surveillance	Annually	NMCP M&E, HIS
Strategy 2: Strengthen malaria EPR	**Input**			
	Amount of funds available for EPR activities	Programme reports	Annually	NMCP M&E/EPR, partners
	Revised EPR guidelines			
	Process			
	Number of EPR planning and review meetings held	Activity reports	Annually	NMCP M&E/EPR, counties, partners
	Number of health workers trained on EPR			
	Output			
	Proportion of reported epidemics/upsurges responded to within two weeks	Activity reports	As they occur	NMCP M&E/EPR, counties
	Outcome			
	Proportion of targeted sub-counties reporting malaria threshold data weekly	HIS/routine surveillance	Weekly	NMCP M&E/EPR, counties, HIS

Goal/strategy	Impact/performance indicators	Data source	Frequency	Responsible
Strategy 3: Increase use of malaria data for decision making	**Input**			
	Amount of funds available for data use activities	Programme reports	Annually	NMCP M&E, partners
	Survey data, routine and entomological surveillance data			
	Process			
	Development of malaria information products[6]	Activity reports	Quarterly	NMCP M&E, counties
	Output			
	Number of programme review meetings held that demonstrate the use of data[7] for decision making	Activity reports	Biannually	NMCP M&E, counties, partners
	Outcome			
	Proportion of counties using malaria surveillance data for decision making and targeting interventions	Activity reports	Annually	NMCP M&E, counties
Strategy 4: Conduct and facilitate health facility surveys	**Input**			
	Amount of funds available for health facility surveys	Programme reports	Annually	NMCP M&E/case management, partners
	Data collection tools			
	QOC training manuals			
	Pharmacovigilance guidelines			
	Process			
	Study protocols developed	Activity reports	Quarterly	NMCP M&E/case management
	Output			
	Number of QOC surveys conducted	Activity reports	Annually	NMCP M&E/case management, counties
	Cohort event monitoring study completed	Activity reports	Annually[8]	NMCP M&E/case management, KEMRI
	Number of therapeutic efficacy testing studies completed	Activity reports	Every three years	NMCP M&E/case management, PPB
	Outcome			
	Proportion of planned surveys conducted	Activity reports	Annually	NMCP M&E

Goal/strategy	Impact/performance indicators	Data source	Frequency	Responsible
Strategy 5: Conduct and support community surveys	**Input**			
	Amount of funds available for community surveys	Programme reports	Annually	NMCP M&E
	Data collection tools			
	Process			
	Study protocols developed	Activity reports	Two to three years	NMCP M&E, KNBS, partners
	Output			
	Number of surveys conducted	Activity reports	Two to three years	NMCP M&E, KNBS, partners, counties
	Outcome			
	Proportion of planned surveys completed	Activity reports	Annually	NMCP M&E
Strategy 6: Facilitate operational research for policymaking	**Input**			
	Amount of funds available for operational research	Programme reports	Annually	
	Database of malaria research studies			
	Process			
	Number of Committee of Experts meetings held	Activity reports	Annually	NMCP M&E
	Updated research agenda	Activity reports	Every two years	NMCP M&E
	Output			
	Number of operational research studies completed	Activity reports	Annually	NMCP M&E, partners
	Outcome			
	Proportion of operational research studies funded	Activity reports	Annually	NMCP M&E, partners
	Number of malaria forums held	Activity reports	Every two years	NMCP M&E, partners

Goal/strategy	Impact/performance indicators	Data source	Frequency	Responsible
Strategy 7: Conduct entomological surveillance	**Input**			
	Amount of funds available for entomological surveillance	Programme reports	Annually	NMCP M&E, partners
	Revised entomological surveillance SOPs			
	Entomological surveillance tools			
	Process			
	Number of health workers trained in entomological surveillance	Activity reports	Annually	NMCP M&E/vector control, counties, partners
	Output			
	Proportion of targeted health workers trained in entomological surveillance	Activity reports	Annually	NMCP M&E/vector control, counties, partners
	Entomological profile maps	Activity reports	Annually	NMCP M&E/vector control, counties, partners
	Outcome			
	Proportion of counties conducting entomological surveys	Activity reports	Biannually	NMCP M&E/vector control, counties
Strategy 8: Monitor efficacy and effectiveness of vector control tools and technologies	**Input**			
	Amount of funds available for monitoring efficacy and effectiveness of vector control tools	Programme reports	Annually	NMCP M&E/vector control, partners, research institutions
	Study equipment and tools			
	Process			
	Development of study protocols	Activity reports	Annually	NMCP M&E/vector control, research institutions
	Output			
	Number of field staff trained	Activity reports	Annually	NMCP M&E/vector control
	Outcome			
	Number of planned surveys conducted	Survey/activity reports	Annually	NMCP M&E/vector control

Goal/strategy	Impact/performance indicators	Data source	Frequency	Responsible
Objective 6: To provide leadership and management for optimal implementation of malaria interventions at all levels, for achievement of all strategic objectives by 2023				
Strategy 1: Align malaria governance and legislation to constitutional mandates and core functions	**Input**			
	Amount of funds available for review of governance and legislation documents	Programme reports	Annually	NMCP programme management, partners
	Revised malaria legislative documents			
	Revised malaria policy			
	Process			
	Number of meetings to review malaria documents	Activity reports	Annually	NMCP programme management
	Output			
	Final drafts of the reviewed malaria documents	Activity reports	Annually	NMCP programme management
	Outcome			
	Number of legislative and policy documents reviewed	Programme reports	Biennially	NMCP programme management
	Number of legislative and policy documents disseminated	Programme reports	Biennially	NMCP programme management
Strategy 2: Strengthen partnerships and coordination for malaria programme management	**Input**			
	Amount of funds available for partnership and coordination activities	Programme reports	Annually	NMCP programme management, partners
	Infrastructure, equipment, and consumables			
	Process			
	Maintenance of partners database	Activity reports	Quarterly	NMCP programme management
	Output			
	Number of Committee of Experts and Malaria Health Sector Working Committee meetings held	Activity reports	Quarterly	NMCP programme management
	Outcome			
	Proportion of Malaria Health Sector Working Committee members participating in CoE meetings	Activity reports	Quarterly	NMCP programme management

Goal/strategy	Impact/performance indicators	Data source	Frequency	Responsible
Strategy 3: Strengthen capacity for malaria programming at national and county levels	**Input**			
	Amount of funds available	Programme reports	Annually	NMCP programme management, partners
	Process			
	Number of programme review meetings held	Activity reports	Biannually	NMCP programme management
	Output			
	Number of programme review meeting reports available	Activity reports	Biannually	NMCP programme management
	Outcome			
	Proportion of activities in the annual malaria work plan implemented as planned	Activity reports	Quarterly	NMCP programme management
	Number of counties implementing at least 75 percent of the malaria activities in their annual work plans in line with the KMS	Activity reports	Biannually	NMCP programme management, counties
Strategy 4: Strengthen resource mobilisation initiatives for malaria	**Input**			
	Amount of funds available	Programme reports	Annually	NMCP programme management, partners, counties
	Process			
	Development of resource mobilisation strategy	Activity reports	Quarterly	NMCP programme management
	Output			
	Number of high-level advocacy meetings held for resource mobilisation	Activity reports	Quarterly	NMCP programme management
	Outcome			
	Proportion of resources mobilised to KMS costed need	Programme reports	Quarterly	NMCP programme management
	Proportion of resources spent to available resources	Programme reports	Quarterly	NMCP programme management, county governments

Goal/strategy	Impact/performance indicators	Data source	Frequency	Responsible
Strategy 5: Enhance malaria commodity security at all levels	**Input**			
	Amount of funds available	Programme reports	Annually	NMCP programme management, partners
	Guidelines and SOPs			
	Process			
	Number of health workers trained in procurement and supply chain management	Activity reports	Annually	NMCP programme management, counties, partners
	Output			
	Proportion of public facilities stocked according to plan for key malaria commodities (all artemether-lumefantrine [AL], SP, artesunate injectables, mRDTs, LLINs)	Activity/QOC reports	Annually	NMCP programme management, counties, partners
	Outcome			
	Proportion of public health facilities having no stockouts of key malaria commodities in the facility	HIS/routine surveillance/ QOC reports	Monthly/ biannual	NMCP programme management, counties, HIS
Strategy 6: Strengthen the use of supply chain data for decision making	**Input**			
	Amount of funds available	Programme reports	Annually	NMCP programme management, partners
	Process			
	Expand the national Logistic Management Information System to include all malaria commodities	Activity reports	Annually	NMCP programme management, counties, HIS, partners
	Output			
	Proportion of counties that make evidence-based facility orders using the functional health supply chain portal for malaria commodity management (AL6s, mRDTs)	Activity reports	Annually	NMCP programme management, counties
	Outcome			
	Proportion of key malaria commodities forecasted within ±25 percent forecast error (composite of eight items: AL—all sizes, injectable artesunate, mRDT, SP, LLINs)	Programme reports	Annually	NMCP programme management, counties, partners

2.4 Measuring Performance

Targets for key indicators of the M&E performance framework have been set as shown in Table 3. These indicators have further been defined in Annex 2.

Table 3. Targets for key outcome indicators of the M&E performance framework

Indicator	Data source	Frequency	Responsibility	Baseline		Targets 2019–2023				
				Source/ year	Data	2018/19	2019/20	2020/21	2021/22	2022/23
Goal: To reduce malaria incidence and deaths by at least 75 percent of the 2016 levels by 2023										
Total inpatient malaria deaths (per 100,000 persons per year)	HIS/routine surveillance	Annually	NMCP M&E, HIS, civil registration and vital statistics (CRVS), counties	-	TBD	-	-	-	-	-
Total inpatient malaria cases (per 10,000 persons per year)	HIS/routine surveillance	Annually	NMCP M&E, HIS, CRVS, counties	-	TBD	-	-	-	-	-
Total confirmed malaria cases (per 1,000 persons per year)	HIS/routine surveillance	Annually	NMCP M&E, HIS, counties	2016	62	60	52.7	46.5	31	15
Annual entomological inoculation rate	Entomological surveillance	Annually	NMCP M&E/ vector control	2017	4.3	4.0	3.5	3.0	2.0	1.1
Objective 1: To protect 100 percent of people living in malaria risk areas through access to appropriate malaria preventive interventions by 2023										
Proportion of households with universal coverage of LLINs in malaria risk areas	Household surveys	Two to three years	NMCP vector control/M&E, KNBS	2017	47%	50%	60%	75%	94%	100%
Proportion of the general population in targeted areas using an LLIN the night before the survey	Household surveys	Two to three years	NMCP vector control/M&E, KNBS	2017	76%	76%	80%	85%	92%	100%
Proportion of population in targeted areas protected through IRS within the last 12 months	Activity reports/ post-spray assessments	Annually	NMCP vector control/M&E, KNBS	2018	100%	100%	100%	100%	100%	100%
Proportion of larval habitats targeted for LSM that are appropriately managed	Entomological surveillance	Annually	NMCP vector control/M&E, Vector-Borne Disease Control Unit, KEMRI, counties	2018	0	20%	40%	60%	80%	100%
Proportion of eligible pregnant women who receive three or more doses of IPTp for malaria during their last pregnancy in targeted counties	Household surveys	Two to three years	NMCP Malaria in Pregnancy (MIP)/M&E	2015	38%	45%	60%	70%	80%	80%
Percentage of IPTp missed opportunities referred	HIS/routine surveillance	Quarterly	NMCP MIP, counties	-	Unknown	30%	50%	80%	80%	80%

Indicator	Data source	Frequency	Responsibility	Baseline		Targets 2019–2023				
				Source/ year	Data	2018/19	2019/20	2020/21	2021/22	2022/23
Objective 2: To manage 100 percent of suspected malaria cases according to the Kenya malaria treatment guidelines by 2023										
Proportion of suspected malaria cases presenting to public health facilities tested with malaria rapid diagnostic test (mRDT) or microscopy	Outpatient Quality of Care (QOC) surveys	Biannually	NMCP case management/M&E	2018	59%	70%	90%	95%	100%	100%
Proportion of suspected malaria cases presenting to public health facilities managed in accordance with the Kenya malaria treatment guidelines	Outpatient QOC surveys	Biannually	NMCP case management/M&E	2018	54%	65%	70%	80%	90%	100%
Severe malaria case fatality rate (proportion of severe malaria cases resulting in death)	Inpatient QOC surveys	Annually	NMCP case management/M&E	-	Unknown	25% reduction	50% reduction	75% reduction	Maintain	Maintain
Proportion of suspected malaria cases presenting to a CHV in targeted areas tested with mRDT	Activity reports	Annually	NMCP case management, partners, Community Health and Development Unit	2018	88%	90%	95%	95%	100%	100%
Objective 3: To establish systems for malaria elimination in targeted counties by 2023										
Functional malaria elimination unit in place	Programme reports	Annually	NMCP, counties	2018	None	unit in place	unit in place	unit in place	unit in place	unit in place
Proportion of targeted health workers trained in malaria elimination	Activity reports	Quarterly	NMCP, counties	2018	0	20%	50%	80%	90%	100%
Proportion of functional county reference laboratories for malaria elimination	Programme reports	Once	NMCP, counties	2018	None	20%	50%	80%	90%	100%
Proportion of malaria notifications investigated/followed up	HIS/routine surveillance	Weekly	NMCP, counties	2018	0	20%	50%	80%	90%	100%
Proportion of households in target counties reached with SBC messages for malaria elimination	Survey reports	Annually	NMCP, counties	2018	0	20%	50%	80%	90%	100%

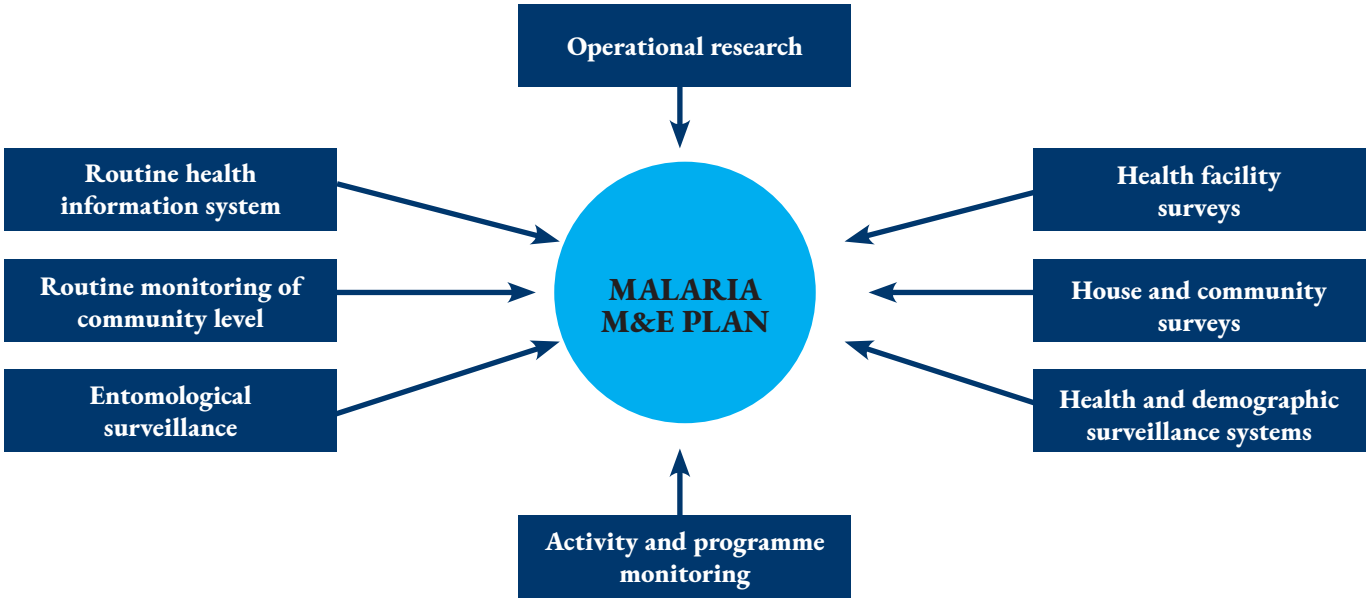
Indicator	Data source	Frequency	Responsibility	Baseline		Targets 2019–2023				
				Source/ year	Data	2018/19	2019/20	2020/21	2021/22	2022/23
Objective 4: To increase utilisation of appropriate malaria interventions in Kenya to at least 80 percent by 2023										
Proportion of population that slept under an LLIN the previous night	Household surveys	2–3 years	NMCP SBC/M&E	2017 (post-mass LLLIN)	76%	76%	80%	85%	92%	95%
Proportion of the population using an LLIN, among households with universal coverage	Household surveys	2–3 years	NMCP SBC/M&E	2017 (post-mass LLLIN)	88%	88%	95%	100%	100%	100%
Proportion of targeted pregnant women who received at least three doses of IPTp (disaggregated by provider-initiated, self-initiated, or both]	Household surveys	2–3 years	NMCP SBC/M&E	2015 (MIS)	38%	45%	60%	70%	80%	80%
Proportion of children under five with fever in the last two weeks for whom advice or treatment was sought within 24 hours of the onset of fever	Household surveys	2–3 years	NMCP SBC/M&E	2015 (MIS)	72%	75%	80%	85%	90%	90%
Objective 5: To strengthen malaria surveillance and use of information to improve decision making for programme performance										
Proportion of expected health facility reports received	HIS/routine surveillance	Monthly	NMCP M&E, HIS, CRVS, counties	2017	80%	90%	95%	100%	100%	100%
Proportion of expected health facility reports received on time	HIS/routine surveillance	Monthly	NMCP M&E, HIS, IDSR, counties	2017	60%	70%	80%	90%	100%	100%
Proportion of targeted sub-counties reporting malaria threshold data weekly	HIS/routine surveillance	Weekly	NMCP M&E/ EPR, counties	2017	31%	60%	80%	100%	100%	100%
Proportion of counties using malaria surveillance data for decision making and targeting interventions	Activity reports	Annually	NMCP M&E, counties	2018	23%	68%	88%	98%	100%	100%
Annual blood examination rate	HIS/routine surveillance	Annually	NMCP M&E, HIS	2017	19	19	20	25	25	30

Indicator	Data source	Frequency	Responsibility	Baseline		Targets 2019–2023				
				Source/ year	Data	2018/19	2019/20	2020/21	2021/22	2022/23
Objective 6: To provide leadership and management for optimal implementation of malaria interventions at all levels, for achievement of all strategic objectives by 2023										
Proportion of activities in the annual malaria work plan implemented as planned	Activity reports	Quarterly	NMCP programme management	2017	49%	90%	90%	95%	95%	100%
Proportion of counties implementing at least 75 percent of the malaria activities in their annual work plans in line with the KMS	Activity reports	Quarterly	NMCP programme management, counties	-	Unknown	30%	50%	60%	70%	80%
Proportion of resources mobilised to KMS costed need	Programme reports	Quarterly	NMCP programme management	2017	47%	60%	70%	80%	90%	100%
Proportion of resources spent to available resources	Programme reports	Quarterly	NMCP programme management	-	Unknown	70%	74%	80%	90%	95%
Proportion of public health facilities having no stockouts of key malaria commodities in the facility	HIS/routine surveillance	Monthly	NMCP programme management, counties							
All artemether-lumefantrine (AL)				2018	80	90	95	100	100	100
Injectable artesunate				2016	81	95	100	100	100	100
SP				2018	96	100	100	100	100	100
mRDT				2018	68	90	95	100	100	100
LLINs				2018	98	98	99	100	100	100
Proportion of key malaria commodities forecasted within ±25 percent forecast error (composite of eight items: AL—all sizes, injectable artesunate, mRDT, SP, LLINs)	Programme reports	Annually	NMCP programme management, counties, partners	2017	0	25	38	50	63	75

2.5 Data Collection Systems

To effectively monitor performance of the KMS 2019–2023, there is need for a clear understanding of how the requisite data will be acquired and used for measuring progress in the implementation of programme objectives. The malaria programme uses routine HIS and programme monitoring to track changes in programme performance over time. Household surveys are used to measure population-based coverage and examine changes in desired health outcomes and impact. Health facility surveys and special assessments are implemented to evaluate questions related to quality of care, laboratory assessment for malaria diagnosis, and therapeutic efficacy testing to ascertain continuing drug efficacy. The malaria programme has strong collaborative research networks, including with health and demographic surveillance systems that support implementation of identified research studies to inform interventions and policy. Figure 3 summarises the different sources of malaria M&E data.

Figure 3. Data sources for the malaria M&E plan



2.5.1 Data Collection

a. Health Management Information System

Kenya's MOH sector uses the DHIS2 for management of routine data collected at health facility and community levels. The routine data are collected manually using paper-based tools, and the aggregated data are entered into DHIS2 on a monthly basis at the sub-county level. Data collection, collation, and reporting through DHIS2 is done by health facilities in Level 2 and above. CHVs are responsible for collecting integrated health data from households and submitting them to community health extension workers (CHEWs) on a monthly basis. CHEWs are attached to health facilities and are charged with ensuring that the data are available at the facilities for further collation into DHIS2. In all cases, the reporting structures are under the authority of county governments. All health service providers (public and private) are obligated to provide the defined health information through DHIS2.

At the national level, the HIS unit is tasked with maintenance of DHIS2, continual updating of the system, provision of guidelines, and capacity building. The M&E unit in the Division of M&E, Health Research Development and Health Informatics is charged with analysing the data and providing routine reports for the national health sector. DHIS2 is functioning well but is burdened by an overload of data elements and indicators (MOH & World Health Organization [WHO], 2018). The demand for disaggregation and entry of individual-level morbidity and mortality data further complicates the capacity of the current system to function optimally. Other challenges include unavailability of appropriate reporting tools, insufficient data quality, and lack of resources. Data on hospital morbidity and mortality need to be strengthened by

improving cause of diseases and deaths statistics using the standards for international classification of diseases (ICD). This will require building capacity of clinicians and coders to implement ICD. Some counties can move faster than others, given the existing and past investments in ICD training. Coordinated efforts are needed to scale up ongoing work and strengthen reporting of these data in DHIS2.

The malaria programme will continue to use DHIS2 to obtain essential malaria surveillance data. The programme will ensure that malaria data elements collected through these tools are made mandatory to ensure completeness of reporting. The programme will conduct annual data quality audits to inform required improvements in the system. The programme will monitor completeness and timeliness of the health facility reports, with particular reference to tools collecting malaria surveillance data (e.g., forms MOH 705 A and B, MOH 505).

b. Integrated Disease Surveillance System

In the western highlands and northern parts of Kenya, malaria transmission is seasonal. However, favourable climatic conditions infrequently increase the intensity of malaria transmission, resulting in epidemics. Malaria is thus one of the 35 notifiable diseases requiring weekly reporting through IDSR. The IDSR unit is responsible for the weekly surveillance system. Malaria alert and action thresholds have been set in at least five health facilities in each of the epidemic-prone counties and in some seasonal transmission counties to facilitate early detection of malaria epidemics and trigger appropriate responses. Using the IDSR reporting tool, weekly malaria laboratory data are collected from health facilities that have capacity for microscopy or mRDT. The data should reach the sub-county disease surveillance coordinators by the first day of the following week. The aggregated data are fed into the DHIS2 and also analysed at the national level, where they are packaged into a weekly epidemiological bulletin. The malaria programme uses the threshold data for malaria epidemic detection and will therefore monitor the proportion of sub-counties reporting malaria threshold data weekly.

c. Monitoring IRS

IRS is recommended in areas of high transmission and as a response to potential epidemics in epidemic and seasonal transmission areas. When spraying is done, standard forms are used by spray operators to collect daily, weekly, and monthly IRS-specific data. The data collected include spraying coverage, population protected by IRS, and net coverage and usage. These data are then submitted to and consolidated at the sub-county level before being transmitted to the national level for aggregation, analysis, and reporting. The malaria programme provides oversight of the IRS activities and assessments. In addition to compiling a report on the implementation process, a pre- and post-spray assessment of epidemiological and entomological indices is undertaken.

d. Tracking LLIN Interventions

A data collection system has been established to track mass net distribution at all levels. Tools designed for the mass distribution have been designed and are reviewed before each campaign. The data are then fed into a database that helps with tracking of the exercise.

Routine distribution of LLINs through ANC and child welfare clinics is captured using the harmonised HIS tools reported through DHIS2. Outcome indicators are assessed using the MIS and other related surveys.

e. Data on Artemisinin-Based Combination Therapies, Microscopy, and mRDT

The malaria medicines reporting tool was modified to allow reporting of mRDT consumption data using the Logistic Management Information System that is now integrated into DHIS2. Microscopy data are captured using the laboratory register through the weekly surveillance reports. The malaria programme has planned a laboratory assessment of malaria diagnosis during the period of this strategy.

Tracking of consumption of artemisinin-based combination therapies is done by the pharmaceutical facilitators in DHIS2 using the Logistic Management Information System tool. The malaria programme, County Department of Health, and other stakeholders can access the data as soon as they are keyed in, thus improving the speed of feedback and response as appropriate.

f. Pharmacovigilance—Voluntary Spontaneous Adverse Drug Reaction Monitoring

Pharmacovigilance is a responsibility of the PPB, which regulates pharmaceutical products and services and ensures the quality, safety, and efficacy of human and veterinary medicines and medical devices. The national pharmacovigilance guidelines provide guidance to health workers and the public on what to report, why to report, when to report, where to report, and how to report. Reporting of adverse drug reactions can be done through either spontaneous or active reporting. Spontaneous reporting is done using yellow forms (the suspected adverse drug reaction reporting form). Reporting to the PPB or the nearest health authorities can be done on paper or online through the PPB website. Data on spontaneous reporting are stored on an international WHO database called VIGIBASE that allows both national and international analysis of potential signals of untoward events of interest.

Active reporting is designed as a cohort monitoring study that typically targets adverse drug reactions of interest or medicines of public health importance. The cohort event monitoring data are stored in CEMFLOW, an international database that enables confirmation of association between adverse events and the drugs in question. The malaria programme has planned to support PPB in pharmacovigilance of malaria commodities and to conduct a cohort event monitoring study during the period of this strategy.

2.5.2 Routine Monitoring at the Community Level

Basic community health services, including malaria services, will be delivered in accordance with the Kenya Essential Package for Health. The malaria activities implemented at the community level will be monitored in accordance with the community health strategy approach. Community health information has been integrated into DHIS2 and is collected by the CHVs at the household level and aggregated by the CHEWs for reporting into DHIS2 on a monthly basis. The sub-county health management teams have the responsibility of facilitating the data collection tools to the CHEWs and CHVs.

2.5.3 Programme Monitoring

The malaria business plan, derived from the KMS, is a tool used by the malaria programme to advocate for resources and solicit for technical assistance from development and implementing partners. The annual work plan is derived from the business plan, and progress of its implementation is reported on a quarterly basis. The malaria programme will facilitate biannual planning and review meetings at the national level, through a forum for sharing information on implementation of activities by the counties and malaria stakeholders. This is in addition to the progress update and review meetings held every quarter.

In the previous strategy (KMS 2009–2018), the programme performance tracking platform was not used due to infrastructure malfunction and inadequate internal processes to support its effectiveness and use. During the KMS 2019–2023, the programme will develop and maintain an information repository for tracking the implementation of malaria activities.

In addition, the programme will conduct mentorship visits to all 47 counties and provide support for integrated support supervision by counties and sub-counties to all service delivery levels, including the community. The M&E Committee of Experts (CoE) holds scheduled quarterly meetings to provide guidance and coordination for monitoring implementation of the KMS.

2.5.4 Sentinel Surveillance

The programme will maintain health facility-based sentinel sites in all sub-counties in the epidemic-prone and seasonal transmission counties to facilitate early detection of malaria epidemics and trigger appropriate responses.

In addition, the malaria programme will support ICD implementation and reporting of inpatient data in a network of select Level 4 and 5 health facilities to achieve quality inpatient morbidity and mortality data.

2.5.5 Community and Facility-Based Surveys

The programme has planned several community and facility-based surveys during the period of the KMS 2019–2023. The community surveys are conducted in collaboration with the KNBS, a government agency for collecting, analysing, and

disseminating the country's statistical data. The KNBS has specialized in data management, sampling, and statistical sound practices. In addition to participating in and mobilising resources for the malaria module in the Kenya Demographic and Health Survey, the malaria programme will conduct the following surveys.

a. MIS

The MIS is conducted every three years to inform programme design and effective implementation by measuring performance of key malaria indicators. The last MIS was done in 2015, and the next one is scheduled to take place in 2020.

b. Entomological Surveys and Monitoring of Insecticide Resistance

Entomological surveys will be conducted twice a year during the wet and dry seasons to establish malaria vector distribution, vector abundance, behaviour, sporozoite rate, and entomological inoculation rate. The surveys will be done by the Vector-Borne Disease Control Unit, and samples will be analysed by the national reference unit at KEMRI. The data will be used to develop entomological profile maps for targeted sub-counties.

In collaboration with research institutions, the programme will undertake monitoring of vector susceptibility to insecticides once per year in at least 15 counties implementing vector control with either LLINs or IRS.

c. Quality Control and Quality Assurance of Diagnostic Methods

In collaboration with PPB, the programme will undertake post-market surveillance of mRDTs to ensure that the quality of kits is acceptable. The kits will be sampled and tested against known standards at the National Quality Control Laboratory. At health facility level, confirmation of mRDT test results will be done by laboratories that have the capacity to undertake expert microscopy. Support supervision will be provided to health facilities using mRDTs to ensure the specified standards are maintained to guarantee integrity of results and inform effective treatment.

In addition, a country-wide health provider and laboratory assessment for malaria diagnosis will be conducted every three years.

d. Quality Control and Quality Assurance of Medicines

The National Quality Control Laboratory tests pre-market batches of malaria medicines entering the public sector. Through the case management intervention unit, PPB will be supported to undertake regular integrated post-market surveillance with emphasis on malaria medicines. Sampled medicines will be tested, and requisite action will be taken if there is evidence of compromised quality.

e. Monitoring Efficacy of Antimalarial Drugs

Data gathered on antimalarial drug resistance inform the review of national treatment guidelines and regional resistance patterns for appropriate planning and intervention. During the period of this strategy, the programme will conduct therapeutic efficacy testing every three years for artemether-lumefantrine, dihydroartemisinin piperaquine, and artesunate.

f. Monitoring Quality of Care

In 2017, the malaria programme initiated inpatient quality of care surveys (QOC) in faith-based hospitals. The programme will continue to conduct QOC surveys twice a year to monitor outpatient malaria case management. Inpatient and private sector QOC surveys will be conducted once every year. In addition, the programme will build capacity for counties to undertake the QOC surveys.

g. Monitoring Efficacy and Effectiveness of Vector Control Tools and Technologies

Special studies will be conducted to monitor efficacy and effectiveness of vector control tools and technologies against epidemiological endpoints. The studies will provide evidence to support the use of new vector control tools and technologies.

2.5.6 Operational Research and Translation of Research Findings to Policy

As Kenya progresses to malaria elimination in the long term, there is a need to undertake targeted operational research, including testing and evaluating new malaria control interventions. This requirement is addressed through the regular malaria operational research CoE meetings that define and frequently update the malaria research agenda. The malaria programme will establish and maintain a database of research studies on malaria that will help identify existing information to inform interventions and policy. A national malaria forum will be held every two years to share new evidence and identify research gaps and emerging issues to update existing strategies and inform the adoption of new ones.

2.6 Evaluation Plan

A mid-term review and end-term review will be conducted to evaluate achievements and determine impediments to attainment of the programme goals and objectives and to identify lessons learned. In line with WHO guidance, the end-term review will be conducted in 2023, and recommendations of the evaluation will inform the next strategy.

An evaluation of the impact of malaria interventions on all-cause mortality in children under five for the period 2003–2015 was conducted in 2016 (MOH 2016b). The next impact evaluation will be feasible and appropriate after 2025 to allow a long-term period of assessment.

3. IMPLEMENTATION ARRANGEMENTS

This section provides a guide for M&E implementation, including standardisation and coordination. Effective implementation of the M&E plan will require well-trained staff, a reliable data management system, quality data, enhanced data use, and coordination.

3.1 Capacity for M&E Implementation

The programme's M&E unit coordinates M&E functions for the KMS 2019–2023. It is responsible for data collation, management, and analysis; surveillance; operational research; documentation and dissemination of information; and overall coordination of the programme's M&E activities. An M&E capacity assessment conducted in 2017 indicated that there had been great improvements in the M&E system for the malaria programme at the national level and that similar capacity needs to be established at county level (MEASURE Evaluation, 2017). Notable strengths of the malaria M&E system include coordinated partnerships, availability of a costed M&E plan and support supervision manual and tools, and enhanced capacity for data analysis. However, inadequate M&E capacity at the county and sub-county levels was identified as a challenge to achieving an optimal malaria M&E system. To address this, the malaria programme plans to conduct training in malaria surveillance, provide mentorship to the county level, and facilitate support supervision. In addition, the programme will continue to conduct data quality audits every year and enhance the utilisation of the audit findings by encouraging development and continual updates of data quality improvement plans by the counties.

3.1.1 Resources in the NMCP M&E Unit

The NMCP M&E unit is adequately staffed to undertake M&E functions. The current staff consists of a public health specialist, a health records and information officer, a statistician, and data manager,

The unit is equipped with the requisite hardware and software to enable data compilation, analysis, and storage. Several desktop computers and laptops are available to support management of data at the NMCP. All the computers have Microsoft Office applications, and some have statistical packages (SPSS, Epi Info, Stata) installed. Tablets and phones are available for data collection during surveys. Data backup is done using CD-ROMs and DVDs. The use of flash disks and the email system for information sharing is widespread. This calls for enhanced protection of the information technology equipment from viruses and malware. Regular maintenance of the equipment is required.

The M&E CoE has clear terms of reference, which include provision of technical leadership and oversight and coordination of M&E activities. During the period of this strategy, the terms of reference were reviewed to incorporate EPR functions. Through the CoE, the NMCP M&E unit benefits from advice and technical guidance from a wide range of stakeholders, such as representatives from government, academia, research institutions, nongovernmental organisations, and development partners. The CoE has representation from all thematic areas of the programme, including case management, vector control, SBC, and programme management.

An inventory of the malaria stakeholders is in place and will be continually updated.

3.2 Data Quality Assurance

Health records and information officers at the health facility, sub-county, county, and national levels are responsible for data collection and management at these levels. Quality of data from the routine HIS remains a challenge for the malaria programme, and indeed the entire health sector. The malaria programme will undertake data quality audits every year, as well as build capacity for data quality assurance at the county level during the audits. The audits will be done in accordance with the MOH data quality assurance protocol that also provides a sample data quality audit tool for customisation.

3.3 Data Processing and Analysis

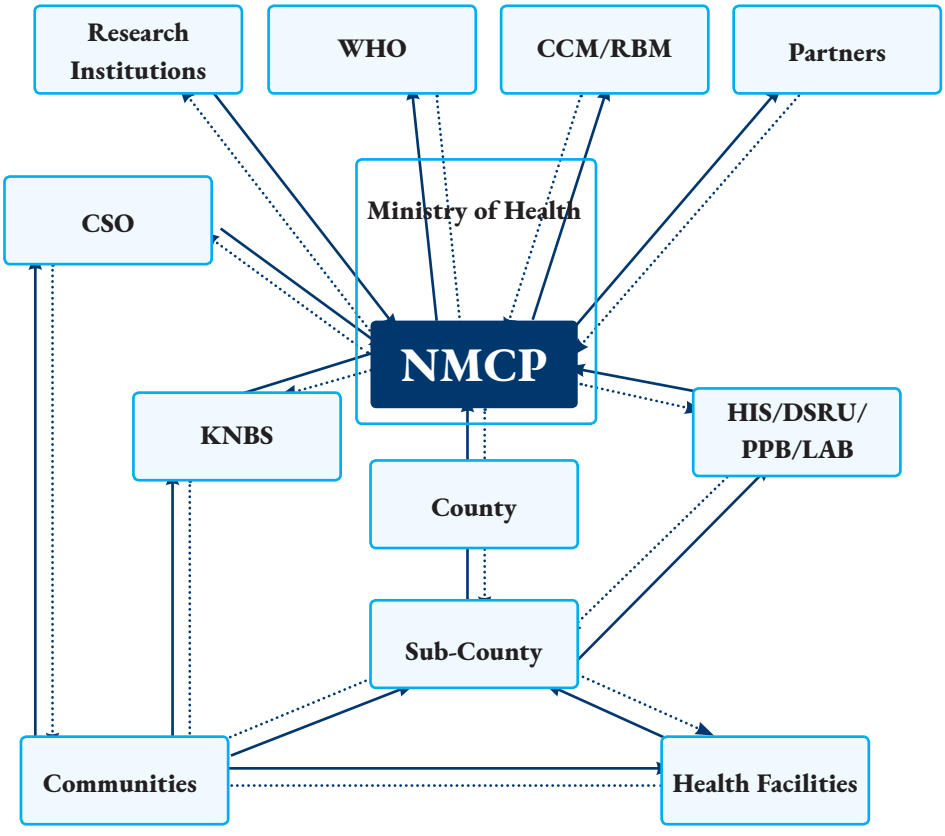
At national level, the M&E unit will be responsible for data processing and analysis aimed at publishing the malaria surveillance bulletin on a quarterly basis. The programme will also establish and regularly update a database of malaria research studies relevant to informing malaria interventions and policy.

3.4 Information Flow

The main source of malaria surveillance data for the programme is the DHIS2, which incorporates health facility and community-level data, including the weekly surveillance data reported through IDSR. The system is web-based and thus requires internet access for both data entry and information use.

NMCP receives and shares data from other sources, such as WHO, KNBS, research institutions, and partners, as illustrated in Figure 4.

Figure 4. Malaria data and information flow



Key: CCM=country coordination mechanism, CSO=civil society organisation, DSRU=disease surveillance and response unit, LAB=Laboratory , RBM=Roll Back Malaria

3.4 Dissemination and Information Use Plan

Information products that will be generated include biannual programme review reports, mid- and end-term malaria programme performance review reports, quarterly malaria surveillance bulletins, biannual QOC reports, policy briefs, the MIS report, and findings from commissioned research studies and evaluations. During the programme review meetings, the programme will collect qualitative information to demonstrate use of data for decision making at all levels.

The programme will endeavour to enhance the use of malaria information at all levels. Data generated from the M&E system will be packaged to meet the information needs of stakeholders. The NMCP has proposed to strengthen engagement with county-level decision makers to create awareness of the information available for use in evidence-based decision making. A detailed table of potential users, the type of information they require, and the communication channel is provided in the data use plan in Annex 3.

Multiple dissemination channels will be used to ensure that information reaches relevant users and to achieve coverage as wide as possible. The channels will include consultative work planning and review meetings, planned trainings, the national malaria forum, World Malaria Day, other regional and international conferences, print and broadcast media, the programme website (www.nmcp.org.ke), and the MOH website (www.health.go.ke).

3.5 M&E Coordination Mechanisms

In line with the "three ones" principle, there will be only one agreed-upon M&E framework to serve both the malaria programme and its partners. Coordinated implementation of the M&E plan will promote efficient use of resources. Data generated by the M&E system will serve the needs of many constituents, including the NMCP, counties, academia, researchers, and development partners. At the national level, implementation of the malaria M&E plan will be coordinated through the M&E CoE, which brings together technical staff and representatives of other MOH departments and units, implementing partners, and donor organisations under the management of the NMCP M&E unit. Through the CoE, the NMCP M&E unit will maintain close links with the other MOH departments and units, including the following: HIS; IDSR; M&E; Civil Registration and Vital Statistics; Vector-Borne Disease Control Unit; Reproductive, Maternal and Newborn Health; Child and Adolescent Health; Community Health and Development Unit; Department of Environmental Health; National Vaccines and Immunisation Programme; National Public Health Laboratory Services; PPB; and the Kenya Medical Supplies Agency.

At county level, county malaria control coordinators will be responsible for coordination and management of the malaria M&E plan. They will be expected to work within the existing coordination structures at the county level and ensure effective flow of information and feedback to all levels.

The malaria programme will maintain and strengthen multi-sectoral and inter-sectoral engagement for improved programme planning, implementation, monitoring, and coordination towards achievement of the programme goals. In the implementation of this M&E plan, the programme will work closely with the following: other government departments; civil society organisations; the private sector; and partners such as the Global Fund, the United States Agency for International Development/President's Malaria Initiative and its implementing partners, the United Kingdom Department for International Development and its implementing partners, WHO, UNICEF, KEMRI and its affiliate institutions, the Kenya association of private hospitals, Amref Health Africa, World Vision Kenya, relevant departments of academic institutions, the International Centre of Insect Physiology and Ecology, the Kenya NGOs Alliance Against Malaria, the Kenya Meteorological Department, the National Coordinating Agency for Population and Development, and KNBS.

3.6 Adjustments to the M&E Plan

The M&E plan is a document that needs to be adjusted when a programme is modified or new information is needed. This M&E plan will be reviewed and modified during the mid-term review.

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ANNEXES

Annex 1: KMS 2019–2023 Activity Matrix

Strategies	Activities	Fiscal years				
		2018/19	2019/20	2020/21	2021/22	2022/23
Objective 1: To protect 100 percent of people living in malaria risk areas through access to appropriate malaria preventive interventions by 2023						
1.1 Distribute LLINs through appropriate channels to achieve and sustain universal coverage in malaria risk areas	1.1.1 Mass net distribution campaign of LLINs in targeted areas		X		X	
	1.1.2 Continuous distribution of LLINs through ANC, the expanded programme on immunisation, and the community	X	X	X	X	X
	1.1.3 Distribution of LLINs using other appropriate channels		X	X	X	X
1.2 Use IRS in the targeted areas	1.2.1 Mapping and enumeration of households/sprayable structures	X	X	X	X	X
	1.2.2 Recruitment and training of spray operators	X	X	X	X	X
	1.2.3 Spraying of targeted structures	X	X	X	X	X
	1.2.4 Entomological and epidemiological monitoring	X	X	X	X	X
1.3 Use LSM in targeted areas	1.3.1 Recruitment and training of community-owned resource persons	X	X	X	X	X
	1.3.2 Baseline survey and mapping (geographical reconnaissance, Geographic Information System, and remote sensing)	X	X	X	X	X
	1.3.3 Application of appropriate LSM interventions in targeted areas	X		X		
	1.3.4 Entomological and epidemiological monitoring	X	X	X	X	X

Strategies	Activities	Fiscal years				
		2018/19	2019/20	2020/21	2021/22	2022/23
1.4 Develop, review, and update documents for malaria vector control	1.4.1 Review and update key vector control documents (integrated vector management guidelines, IRS business plan, integrated resistance management plan)	X				
1.5 Provide IPTp-SP at ANC in targeted areas	1.5.1 Update IPTp component in all guidelines	X				X
	1.5.2 Disseminate IPTp job aids to all targeted counties	X	X	X	X	X
	1.5.3 Scale up IPTp to fringe areas bordering endemic regions	X				
	1.5.4 Train service providers (public, private, and nongovernmental organisations) on IPTp	X	X	X		
	1.5.5 Scale up the mentorship model to all target counties	X	X	X	X	X
	1.5.6 Provide technical support during MIP supervisory visits	X	X	X	X	X
	1.5.7 Participate in county malaria/ reproductive health CoE review meetings to ensure that MIP agenda is discussed	X	X	X	X	X
	1.5.8 Conduct MIP CoE meetings	X	X	X	X	X
1.6 Engage CHVs to identify IPTp missed opportunities for referral to ANC in targeted areas	1.6.1 Train CHVs to sensitise community and identify IPTp missed opportunities during routine household visits for referral to ANC	X	X	X		
	1.6.2 Conduct review meetings with CHVs	X	X	X	X	X
Objective 2: To manage 100 percent of suspected malaria cases according to the Kenya malaria treatment guidelines by 2023						
2.1 Strengthen capacity for integrated malaria case management	2.1.1 Revise and disseminate malaria diagnosis and treatment guidelines and curricula	X		X		X
	2.1.2 Engage pre-service instructors on malaria case management	X	X	X	X	X
	2.1.3 Conduct training of trainers, support training, and monitor health worker training on malaria case management and reporting	X		X		X
	2.1.4 Provide technical oversight for outpatient malaria case management	X	X	X	X	X

Strategies	Activities	Fiscal years				
		2018/19	2019/20	2020/21	2021/22	2022/23
2.2 Strengthen capacity for case management of severe malaria	2.2.1 Revise and disseminate malaria diagnosis and treatment guidelines and curricula	X		X		X
	2.2.2 Conduct training of trainers, support training, and monitor health worker training on severe malaria case management and reporting	X	X	X	X	X
	2.2.3 Provide technical oversight for severe malaria case management	X	X	X	X	X
	2.2.4 Support counties to establish and sustain clinical audit/quality improvement activities for severe malaria	X	X	X	X	X
2.3 Provide malaria case management at the community level in all targeted areas	2.3.1 Convene sensitisation meetings with regulators to authorize use of mRDTs and artemisinin-based combination therapies by CHVs	X	X	X	X	X
	2.3.2 Develop, review, and disseminate malaria CCMm guidelines and curricula	X	X	X	X	X
	2.3.3 Support training of community health assistants on CCMm	X				
	2.3.4 Revise and disseminate biosafety guidelines for Level 1	X				
	2.3.5 Support supportive supervision for CCMm practice by county teams		X			
	2.3.6 Support quarterly county review meetings for CCMm	X	X	X	X	X
	2.3.7 Support quarterly county review meetings for CCMm	X	X	X	X	X

Strategies	Activities	Fiscal years				
		2018/19	2019/20	2020/21	2021/22	2022/23
2.4 Ensure quality for malaria parasitological diagnosis	2.4.1 Revise and disseminate malaria parasitological diagnosis guidelines and curricula	X	X	X	X	X
	2.4.2 Conduct training of trainers and train health workers on malaria parasitological diagnosis	X	X	X	X	X
	2.4.3 Revise and disseminate guidelines and curricula for quality assurance for malaria diagnosis	X	X	X	X	X
	2.4.4 Conduct training of trainers and train health workers on quality assurance for malaria diagnosis	X	X	X	X	X
	2.4.5 Support supportive supervision of quality assurance for malaria diagnosis	X	X	X	X	X
	2.4.6 Review malaria diagnosis quality assurance implementation plan	X		X		
	2.4.7 Conduct lot-to-lot testing for mRDTs	X	X	X	X	X
	2.4.8 Support external quality assessment activities, including development of improvement plans	X	X	X	X	X
	2.4.9 Conduct biannual quality assurance meetings	X	X	X	X	X
	2.4.10 Review and update malaria equipment and supplies specification	X	X	X	X	X
2.5 Procure diagnostic and treatment commodities	2.5.1 Procure and distribute diagnostics and treatment commodities	X	X	X	X	X

Strategies	Activities	Fiscal years				
		2018/19	2019/20	2020/21	2021/22	2022/23
Objective 3: To establish systems for malaria elimination in targeted counties by 2023						
3.1 Establish structures and capacity at national and county levels to coordinate and drive the implementation of the elimination agenda	3.1.1 Develop terms of reference for a national malaria elimination taskforce/committee and appoint suitable members	X				
	3.1.2 Establish the national malaria elimination taskforce/committee and appoint suitable members	X	X			
	3.1.3 Solicit seed funding for malaria elimination (e.g., Government of Kenya, elimination working group)		X			
	3.1.4 Lobby for malaria elimination at national and county levels	X				
	3.1.5 Establish county malaria elimination taskforce/committee	X				
	3.1.6 Conduct malaria elimination assessments in candidate counties (at sub-county level)		X			
	3.1.7 Conduct peer learning visits to national programs with experience in malaria elimination (e.g., Eswatini and Zanzibar)		X			
	3.1.8 Conduct regular malaria elimination committee meetings	X	X	X	X	X

Strategies	Activities	Fiscal years				
		2018/19	2019/20	2020/21	2021/22	2022/23
3.2 Develop capacity for malaria elimination	3.2.1 Develop and disseminate business plan, guidelines, training curriculum, and SOPs for malaria elimination implementation		X			
	3.2.2 Establish and train national and county malaria elimination teams		X			
	3.2.3 Mentor and supervise malaria elimination teams at both national and county levels		X	X	X	X
	3.2.4 Conduct onsite training, including practicum for county and health facility incharges and health workers			X		
	3.2.5 Train CHVs on their specific roles			X		
3.3 Establish active case detection, notification, investigation, and response systems for elimination in targeted counties	3.3.1 Establish malaria investigation teams at the county level and assign responsibilities for response		X	X		
	3.3.2 Strengthen passive case notification systems in counties		X	X	X	X
	3.3.3 Conduct active case detection around each index case according to guidelines		X	X	X	X
	3.3.4 Set up and maintain case and foci repositories at national and county levels		X	X	X	X
	3.3.5 Map and classify malaria transmission foci		X	X	X	X
	3.3.6 Undertake appropriate intervention for the foci		X		X	
	3.3.7 Conduct quarterly elimination review meetings		X	X	X	X
3.4 Strengthen quality assurance for diagnosis, treatment, and entomology to enhance surveillance	3.4.1 Conduct assessments for national and county reference laboratories for diagnosis of malaria	X	X			X
	3.4.2 Strengthen county malaria reference laboratory		X	X	X	X
	3.4.3 Conduct health worker training on malaria parasitical diagnosis and entomology		X	X	X	X
	3.4.4 Conduct supportive supervision of quality assurance for malaria diagnosis and malaria treatment in elimination settings		X	X	X	X

Strategies	Activities	Fiscal years				
		2018/19	2019/20	2020/21	2021/22	2022/23
3.5 Strengthen SBC for malaria elimination	3.5.1 Conduct econometric investment case for malaria elimination to use as an advocacy tool		X			
	3.5.2 Engage national and county health leadership, governors, partners, and other stakeholders to prioritise, allocate resources, and participate in malaria elimination activities	X	X	X	X	X
	3.5.3 Develop and disseminate appropriate malaria elimination messages to targeted audience through a variety of preferred communication channels, including inter-personal communication		X	X	X	X
	3.5.4 Engage various community networks, community-based organisations, and civil society organisations through a variety of approaches to participate in malaria elimination		X	X	X	X
Objective 4: To increase utilisation of appropriate malaria interventions in Kenya to at least 80 percent by 2023						
4.1 Scale up malaria advocacy at national and county levels for increased utilisation of malaria interventions	4.1.1 Build capacity on malaria advocacy at all levels	X	X			X
	4.1.2 Develop county malaria advocacy briefs	X				
	4.1.3 Engage key stakeholders to advocate utilisation of malaria interventions	X	X	X	X	X
	4.1.4 Conduct high-level advocacy activities for increased utilisation of malaria interventions	X	X	X	X	X
	4.1.5 Publish malaria control newsletter	X	X	X	X	X

Strategies	Activities	Fiscal years				
		2018/19	2019/20	2020/21	2021/22	2022/23
4.2 Strengthen community-based SBC activities for all malaria interventions	4.2.1 Engage community health strategy unit to develop a package on malaria interventions for CHVs	X		X		
	4.2.2 Engage counties and stakeholders to train CHVs on promotion of malaria interventions at the household level through inter-personal communication	X	X			
	4.2.3 Engage civil society organisations, community-based organisations, and other networks to promote social accountability and utilisation of malaria interventions	X	X	X	X	X
	4.2.4 Scale up the engagement of school pupils to promote use of malaria interventions at household level	X	X	X	X	X
4.3 Strengthen structures for the delivery of malaria SBC interventions at all levels	4.3.1 Review and realign the malaria communication strategy for the KMS	X	X			
	4.3.2 Scale up the capacity of implementers on malaria SBC and develop county communication plans at county and partner levels	X		X	X	X
	4.3.3 Strengthen provider behaviour change communication for the attainment of national targets	X		X		
4.4 Strengthen programme communication for increased utilisation of all malaria interventions	4.4.1 Establish and maintain online portal of existing malaria information and education communication materials and messages	X	X	X	X	X
	4.4.2 Develop, disseminate, and distribute malaria SBC package to promote utilisation of all malaria interventions at the household level	X	X	X	X	X
	4.4.3 Support mass media activities and campaigns	X	X	X	X	X

Strategies	Activities	Fiscal years				
		2018/19	2019/20	2020/21	2021/22	2022/23
Objective 5: To strengthen malaria surveillance and use of information to improve decision making for programme performance						
5.1 Strengthen malaria surveillance	5.1.1 Develop malaria surveillance guidelines	X	X			
	5.1.2 Review malaria surveillance curriculum	X				
	5.1.3 Train health workers on malaria surveillance	X	X	X	X	
	5.1.4 Conduct data quality audits	X	X	X	X	X
	5.1.5 Develop and continually update the data quality improvement plans	X	X	X	X	X
	5.1.6 Review the support supervision manual		X			
	5.1.7 Conduct mentorship at the national level and support supervision at the county level	X	X	X	X	X
	5.1.8 Establish a network of health facilities to enhance continuous availability of inpatient morbidity and mortality data	X	X	X	X	X
	5.1.9 Review and update health information system tools	X		X		

Strategies	Activities	Fiscal years				
		2018/19	2019/20	2020/21	2021/22	2022/23
5.2 Strengthen malaria EPR	5.2.1 Review the EPR guidelines		X			
	5.2.2 Conduct annual EPR review and planning meetings (including threshold setting)	X	X	X	X	X
	5.2.3 Train county and sub-county teams on EPR		X			X
	5.2.4 Enhance capacity to pull and push commodities for uncomplicated and severe malaria during epidemics/ upsurges	X	X	X	X	X
	5.2.5 Participate in integrated disease surveillance and response CoE meetings	X	X	X	X	X
	5.2.6 Conduct rapid assessment of detected epidemics/upsurges and preparedness capacity in epidemic-prone and seasonal sub-counties	X	X	X	X	X
	5.2.7 Conduct quarterly epidemic monitoring and detection review meetings	X	X	X	X	X
	5.2.8 Conduct post-epidemic evaluation	X	X	X	X	
5.3 Increase use of malaria data for decision making	5.3.1 Develop malaria surveillance bulletins and profiles	X	X	X	X	X
	5.3.2 Develop malaria policy briefs	X	X	X	X	X
	5.3.3 Conduct regular stratification for targeting of interventions	X	X	X	X	X
	5.3.4 Strengthen engagement with countylevel decision makers to enhance evidence-based decision making	X	X	X	X	X
	5.3.5 Establish and maintain a system to ensure sharing of findings and progress updates on malaria research and non-research data	X	X	X	X	X
5.4 Conduct and facilitate health facility surveys	5.4.1 Conduct quality of care surveys	X	X	X	X	X
	5.4.2 Conduct countrywide health provider and laboratory assessment for malaria diagnosis	X			X	
	5.4.3 Conduct cohort event monitoring[9]			X	X	X
	5.4.4 Conduct therapeutic efficacy testing every three years	X			X	

Strategies	Activities	Fiscal years				
		2018/19	2019/20	2020/21	2021/22	2022/23
5.5 Conduct and support community surveys	5.5.1 Conduct Malaria Indicator Surveys			X	X	
	5.5.2 Conduct post-mass LLIN surveys	X				X
	5.5.3 Support conduct of the Kenya Demographic and Health Survey			X	X	
5.6 Facilitate operational research for policymaking	5.6.1 Annually update research agenda	X		X		X
	5.6.2 Establish and regularly update a database of malaria research studies to inform interventions and policy	X	X	X	X	X
	5.6.3 Hold biennial national malaria research to policy conferences			X		X
5.7 Conduct entomological surveillance	5.7.1 Review and consolidate entomological SOPs		X			
	5.7.2 Procure entomological surveillance tools	X	X	X	X	X
	5.7.3 Select sentinel sites for entomological surveillance	X	X	X	X	X
	5.7.4 Conduct entomological surveillance training at the county level		X			
	5.7.5 Conduct entomological surveys twice a year (wet and dry season)	X	X	X	X	X
	5.7.6 Develop entomological profile maps for select sub-counties	X		X		
	5.7.7 Conduct routine monitoring of vector susceptibility to insecticides (twice per year)	X	X	X	X	X
5.8 Monitor efficacy and effectiveness of vector control tools and technologies	5.8.1 Monitor efficacy and effectiveness of LLINs	X	X	X	X	X
	5.8.2 Monitor efficacy and effectiveness of IRS	X	X	X	X	X

Strategies	Activities	Fiscal years				
		2018/19	2019/20	2020/21	2021/22	2022/23
Objective 6: To provide leadership and management for optimal implementation of malaria interventions at all levels, for the achievement of all strategic objectives by 2023						
6.1 Align malaria governance and legislation to constitutional mandates and core functions	6.1.1 Facilitate review of malaria legislative documents		X	X		
	6.1.2 Facilitate review of malaria policy	X	X			
	6.1.3 Facilitate mid-term review process for the KMS			X		
	6.1.4 Facilitate end-term review process for the KMS					X
	6.1.5 Advocate development and review of county by-laws to support malaria policy implementation					X
6.2 Strengthen partnerships and coordination for malaria programme management	6.2.1 Develop and maintain an updated partners database for both national and county levels		X			X
	6.2.2 Reconstitute and maintain functional CoEs and Malaria Health Sector Working Group	X	X	X	X	X
	6.2.3 Enhance NMCP visibility within Ministry of Health structures	X	X	X	X	X
	6.2.4 Facilitate private sector engagement for enhanced delivery of malaria interventions	X	X	X	X	X
	6.2.5 Strengthen engagement with counties	X	X	X	X	X

Strategies	Activities	Fiscal years				
		2018/19	2019/20	2020/21	2021/22	2022/23
6.3 Strengthen capacity for malaria programming at national and county levels	6.3.1 Develop and review national annual malaria work plans	X	X	X	X	X
	6.3.2 Ensure incorporation of malaria activities in annual county work plans	X	X	X	X	X
	6.3.3 Conduct programme performance monitoring	X	X	X	X	X
	6.3.4 Develop, review, and maintain an implementation and performance tracking platform at the national level	X	X	X	X	X
	6.3.5 Develop and maintain a national information repository/ knowledge hub	X	X	X	X	X
	6.3.6 Undertake capacity development for malaria programming at national and county levels	X	X	X	X	X
	6.3.7 Maintain human resources for the NMCP	X	X	X	X	X
	6.3.8 Maintain NMCP infrastructure, equipment, and consumables	X	X	X	X	X
6.4 Strengthen resource mobilisation initiatives for malaria	6.4.1 Conduct high-level advocacy for increased funding for malaria from all sectors		X		X	
	6.4.2 Develop and implement a resource mobilisation strategy	X	X	X	X	X
	6.4.3 Conduct high-level advocacy for increased public funding in malaria control at national and county levels	X	X	X	X	X
	6.4.4 Participate in and advocate inclusion of malaria interventions in healthcare service mechanisms	X	X	X	X	X

Strategies	Activities	Fiscal years				
		2018/19	2019/20	2020/21	2021/22	2022/23
6.5 Enhance malaria commodity security at all levels	6.5.1 Establish and operationalise a malaria PSM working group with appropriate terms of reference, representation, and a PSM plan	X				
	6.5.2 Develop, review, and disseminate PSM-related guidelines, technical specifications, tools, and SOPs	X	X			
	6.5.3 Build capacity on PSM at all levels	X	X	X	X	X
	6.5.4 Work with national and county-level malaria commodity managers to develop and implement commodity managementfocused interventions, including quantification, procurement and distribution planning, and inventory management	X	X	X	X	X
	6.5.5 Undertake regular surveillance of adverse drug reactions and product quality to ensure patient safety, quality, and efficacy for malaria commodities	X	X	X	X	X
6.6 Strengthen the use of supply chain data for decision making	6.6.1 Expand the national logistic management information system to cover all malaria commodities	X	X	X		X
	6.6.2 Strengthen and enhance malaria commodity data availability, quality, and use for supply chain decision making		X		X	

Key:

ANC=antenatal care, CCMm=community case management of malaria, CHV=community health volunteer, CoE=Committee of Experts, EPR=epidemic preparedness and response, IPTp= intermittent preventive treatment in pregnancy, IRS=indoor residual spraying, KMS=Kenya Malaria Strategy, LLIN=long-lasting insecticide-treated net, LSM=larval source management, MIP=malaria in pregnancy, mRDT=malaria rapid diagnostic test, NMCP=National Malaria Control Programme, PSM=procurement and supply chain management, SBC=social and behaviour change, SOP=standard operating procedure, SP=sulphadoxine-pyrimethamine

Annex 2: Definitions of Key Indicators

Goal/objective/strategy	Indicator	Definition	Data type/source
Goal: To reduce malaria incidence and deaths by at least 75 percent of the 2016 level by 2023	Total inpatient malaria deaths (per 100,000 persons per year)	N: Total number of inpatient deaths due to confirmed malaria D: Total population per 100,000 persons	HIS/routine surveillance
	Total inpatient malaria cases (per 10,000 persons per year)	N: Total number of inpatient cases with a confirmed diagnosis of malaria at discharge D: Total population per 10,000 persons	HIS/routine surveillance
	Total confirmed malaria cases (per 1,000 persons per year)	N: Number of outpatient malaria cases confirmed by microscopy or mRDT reported by health facilities per year D: Total population per 1,000 persons for persons resident in areas at risk of malaria	HIS/routine surveillance
	Annual entomological inoculation rate	[Human biting rate x sporozoite rate from human landing catches] OR [vector density x human biting rate x sporozoite rate based on Centers for Disease Control and Prevention light trap collection]	Entomological surveillance

Goal/objective/strategy	Indicator	Definition	Data type/source
Objective 1: To protect 100 percent of people living in malaria risk areas through access to appropriate malaria preventive interventions by 2023	Proportion of households with universal coverage of LLINs in malaria risk areas	N: Number of households with universal coverage (at least one LLIN for every two people) D: Total number of households surveyed	Household surveys
	Proportion of the general population in targeted areas using an LLIN the night before the survey	N: Number of individuals using an LLIN the night before the survey D: Total number of individuals (residents and visitors) who spent the previous night in surveyed households	Household surveys
	Proportion of population in targeted areas protected through IRS within the last 12 months	N: Number of persons in targeted areas protected by IRS D: Total population at risk in targeted areas	Activity reports/ postspray assessments
	Proportion of larval habitats targeted for larval source management that are appropriately managed	N: Number of larval habitats targeted for larval source management that are appropriately managed D: Total number of larval habitats targeted for larval source management	Entomological surveillance
	Proportion of eligible pregnant women who receive three or more doses of IPTp for malaria during their last pregnancy in targeted counties	N: Number of women who received three or more doses of IPTp to prevent malaria during their last pregnancy that led to a live birth (within the last two years) D: Total number of women surveyed who had a live birth in the last two years	Household surveys
	Percentage of IPTp missed opportunities[10] referred	N: Number of IPTp missed opportunities referred D: Total number of pregnant women within the catchment area	HIS/routine surveillance (community health register)
Strategy 1: Distribute LLINs through appropriate channels to achieve and sustain universal coverage in malaria risk areas	Proportions of household population with universal LLIN coverage after mass net distribution	N: Number of LLINs distributed through mass net campaign D: Total targeted population	Activity reports
Strategy 2: Use indoor residual spraying in the targeted areas	Proportion of targeted structures sprayed per spray cycle	N: Number of households/structures that were sprayed during an IRS campaign/spray cycle D: Total number of households/structures targeted for spraying	Activity reports
Strategy 3: Use larval source management in targeted areas	Proportion of known habitats mapped	N: Number of known habitats mapped D: Total number of known habitats	Activity reports
Strategy 4: Develop, review, and update documents for malaria vector control	Updated documents	Documents updated/not updated	Activity reports/availability of updated documents

Goal/objective/strategy	Indicator	Definition	Data type/source
Strategy 5: Provide IPTp-SP at ANC in targeted areas	Proportion of ANC clients receiving IPTp at the ANC	N: Number of pregnant women who received IPTp during ANC visit the previous month D: Number of women who visited ANC the previous month	HIS/routine surveillance (ANC register)
Strategy 6: Engage CHVs to identify IPTp missed opportunities for referral to ANC in targeted areas	Proportion of pregnant women referred by CHVs to health facility for IPTp	N: Number of pregnant women referred to a health facility for IPTp D: Number of all pregnant women seen by the CHV during the month	HIS/routine surveillance (community health register)
Objective 2: To manage 100 percent of suspected malaria cases according to the Kenya malaria treatment guidelines by 2023	Proportion of suspected malaria cases presenting to public health facilities tested with mRDT or microscopy	N: Total number of suspected malaria cases sampled tested with mRDT or microscopy D: Total number of suspected malaria cases sampled	Outpatient QOC surveys
	Proportion of suspected malaria cases presenting to public health facilities managed in accordance with the Kenya malaria treatment guidelines	N: Total number of suspected malaria cases sampled managed in accordance with the Kenya malaria treatment guidelines D: Total number of suspected malaria cases sampled	Outpatient QOC surveys
	Severe malaria case fatality rate (proportion of severe malaria cases resulting in death)	N: Total number of inpatient severe malaria cases admitted to select network of health facilities who died in hospital D: Total number of inpatient severe malaria cases admitted to select network of health facilities	Inpatient QOC surveys/ routine surveillance
	Proportion of suspected malaria cases presenting to a CHV in targeted areas tested with mRDT	N: Total number of suspected malaria cases presenting to a CHV tested with mRDT D: Total number of suspected malaria cases presenting to a CHV	Activity reports
Strategy 1: Strengthen capacity for integrated malaria case management	Proportion of health workers who received supportive supervision for malaria case management in the three months preceding the survey	N: Total number of health workers sampled reporting having received supportive supervision for malaria case management D: Total number of health workers sampled	Outpatient QOC surveys
Strategy 2: Strengthen capacity for case management of severe malaria	Proportion of confirmed cases of severe malaria treated with injectable artesunate	N: Total number of sampled severe malaria cases treated with injectable artesunate D: Total number of sampled severe malaria cases	Inpatient QOC surveys
Strategy 3: Provide malaria case management at the community level in targeted areas	Proportion of CHUs in all target areas implementing CCMm	N: Total number of CHUs in all target areas implementing CCMm D: Total number of CHUs in all target areas	HIS/routine surveillance/ programme reports

Goal/objective/strategy	Indicator	Definition	Data type/source
Strategy 4: Ensure quality for malaria parasitological diagnosis	Proportion of laboratories performing light microscopy for malaria enrolled in EQA	N: Number of laboratories performing light microscopy for malaria enrolled in EQA D: Total number of laboratories performing light microscopy for malaria	Activity reports
Strategy 5: Procure diagnostic and treatment commodities-	Quantity of diagnostic and treatment commodities distributed	N: Number of the different diagnostic and treatment commodities distributed	Activity reports
Objective 3: To establish systems for malaria elimination in targeted counties by 2023	Functional malaria elimination unit in place	Functional malaria elimination unit available/not available	Programme reports
	Proportion of health workers in malaria elimination teams who received supportive supervision	N: Total number of health workers targeted reporting having received supportive supervision for malaria elimination D: Total number of health workers targeted for supportive supervision	Activity reports
	Proportion of functional county reference laboratories for malaria elimination	N: Number of counties with certified reference laboratories for malaria elimination D: Number of counties targeted for malaria elimination	Programme reports
	Proportion of malaria notifications investigated/followed up	N: Number of malaria notifications investigated/followed up D: Total number of malaria cases notified	HIS/routine surveillance
	Proportion of households in target counties reached with SBC messages for malaria elimination	N: Number of households surveyed in target counties that were reached with SBC messages for malaria elimination D: Total number of households in target counties that were surveyed	Survey reports
Strategy 1: Establish structures and capacity at the national and county levels to coordinate and drive the implementation of the elimination agenda	Number of malaria elimination technical meetings held at the national level	N: Number of malaria elimination technical meetings held at the national level	Activity reports
Strategy 2: Develop capacity for malaria elimination	Number of health workers trained in malaria elimination	N: Number of health workers trained in malaria elimination	Training reports
Strategy 3: Establish active detection, notification, investigation, and response systems for elimination in targeted areas	Proportion of malaria cases notified	N: Number of notified malaria cases in target counties notified D: Total number of malaria cases in target counties	HIS/routine surveillance

Goal/objective/strategy	Indicator	Definition	Data type/source
Strategy 4: Strengthen quality assurance for diagnosis, treatment, and entomology to enhance surveillance	Proportion of laboratories in targeted counties performing light microscopy for malaria enrolled in EQA	N: Number of laboratories in targeted counties performing light microscopy for malaria enrolled in EQA D: Total number of laboratories in targeted counties performing light microscopy for malaria	Activity reports
Strategy 5: Strengthen SBC for malaria elimination	Number of community-based and civil society organisations engaged to participate in malaria elimination	N: Number of community-based and civil society organisations engaged to participate in malaria elimination	Activity reports
Objective 4: To increase utilisation of appropriate malaria interventions in Kenya to at least 80 percent by 2023	Proportion of population that slept under an LLIN the previous night	N: Number of individuals who slept under an LLIN the previous night D: Total number of individuals who spent the previous night in surveyed households	Household surveys
	Proportion of the population using an LLIN, among households with universal coverage	N: Number of people who could sleep under an LLIN if each LLIN in the household were used by two people (total number of LLINs in a household) D: Total number of individuals who spent the previous night in surveyed households	Household surveys
	Proportion of targeted pregnant women who received at least three doses of IPTp (disaggregated by providerinitiated, selfinitiated, or both)	N: Number of women who received three or more doses of IPTp to prevent malaria during their last pregnancy that led to a live birth (within the last two years) D: Total number of women surveyed who had a live birth in the last two years	Household surveys
	Proportion of children under five with fever in the last two weeks for whom advice or treatment was sought within 24 hours of the onset of fever	N: Number of children under five with fever in the last two weeks for whom advice or treatment was sought within 24 hours of the onset of fever D: Total number of children under five with fever in the last two weeks	Household surveys
	Proportion of patients who received AL and were counselled	N: Number of patients who received AL and were counselled D: Total number of patients who received AL	QOC reports
Strategy 1: Scale up malaria advocacy at national and county levels for increased utilisation of malaria interventions	Proportion of roundtable advocacy meetings held to advocate increased utilisation of malaria interventions	N: Total number of roundtable meetings held D: Total number of roundtable meetings planned	Activity reports
	Proportion of the targeted stakeholders advocating utilisation of malaria interventions	N: Number of key stakeholders advocating utilisation of malaria interventions D: Total number of targeted stakeholders engaged	Activity reports

Goal/objective/strategy	Indicator	Definition	Data type/source
Strategy 2: Strengthen community-based SBC activities for all malaria interventions	Proportion of caregivers of children under five who know that they should seek treatment within 24 hours of fever onset	N: Number of caregivers of children under five who know that they should seek treatment within 24 hours of fever onset D: Total number of caregivers of children under five surveyed	Survey reports
	Proportion of caregivers who know that children under five should be tested for malaria before treatment	N: Number of caregivers who know that children under five should be tested for malaria before treatment D: Total number of caregivers of children under five surveyed	Survey reports
	Proportion of women of reproductive age in targeted counties who know about IPTp as a way to prevent malaria in pregnancy	N: Number of women of reproductive age in targeted counties with knowledge on IPTp as a way to prevent malaria in pregnancy in targeted counties D: Total number of women of reproductive age in targeted counties	Survey reports
Strategy 3: Strengthen structures for the delivery of malaria SBC interventions at all levels	Proportion of counties implementing[11] their malaria communication plans	N: Number of counties implementing malaria communication plans D: Total number of counties with malaria communication plans	Activity reports
Strategy 4: Strengthen programme communication for increased utilisation of all malaria interventions	Proportion of people who recall hearing or seeing any malaria messages within the last six months	N: Number of people who recall hearing or seeing any malaria messages within the last six months D: Total number of individuals surveyed in targeted population	Survey reports

Goal/objective/strategy	Indicator	Definition	Data type/source
Objective 5: To strengthen malaria surveillance and use of information to improve decision making for programme performance	Proportion of expected health facility reports received	N: Number of health facility reports received D: Total number of health facility reports expected	HIS/routine surveillance
	Proportion of expected health facility reports received on time	N: Number of health facility reports received on time D: Total number of health facility reports expected	HIS/routine surveillance
	Proportion of targeted subcounties reporting malaria threshold data weekly	N: Number of targeted sub-counties reporting malaria threshold data weekly D: Total number of targeted subcounties	HIS/routine surveillance
	Proportion of counties using malaria surveillance data for decision making and targeting interventions	N: Number of counties providing evidence of using malaria surveillance data for targeting interventions D: Total number of counties	Activity reports
	Annual blood examination rate	N: Number of patients receiving a parasitological test for malaria D: Estimated mid-year population at risk of malaria	HIS/routine surveillance
Strategy 1: Strengthen malaria surveillance	Proportion of health facilities reporting inpatient data	N: Number of health facilities with admission services reporting inpatient data, including deaths D: Total number of health facilities offering admission services	HIS/routine surveillance
Strategy 2: Strengthen malaria epidemic preparedness and response	Proportion of reported epidemics/ upsurges responded to within two weeks	N: Number of reported epidemics/upsurges responded to within two weeks D: Total number of reported epidemics/ upsurges	Activity reports
Strategy 3: Increase use of malaria data for decision making	Number of programme review meetings held that demonstrate the use of data for decision making	N: Number of programme review meetings held	Activity reports
Strategy 4: Conduct and facilitate health facility surveys	Proportion of planned surveys conducted	N: Number of surveys conducted D: Total number of surveys planned	Activity reports
Strategy 5: Conduct and support community surveys	Proportion of planned surveys completed	N: Number of surveys completed D: Total number of surveys planned	Activity reports
Strategy 6: Facilitate operational research for policymaking	Number of malaria forums held	N: Number of malaria forums held	Activity reports
Strategy 7: Conduct entomology surveillance	Proportion of counties conducting entomological surveys	N: Number of counties conducting entomological surveys D: Total number of counties	Activity reports

Goal/objective/strategy	Indicator	Definition	Data type/source
Strategy 8: Monitor efficacy and effectiveness of vector control tools and technologies	Number of planned surveys conducted	N: Number of surveys conducted	Survey/activity reports
Objective 6: To provide leadership and management for optimal implementation of malaria interventions at all levels, for the achievement of all strategic objectives by 2023	Proportion of activities in the annual malaria work plan implemented as planned	N: Number of activities implemented according to the work plan D: Number of activities in the annual work plan	Programme reports
	Proportion of counties implementing at least 75 percent of the malaria activities in their annual work plans in line with the KMS	N: Number of activities implemented according to county plan D: Number of activities in the annual county work plan	Activity reports
	Proportion of resources mobilised to KMS costed need	N: Amount of resources mobilised D: Total amount required for strategy implementation	Programme reports
	Proportion of resources spent to available resources	N: Amount of resources spent on malaria activities D: Total amount of resources available	Programme reports
	Proportion of public health facilities having no stockouts of key malaria commodities in the facility	N: Number of public facilities having no stockouts of key malaria commodities in the facility D: Total number of public facilities	Programme reports
	Proportion of key malaria commodities forecasted within ±25 percent forecast error (composite of eight items: AL—all sizes, artesunate, RDT, SP, LLINs)	N: Number of key malaria commodities meeting the forecast threshold D: Total number of key malaria commodities forecast (All AL, SP, injectable artesunate, RDTs, LLINs—eight items)	Programme reports
Strategy 1: Align malaria governance and legislation to constitutional mandates and core functions	Number of legislative and policy documents reviewed and disseminated	N: Number of legislative and policy documents reviewed and disseminated	Programme reports
Strategy 2: Strengthen partnerships and coordination for malaria programme management	Proportion of malaria CoE members participating in CoE meetings	N: Number of malaria CoE members participating in CoE meetings D: Total number of members as defined in the malaria CoE terms of reference	Programme reports
Strategy 3: Strengthen capacity for malaria programming at national and county levels	Number of programme review meeting reports available	N: Number of meeting reports	Programme reports
Strategy 4: Strengthen resource mobilisation initiatives for malaria	Number of high-level advocacy meetings held for resource mobilisation	N: Number of meetings held	Programme reports

Goal/objective/strategy	Indicator	Definition	Data type/source
Strategy 5: Enhance malaria commodity security at all levels	Proportion of public facilities stocked according to plan for key malaria commodities (All AL, SP, injectable artesunate, mRDTs, LLINs)	N: Number of public facilities stocked within min-max levels D: Total number of public facilities	Activity/QOC reports
Strategy 6: Strengthen the use of supply chain data for decision making	Proportion of counties that make evidence-based facility orders using the functional health supply chain portal for malaria commodity management (AL6s, mRDTs)	N: Number of counties with evidence-based (based on health supply chain portal) facility order quantities D: Total number of counties that have placed an order	Activity reports

Key:

AL=artemether-lumefantrine, ANC=antenatal care, CCMm=community case management for malaria, CHU=community health unit, CHV=community health volunteer, CoE=committee of experts, D=denominator, EQA=external quality assessment, HIS=health information system, IPTp=intermittent preventive treatment in pregnancy, IRM= integrated resistance management, IRS=indoor residual spraying, KMS=Kenya Malaria Strategy, LLIN=long-lasting insecticide-treated net, mRDT=malaria rapid diagnostic test, N=numerator, QOC=quality of care, SCB=social and behaviour change, SP=sulphadoxine-pyrimethamine,

Annex 3: Data Use Plan

Programmatic questions	Indicator	Data source	Timeline for analysis	Proposed decisions	Decision maker	Communication channel
What is the LLIN coverage among households?	Proportion of households with at least one LLIN for every two persons	Household survey	Three to five years	Inform LLIN distribution	Head NMCP, CHMTs	Survey report, county-specific briefs, review meetings
Are pregnant women in targeted areas receiving at least three doses of IPTp?	Proportion of women who received three doses or more of IPTp during previous pregnancy (within the last two years)	Household survey	Three to five years	Ensure uninterrupted supply of SP Update service providers providing IPTp Improve linkages between health facility and community Improve uptake of SP Improve data capture and reporting	Head NMCP, CHMTs	Survey report, county-specific briefs, review meetings
Are malaria patients managed according to the Kenya malaria case management guidelines?	Proportion of patients with suspected malaria presenting to health facility who are tested for malaria using malaria rapid diagnostic test or microscopy Proportion of suspected malaria cases presenting to health facility who are managed in accordance with the Kenya malaria case management guidelines	Quality of care reports	Biannually	Train or mentor health workers on malaria case management Ensure no stockouts of key malaria diagnostics and medicines Provide updated case management guidelines	Head NMCP, CHMTs	Survey report, surveillance bulletins, review meetings

Programmatic questions	Indicator	Data source	Timeline for analysis	Proposed decisions	Decision maker	Communication channel
What is the state of preparedness for malaria epidemics in targeted subcounties?	Proportion of targeted sub-counties reporting malaria threshold data weekly (in epidemic-prone and seasonal transmission counties) Proportion of detected epidemics properly managed as per the EPR guidelines	Routine surveillance Post-epidemic evaluation reports	Weekly Annually	Inform EPR plans Enhance monitoring and reporting of thresholds Enhance commodity management	Head NMCP, IDSR unit, CHMTs, subcounties	Surveillance bulletins, EPR review meetings
What is the quality of malaria surveillance data reported by health facilities?	Proportion of health facilities sending quality reports on malaria surveillance data	Routine surveillance Data quality audits	Monthly Quarterly	Build DQA capacity for counties Advocate resources for health information system	Head NMCP, IDSR unit, CHMTs, subcounties, health facility in-charges	DQA reports, review meetings
What is the level of LLIN use among the targeted population?	Proportion of children under five who slept under an ITN/LLIN the night before the survey Proportion of pregnant women who slept under an ITN/LLIN the night before the survey Proportion of individuals who slept under an ITN/LLIN the night before the survey	Household survey	Three to five years	Strengthen social and behaviour change to increase net use Inform LLIN distribution	Head NMCP,CHMTs, partners	Survey report, county-specific briefs, review meetings
What is the level of knowledge on malaria prevention, diagnosis, and treatment among the targeted population?	Proportion of people with knowledge on malaria prevention, diagnosis, and treatment	Household survey	Three to five years	Design appropriate messages to increase knowledge on malaria prevention, diagnosis, and treatment	Head NMCP,CHMTs, partners	Survey reports, review meetings

Programmatic questions	Indicator	Data source	Timeline for analysis	Proposed decisions	Decision maker	Communication channel
What are the changes in malaria epidemiology in Kenya?	Confirmed outpatient malaria cases among children under five per 1,000 Malaria parasitaemia prevalence rate among children under five in lake endemic areas (by microscopy) Total inpatient malaria cases per 10,000 Inpatient malaria deaths among children under five per 1,000	Routine surveillance Household survey	Monthly Three to five years	Target malaria control interventions Improve reporting Advocate funding	Head NMCP, Head Department of Preventive and Promotive Health, partners	Survey reports, policy briefs, world malaria report

Key:

CHMT=county health management team, DQA=data quality audit, EPR=epidemic preparedness and response, IDSR=integrated disease surveillance and response, IPTp=intermittent preventive treatment in pregnancy, ITN=insecticide-treated net, LLINs=long-lasting insecticidal nets, NMCP=National Malaria Control Programme

Annex 4: Glossary of Select Monitoring and Evaluation Terms

This glossary contains select monitoring and evaluation terms used in this monitoring and evaluation plan.

Evaluation: The periodic assessment of the change in targeted results that can be attributed to an intervention. It attempts to link a particular outcome or impact directly to a particular intervention and helps determine the value or worth of a programme. Evaluation deploys various techniques that include quantitative and qualitative research methods to systematically investigate a programme's effectiveness and impact to determine the extent to which the invested resources have yielded expected results.

Impact: Longer-term effects or results of the interventions (e.g., reduced mortality).

Indicators: A measurement or value to show how close a programme is to its desired outcomes. Indicators will be different, depending on the reporting level in the health system and interventions deployed.

Inputs: Resources devoted to the programme, such as funds, staff time, technical assistance, and other types of resources

Monitoring: The routine tracking of key elements of programme performance through record keeping, regular reporting, surveillance systems, and periodic surveys. It involves generating data on inputs, processes, and outputs of an ongoing programme over time.

Outcomes: A set of results at the (target) population level induced by the programme interventions. Outputs that are well designed and that reach the populations for which they were intended will likely result in positive short-term effects known as outcomes (e.g., increased use of treated nets or improved access to effective treatment).

Outputs: Often the results of processes (e.g., immediate results achieved through the execution of activities). They include items such as stocks and delivery systems for drugs and other essential commodities, new or improved services, trained staff, and information materials.

Processes: Activities carried out to achieve programme objectives, such as training of health workers.

Programme monitoring: An assessment of the extent to which implementation of planned activities is consistent with the project or programme design.

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